EUROPEAN CENTRAL BANK

EUROSYSTEM

Euro area and national quarterly financial accounts

Quality report 2022

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Contents

Executive summary

This biennial report reviews the quality of the quarterly euro area and national financial accounts.[1] It fulfils the formal requirement for the Executive Board of the European Central Bank (ECB) to inform the Governing Council of the ECB on the quality of those statistics, as set out in Article 7(2) of Guideline ECB/2013/24 (hereinafter "the ECB Guideline"). The ECB Guideline was substantially amended in 2021 with new data requirements for the central bank and for the other financial institutions (OFIs) subsectors, among others.[2,3] The role of OFIs was recognised in the ECB's 2020-21 monetary policy strategy review and the first publication of new OFI subsectors in October 2022 is an important step in facilitating their analysis.[4,5]

This report also provides information supporting the data quality assurance process for the macroeconomic imbalance procedure (MIP), as laid down in the "Memorandum of Understanding between Eurostat and the European Central Bank/Directorate General Statistics on the quality assurance of statistics underlying the Macroeconomic Imbalance Procedure" (hereinafter "the MoU").

The main principles and elements guiding the production of ECB statistics are set out in the ECB's Statistics Quality Framework and quality assurance procedures, which are published on the ECB's website. This report provides analysis of the relevant statistical output, looking at: (i) methodological soundness; (ii) timeliness; (iii) reliability and stability; (iv) internal consistency (completeness and compliance with validation rules); and (v) external consistency with four other comparable statistical domains – quarterly non-financial sector accounts, balance of payments (b.o.p.) and international investment position (i.i.p.) statistics, monetary financial institution (MFI) balance sheet items (BSI), and securities issues statistics.

The descriptive and quantitative indicators that are used in this report are based on quarterly data produced in accordance with the European System of Accounts (ESA 2010). They include all data and revisions published up to 28 October 2022. Supporting information and details of how the indicators are computed can be found in Annexes 1 and 2 respectively.

Given the specific requirements relating to the MIP and the ECB's responsibilities in the context of the MoU, Box 1 at the end of the report presents a number of

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1 The principles underpinning this report can be found in the "Public commitment on European Statistics by the ESCB". The ECB Statistics Quality Framework (SQF) and quality assurance procedures, which were published in April 2008, build on that public commitment by the European System of Central Banks (ESCB).

2 Guideline ECB/2013/24 of 25 July 2013, as amended by Guidelines ECB/2020/51 of 14 October 2020 and ECB/2021/20 of 29 April 2021: consolidated version.

3 Further data requirements will become mandatory in 2023 including the integration of foreign direct investment by sector and the splitting of insurance and pension entitlements by investment risk. The analysis of OFIs will be further facilitated by extending the counterpart sector details to the OFI subsectors; which will become mandatory in 2024.

4 The importance of the analysis of OFIs was emphasised in "Non-bank financial intermediation in the euro area: implications for monetary policy transmission and key vulnerabilities", *Occasional Paper Series*, No 270, ECB, revised December 2021.

5 For further details see, "Other financial institutions explained".

indicators relating to the fitness for purpose of data for all EU countries. That box draws on data up to the end of 2021, as transmitted in October 2022, and focuses on data availability, revisions, and the sources and methods that are relevant for the financial accounts data underlying the MIP indicators.

Statistical developments between 2020 and 2022

All euro area countries transmitted the mandatory data to the ECB, except for some gaps in backdata before 2013 with no significant impact in the euro area aggregates (see Section 4.1), and the transmissions were generally timely and consistent. Countries provided selected ("supplementary") quarterly data at t+85, metadata at t+87 and full national financial accounts data and metadata at t+97, as required by the ECB Guideline. The transmission of metadata at t+87 explaining major events and revisions of the supplementary data became mandatory from 1 June 2021. The metadata requirements were extended to single events and revisions that are significant at the national level on the same date.[6]

In terms of methodological soundness, the national financial accounts are generally consistent with the requirements and conceptual framework set out in ESA 2010. However, financial accounts data are derived statistics that are based on a wide range of data sources, and those sources are not necessarily complete or fully sufficient in terms of conceptual requirements. In such cases, source data are supplemented with estimations or residual calculations, to ensure that the accounts are complete. Financial accounts data are, therefore, not necessarily the same as other datasets, and differences must be monitored and explained to users. The ECB encourages colleagues working on financial accounts to interact with their counterparts to reduce structural discrepancies and/or reconcile differences between the various datasets.

Within the European System of Central Banks (ESCB), the Working Group on Financial Accounts and Government Finance Statistics (WG FGS) and the Working Group on External Statistics (WG ES) and other substructures of the Statistics Committee (STC) (such as the Working Group on Monetary and Financial Statistics (WG MFS)) are working closely together on several common issues.

- Eliminating the remaining inconsistencies between the national b.o.p./i.i.p. and the rest of the world account).
- Addressing the main challenges for the collection and compilation of data on unlisted equity (comprising unlisted shares and other equity) based on the recommendations of the ESCB Virtual Group on Unlisted Equity.
- Proceeding with follow-up work on the recommendations of the ESCB Task Force on Financial Derivatives (TF FD), through the implementation of national action plans.

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6 This extension replaces the previously voluntary transmission of metadata by countries that do not usually exceed the thresholds set by the ECB Guideline expressed in terms of euro area GDP.

- Coverage of the OFI sector (particularly the timely coverage of special-purpose entities (SPEs)), given the lack of primary statistics in that area (with several countries making significant efforts to close existing data gaps). An ESCB network of statistical experts on captive financial institutions examined and confirmed the internationally agreed guidance on the delimitation of holding companies and head offices.[7]

- Long-term statistical improvements, such as the planned introduction of the Integrated Reporting Framework, which seeks to integrate the Eurosystem's statistical reporting requirements for banks, and the further development of the ECB's investment fund statistics, which will also support the quality of the financial accounts.

- Improvements to vertical consistency – i.e. consistency with non-financial sector accounts – require cooperation between compilers of financial and non-financial accounts. Recommendations to improve vertical consistency were developed by the WG FGS in cooperation with Eurostat and national experts on sector accounts and were approved in December 2021. Their implementation is planned by the time of the next benchmark revision in national accounts in autumn 2024.[8]

As in previous reports, known methodological issues and coverage gaps in the financial accounts of euro area countries are shown in Table 1. That information is based on the regular validation of data in the quarterly production rounds, discussions in the WG FGS and the WG ES, and the Committee on Monetary, Financial and Balance of Payments Statistics (CMFB) "level 3" quality reports (which detail national compilers' assessments of their own sources and methods).

Table 1

Notable issues and scope for improvement (for euro area countries)

Concept	Ref.	Description of recommendation	Applicable countries/national central banks (NCBs)
Methodological description and statistical procedures (Section 2)			
Securities held with non-resident custodians and other foreign assets (incl. deposits and real estate), particularly for households	A1	Further improve the estimation models for assets held abroad by residents, particularly for the household sector, in cooperation with the WG ES	All countries (excluding Latvia and Spain)9
	A1.1	Securities: integrate third-party holdings from the securities holdings statistics (SHS), particularly for households	Ireland, Greece, Malta, Netherlands, Austria, Portugal, Slovakia, Finland
	A1.2	Deposits with non-euro area banks: integrate available mirror data provided by the Bank for International Settlements (BIS)	Ireland, Greece, Malta, Netherlands, Slovakia, Finland
Coverage of OFIs	A2.1	Further improve coverage of OFIs	Germany

7 Final Report by the Task Force on Head Offices, ECB, Eurostat and OECD, 14 June 2013. Classification of Holding Companies and Head Offices according to NACE Rev.2, UNITED NATIONS DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS STATISTICS DIVISION. 20 April 2015.

8 Report on developing a common approach to improve vertical consistency, ECB and Eurostat, March 2022, updated in July 2022.

9 Latvia has improved its estimation models by integrating SHS data and by using BIS mirror data and mirror data on real estate. Spain uses mirror data from Money and Banking statistics, the BIS and from the regulation on insurance and PFs, in the declaration system securities deposited abroad are declared, and the compilers have access to tax data on household declarations of assets abroad (including real estate).

Concept	Ref.	Description of recommendation	Applicable countries/national central banks (NCBs)
			Netherlands
	A2.2	Improve quarterly data sources for OFIs	Germany Malta (S.127 only) Slovakia (S.127 only)
	A2.2.1	Further reduce the remaining coverage gap for quarterly OFI data	Luxembourg (S.127 only)
Financial derivatives	A3	Enhance data sources and procedures to record financial derivatives for all sectors and implement national actions plans	All countries
Unlisted shares and other equity	A4	Enhance data sources and procedures to record unlisted shares and other equity	Several countries – guidance to be developed jointly by WG FGS and WG ES
Consolidated non-financial corporation (NFC) debt (excluding Intra-NFC loans and debt securities)	A5.1	Ensure NFC debt is consistent with available monthly/quarterly MFI/b.o.p. sources for periods after the latest benchmark data from business statistics	Finland
	A5.2	Enhance coverage and timeliness for intra-NFC loans	Cyprus
Availability of data and metadata (Section 4)			
Completeness	C	Provide missing backdata	Estonia Ireland
Accessibility of data	C1.1	Increase quality of pre-2002 backdata and pre-2019 counterpart sector data for securities to allow publication	Ireland
	C1.2	Increase public availability of data	Ireland
	C2.1	Timely sending of mandatory metadata	Italy Ireland
	C2.2	The sending of metadata by countries which – owing to their size – do not usually exceed the thresholds set by the ECB Guideline is encouraged. It is emphasised that metadata for single events and revision that are significant at the national level are mandatory.	Several countries which – owing to their size – do not usually exceed the thresholds set by the ECB Guideline.
Accuracy and reliability (Section 5)			
Revisions	D1	Monitor revisions to data and the sources of revisions, and take action as needed	Several countries see Section 5 and in particular Charts 1-3.
Internal consistency (Section 6)			
Aggregation consistency	E1	Establish full consistency of sector and instrument aggregation	Ireland
Negative stocks	E2	Ensure that values for deposits/loans (balance sheets) are non-negative for all who-to-whom details	Ireland (deposits, loans, equity and other accounts payable/receivable) Spain (deposits) Netherlands (loans, deposits, equity, debt securities)
Consistency with non-financial sector accounts (Section 7.1)			
Vertical discrepancies	F1.1	Address reasons for vertical discrepancies which are large in relation to GDP	Germany (NFCs) Ireland (financial corporations, NFCs) Greece (households, financial corporations) Finland (households, financial corporations)
	F1.2	Review and implement ESCB/ESS recommendations on vertical consistency, as required	All countries
External consistency with balance of payments (Section 7.2)			
Consistency between b.o.p./i.i.p. data and rest of the world financial accounts data	G1	Address the remaining discrepancies as rapidly as possible. Structural issues at the latest by the time of the benchmark revision in 2024	Belgium, Germany, Ireland, Greece, Spain, France, Italy, Malta, Portugal, Slovenia, (see Charts 5 and 6 for more details)

Statistical issues affecting MIP indicators

The ECB, in collaboration with Eurostat, has continued to monitor specific aspects of the quality of statistical output, as required under the MoU, covering both euro area countries and other EU countries. Given that the financial accounts are an integrated statistical accounting framework, most of the issues mentioned in the report are also relevant in terms of assessing the quality of data for MIP purposes. Furthermore, there are certain issues which directly affect MIP data. In particular, item A5 is important for private sector debt and credit flows, while items A2, A3, A4 and G1 are important for financial sector liabilities.

One area where the compilation of the financial accounts data underlying the MIP indicators is still affected by limited data sources is the coverage of financial sector liabilities (particularly for OFIs), for which there are no comprehensive statistical reporting requirements at euro area level. Improving the quality of data on OFIs is a high priority There are issues in many EU countries in relation to the coverage and quality of statistics on OFIs. Poland should improve cross-checking with business registers or the use of other methods to ensure full coverage. Germany is working on a new system to identify OFIs in corporate balance sheet databases and has been able to verify that the largest enterprises are included or can be added manually, so that coverage in terms of volume is considered significantly above 70%. However more work is needed to ensure full coverage. The Netherlands has developed a new OFI survey to close data gaps which will be fully implemented by the time of the benchmark revision in 2024 to ensure consistency between the financial and non-financial accounts. In Croatia and Sweden, it is difficult to determine the degree of coverage for particular OFI subsectors, groups of entities or instruments on the basis of existing data sources, which indicates that the source data require specific improvements.

In most countries, quarterly and annual financial accounts are fully consistent (see Table A.1.2.2 in Annex 1). Vintage differences may occur, as not all countries update their annual data on a quarterly basis. Countries are encouraged to ensure that quarterly and annual data are consistent, particularly for data vintages that are used for MIP purposes in October of each year. Minor differences persist in Ireland and the Czech Republic.

For MIP purposes, the focus is on data for the last ten complete years. This data range is available for all EU countries except Denmark and Croatia. Those two countries are, therefore, encouraged to increase the length of the relevant time series.

Finally, analysis shows that discrepancies between b.o.p./i.i.p. statistics and sectoral financial accounts persist for several countries. This negatively affects the analytical combination of the two datasets and signals a lack of reliability or adequacy in the methodology of at least one of the two sets of statistics. Compared with the previous quality report, the situation has deteriorated in most countries. The benchmark revision in 2024 is a major target date for overcoming structural differences between the two types of statistics.

For more information on the assessment of data quality for MIP purposes, see Box 1.

1 Introduction

This report reviews the quality of the quarterly euro area and national financial accounts. It fulfils the formal requirement obliging the Executive Board to inform the Governing Council on the quality of those statistics, as set out in Article 7(2) of the ECB Guideline. Furthermore, this report provides information supporting the data quality assurance process for MIP, as laid down in the MoU. The report follows the recommendations adopted by the CMFB with regard to the harmonisation of the "level 2" quality report for b.o.p./i.i.p. statistics.[10]

The report focuses mainly on national data for the 19 euro area countries, as well as euro area aggregates. Data for all EU Member States (the EU27) are commented on in Box 1 at the end of the report and are available in the annexed tables.

The report is produced every two years. The next report will be released in spring 2025.

1.1 Scope of data coverage and structure of the report

This report analyses a number of aspects of data quality, including: (i) methodological issues caused by national compilers diverging from statistical standards or needing to enhance statistical procedures; (ii) NCBs' compliance with their obligation to transmit data and metadata to the ECB in terms of timeliness and coverage; (iii) the reliability of statistical data; (iv) the internal consistency of statistics; and (v) external consistency with other statistical domains/datasets (i.e. with non-financial sector accounts and b.o.p. statistics) and related financial statistics (i.e. MFI balance sheet statistics and securities issues statistics).

The data and metadata obligations increased substantially with the 2021 Guideline amendment. The most challenging aspects were the new data requirements for OFI subsectors (other financial intermediaries, financial auxiliaries, and captive financial institutions and money lenders), which became mandatory in June 2022.

The analysis focuses on the quarterly financial accounts data that were transmitted and published in 2022. The report is based on data available as at 28 October 2022, focusing on the transmissions of data and metadata for the reference quarters from the third quarter of 2020 to the second quarter of 2022,[11] with the main body of the report looking only at data for the 19 euro area countries.

Given the specificities of the MIP process, Box 1 at the end of this report presents a number of indicators looking at the fitness for purpose of data for all EU Member States. The box draws on data up to the end of 2021 as transmitted in October 2022 and focuses on (i) data availability, (ii) revisions, (iii) consistency with non-financial

[10] The CMFB proposed that harmonisation be extended to the financial accounts.

[11] The revision analysis is for the reference quarters Q2 2020-Q1 2022.

sector accounts, and (iv) sources and methods for financial accounts data underlying the MIP indicators (i.e. MIP-relevant aspects of quality). All indicators presented in Box 1 relate to national GDP or outstanding amounts and are intended to facilitate the analysis of MIP scoreboard indicators.

2 Methodological soundness and statistical procedures

The national financial accounts are generally consistent with the requirements and conceptual framework set out in ESA 2010. However, financial accounts data are derived statistics that are based on a wide range of data sources, and those sources are not necessarily complete or sufficient in terms of conceptual requirements. In such cases, source data are supplemented with estimations or residual calculations in order to ensure the accounts are complete. An overview of the known methodological issues and coverage gaps is provided in Table 1 in the executive summary. That information is based on the regular validation of data in the quarterly production rounds, discussions in the WG FGS, and the CMFB “level 3” quality reports (which detail national compilers’ assessments of their own national sources and methods). This section describes various issues affecting large numbers of countries (and in some cases, all countries).

2.1 Assets held abroad

For securities held with non-resident custodians, national security-by-security data used for SHS and external statistics should be supplemented with data on residents’ securities held with custodians in other euro area countries and non-euro area countries, particularly in countries whose reporting systems do not include a declaration of securities deposited abroad. Holdings with custodians in other euro area countries can be obtained from the third-party holdings in the euro area SHS data and are increasingly being integrated into the national data of euro area countries. Estonia, Ireland, Greece, Malta, the Netherlands, Austria, Portugal, Slovakia and Finland have not yet integrated these third-party holdings into data for the household sector.

For complete coverage of deposits held by households with non-resident banks, balance sheet statistics from other euro area countries and the BIS’s locational banking statistics are both valuable sources of information. Consequently, NCBs are encouraged (i) to report the breakdown vis-à-vis households by counterpart country to the BIS, and (ii) to gather available mirror data (as reported by other NCBs) for their country and incorporate that information into their national data where appropriate. This has not yet been implemented in Ireland, Greece, Malta, the Netherlands, Slovakia and Finland.

2.2 Coverage of other financial institution subsectors

Other financial institutions (OFIs) are institutions that provide financial services other than monetary financial institutions (MFIs) (i.e. banks and money market funds), investment funds, insurance corporations or pension funds. In 2022 they accounted for 22% of total financial sector liabilities. Owing to the heterogeneity the OFI subsectors, other financial intermediaries (ESA code S.125), financial auxiliaries (S.126) and captive financial instructions and money lenders (S.127) are only partially covered by euro area-wide statistical reporting requirements under ECB regulations. To complement the analysis of financial intermediation, mandatory primary statistics exist for two large segments of financial intermediaries (S.125) included under OFIs. Reporting requirements were specified for financial vehicle corporations engaged in the securitisation of assets in 2013.[12] Statistical reporting requirements were also extended to large securities and derivatives dealers, referred to as systemic investment firms.[13]

No harmonised reporting requirements at euro area level exist for financial auxiliaries (S.126) or captive financial institutions and money lenders (S.127). These two subsectors are made up of institutions which are not financial intermediaries. Financial auxiliaries facilitate financial transactions between third parties without becoming the legal counterparty – examples include stock exchanges, managers of pension funds and mutual funds, and insurance brokers. Captive financial institutions and money lenders are mainly holding companies and intragroup entities, such as financing conduits that raise funds in open markets to be used by their parent corporation. They are by far the largest OFI subsector and accounted for 17% of financial sector liabilities in 2022, concentrated in a small number of euro area countries.

While most countries have developed national surveys and other data sources (albeit to varying degrees), it remains a challenge to ensure that data for the OFI sector provide full coverage and are of high quality. NCBs provided the most recent information on their sources and methods in the 2021 and 2022 updates of the CMFB “level 3” quality reports.

It is important to identify the complete population of existing entities in a country in order to report comprehensive data for OFIs. This may be done using the information in business registers (which means that those registers need to be complete and accessible by statistical compilers), or it may involve the use of other comprehensive databases (e.g. balance sheet databases). Luxembourg continues to maintain and, where possible, improve the coverage of quarterly data sources for sector S.127, which currently accounts for around 90% of the total population. The Netherlands already has a high degree of coverage and has developed a new OFI survey to close possible data gaps. However, it will only be fully implemented by the time of the benchmark revision in 2024 to ensure consistency between the financial and non-financial accounts. Germany is working on a new system to identify OFIs in corporate balance sheet databases and has been able to verify that the largest enterprises are included or can be added manually, so that the coverage in terms of volume is considered significantly above 70%. However more work is need ensure

12 Regulation (EU) No 1075/2013 of the European Central Bank of 18 October 2013 concerning statistics on the assets and liabilities of financial vehicle corporations engaged in securitisation transactions (ECB/2013/40).

13 The reporting requirement for systemic investment firms such as non-MFI credit institutions were specified in Regulation (EU) 2021/379 of the European Central Bank of 22 January 2021 on the balance sheet items of credit institutions and of the monetary financial institutions sector (recast) (ECB/2021/2).

full coverage. While work on registers and balance sheet databases is needed to ensure complete coverage, another common issue is the availability of timely quarterly data sources for OFIs that are suitable for compiling financial accounts. Direct data sources are needed for instruments that are not covered by counterpart sector information (e.g. unlisted shares and loans). With that in mind, Germany, Malta (S.127 only) and Slovakia (S.127 only) have been encouraged to improve their quarterly direct data sources.

Where quarterly data coverage is not complete for specific OFI subsectors, groups of entities or instruments, full coverage may be achieved by estimating or grossing-up the missing data using information obtained from existing annual data sources.

2.3 Financial derivatives

It is particularly difficult to achieve full coverage of financial derivatives for sectors that are not covered by direct statistical reporting requirements (i.e. the private sector and large parts of the OFI sector), as these are not generally covered by custodian statistics. Consequently, compilers of financial accounts generally rely on counterpart sector information, which may not provide sufficient information. In October 2018 a joint WG FA-WG ES Task Force on Financial Derivatives was formed, and in October 2020 that task force produced a report providing guidance on the compilation of data on financial derivatives in macroeconomic statistics. The STC approved the task force's recommendations and countries have drawn up national action plans with a view to improving data sources and compilation methods and implementing them on a step-by-step basis. Countries are reviewing their sources and methods. Greece has achieved consistency for b.o.p. and financial accounts (FA) for financial sector transactions, and Spain has improved the instructions for direct reporters in the external sector for each type of derivative and modified their declarations as appropriate. The WG FGS agreed to implement structural improvements (e.g. changes to major data sources) by the time of the next benchmark revision (in 2024).

2.4 Unlisted shares and other equity

Data sources for unlisted shares and other equity are incomplete in many countries, as corporate balance sheet databases may not fully cover privately owned corporations or quasi-corporations. Even if corporate balance sheet data are available, it is difficult to value unlisted shares and other equity in the absence of comparable corporations issuing listed shares. These issues contribute to bilateral asymmetries (in particular in foreign direct investment), lower cross-country comparability, and inconsistencies with related data on investment income.

A joint WG FGS and WG ES expert group developed recommendations on the recording of unlisted shares and other equity in 2022. The expert group prepared a comprehensive set of best practices for the collection and compilation of unlisted equity data, which should serve as the basis for a thorough review of national systems. The group recommended significantly enhancing data sharing at international and European level. Recommendations also included undertaking efforts to improve the recording of intangible assets, practical guidance on the split between unlisted shares and other equity, and a reduction in the number of recommended statistical methods for deriving valuation estimates. The WG FGS and WG ES will continue their work in 2023 to support the implementation of national action plans by developing practical approaches. Finally, the group identified several issues which go beyond the topic of unlisted equity and require further work by the statistical community at large, including the recording of accounting provisions and negative equity, as well as mergers and acquisitions, and related corporate actions.

2.5 Consolidated non-financial corporation debt

All euro area countries have timely counterpart sector information to compile consolidated loans and counterpart sector data for securities to compile consolidated debt securities. However, in Finland the estimation of non-consolidated and intra-NFC loans for periods after the latest benchmark data from business statistics, gives rise to consolidated NFC loans that do not fully reflect the available counterpart sector information. It is therefore recommended that Finland review its compilation procedures for consolidated NFC debt. Cyprus is working to improve the coverage and timeliness of its direct data sources and procedures for intra-NFC loans.

3 Timeliness and punctuality

The ECB Guideline requires (i) transmission of a subset of supplementary financial accounts data at t+85 (i.e. 85 calendar days after the end of the reference quarter) to enable the compilation of an integrated set of quarterly euro area financial and non-financial accounts, and (ii) transmission of the full set of national financial accounts data at t+97.

In the period from November 2020 to October 2022 most euro area countries transmitted the supplementary data and the full set of national data by the relevant deadlines.

In June 2021 the amended ECB Guideline took effect and the transmission of the NCB subsector and a few additional data requirements became mandatory. All countries provided the most recent reference quarters. However, in June and July 2021 several countries provided the additional data requirements with a delay or did not provide the required backdata on time.

In June 2022 the first mandatory transmission of the OFI subsectors' data took place. All euro area countries provided the data for the reference period as required by the Guideline, although there were small delays in the submission of backdata by some countries.

Table 2 shows the dates for the transmission and publication of financial accounts data. National data are released by the ECB at t+108 (NCBs follow their own release policies). The release of national financial accounts on 12 October 2022 and of euro area results on 28 October 2022 successfully covered the new OFI breakdowns under the amended Guideline.

Table 2

Transmission and release dates in 2021 and 2022 for euro area aggregates and country data

Reference quarter	Transmission of supplementary financial accounts data (t+85)	Early release of euro area data with complete data on households and NFCs	Calendar days after reference quarter	Transmission of national financial accounts data (t+97)	Release of national financial accounts (t+108)	Calendar days after reference quarter	Full release of euro area data	Calendar days after reference quarter
Q3 2020	24 December 2020	12 January 2021	104	5 January	14 January	106	28 January	120
Q4 2020	26 March	9 April	99	7 April	14 April*	104	29 April	119
Q1 2021	24 June	5 July	96	6 July	13 July	104	28 July	119
Q2 2021	23 September	4 October	96	5 October	12 October*	104	29 October	121
Q3 2021	24 December 2021	11 January 2022	103	5 January	14 January	106	27 January	119
Q4 2021	26 March	5 April	95	7 April	14 April*	104	28 April	118
Q1 2022	24 June	5 July	96	6 July	13 July	104	27 July	118
Q2 2022	23 September	5 October	97	5 October	12 October*	104	28 October	120

Source: ECB.
* Excluding the general government sector.

4 Availability of data and metadata

4.1 Completeness

Most data transmissions in 2021 and 2022 were complete and carried out according to the deadlines specified in the ECB Guideline. Some gaps existed or still exist for the new statistical breakdowns required under the 2021 update of the ECB Guideline for backdata before 2013.

In June and July 2021 the first mandatory transmissions of central bank subsector data and selected additional data requirements took place. The additional data requirements related mainly to insurance and pension-related financial instrument details. All euro area countries provided the newly required data for the reference period, even though several countries did not provide the required backdata on time. By October 2022 all countries, except Ireland and Estonia, had provided the newly required backdata. For Estonia, the backdata for 137 series (Other changes in volume for the fourth quarter of 2012) are missing, and for Ireland the backdata for 523 series (for different periods from the first quarter of 1999 to the third quarter of 2013) are missing.

In June and July 2022, the first mandatory transmissions of the OFI subsectors' data took place. All euro area countries provided the data for the reference period, although there were small delays in the provision of backdata for some countries. By October 2022, all euro area countries had provided the required backdata for the OFI subsectors.

Most countries regularly delivered metadata on revisions and major events governed by the ECB Guideline at t+87 for supplementary data (from 2021) and at t+97 for full datasets. There were small delays in the provision of metadata by Finland, Slovenia, Spain and Slovakia, while metadata were missing for one or more quarters for Ireland and Italy.

4.2 Accessibility

"Accessibility" refers to the conditions under which users can obtain, use and interpret data. This is ultimately a measure of how straightforward it is to access data and the extent to which confidentiality constraints prevent certain data from being shared.

The ECB publishes euro area aggregates for transactions and outstanding amounts for all euro area aggregates. Revaluations are published for debt securities, equity (sum of shares and other equity), and investment fund shares/units held by the main resident sectors. Details of counterpart sectors are published for transactions in and outstanding amounts of deposits, loans, debt securities, listed shares and investment fund shares.

The ECB also publishes national data in accordance with Article 3(2) of the ECB Guideline, which requires the publication of quarterly national financial accounts data as transmitted by NCBs and deemed relevant by the STC, with the exception of information for counterpart sectors "euro area other than domestic" and "residents outside the euro area".[14] In April 2022 the STC approved the extended publication of national data covering the new data for the central bank and OFI subsectors.

Under that framework, all data are sent to the ECB with a confidentiality flagging. Table 3 shows observations that are marked as "free for publication" as a percentage of all observations that must be published under the ECB Guideline. Values below 100 are due to the flagging of a transmitted series which blocks it from external publication. It distinguishes between two different datasets: the "core" dataset[15] and a second dataset containing details of counterpart sectors for securities (see the tables in Annex I to the ECB Guideline) as well as the new data publication requirements relating mostly to the central bank and the OFI subsectors.[16]

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14 Article 3(2) of the ECB Guideline reads: "The ECB shall publish the euro area aggregates it compiles, as well as the "national data" collected under Article 2, as described in paragraphs 3 to 5 thereof, as deemed relevant by the STC, except for data relating to the cells in rows 12-21 of Tables 3 to 9 of Annex I (referring to the counterpart sectors "euro area other than domestic" and "residents outside the euro area").

15 This has been mandatory since October 2014 and includes assets and liabilities broken down by institutional sector (excluding the NCB and OFI subsectors), as well as who-to-whom (or "counterpart sector") tables for deposits and both short and long-term loans (Tables 3 to 5). A minimum set of backdata, starting from the reference quarter Q4 2012, has been mandatory since October 2014. Additional backdata (Q1 1999 to Q3 2012) became mandatory in October 2017.

16 The counterpart sector details for securities (Tables 6 to 9 in Annex I to the ECB Guideline), and for the OFI subsectors starts from the reference quarter Q4 2013. The data for the NCB subsector starts from reference quarter Q1 2015. In addition, the new data requirements relating to some financial instruments, mainly to insurance and pension-related financial instrument details that became mandatory with the amended Guideline in June 2021, are included in the dataset to be published.

Table 3

Observations marked as "free for publication" as a percentage of all observations for euro area countries

Country	Core dataset: assets, liabilities and counterpart sector details for deposits and loans		Counterpart sector details for securities and new subsector details
	Q1 1999-Q3 2012	Q4 2012-Q2 2022	Q4 2013/Q1 2015-Q2 2022
BE	100	100	100
DE	100	100	100
EE	100	100	100
IE	78	85.9	46
GR	100	100	100
ES	100	100	100
FR	100	100	100
IT	100	100	100
CY	99.7	98.7	83
LV	100	100	100
LT	100	100	100
LU	96.6	100	100
MT	100	100	82
NL	100	100	73
AT	100	100	100
PT	100	100	100
SI	100	100	100
SK	100	100	100
FI	100	100	100

Source: ECB.

Most euro area countries make their entire datasets publicly available and thereby enable their publication in the ECB's Statistical Data Warehouse. Ireland currently releases only 46% of the required counterpart sector details for securities and new subsector details – significantly lower than in the last report (81%) – as a result of a large number of data points for the new subsector breakdowns being flagged as "not for publication". Furthermore, only 78% of the additional backdata for the core dataset are fully available, as some of the data before the first quarter of 2002 are flagged as "not for publication". In addition, only 85.9% of the core dataset from the fourth quarter of2012 are accessible, which is a slight decrease compared with the last report. In the case of Cyprus, the partial unavailability of more recent data and counterpart sector details is due to primary and secondary confidentiality constraints in the b.o.p. and i.i.p. source data. In the case of Luxembourg, a small amount of backdata for the core dataset (for the insurance corporation and pension fund subsectors and counterpart sectors) remain unpublished owing to confidentiality constraints. Malta and the Netherlands flag (part of) the new OFI subsector breakdown as "not for publication" as a result of the temporary exemption agreed by the STC, resulting in decreased availability of their data compared with the last report.

Germany, Finland, France, Lithuania, Luxembourg and Spain also provide data for periods preceding the mandatory period under the ECB Guideline, starting from the first quarter of 1995.

Under the G20 Data Gaps Initiative, the ECB shares the quarterly financial accounts data for EU countries with other international organisations (such as the OECD and the IMF). Furthermore, the data are shared with Eurostat for further dissemination via its external databases.

4.3 Clarity

"Clarity" refers to the "information environment" surrounding data – i.e. whether they are accompanied by relevant and pertinent metadata, illustrations (such as charts), information on their quality and potential limitations, and background information (such as details of sources and methods).

The availability of background information on sources and methods considerably enhances the usability and clarity of data.

The ECB publishes two press releases per quarter on its website, outlining the latest data and relevant economic developments. The dissemination dates for all press releases are announced at the beginning of each calendar year in the ECB's statistical calendars.

The concepts and definitions used in the quarterly financial accounts are in line with international statistical standards (including ESA 2010). Background information explaining the link between the financial and non-financial accounts and providing further methodological details is available in the sector accounts section of the ECB's website.

The euro area aggregates and national data can be accessed via the ECB's Statistical Data Warehouse or the sector accounts section of the Statistics Bulletin. Furthermore, the ECB publishes a large set of euro area and country charts for the household sector in its Household Sector Report.

The ECB has a Statistical Information Request facility for external statistics users which helps them to access and analyse data.

A subset of the statistics produced under the ECB Guideline can also be accessed via the euro area statistics website. That website aims to facilitate the understanding, use and comparison of euro area and national data by presenting statistics in a user-friendly manner. It also allows who-to-whom data to be easily viewed in interactive graphics, which can be downloaded for use in other websites, emails or social media.

Table A.1.1.1 in Annex 1 presents a summary of national practices as regards the accessibility of data and metadata. All euro area countries allow users to download data in a number of different formats. Belgium, Germany, Estonia, Ireland, Spain, France, Cyprus, Lithuania, the Netherlands, Portugal and Finland all publish a quarterly press release. Most euro area countries (except Greece and Luxembourg) also publish statistical and/or economic bulletins, providing a visual representation of data in the form of charts, graphs and tables. In that context, countries should provide a single point of contact for queries from data users.

The CMFB “level 3” quality – or “self-assessment” – reports, which provide metadata on national financial accounts (including descriptions of compilation practices, sources and methods), are published on national websites and/or the CMFB’s website. The CMFB’s website provides links to reports on all EU countries (in the section on quality assurance for statistics underpinning the MIP scoreboard). Countries that needed to update their reports did so in 2021 and 2022.

5 Accuracy and reliability

This section reviews the stability of data in terms of revisions to the initially compiled data (the “first assessment” or “first vintage”). In general, revisions are needed to improve the accuracy of data, as an initial assessment may be based on incomplete, late or erroneous responses from reporting agents. However, large recurrent revisions may indicate that the data collection and/or compilation process is of comparatively low quality – a situation which needs to be addressed. On the other hand, if there are minimal revisions or none at all, this does not necessarily mean that the first assessment was of high quality; it may simply indicate a national preference for not revising the relevant data.

In this report, revisions for individual euro area countries and the euro area as a whole are assessed by comparing the initial and final vintages. Two basic types of indicators are used (see Annex 1 for more details):

1. **Relative size indicators** measure the absolute difference between the first vintage and the most recent vintage. Absolute differences may be quantified relative to the underlying series when strictly positive, or they may be calculated relative to a reference series such as GDP or underlying outstanding amounts. These indicators are symmetric mean absolute percentage errors (SMAPEs) and mean absolute revisions shown as a percentage of GDP. In the case of transactions, revisions cannot be properly related to the series value itself, as observations may have different signs or be close to zero. Consequently, absolute revisions to transactions are related to the underlying outstanding amounts or the relevant country’s GDP.

2. **Directional stability and reliability indicators** measure how frequently initial assessments are revised in the same direction and whether the direction of change indicated by the initial assessment has correctly predicted the direction of change in the most recent data vintage.

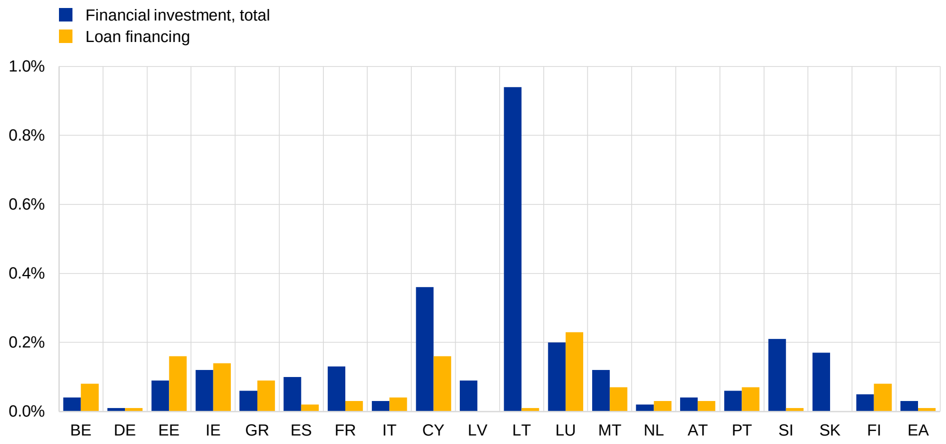
All revision indicators are calculated using quarterly national and euro area data for reporting periods from the second quarter of 2020 to the first quarter of 2022, as shown in the charts throughout this section. The analysis focuses on the main financial accounts indicators, as commented on in the ECB’s euro area accounts press releases in relation to households’ financial investment and the financing of households and non-financial corporations. Financial sector liabilities are also presented, as they are the basis for the third MIP headline indicator. Revision indicators are shown for both euro area aggregates and country data. The median values for the countries are presented in order to facilitate a comparison across countries. Detailed tables containing SMAPEs, upward revision ratios and directional reliability indicators for the euro area aggregates and all EU countries are available in Annex 1 for information purposes. When comparing revisions to country data and euro area aggregates, due consideration should be given to the fact that revisions to country data may offset each other, implying smaller revisions at euro area level.

5.1 Household financial investment and loan financing

In 2022, revisions to household financial investment were larger than revisions to household loan financing in nine euro area countries (Chart 1).

Chart 1
Revisions to household financial investment and household loan financing (transactions)

(symmetric mean absolute percentage errors; Q2 2020-Q1 2022)



Source: ECB.
Note: EA = euro area.

Revisions to euro area household financial investment (transactions) were smaller than the median for revisions by individual euro area countries. Directional reliability was 100% (Table A.1.3.4 in Annex 1). Cyprus, Lithuania and Slovenia revised their household financial investment data more extensively than other countries. In Lithuania this was the result of revisions to the counterpart NFCs' data given the newly available annual data used for benchmarking, while in Cyrus it was the result of revisions to b.o.p/i.i.p. statistics and, to lesser extent, to OFI statistics. In Slovenia, the data were revised to include improved data estimations which led to reduced vertical discrepancies. The median for all euro area countries was 0.1%. All three countries showed levels of directional reliability of above 70%, with data mostly being revised upwards (75% upward revision ratio for Cyprus and Slovenia, 100% upward revision ratio for Lithuania).

Revisions to euro area household loan financing (transactions) were smaller than the median for euro area countries, with directional reliability of 100%.

Estonia, Cyprus and Luxembourg revised their household loan financing data more extensively than other euro area countries. In Estonia, this was mainly the result of revisions to loans granted by OFIs, owing to changes in the OFI sample survey and updated annual balance sheet data. In Cyprus, the revisions were mainly the result of a change in the valuation method for loans held by certain Credit Acquiring Companies from market to nominal values, while in Luxembourg they were the result of revisions to cross-border loans sourced from the BIS. The median for all euro area countries stands at 0.04%. Directional reliability was above 70% for all three countries, and Cypriot data were mostly revised upwards (75% upward revision ratio).

5.2 Non-financial corporation financing

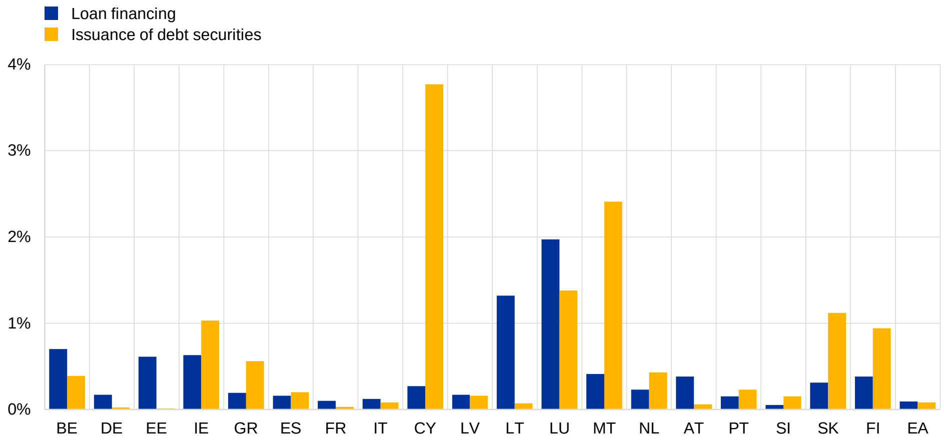
Looking at the various components of NFC financing, in ten euro area countries data on the net issuance of debt securities were revised more extensively than data on loan financing (Chart 2).

For both loans and debt securities, revisions for the euro area as a whole were smaller than the median for euro area countries. Directional reliability was 88% for debt securities and 75% for loan financing. For the net issuance of debt securities, revisions in Cyprus, Malta and Luxembourg were larger than in other euro area countries. In Malta, they were more extensive as a result of the revisions to debt securities held by the rest of the world, while in Luxembourg they were a result of revisions to the source data. The median for all euro area countries was 0.23%. Luxembourg recorded directional reliability of less than 50% and Maltese data were mainly revised upwards (upward revision ratio of 75%).

Belgium, Lithuania and Luxembourg revised NFC loan financing data more extensively than other euro area countries. In Lithuania, the revisions were the result of benchmarking the quarterly data to the newly available annual data. Directional reliability of less than 70% was recorded in both Belgium and Luxembourg. Luxembourg data were mostly revised upwards (75% upward revision ratio).

Chart 2
Revisions to NFC financing (transactions)

(symmetric mean absolute percentage errors; Q2 2020-Q1 2022)



Source: ECB.
Note: EA = euro area.

5.3 Financial corporation liabilities

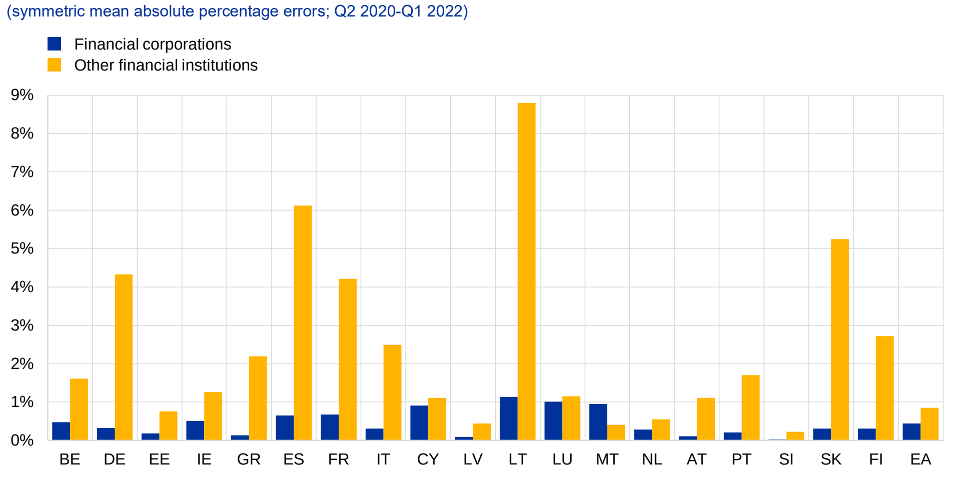
With regard to revisions to financial corporation liabilities (stocks), the euro area as a whole recorded revisions totalling 0.4% of underlying stocks during the review period, which was slightly higher than the median for individual euro area countries (0.3%), as some of the countries with the largest liabilities recorded above average revisions (see Chart 3). Revisions were relatively low for all subsectors of the financial corporation sector, with the largest seen in the investment funds subsector (where revisions to the euro area aggregate totalled 1.2%, compared with a median of 0.2% for individual euro area countries). Directional reliability for euro area financial corporation liabilities stood at 100%.

Revisions to financial corporation liabilities were low in all euro area countries. Revisions in excess of 1% were seen in Lithuania and Luxembourg, with data being revised upwards in both countries (100% upward revision ratio). The higher revisions for Lithuanian data owed to the inclusion of cash pool loans in subsector S.127 data.

For several countries revisions to OFI liabilities were larger than those reported in the last quality report. Germany, Spain, France, Lithuania and Slovakia recorded the largest revisions to OFI liabilities, with directional reliability of less than 70% in Spain and France, and upward revision ratios of above 75% in Spain, Lithuania and Slovakia. In the case of Spain, these revisions were related to the review of the sources used to separately compile the data of the OFI subsectors S.125, S.126 and S.127, as required under the ECB Guideline. This was an extraordinary revision and therefore these indicators cannot be interpreted in the same way as routine revisions.

Chart 3

Revisions to financial corporation liabilities (stocks)



Source: ECB.
Note: EA = euro area.

Detailed tables containing SMAPEs, upward revision ratios, directional reliability indicators and mean absolute revisions as a percentage of GDP for all EU countries are available in Annex 1.

6 Internal consistency

"Internal consistency" concerns accounting identities and hierarchical relationships between aggregates and components.[17] This includes horizontal consistency, which is defined as equality between the sum of (transactions in) financial assets and the sum of (transactions in) liabilities for each financial instrument (i.e. the sum of listed shares issued by resident sectors and the rest of the world equals the sum of listed shares purchased by resident sectors and the rest of the world).

The euro area accounts are not a simple aggregation of the national data, as they need to be combined with other euro area statistics (particularly b.o.p. and i.i.p. data and MFI balance sheet statistics) in order to obtain genuine euro area accounts. Horizontal consistency is not generally maintained when all of these components are put together, owing to discrepancies across data sources. The resulting imbalances between assets and liabilities for each transaction are then resolved by leaving data from the most reliable sources unchanged and amending data from less reliable sources, as appropriate.

Horizontal imbalances in the euro area financial accounts (before the reconciliation of data sources) continue to be significant. The two underlying causes of this are b.o.p./i.i.p. asymmetries[18] and differences between national financial accounts data and euro area building blocks. The latter mainly occur because national compilers of financial accounts adjust the statistics underlying the euro area building blocks or use different data sources. For example, loans granted by MFIs to general government, as recorded in the financial accounts, may differ from the data in MFI balance sheet statistics because compilers of financial accounts use government finance statistics. These are assumed to be better at identifying borrowing entities in the government sector (with reporting MFIs sometimes misclassifying entities such as local utilities providers as part of the government).

Table 4 shows the horizontal imbalances for euro area financial transactions that result from the combination of the various data sources (i.e. before the balancing process for the 28 October 2022 release).

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17 Internal consistency covers the following four elements: (i) aggregation consistency: total economy (transmitted sector total) = sum of sectors (sub-sectors); (ii) horizontal consistency: assets (sum of relevant sectors) = liabilities (sum of relevant sectors); (iii) balancing item consistency: transmitted net lending/net borrowing derived from the financial accounts (B.9F) and net financial worth (BF.90) = assets (sum of relevant instruments) – liabilities (sum of relevant instruments); and (iv) counterpart sector consistency: totals (as reported in Tables 1 and 2) = sum of relevant counterpart sectors (as reported in Tables 3 to 7).

18 In order to compile appropriate rest of the world accounts for the euro area, cross-border transactions and positions between euro area countries must be converted into domestic ones. For example, loans between the non-financial corporations of two euro area countries are recorded as loans between non-financial corporations, rather than loans to and from the rest of the world. However, in the national data of euro area countries, bilateral transactions and positions do not always mirror each other. These "asymmetries" are eliminated in order to obtain a consistent set of euro area accounts.

Table 4

Internal consistency of input data for the euro area accounts by financial instrument

Horizontal imbalances

(root mean squared errors (RMSEs); EUR billions)

Financial instrument	Q4 2020 to Q2 2022	Q4 2018 to Q2 2020	Q4 2017 to Q2 2019
Gold and SDRs	1.6 ↓	2.4 ↑	1.8 ↑
Currency and deposits	24.1 ↑	12.9 ↑	5 ↓
Debt securities	16.7 ↓	32.9 ↓	39.5 ↑
Loans	27.6 ↓	30.5 ↑	10.9 ↓
Shares and other equity	54.0 ↑	41.2 ↑	40.4 ↓
Insurance and pension schemes	6.8 ↑	4.0 ↓	5.4 ↑
Financial derivatives	13.1 ↑	12.9 ↓	19.1 ↔
Other accounts	94.2 ↑	50.6 ↓	61.6 ↑

Source: ECB.
Note: The RMSE is broken down into a bias component █ and a variance component ░. Arrows indicate an increase (↑), no change (↔) or a decrease (↓) in the indicator compared with its value one year ago.

The inconsistency of euro area aggregates before balancing increased for five financial instruments, and decreased for three, relative to the same quarters two years previously (second column). The inconsistencies of currency and deposits, shares and other equity are biased owing to an excess of assets over time, which stems from the fact that net assets vis-à-vis the rest of world are larger in the national financial accounts than they are in the euro area balance of payments (both of which are sources for the aggregate euro area financial accounts).

The national financial accounts datasets as transmitted to the ECB (i.e. the country datasets after balancing by national compilers) are internally consistent, except for minor issues that do not affect the main indicators.[19] There are still some internal inconsistencies relating to aggregation checks for Ireland, mostly for other changes in volume for data before 2013 (see Table A.1.2.1 in Annex 1).

Ireland reported ten series with negative stock (balance sheet) data: two for deposits, five for loans and three for other accounts payable/receivable. The Netherlands reported six time series with negative stock data for loans and one for deposits. Spain reported four time series with negative stocks: two for deposits and two for the other accounts payable/receivable. The negative values for some deposit breakdowns correspond to quarters in 1999 and 2000. This period is not included in the routine revision period and will therefore be corrected by the next benchmark revision in 2024 (a small negative value for other accounts payable/ receivable was corrected in 2022).

Several countries reported negative stocks for equity and debt securities. However, these may be due to short-selling in the case of listed shares and debt securities, and to negative equity in branches or entities with unlimited liability equity. Countries are contacted when they report negative stock for these instruments and asked to

[19] Internal discrepancies and unexplained negative stocks of more than €10 million were observed in a few countries in 2022, but these were generally corrected in later transmissions.

confirm that this is for legitimate reasons. The Netherlands and Ireland have reported a few equity or debt securities stocks that are negative for other reasons. In Ireland, the reported negative stocks for an equity series for OFI subsector S.127 were the result of insufficiently granular source data for this subsector and balancing between OFI subsector data.

7 External consistency/coherence

7.1 Coherence with non-financial sector accounts: vertical consistency

The ECB, in cooperation with Eurostat, produces integrated financial and non-financial accounts, which are published as the quarterly euro area accounts. Full coverage of instruments facilitates the compilation of the balancing items net lending/net borrowing (from the non-financial accounts) and net financial transactions (net acquisition of financial assets minus the net incurrence of liabilities, or net lending/net borrowing as derived from the financial accounts). It also enhances "vertical reconciliation" (equal balances for the financial and non-financial accounts), both within euro area institutional sectors and relative to the rest of the world. Currently, the euro area accounts comprise fully vertically integrated data for the financial corporation and general government sectors, while the NFC sector, the household sector and the rest of the world feature vertical discrepancies between the financial and non-financial accounts.

Vertical imbalances arise because different data sources are used for the compilation of the financial and non-financial accounts. The discrepancy in the rest of the world account is closely related to the "net errors and omissions" stemming from the b.o.p. In the euro area accounts, the vertical discrepancies resulting from the national data and euro area building blocks are reduced (and almost entirely eliminated in the case of financial corporations and government) by the effect of source selection criteria (which is sensitive to consistency considerations) and data adjustments made on the basis of expert judgement and mathematical methods. For the euro area rest of the world account, the discrepancy is identical to the "net errors and omissions" in the euro area b.o.p. for periods after the first quarter of 2013, since the two sets of statistics are fully reconciled from that quarter onwards (see Section 7.2).

National compilers are encouraged to improve vertical consistency by implementing the recommendations of the "Report on developing a common approach to improve vertical consistency"[20] in their compilation systems in cooperation with non-financial sector accountants. More substantial, structural changes may be implemented with the benchmark revision in 2024. In December 2021 the recommendations were approved by the ESCB's Statistics Committee and by Eurostat's Directors of Macroeconomic Statistics. The charts below show vertical discrepancies for resident private sectors. For countries where GDP is less than 1% of the EU total, the transmission of quarterly non-financial sector accounts is not mandatory for resident sectors other than the government sector. Consequently, the vertical consistency of quarterly data cannot be assessed for Estonia, Cyprus, Latvia, Lithuania, Luxembourg, Malta and Slovakia, while Slovenia provides quarterly data on a voluntary basis. For Ireland, the comparison is based on the quarterly financial

[20] Report published on the ECB's website.

accounts compiled by the NCB, while noting that the annual financial accounts compiled by the National Statistical Institute (NSI) may yield different results in terms of vertical consistency.

Charts 4.1a, 4.2a and 4.3a show absolute vertical discrepancies as at October of the following year (i.e. the vertical discrepancy for 2021 is based on data available as at October 2022). These charts provide a snapshot of the data that are available about six months after the relevant year's fourth quarter data have been compiled for the first time. Further revisions to data for previous years are not shown, although several countries have taken steps to reduce vertical discrepancies for previous periods.

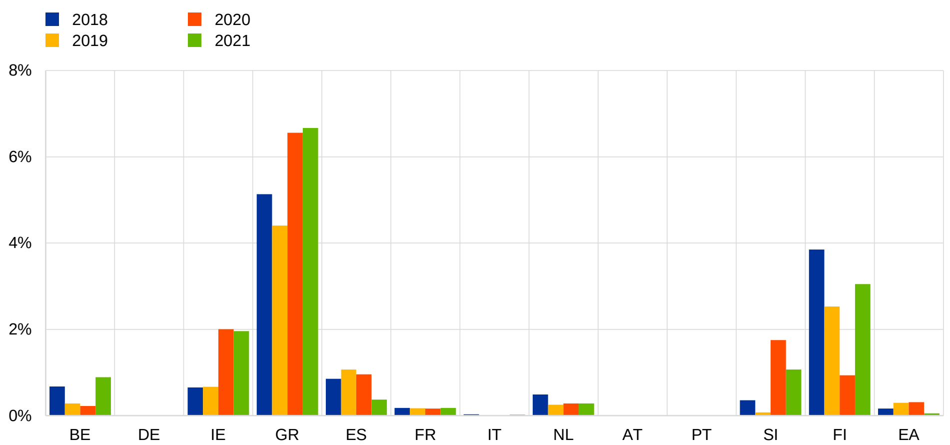
Charts 4.1b, 4.2b and 4.3b display cumulative vertical discrepancies as at October 2022 in order to show whether vertical discrepancies balance out or accumulate over time. An accumulation of vertical discrepancies indicates a persistent bias in the accounts.

For euro area households, the differences between the financial and non-financial accounts were small in all four years (see Chart 4.1a). Two countries (Germany and Portugal) reconcile the household sector (e.g. by adjusting financial and/or non-financial items where data sources are considered incomplete or of relatively low quality), but other countries do not make such reconciliation adjustments. In France, the reconciliation exercise is conducted once a year, as balance sheet data are revised on an annual basis. In many countries, vertical discrepancies tend to largely offset each other over time, so four-quarter averages are low in most countries. Discrepancies relative to GDP for 2021 were particularly large in Greece and Finland. Overall, the picture is similar to the situation as assessed two year earlier.

Chart 4.1a

Vertical discrepancies for households

(absolute vertical discrepancies relative to GDP; percentages; data as at the October following the reference year)



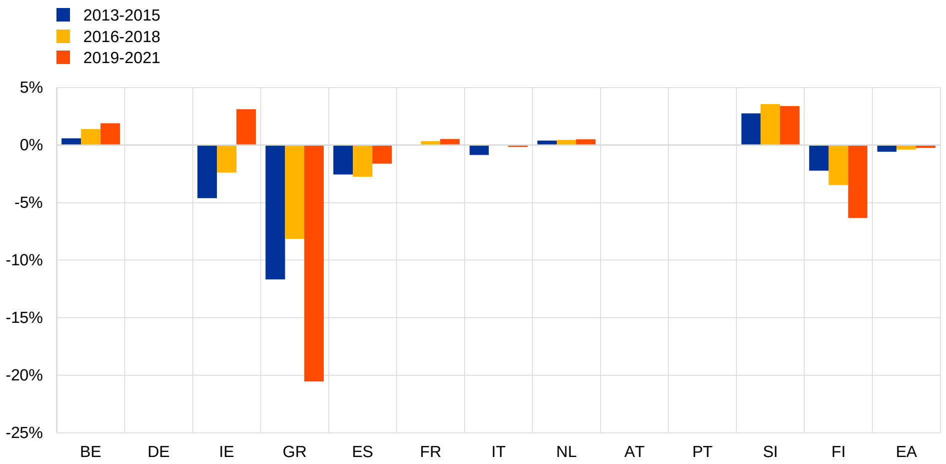
Source: ECB.
Notes: EA = euro area.

The sign persistence of vertical discrepancies is also a useful indicator of quality, as it helps to identify bias in the accounts (ignoring short-term volatility and recording issues in consecutive quarters). Chart 4.1b shows cumulative vertical discrepancies for household sectors in relation to GDP. The euro area household sector displays a very small negative bias. Countries with large absolute discrepancies also exhibit persistent biases in the accounts, with a very high negative bias seen for Greece and a negative bias for Finland. In the case of Greece, the large vertical discrepancies for the household sector are largely mirrored by vertical discrepancies for the rest of the world (see Section 7.2). A negative bias indicates persistent underreporting of net lending, as derived from the non-financial accounts (with a positive bias indicating the opposite).

Chart 4.1b

Bias in vertical discrepancies for households

(cumulative vertical discrepancies relative to GDP; percentages)



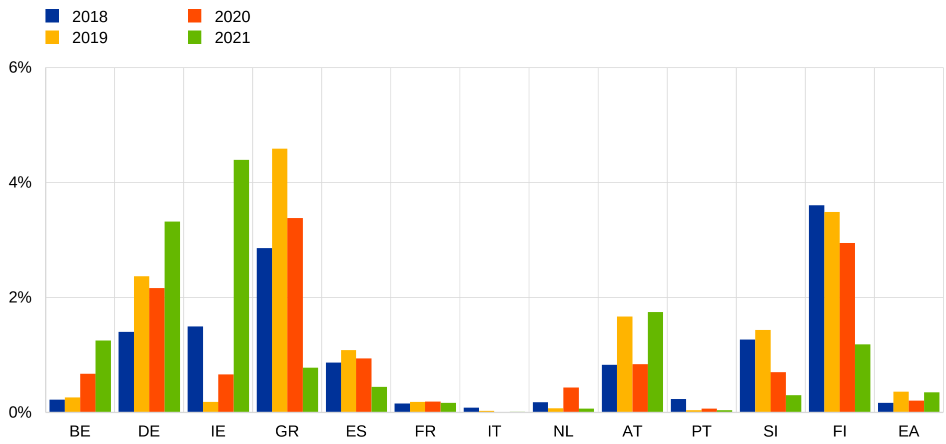
Source: ECB.
Notes: EA = euro area. Slovenia provides non-financial accounts for this sector on a voluntary basis.

For euro area NFCs, the differences between financial and non-financial accounts remain low overall at 0.3% of GDP (see Chart 4.2a). For some countries, however, the discrepancies are significantly greater, partly because statistical sources for NFCs are less complete (so it is more difficult to achieve consistent results) and partly because the NFC sector is not generally reconciled. In some countries, this sector is also used to offset the “net errors and omissions” stemming from b.o.p. data. Discrepancies relative to GDP for 2021 were particularly large in Germany and Ireland.

Chart 4.2a

Vertical discrepancies for non-financial corporations

(absolute vertical discrepancies relative to GDP; percentages; data as at the October following the reference year)



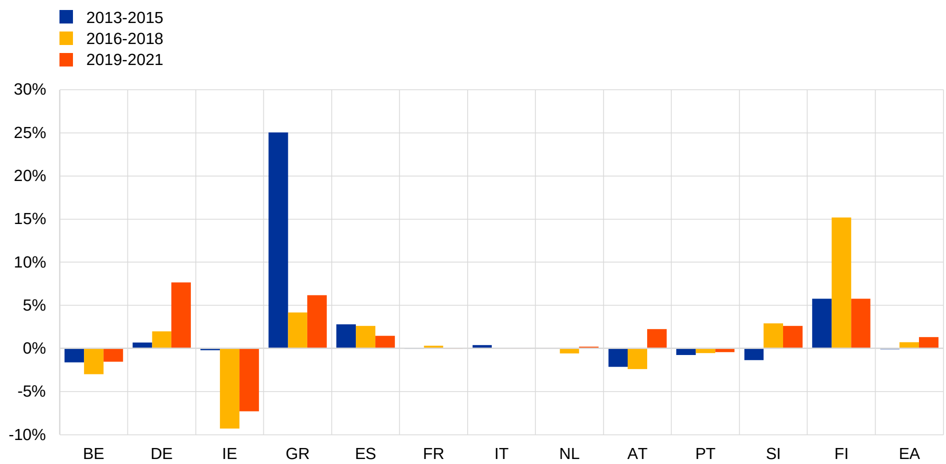
Source: ECB.
Notes: EA = euro area. Slovenia provides non-financial accounts for this sector on a voluntary basis.

The euro area NFC sector displays a small positive bias (see Chart 4.2b); Germany displays a positive bias for all periods, while Ireland shows a negative bias for all periods.

Chart 4.2b

Bias in vertical discrepancies for non-financial corporations

(cumulative vertical discrepancies relative to GDP; percentages)



Source: ECB.
Notes: EA = euro area. Slovenia provides non-financial accounts for this sector on a voluntary basis.

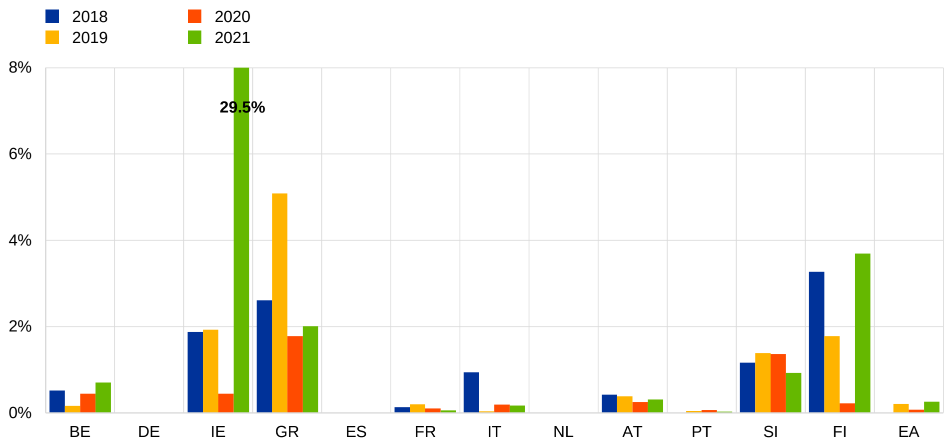
For the euro area financial corporation sector the differences between financial and non-financial accounts remain low overall at 0.3% of GDP (see Chart 4.3a).[21] Data availability is typically better in that sector than it is in non-financial sectors, and many countries usually achieve consistency. Discrepancies relative to GDP for 2021

[21] With the introduction of a new common balancing mechanism applied to the rest of the world sector in both the euro area financial accounts and the euro area b.o.p. (see Section 7.2), the reconciliation of the financial corporation sector was reviewed. Small discrepancies remain to maintain consistency with source data.

exceeded 2% in Ireland, Greece and Finland. In Ireland, the exceptionally high value for 2021 was the result of a mistake in the data reporting of net lending derived from financial accounts for the OFI sector. This was corrected in December 2022, putting the value for 2021 at 4.7%.

Chart 4.3a
Vertical discrepancies for financial corporations

(absolute vertical discrepancies relative to GDP; percentages; data as at the October following the reference year)

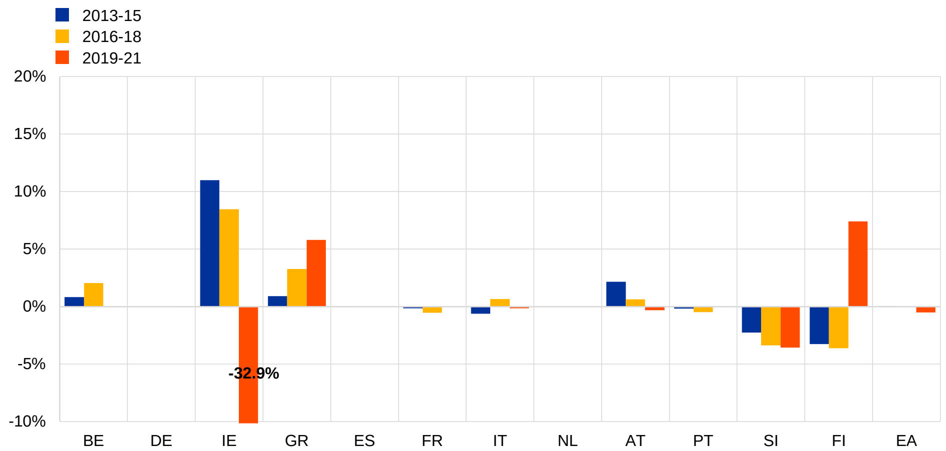


Source: ECB.
Notes: EA = euro area. Slovenia provides non-financial accounts for this sector on a voluntary basis.

Data for Greece exhibit a positive bias in all periods (see Chart 4.3b). In Ireland, the exceptionally high value for 2021 was the result of a mistake in the data reporting of net lending derived from financial accounts for the OFI sector. This was corrected in December 2022, putting the value for 2021 at 6.0%.

Chart 4.3b
Bias in vertical discrepancies for financial corporations

(cumulative vertical discrepancies relative to GDP; percentages)



Source: ECB.
Notes: EA = euro area. Slovenia provides non-financial accounts for this sector on a voluntary basis.

7.2 Consistency with balance of payments and international investment position statistics

Euro area b.o.p. and i.i.p. data are a building block for the euro area financial accounts and are widely used at national level for the compilation of the rest of the world financial and non-financial accounts as part of the system of national accounts.

The methodological differences between the b.o.p./i.i.p. and the rest of the world account (national accounts) were removed with the implementation of ESA 2010 and BPM6 (although some challenges still remain in terms of interpretation).[22] Nevertheless, subsequent analysis showed that inconsistencies between the two statistical domains continued to persist in many countries, negatively affecting the combined use of the two datasets, as well as their reliability.[23] In this regard, the ESCB has worked to remove inconsistencies between the two statistical domains, and most countries already compile the two sets of statistics in a consistent manner. However, large discrepancies are still observed in a few countries, which has a substantial impact on euro area and EU aggregates. Such issues are being tackled under the MIP quality assurance framework.

7.2.1 Financial transactions

Chart 5 shows the differences between the b.o.p. and the rest of the world account for financial transactions. In this case, discrepancies may be accounted for by time of recording differences, as well as the reconciliation of national sectoral accounts. “Vertical” reconciliation (correcting for errors and omissions) and “horizontal” reconciliation (ensuring that assets are equal to liabilities across sectors) may both entail large adjustments to financial transactions in the rest of the world account. Nonetheless, as an indicative benchmark, relative differences should ideally not exceed 0.3% of the average value of the underlying positions.

Since the release of b.o.p. data and euro area accounts on 29 October 2020, consistency between the two datasets for transactions at euro area level has been achieved thanks to the alignment of data sources and the introduction of a common balancing mechanism for periods from the first quarter of 2013 onwards. Work on achieving consistency in positions and other changes is expected to be resumed after the next benchmark revision in 2024, with the results for publication expected in 2025 (see below).

For the euro area as a whole, these differences were eliminated by the new compilation approach mentioned above. At country level, differences of more than 0.3% were recorded in several countries: Germany (liabilities only), Greece (assets only), Malta and Slovenia (liabilities only).

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22 The harmonised EU revision policy also supports equality between the two statistical domains. In addition, the ECB and Eurostat have jointly provided methodological advice to national compilers on selected topics with the objective of further harmonising the recording.

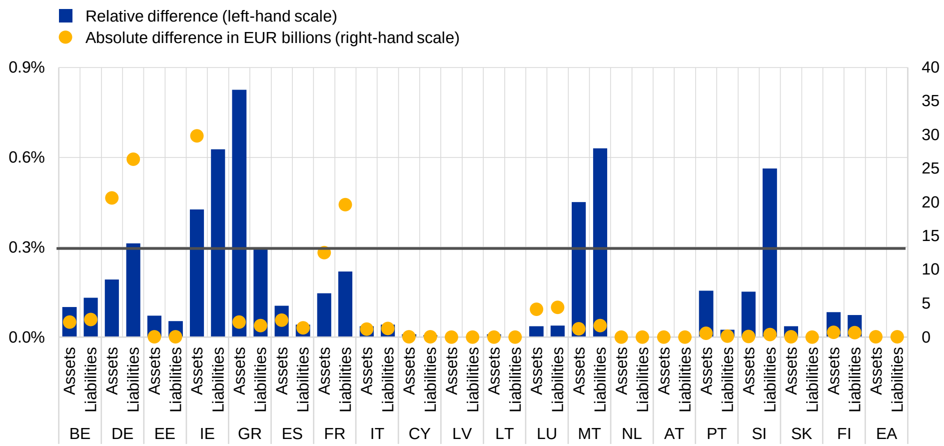
23 Aside from the non-identical interpretations given in the two manuals, the use of different data sources or different compilation methods also contribute to the outstanding differences.

Greece recorded the highest level of relative discrepancies for assets (for the link with vertical discrepancies see Section 7.1), while the largest absolute differences were observed in Ireland (assets only).

Chart 5

Financial account transaction discrepancies between the b.o.p. and the rest of the world account

(average absolute and relative differences (as a percentage of b.o.p. and rest of the world stocks of financial assets/liabilities) for the period Q3 2019 to Q2 2022 (b.o.p. vs euro area accounts))



Source: ECB.
Note: EA = euro area.

7.2.2 Financial positions

Chart 6 shows the differences between the i.i.p. and the rest of the world account for financial assets and liabilities (balance sheets/positions). As expected, the differences between the two datasets are larger for positions than they are for transactions. Relative differences should, as an indicative benchmark, be less than 0.5% of the total of the average financial assets/liabilities in the i.i.p. and the sectoral accounts.

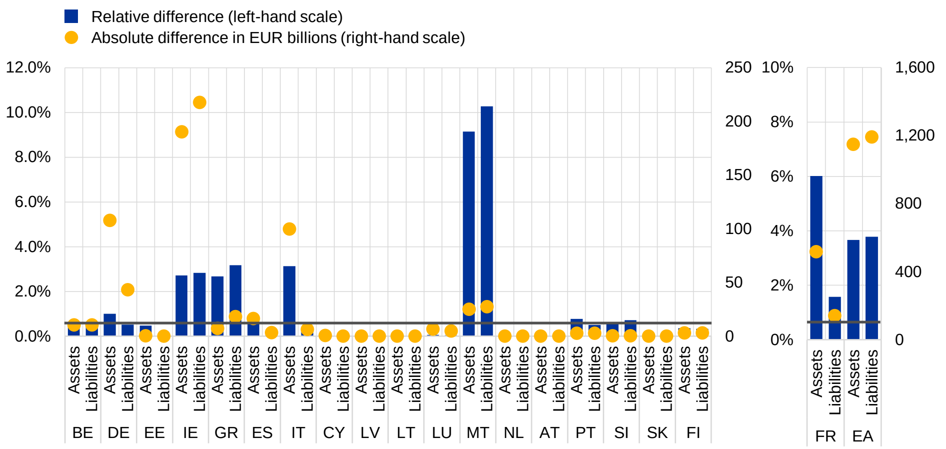
The euro area recorded discrepancies of 3.7% for assets and 3.8% for liabilities, somewhat smaller than in the last quality report. These discrepancies arose mostly from differences between the compilation and reconciliation processes for the euro area i.i.p. and the rest of the world. The ECB aims to fully reconcile these positions by 2025. At country level, differences of more than 0.5% were recorded in Belgium (liabilities only), Germany, Ireland, Greece, Spain (assets only), France, Italy (assets only), Malta, Portugal (assets only) and Slovenia. The highest relative discrepancies were recorded in Malta, while the largest absolute differences were observed in France (assets).

Detailed analysis at instrument level reveals sizeable differences in equity instruments, which are mostly triggered by differences in valuation practices (e.g. as regards unlisted equity instruments in the case of France).[24] Other reasons for these differences (which also affect other instrument types) include discrepancies relating to vintages, data sources and estimation methods.

Chart 6

Financial account position discrepancies between the i.i.p. and the rest of the world account

(average absolute and relative differences as a percentage of i.i.p. and rest of the world stocks of financial assets/liabilities for the period Q3 2019 to Q2 2022 (i.i.p. vs euro area accounts))



Source: ECB.
Note: EA = euro area.

7.3 Comparison with other financial statistics

Deviations from other financial statistics may well be justified, as compilers of financial accounts may choose to amend primary data sources to align them with ESA concepts, or to enrich data using alternative or supplementary data sources. However, identifying, comparing and explaining differences could be the starting point for more thorough analysis. Furthermore, explaining major differences between national data and other related statistics provides valuable information for users of euro area accounts and MIP data.

7.3.1 Comparing MFI loans by counterpart sector with MFI balance sheet statistics

In several instances, there are conceptual differences between MFI loans as recorded in the financial accounts and MFI loans as recorded in MFI BSI statistics.

Loans granted by MFIs to general government as recorded in the financial accounts may differ from the data in BSI statistics, since compilers of financial accounts use government finance statistics, which are assumed to be better at identifying borrowing entities in the government sector (with reporting MFIs sometimes

[24] In the rest of the world dataset an elaborate method is used to estimate market prices, whereas for i.i.p. statistics the own funds at book value methodology is consistently applied.

misclassifying entities such as local utilities providers). This is also the main reason why MFI loans to NFCs, as recorded in the financial accounts, differ from BSI data in a number of countries (see Table A.1.5.1 in Annex 1). Another reason could be the recording of accrued interest, which should ideally be recorded with the relevant instrument in the financial accounts, whereas in BSI statistics it is recorded under remaining assets/liabilities. Moreover, the “rerouting” of loans via the government sector in the financial accounts can lead to differences between BSI and financial accounts statistics in situations where MFIs grant loans to the private sector “on behalf of” the government.

The differences are less than 2% of stocks in most countries. In Germany, Austria and Finland, however, financial accounts data differ by more than 2% owing to the reclassification of MFI loans to government in line with government finance statistics.

7.3.2 Comparing securities issuance with ECB securities issues statistics

Conceptual differences between securities issuance in the financial accounts and the ECB’s securities issues statistics (SEC) relate to the recording of listing and delisting of shares (recorded as transactions in the financial accounts, but not in SEC) and the coverage of securities without an International Securities Identification Number (ISIN) code. In some EU Member States, securities issued without an ISIN code, which are not generally captured in SEC data, are non-negligible. Consequently, compilers of financial accounts supplement the SEC data with additional information on non-ISIN securities.

These methodological differences and the supplementation of securities issuance data with additional information may explain why values for stocks tend to be higher in the financial accounts than they are in SEC data (see Table A.1.5.1 in Annex 1). Meanwhile, small negative relative differences are observed in Luxembourg and the Netherlands.

Box 1
Quality indicators for financial accounts statistics underlying the MIP

The MIP scoreboard that is used for the Alert Mechanism Report consists of 14 headline indicators with thresholds (which are complemented by auxiliary indicators with no thresholds). The composition of those MIP indicators is subject to review and evolves over time in order to reflect the latest developments and changes in data needs. Most of them are composite indicators – i.e. they make use of at least two data sources.

The financial accounts are the main input for the following three headline indicators:

- private sector debt[25], consolidated[26], as a percentage of GDP;
- private sector credit flow[27], consolidated, as a percentage of GDP;
- financial sector liabilities[28], non-consolidated[29], one-year percentage change (11 years of data required).

Additionally, the financial accounts are used for one auxiliary indicator:

- household debt, including non-profit institutions serving households (NPISHs), consolidated, as a percentage of GDP.

Together, these indicators provide analytical evidence of possible vulnerabilities and risks that require further investigation at country level.

The following sections assess the fitness for purpose of financial accounts data used for the MIP, looking at the data vintage used in the 2022 Alert Mechanism Report**.**

Institutional set-up

Quarterly financial accounts are transmitted to the ECB on the basis of the ECB Guideline, with non-euro area EU Member States providing those data on a voluntary basis. Annual financial accounts are sent to Eurostat on the basis of the ESA 2010 transmission programme (under Regulation (EU) No 549/2013[30]). The indicators that are used for the MIP are provided by Eurostat on the basis of the annual financial accounts that are compiled in the Member States by NCBs (or in some cases, NSIs). In most cases, the annual and quarterly financial accounts are derived from a single compilation system. An MoU governing this process was signed in November 2016. In that MoU (and the related exchange of letters), the European Commission and the ECB recognise the quality assurance frameworks put in place in the European Statistical System (ESS) and the ESCB, and establish practical working arrangements with a view to ensuring the quality of the statistics underpinning the MIP.

The MoU specifies that Eurostat and the ECB's Directorate General Statistics (DG/S) should regularly conduct assessments looking at the quality of national datasets. In particular, DG/S should run quality checks on the datasets reported by NCBs and provide Eurostat with quality-assured datasets and/or information on the quality of data after the regular transmission of data in

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[25] Private sector debt as defined in the MIP scoreboard is the stock of liabilities of non-financial corporations (S.11), households (S.14) and NPISHs (S.15). The instruments that are taken into account when compiling private sector debt are debt securities and loans.

[26] For instance, not taking into account the stock (transactions in the case of credit flows) of debt between entities in the same sector.

[27] Private sector credit flows are defined as the net amount of liabilities that have been incurred (transactions) by non-financial corporations (S.11), households (S.14) and NPISHs (S.15) in the relevant year.

[28] Total financial sector liabilities are defined as the sum of all liabilities incurred by the financial corporation sector through currency and deposits, debt securities, loans, equity and investment fund shares/units, insurance, pensions and standardised guarantee schemes, financial derivatives and employee stock options, and other accounts payable.

[29] For instance, taking into account the stock of liabilities between entities in the same sector.

[30] Regulation (EU) No 549/2013 of the European Parliament and of the Council of 21 May 2013 on the European system of national and regional accounts in the European Union (OJ L 174, 26.6.2013, p. 1).

September/October each year.[31] The MoU also envisages visits by DG/S and Eurostat to NCBs and/or NSIs to help assess the quality of MIP-related statistical output. In 2022, a country visit to Finland took place, resulting in recommendations for improving data quality (as detailed in the relevant sections of this report).

To ensure full transparency on the quality of MIP-related statistics, a three-level quality reporting system has been set up over the last few years with the support of the CMFB. That system consists of national self-assessment reports (level 3), which feed into domain-specific quality reports (level 2) – including this report – that are coordinated by the ECB and Eurostat. Finally, a joint Eurostat/ECB summary report assessing the quality of all statistics underpinning the MIP (level 1) is published each year on the CMFB's website.

Availability and confidentiality of data

For MIP purposes, the focus is on data for the last ten complete years (2012-21). However, 11 years (2011-21) are required for the calculation of financial sector liabilities (as a one-year percentage change). The following assessment refers to the situation for quarterly financial accounts as transmitted to the ECB. For financial sector liabilities, this data range was available on a quarterly basis for all EU countries except Denmark and Croatia. For Croatia, quarterly financial accounts are not required for the years before it joined the European Union (i.e. the period before 2013).[32] Longer time series (15 years or more) are preferable, but of the countries that joined the EU in 2004 or later, only Lithuania and Hungary provide quarterly backdata before 2004. Consolidated data on private sector debt and credit are available from the fourth quarter of 2013 for all countries, in line with the ECB Guideline (which requests that countries provide the counterpart sector details for securities that are needed for full consolidation of NFC debt from the fourth quarter of 2013).

All EU Member States make the dataset specified in the ECB Guideline available to the general public, except for some minor exceptions which do not affect the compilation of MIP indicators on a quarterly basis. Ireland, for example, releases only 46% of the required counterpart sector details for securities and new subsector details, and only 78% of the required additional backdata for the core dataset are fully available, while some data before the first quarter of 2002 are flagged as "not for publication". In addition, the accessibility of the core dataset is just 85.9% for Ireland. In the case of Cyprus, the partial unavailability of more recent data and counterpart sector details is due to confidentiality constraints in the b.o.p./i.i.p. source data.

Sources and methods

The national financial accounts are generally consistent with the requirements and conceptual framework set out in ESA 2010. However, financial accounts data are derived statistics that are based on a wide range of data sources, and those sources are not necessarily complete or fully sufficient in terms of conceptual requirements.

31 The ECB runs quality checks on all quarterly financial accounts received from EU Member States. According to the MoU, it is then up to Eurostat to assess whether those quarterly data are comparable with the annual data that it receives from the Member States. For the large majority of Member States, the quarterly and annual accounts are a result of the same compilation system. Eurostat then derives MIP indicators from the annual financial accounts.

32 Euro area NCBs are not required to transmit data to the ECB for quarters before the first quarter of the year in which the relevant Member State acceded to the European Union. Non-euro area NCBs transmit all data on a voluntary basis.

One area where the compilation of the financial accounts data underlying the MIP indicators is affected by limited data sources is the coverage of financial sector liabilities (particularly captive financial institutions and OFIs in general, for which source data are not normally comprehensive and timely). Poland should improve cross-checking with business registers or use other methods to ensure full coverage of OFIs. Germany is working on a new system to identify OFIs in corporate balance sheet databases and has been able to verify that the largest enterprises are included or can be added manually, so that the coverage in terms of volume is considered significantly above 70%. However, more work is needed to ensure full coverage. The Netherlands has developed a new OFI survey to close possible data gaps, although it will only be fully implemented with the benchmark revision in 2024 to ensure consistency between the financial and non-financial accounts. In Croatia and Sweden, meanwhile, it is difficult to determine the coverage for OFI subsectors, groups of entities or instruments on the basis of existing data sources. This may mean that those data are not complete. Neither is it possible to estimate the missing data.

Several countries do not have fully comprehensive direct data sources for NFCs, or access to business registers facilitating the grossing-up procedures that are needed to achieve full coverage of intra-NFC loans and other transactions/positions that are not covered by counterpart sector information. Cyprus and Poland should improve cross-checking with business registers or use other methods to ensure full coverage. Furthermore, Cyprus, Malta, Bulgaria, the Czech Republic, Denmark, Croatia and Romania are all encouraged to improve their timely direct data sources, which will reduce revisions when comprehensive data become available.

Accuracy and reliability

Revisions to the data underlying the MIP headline indicators are relatively small for most countries (as shown in MIP Table A).

For consolidated private sector debt and credit flows, revisions are mostly due to revisions to NFC loan financing, whereas revisions to household loan financing and the issuance of NFC debt securities are generally smaller.

For consolidated private sector debt, revisions are relatively large in Belgium, Germany, Cyprus and Luxembourg, while all other countries have revisions that are less than 2% of national GDP. In Belgium, loan liabilities of NFCs were revised as part of a consistency exercise with and revisions to the rest of the world counterpart sector data (mainly foreign direct investment from b.o.p./i.i.p.). In Cyprus, the revisions are mainly the result of a change in the valuation method for loans held by certain Credit Acquiring Companies from market to nominal values. In Luxembourg, the revisions are high as a result of Structural Business Survey data for 2020 recently becoming available and revisions to the rest of the world and international investment position counterpart sector data.

For consolidated private sector credit flows, revisions are relatively large in Belgium, the Czech Republic, Ireland, Cyprus, Luxembourg, Malta and Sweden, while all other countries have revisions that are less than 1% of national GDP. In Ireland, those revisions are driven by revisions to NFC data from a new vintage of b.o.p. survey data and from the inclusion of updated company accounts information for corporations with no b.o.p. relevance which are revised once a year. The revisions in Malta owed to debt securities from the rest of the world and loans from captive financial institutions and money lenders. For revisions to data for Belgium, Cyprus and Luxembourg, see the information on consolidated private sector debt.

For total financial sector liabilities, revisions are less than 2% in most cases, measured as a one-year percentage change. The larger revisions observed for Cyprus are mainly due to revisions to b.o.p./i.i.p. data due to updated data on SPEs. Moreover, financial sector liabilities continue to be revised upwards as countries improve their data sources to increase coverage of OFIs. The size of those revisions differs across countries, partly reflecting their differing economic realities and, in particular, the restructuring of multinationals.

Revisions to the auxiliary indicator on household debt are generally smaller than the revisions to headline indicators, mirroring developments in the main reliable statistical source (loans by MFIs). The largest revisions (above 1% of GDP) can be seen in Malta, which is mainly due to the revisions reported by captive financial institutions and money lenders.

Internal consistency

Most countries fulfil all validation (accounting) rules, with minor exceptions seen in the Czech Republic, Denmark, Ireland, Hungary, Romania and Sweden (see Table A.1.2.1 in Annex 1).

Consistency of quarterly and annual financial accounts

In most countries, quarterly and annual financial accounts are fully consistent (see Table A.1.2.2 in Annex 1), with the level of consistency improving significantly relative to last year's report. However, vintage differences may occur, as not all countries update their annual data on a quarterly basis. Countries are encouraged to ensure that quarterly and annual data are consistent, particularly for data vintages that are used for MIP purposes in October of each year. Structural differences may signal quality issues in quarterly and/or annual accounts. Small differences are observed in the Czech Republic and Ireland.

In some countries, differences in the classification of certain financial institutions in quarterly and annual financial accounts explain some minor differences in financial sector liabilities. In Hungary, for example, the difference for financial sector liabilities (0.9%) is due to the Hungarian Export-Import Bank (Eximbank) being classified differently in the quarterly and annual financial accounts that are transmitted to European institutions (with quarterly data based on NCB data sent to the ECB and annual data based on NCB data transmitted via Eurostat). While the bank is included in the financial sector in the quarterly financial accounts and other financial statistics, it is classified in the general government sector in the annual financial accounts and other statistics transmitted to Eurostat. In its opinion of 17 July 2017, the CMFB advised that Eximbank should be classified as part of the general government sector.[33] The consistency of financial accounts should be improved by fully implementing the CMFB's opinion in quarterly and annual results.

Consistency with non-financial accounts

An important quality aspect for users of financial accounts is their consistency with non-financial accounts across institutional sectors. Conceptually, the net lending/net borrowing that is derived from financial and non-financial accounts should be identical for all sectors, although in practice this is often not the case. Large and persistent differences signal quality issues in the financial and/or non-financial accounts in question, i.e. they can affect the accuracy of MIP indicators derived from the financial or non-financial accounts.

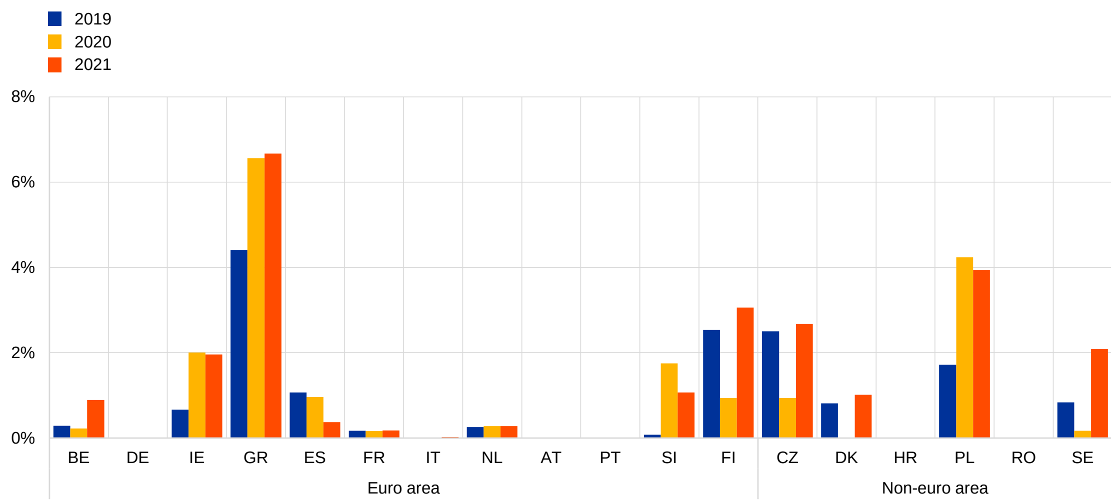
33 In Magyar Nemzeti Bank's quarterly and annual financial accounts, Eximbank is regarded as part of the financial sector.

For the household sector, vertical discrepancies for 2021 were above 2% of GDP in Greece, Finland, the Czech Republic, Poland and Sweden (see MIP Chart A).

MIP Chart A

Vertical discrepancies for households

(absolute vertical discrepancies relative to GDP; percentages)

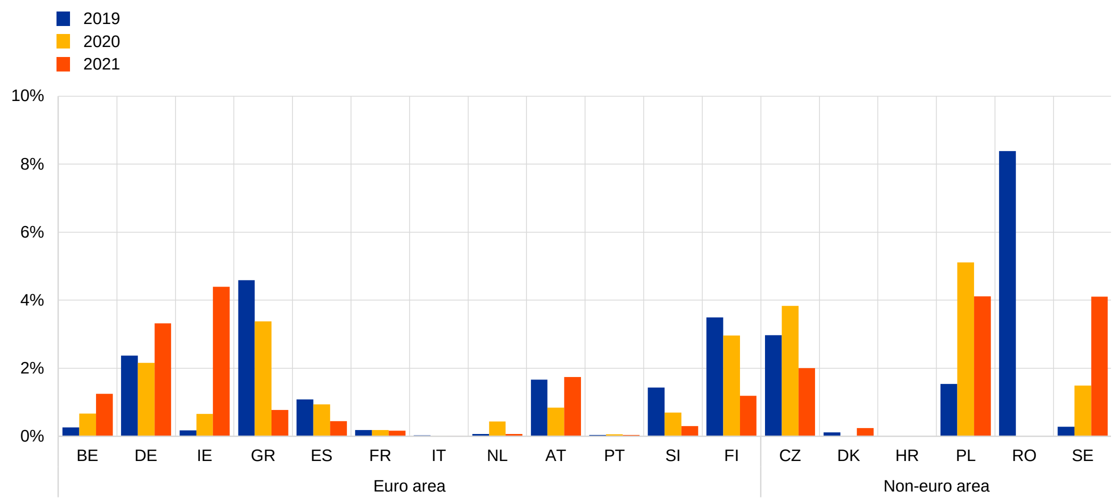


Source: ECB.
Note: Quarterly non-financial accounts for this sector are provided by Slovenia on a voluntary basis.

MIP Chart B

Vertical discrepancies for non-financial corporations

(absolute vertical discrepancies relative to GDP; percentages)



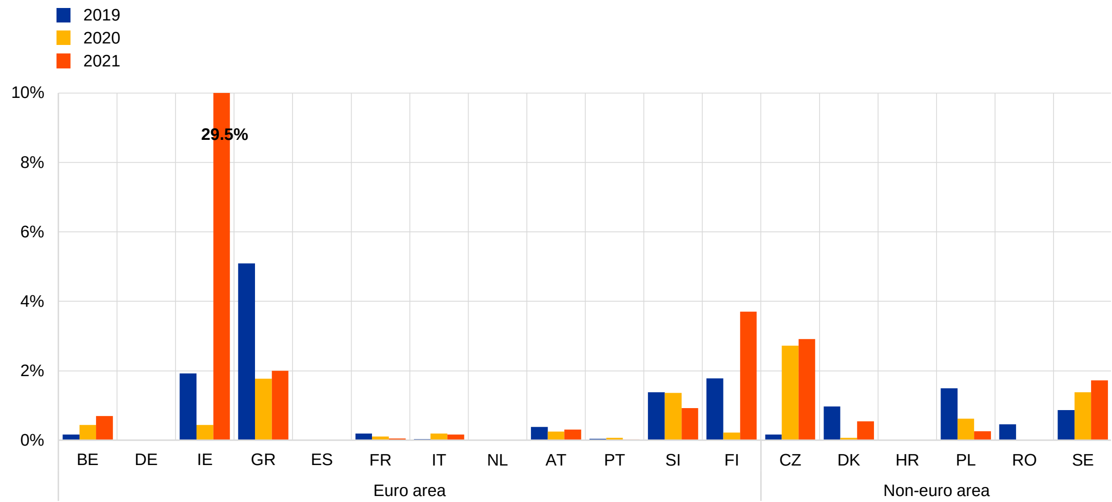
Source: ECB.
Note: Quarterly non-financial accounts for this sector are provided by Croatia (up to and including data for 2016) and Slovenia on a voluntary basis.

For the NFC sector, vertical discrepancies for 2021 were above 2% of GDP in Germany, Ireland, the Czech Republic, Poland and Sweden (see MIP Chart B).

MIP Chart C

Vertical discrepancies for financial corporations

(absolute vertical discrepancies relative to GDP; percentages)



Source: ECB.
Note: Quarterly non-financial accounts for this sector are provided by Slovenia on a voluntary basis.

For the financial corporation sector, vertical discrepancies for 2021 were above 2% of GDP in Ireland, Finland and the Czech Republic (see MIP Chart C). In Ireland, the exceptionally high value for 2021 was the result of a mistake in the data reporting of net lending derived from financial accounts for the OFI sector. This was corrected in December 2022, putting the value for 2021 at 4.7%.

In several EU countries, work to ensure good alignment of financial and non-financial accounts is being carried out, with regular meetings being held by compilers. At European level, recommendations to improve vertical consistency have been developed by the ESCB (WG FGS) and Eurostat groups (EG SA, TF AFA), consulting the ESCB WG ES and users from the ECB and the EU Commission.

MIP Table A

Revisions

(revisions to financial accounts data underlying MIP indicators for 2020 (October 2022 transmission vs October 2021 transmission); percentages)

Country	Private sector debt, consolidated Revision as % of GDP	Private sector credit flow, consolidated Revision as % of GDP	Total financial sector liabilities, non-consolidated Revision as % of 2021 transmission	Household debt, consolidated Revision as % of GDP
Euro area				
BE	-9.08	-3.99	0.56	0.00
DE	2.25	0.46	1.25	-0.00
EE	-0.49	-0.46	0.25	-0.20
IE	-0.01	-3.85	0.94	0.55
GR	-0.36	-0.23	-0.24	-0.19
ES	1.15	0.26	0.92	-0.04
FR	1.72	0.50	-1.45	0.10
IT	-0.04	-0.12	0.78	0.02
CY	12.20	1.18	-3.02	-0.11
LV	-0.07	-0.11	0.05	-0.04
LT	0.00	-0.00	-0.01	0.00
LU	5.57	50.22	1.76	-0.03
MT	-0.23	-2.14	-0.21	1.02
NL	-1.54	0.53	-0.36	0.31
AT	-0.19	-0.21	-0.14	0.21
PT	0.26	-0.00	-0.60	-0.22
SI	0.00	0.00	0.01	-0.01
SK	0.69	-0.73	0.47	0.00
FI	-1.32	-0.29	0.30	0.00
Non-euro area				
BG	-1.15	-0.45	-0.44	-0.00
CZ	-0.97	-1.05	1.47	-0.01
DK	-0.13	0.21	0.14	-0.04
HR	0.02	0.00	0.04	0.32
HU	0.94	0.46	-0.09	0.10
PL	0.51	0.30	-0.01	-0.00
RO	0.01	0.00	0.00	0.00
SE	-0.45	2.74	1.24	0.01

Annexes

Annex 1: Detailed tables on quality criteria

A.1.1 Accessibility and clarity

Table A.1.1.1
Accessibility of financial accounts data

Country	Website	Downloads	Charts and tables	Press release	Hotline
Euro area					
BE	Y	Y	Y	Y	Y
DE	Y	Y	Y	Y	Y
EE	Y	Y	Y	Y	Y
IE	Y	Y	Y	Y	Y
GR	Y	Y	N	N	Y
ES	Y	Y	Y	Y	Y
FR	Y	Y	Y	Y	Y
IT	Y	Y	Y	N	Y
CY	Y	Y	Y	Y	Y
LV	Y	Y	Y	N	Y
LT	Y	Y	Y	Y	Y
LU	Y	Y	N	N	Y
MT	Y	Y	Y	N	Y
NL	Y	Y	Y	Y	Y
AT	Y	Y	Y	N	Y
PT	Y	Y	Y	Y	Y
SI	Y	Y	Y	N	Y
SK	Y	Y	Y	N	Y
FI	Y	Y	Y	Y	Y
Euro area	Y	Y	Y	Y	Y
Non-euro area					
BG	Y	Y	Y	N	Y
CZ	Y	Y	Y	Y	Y
DK	Y	Y	Y	Y	Y
HR	Y	Y	Y	Y	N
HU	Y	N	Y	Y	Y
PL	Y	Y	Y	N	Y
RO	Y	Y	Y	N	Y
SE	Y	Y	Y	Y	Y

Source: ECB.

A.1.2 Internal consistency

Table A.1.2.1

Percentage of validation rules satisfied

(period: Q4 2012 to Q2 2019)

Country	Consistency rate
Euro area	
BE	100
DE	100
EE	100
IE	95
GR	100
ES	100
FR	100
IT	100
CY	100
LV	100
LT	100
LU	100
MT	100
NL	100
AT	100
PT	100
SI	100
SK	100
FI	100
Non-euro area	
BG	100
CZ	99
DK	91
HR	100
HU	99
PL	100
RO	96
SE	99

Source: ECB.

Table A.1.2.2

Consistency across frequencies, 2021

(percentages)

Country	Private sector debt, consolidated	Private sector credit flow, consolidated	Total financial sector liabilities, non-consolidated	Household debt, consolidated
	% difference (QFA-AFA)/QFA			
Euro area				
BE	-0.00	0.00	-0.00	0.00
DE	0.00	0.00	0.00	0.00
EE	-0.00	0.00	0.00	-0.00
IE	-0.20	-2.33	0.98	2.61
GR	0.00	0.00	0.00	0.00
ES	0.00	0.00	0.00	0.00
FR	0.00	-0.00	0.00	0.00
IT	0.30	0.22	0.09	0.00
CY	0.01	0.01	0.00	0.04
LV	0.00	-0.00	-0.00	0.00
LT	0.00	0.00	-0.00	-0.00
LU	0.00	-0.00	0.02	0.00
MT	0.00	-0.00	-0.00	-0.00
NL	0.00	0.00	0.00	0.00
AT	-0.00	0.00	-0.00	-0.00
PT	-0.00	-0.00	0.00	-0.00
SI	0.00	-0.00	-0.00	0.00
SK	-0.15	0.39	-0.26	0.04
FI	0.00	0.00	0.00	0.00
Non-euro area				
BG	-0.00	-0.00	-0.07	-0.00
CZ	1.88	3.42	-0.39	0.59
DK	0.00	-0.01	-0.00	0.00
HR	-0.00	-0.00	-0.00	-0.00
HU	-0.00	0.00	0.65	0.00
PL	-0.00	-0.00	0.00	0.00
RO	0.00	-0.00	0.00	0.00
SE	0.00	0.00	0.00	0.00

Source: ECB.

A.1.3 Revision indicators

Table A.1.3.1

Symmetric mean absolute percentage errors* for the period Q2 2020 to Q1 2022

(percentages)

	Households (including NPISHs)				Non-financial corporations							Financial corporations					
	Loans		Total assets		Debt securities		Loans		Intra-NFC loans		Total	Total	MFIs	IVFs	OFIs	ICs	PFs
	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Trans-actions	Stocks					
Euro area																	
BE	0.24	0.08	0.61	0.04	3.07	0.39	1.50	0.70	9.26	2.64	0.15	0.47	0.19	0.00	1.61	1.41	0.27
DE	0.21	0.01	0.36	0.01	1.76	0.02	3.14	0.17	1.75	0.26	0.03	0.32	0.00	0.00	4.33	2.46	0.38
EE	0.24	0.16	1.47	0.09	0.17	0.01	2.29	0.61	10.55	1.44	0.07	0.18	0.07	0.74	0.76	0.21	0.72
IE	1.03	0.14	1.73	0.12	10.34	1.03	1.51	0.63	8.29	0.31	0.39	0.51	0.26	0.19	1.26	4.33	3.15
GR	0.15	0.09	0.29	0.06	0.49	0.56	0.52	0.19	NA	NA	0.03	0.13	0.11	0.48	2.19	0.20	0.67
ES	0.03	0.02	2.48	0.10	0.35	0.20	0.47	0.16	0.45	0.45	0.05	0.65	0.05	0.01	6.12	0.05	0.55
FR	0.30	0.03	0.32	0.13	0.47	0.03	1.93	0.10	3.18	0.22	0.07	0.67	0.50	0.12	4.21	0.43	NA
IT	0.03	0.04	1.76	0.03	0.82	0.08	0.36	0.12	4.90	1.52	0.07	0.31	0.07	0.00	2.49	0.19	0.32
CY	0.30	0.16	0.63	0.36	7.84	3.77	4.41	0.27	0.04	0.02	0.53	0.91	0.07	0.00	1.11	0.48	2.66
LV	0.04	0.00	0.69	0.09	0.08	0.16	0.71	0.17	3.10	0.74	0.21	0.09	0.00	0.72	0.44	0.04	0.00
LT	0.03	0.01	1.96	0.94	0.04	0.07	2.50	1.32	12.89	6.41	0.22	1.13	0.00	1.14	8.80	0.22	0.00
LU	0.15	0.23	0.39	0.20	0.78	1.38	2.42	1.97	6.16	1.38	0.24	1.01	0.13	1.12	1.15	0.56	0.80
MT	1.10	0.07	1.46	0.12	0.46	2.41	5.97	0.41	10.27	0.62	0.25	0.95	0.76	2.83	0.41	1.13	31.49
NL	0.11	0.03	0.24	0.02	6.14	0.43	1.62	0.23	2.61	0.07	0.07	0.28	0.30	0.20	0.55	0.26	0.06
AT	0.10	0.03	0.30	0.04	0.21	0.06	0.78	0.38	2.36	1.52	0.04	0.11	0.07	0.07	1.11	1.13	0.80
PT	0.35	0.07	0.30	0.06	0.62	0.23	1.06	0.15	5.95	0.93	0.02	0.21	0.05	0.86	1.70	0.08	2.69
SI	0.01	0.01	0.61	0.21	0.15	0.15	0.11	0.05	0.41	0.07	0.01	0.02	0.01	0.00	0.22	0.02	0.00
SK	0.00	0.00	5.34	0.17	0.01	1.12	0.54	0.31	0.00	0.00	0.16	0.31	0.23	0.04	5.25	2.49	0.00
FI	0.11	0.08	0.21	0.05	1.98	0.94	1.28	0.38	3.54	0.94	0.06	0.31	0.17	0.32	2.72	0.16	1.60
Euro area	0.06	0.01	0.30	0.03	0.48	0.08	0.38	0.09	1.95	0.17	0.03	0.44	0.08	1.24	0.85	0.99	0.50
Median	0.15	0.04	0.61	0.09	0.49	0.23	1.50	0.27	3.36	0.68	0.07	0.31	0.07	0.19	1.61	0.26	0.61
Non-euro area																	
BG	0.03	0.01	6.15	2.48	1.13	0.03	1.05	0.17	6.55	1.76	0.03	0.12	0.11	0.51	0.39	0.60	0.00
CZ	0.01	0.01	0.98	0.10	0.04	0.00	1.37	0.88	3.87	5.04	0.13	0.40	0.05	0.10	2.61	0.14	0.42
DK	0.03	0.02	0.96	0.10	0.39	0.14	2.76	0.97	8.60	3.38	0.04	0.52	0.04	0.01	1.95	0.09	0.33
HR	0.54	0.03	0.34	0.21	3.50	0.11	0.46	0.17	1.70	0.41	0.01	0.03	0.02	0.07	0.81	0.01	0.00
HU	0.52	0.09	1.37	0.20	0.32	0.42	2.09	0.85	4.62	3.59	0.22	1.20	0.06	0.25	2.07	0.39	0.11
PL	0.01	0.01	0.73	0.08	3.65	0.46	0.48	0.10	0.29	0.34	0.10	0.20	0.14	0.05	1.23	0.01	0.00
RO	0.13	0.02	1.91	0.31	0.03	0.00	0.56	0.25	2.42	2.16	0.14	0.34	0.18	0.00	3.57	0.54	0.00
SE	0.00	0.00	0.61	0.11	1.34	0.16	0.99	0.20	0.31	0.24	0.06	5.65	11.45	0.31	2.80	1.13	1.09

Source: ECB.
Notes: NA = no revisions. For non-euro area countries, data relate to the period Q4 2018 to Q4 2019.
* In the case of transactions, underlying stocks are used in the denominator, resulting in the calculation of mean absolute comparative errors.

Table A.1.3.2

Mean absolute revisions for the period Q2 2020 to Q1 2022

(percentages of GDP)

	Households (including NPISHs)				Non-financial corporations							Financial corporations					
	Loans		Total assets		Debt securities		Loans		Intra-NFC loans		Total	Total	MFIs	IVFs	OFIs	ICs	PFs
	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Trans-actions	Stocks					
Euro area																	
BE	0.30	0.09	3.58	0.23	0.73	0.09	4.00	1.86	6.17	1.75	1.67	5.16	1.09	0.00	4.20	2.10	0.05
DE	0.23	0.01	1.49	0.05	0.24	0.00	3.93	0.21	0.32	0.05	0.34	3.30	0.02	0.00	2.48	3.42	0.14
EE	0.17	0.12	3.78	0.22	0.01	0.00	3.10	0.83	3.37	0.46	0.34	0.86	0.24	0.22	0.89	0.02	0.09
IE	0.63	0.08	3.87	0.27	2.90	0.29	4.55	1.90	4.78	0.18	13.05	16.87	1.93	2.95	9.58	8.48	2.00
GR	0.16	0.10	0.89	0.18	0.01	0.02	0.63	0.24	0.00	0.00	0.18	0.76	0.58	0.05	0.54	0.04	0.01
ES	0.04	0.02	10.36	0.40	0.08	0.04	0.85	0.29	0.20	0.20	0.40	5.67	0.34	0.00	5.59	0.03	0.14
FR	0.39	0.04	1.61	0.63	0.28	0.02	5.10	0.27	4.02	0.27	0.96	9.77	5.08	0.15	3.92	0.96	0.00
IT	0.03	0.03	9.71	0.15	0.15	0.01	0.46	0.15	0.26	0.08	0.53	2.48	0.38	0.00	2.04	0.22	0.05
CY	0.49	0.26	2.93	1.65	0.07	0.03	14.15	0.86	0.00	0.00	24.00	41.20	0.52	0.00	40.86	0.19	0.88
LV	0.01	0.00	1.33	0.18	0.00	0.00	0.67	0.16	0.53	0.13	0.84	0.35	0.01	0.02	0.33	0.00	0.00
LT	0.01	0.00	4.02	1.93	0.00	0.00	1.61	0.85	1.72	0.85	0.71	3.70	0.00	0.07	3.64	0.02	0.00
LU	0.20	0.29	1.23	0.63	0.59	1.04	13.41	10.93	9.25	2.06	109.77	452.96	5.87	180.50	272.55	3.80	0.05
MT	1.11	0.07	6.55	0.53	0.05	0.28	17.66	1.21	16.11	0.97	11.49	43.01	5.27	8.12	13.22	2.57	25.60
NL	0.21	0.07	1.73	0.11	2.00	0.14	4.16	0.59	0.93	0.02	1.87	7.74	2.21	0.48	6.68	0.34	0.24
AT	0.10	0.03	1.16	0.14	0.05	0.01	1.31	0.64	1.00	0.65	0.32	0.95	0.42	0.08	1.23	0.62	0.10
PT	0.46	0.09	1.29	0.27	0.19	0.07	1.81	0.26	1.35	0.21	0.15	1.74	0.29	0.28	2.15	0.04	0.58
SI	0.01	0.01	1.53	0.53	0.00	0.00	0.10	0.04	0.05	0.01	0.05	0.08	0.03	0.00	0.04	0.01	0.00
SK	0.00	0.00	10.33	0.33	0.00	0.11	0.52	0.29	0.00	0.00	0.68	1.31	0.76	0.01	1.01	0.42	0.00
FI	0.15	0.10	0.67	0.16	0.56	0.26	2.63	0.78	2.50	0.67	0.60	3.21	1.24	0.41	2.26	0.10	0.04
Euro area	0.07	0.01	1.34	0.13	0.13	0.02	0.71	0.18	1.17	0.10	0.40	6.59	0.58	3.14	2.83	1.42	0.24
Median	0.17	0.07	1.73	0.27	0.08	0.03	2.63	0.59	1.00	0.20	0.68	3.30	0.52	0.07	2.48	0.22	0.05
Non-euro area																	
BG	0.01	0.00	17.40	7.02	0.05	0.00	1.39	0.23	1.07	0.29	0.11	0.43	0.30	0.02	0.14	0.09	0.00
CZ	0.01	0.01	2.81	0.30	0.00	0.00	1.27	0.82	0.45	0.59	0.67	2.12	0.20	0.02	2.03	0.03	0.08
DK	0.06	0.05	7.59	0.80	0.05	0.02	6.64	2.34	3.83	1.51	0.85	9.80	0.30	0.03	9.60	0.22	0.53
HR	0.36	0.02	0.88	0.53	0.26	0.01	0.72	0.27	1.00	0.24	0.03	0.14	0.07	0.01	0.14	0.00	0.00
HU	0.20	0.03	3.67	0.53	0.02	0.03	2.70	1.09	1.31	1.02	1.76	9.77	0.18	0.09	9.60	0.05	0.01
PL	0.01	0.01	1.50	0.16	0.25	0.03	0.37	0.08	0.02	0.02	0.33	0.64	0.31	0.01	0.33	0.00	0.00
RO	0.04	0.01	2.85	0.47	0.00	0.00	0.34	0.15	0.05	0.05	0.26	0.61	0.24	0.00	0.50	0.03	0.00
SE	0.00	0.00	4.35	0.77	0.76	0.09	2.77	0.56	0.32	0.24	0.78	68.71	65.43	0.70	4.48	0.63	2.23

Source: ECB.
Notes: NA = no revisions. For non-euro area countries, data relate to the period Q4 2020 to Q4 2021.

Table A.1.3.3

Upward revision ratios for the period Q2 2020 to Q1 2022

(percentages)

	Households (including NPISHs)				Non-financial corporations						Financial corporations						
	Loans		Total assets		Debt securities		Loans		Intra-NFC loans		Total	Total	MFIs	IVFs	OFIs	ICs	PFs
	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Trans-actions	Stocks					
Euro area																	
BE	50	75	100	50	0	25	25	38	100	38	38	100	0	0	100	100	17
DE	13	50	100	50	38	67	100	50	100	0	50	75	38	50	50	88	88
EE	71	50	88	75	100	67	100	88	75	57	75	50	50	100	38	57	100
IE	86	29	88	63	100	63	13	13	43	29	25	88	0	100	75	88	14
GR	50	63	50	38	25	29	13	38	NA	NA	63	63	38	50	25	75	50
ES	25	100	88	88	75	38	75	75	67	86	88	100	75	100	100	75	63
FR	100	50	13	38	0	63	100	88	100	75	50	0	0	100	0	25	NA
IT	29	88	88	50	0	75	88	50	100	38	25	100	75	NA	100	100	0
CY	0	75	63	75	75	50	100	50	86	86	38	13	50	50	13	75	50
LV	33	33	100	50	60	25	75	50	50	50	38	75	40	83	88	50	100
LT	100	67	63	100	25	38	25	38	25	25	75	100	50	88	88	63	100
LU	38	50	13	63	63	50	75	75	0	13	75	100	38	100	100	63	75
MT	100	75	63	50	88	75	100	38	100	38	50	63	0	75	63	75	50
NL	88	50	100	63	100	80	13	50	0	0	50	38	63	88	38	63	0
AT	63	63	75	63	88	83	100	63	100	88	88	75	75	100	75	0	0
PT	38	25	88	50	100	75	88	25	100	38	25	13	13	75	0	13	63
SI	0	29	88	75	0	0	88	38	71	57	75	75	50	NA	83	50	NA
SK	NA	33	100	38	0	0	88	63	80	67	63	88	50	0	88	88	100
FI	25	50	63	25	14	63	75	63	75	50	63	100	100	14	100	63	83
Euro area	50	75	75	38	50	63	63	75	100	50	75	100	0	100	100	100	13
Non-euro area																	
BG	60	80	100	100	20	75	0	80	60	80	80	20	20	100	60	40	NA
CZ	80	60	0	20	100	67	20	20	67	75	40	100	50	0	100	0	33
DK	40	40	80	80	80	40	80	100	100	100	100	80	100	80	80	80	20
HR	100	80	60	100	25	100	80	80	80	80	0	40	60	100	0	100	40
HU	100	100	100	60	40	40	100	60	80	60	60	100	60	100	100	60	20
PL	20	40	80	40	100	60	100	80	80	60	80	100	100	25	100	60	100
RO	60	20	80	60	0	80	40	60	100	100	80	100	80	NA	100	100	NA
SE	100	33	40	60	60	60	20	100	100	50	20	80	100	80	100	40	0

Source: ECB.
Notes: NA = no revisions. For non-euro area countries, data relate to the period Q4 2020 to Q4 2021.

Table A.1.3.4

Directional reliability indicator for the period Q2 2020 to Q1 2022

(percentages)

	Households (including NPISHs)				Non-financial corporations							Financial corporations					
	Loans		Total assets		Debt securities		Loans		Intra-NFC loans		Total	Total	MFIs	IVFs	OFIs	ICs	PFs
	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Stocks	Trans-actions	Trans-actions	Stocks					
Euro area																	
BE	100	63	100	100	88	75	75	50	38	50	88	88	88	88	38	75	88
DE	100	100	100	100	88	100	75	100	75	88	100	88	88	88	75	63	75
EE	100	88	88	75	88	100	75	75	63	38	100	100	75	88	75	88	88
IE	50	75	88	100	75	63	63	100	88	25	75	100	88	88	63	88	50
GR	100	100	100	100	88	88	88	75	100	100	100	100	88	88	63	88	75
ES	100	100	100	100	100	88	88	75	88	88	100	100	88	88	63	88	75
FR	100	100	100	88	75	100	100	88	88	63	100	100	88	88	63	63	88
IT	100	100	100	100	88	88	75	75	75	75	100	100	88	88	88	88	88
CY	75	75	100	75	75	75	63	88	100	100	88	75	75	88	63	88	38
LV	100	100	100	88	88	88	100	100	50	100	88	100	88	75	63	88	88
LT	100	100	88	88	100	100	88	75	75	63	100	100	88	75	88	88	88
LU	100	75	100	75	88	25	63	63	25	63	88	88	75	88	88	63	88
MT	100	88	88	100	88	88	63	88	75	88	88	100	75	50	88	75	50
NL	100	100	100	100	75	100	75	88	100	75	100	88	88	88	75	63	88
AT	100	88	100	100	100	88	88	100	38	75	75	100	88	88	75	75	63
PT	100	88	100	100	100	100	63	100	75	75	100	100	88	88	75	88	75
SI	88	100	88	100	100	88	100	100	100	100	100	100	88	88	88	88	88
SK	100	100	100	100	100	100	63	75	100	100	100	100	88	88	75	88	88
FI	100	88	100	100	88	63	63	50	63	88	100	100	88	88	88	88	75
Euro area	100	100	100	100	75	88	75	75	75	75	100	100	100	100	88	100	100
Non-euro area																	
BG	100	100	80	80	60	100	80	80	20	80	100	100	100	100	60	60	100
CZ	100	100	80	80	100	100	40	100	80	100	100	100	100	100	60	100	60
DK	100	100	100	80	100	100	40	80	60	60	80	100	100	100	100	100	100
HR	100	100	100	60	60	100	80	100	80	60	100	100	100	100	100	100	100
HU	100	100	100	80	100	100	80	80	80	20	100	100	100	100	60	100	100
PL	100	100	100	100	100	80	100	80	80	100	80	100	100	100	100	100	100
RO	100	100	60	80	100	100	100	80	40	60	100	100	100	100	80	100	100
SE	100	100	100	80	100	100	80	100	100	80	80	80	80	100	100	60	80

Source: ECB.
Note: For non-euro area countries, data relate to the period Q4 2020 to Q4 2021.

A.1.4 Vertical discrepancies

Table A.1.4.1

Four-quarter cumulative vertical discrepancies

	EUR millions*				As a percentage of GDP			
	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2021	Q4 2021	Q1 2022	Q2 2022
Households – euro area								
BE	7,780	4,473	505	1,833	2%	1%	0%	0%
DE	0	0	0	0	0%	0%	0%	0%
IE	7,279	8,359	5,215	4,410	2%	2%	1%	1%
GR	-15,275	-12,117	-14,813	-17,414	-8%	-7%	-8%	-10%
ES	4,086	4,453	5,421	-2,948	0%	0%	0%	0%
FR	-12,766	4,405	27,715	21,316	-1%	0%	1%	1%
IT	-1,549	-468	1,536	1,334	0%	0%	0%	0%
NL	3,941	2,404	-663	1,801	0%	0%	0%	0%
AT	2,446	-1	-4,108	-4,062	1%	0%	-1%	-1%
PT	0	0	0	0	0%	0%	0%	0%
SI	473	558	662	423	1%	1%	1%	1%
FI	-2,709	-7,673	-9,236	-7,463	-1%	-3%	-4%	-3%
Euro area	-31,614	6,701	30,919	56,454	0%	0%	0%	0%
Households – non-euro area								
CZ	93,791	163,387	122,352	125,508	2%	3%	2%	2%
DK	19,301	25,480	12,297	-12,741	1%	1%	0%	-1%
HR	NC	NC	NC	NC	NC	NC	NC	NC
PL	-118,057	-103,162	-79,065	-81,483	-4%	-4%	-3%	-3%
RO	NC	NC	NC	NC	NC	NC	NC	NC
SE	-67,315	-113,681	-133,945	-147,648	-1%	-2%	-2%	-3%
Non-financial corporations – euro area								
BE	2,660	-6,270	-2,615	-10,956	1%	-1%	-1%	-2%
DE	139,008	119,655	86,302	70,618	4%	3%	2%	2%
IE	-25,426	-18,733	-6,724	-4,399	-6%	-4%	-2%	-1%
GR	6,975	-1,413	2,833	5,871	4%	-1%	2%	3%
ES	-9,025	-5,339	-4,817	5,071	-1%	0%	0%	0%
FR	73,670	4,114	-32,159	-35,182	3%	0%	-1%	-1%
IT	-59	187	470	-29	0%	0%	0%	0%
NL	-345	550	1,309	-1,116	0%	0%	0%	0%
AT	4,006	7,082	11,143	14,238	1%	2%	3%	4%
PT	275	-77	-314	-606	0%	0%	0%	0%
SI	46	155	171	986	0%	0%	0%	2%
FI	2,030	2,982	9,483	14,116	1%	1%	4%	6%
Euro area	18,761	42,568	24,534	32,202	0%	0%	0%	0%

	EUR millions*				As a percentage of GDP			
	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2021	Q4 2021	Q1 2022	Q2 2022
Non-financial corporations – non-euro area								
CZ	-243,912	-122,443	-108,484	14,712	-4%	-2%	-2%	0%
DK	-6,455	-5,991	-7,702	-63,331	0%	0%	0%	-3%
HR	NC	NC	NC	NC	NC	NC	NC	NC
PL	141,470	108,085	80,780	114,001	5%	4%	3%	4%
RO	NC	NC	NC	NC	NC	NC	NC	NC
SE	96,327	224,355	135,692	256,490	2%	4%	2%	5%
Financial corporations – euro area								
BE	-9,556	3,514	7,372	12,642	-2%	1%	1%	3%
DE	2	2	0	-4	0%	0%	0%	0%
IE	-128,592	-125,722	-136,755	-759	-30%	-29%	-32%	0%
GR	5,127	3,643	1,555	-5,250	3%	2%	1%	-3%
ES	-4	0	0	0	0%	0%	0%	0%
FR	-32,330	-1,370	-15,071	51,894	-1%	0%	-1%	2%
IT	-12,208	-2,998	4,406	-7,124	-1%	0%	0%	0%
NL	0	0	0	0	0%	0%	0%	0%
AT	-4,103	-1,243	-3,850	794	-1%	0%	-1%	0%
PT	-204	57	71	142	0%	0%	0%	0%
SI	-542	-482	-526	-446	-1%	-1%	-1%	-1%
FI	8,418	9,283	4,361	1,950	3%	4%	2%	1%
Euro area	-28,137	-32,000	-16,000	0	0%	0%	0%	0%
Financial corporations – non-euro area								
CZ	-47,052	-178,363	-38,070	-121,916	-1%	-3%	-1%	-2%
DK	1,100	-13,670	-5,355	-8,859	0%	-1%	0%	0%
HR	NC	NC	NC	NC	NC	NC	NC	NC
PL	-9,943	6,980	16,547	-28,542	0%	0%	1%	-1%
RO	NC	NC	NC	NC	NC	NC	NC	NC
SE	14,674	-94,216	-49,947	6,045	0%	-2%	-1%	0%

Source: ECB.
Note: NC = No data
* For non-euro area countries, these figures are shown in the national currency.

A.1.5 Comparison with financial statistics

Table A.1.5.1

Comparison with MFI balance sheet items (BSI) data and securities issues statistics (SEC)

(percentages)

	External comparison					
	MFI loans to NFCs and households: FA vs BSI, 2021		NFC debt securities: FA vs SEC, 2021			
	Stocks	Transactions*	Stocks		Transactions*	
	% difference (QFA-BSI)/QFA		% difference (QFA-SEC)/QFA	Difference as % of GDP	% difference (QFA-SEC)/QFA	Difference as % of GDP
Euro area						
BE	0.87	0.07	-2.00	-0.22	-0.15	-0.02
DE	-4.52	-0.36	6.66	0.47	0.67	0.05
EE	0.39	0.83	6.23	0.22	2.34	0.08
IE	-0.10	3.61	55.94	10.48	19.23	3.60
GR	-0.79	0.09	-2.48	-0.06	-3.97	-0.10
ES	-0.02	0.01	-0.37	-0.04	0.64	0.08
FR	0.39	-0.01	3.01	0.89	1.03	0.30
IT	0.01	0.03	0.08	0.01	-0.93	-0.09
CY	1.11	0.24	38.33	0.17	3.81	0.02
LV	-0.11	0.58	1.53	0.02	-2.81	-0.04
LT	0.02	-0.02	16.55	0.65	6.49	0.25
LU	-0.51	-0.57	-5.09	-1.82	6.52	2.33
MT	0.62	0.03	1.21	0.08	18.39	1.23
NL	0.60	-0.17	-13.26	-2.35	-1.42	-0.25
AT	2.67	0.26	4.78	0.54	-0.47	-0.05
PT	0.20	-0.25	7.56	1.22	3.03	0.49
SI	-0.03	-0.12	27.30	0.35	0.05	0.00
SK	0.61	-0.05	2.22	0.10	0.60	0.03
FI	-7.04	-1.28	3.18	0.44	-1.58	-0.22
Non-euro area						
BG	1.01		5.42	0.13		
CZ	-0.17		-7.43	-0.32		
DK	0.51		-11.76	-0.75		
HR	0.26		39.92	1.54		
HU	1.50		-1.55	-0.08		
PL	0.71		37.04	1.30		
RO	0.52		0.06	0.00		
SE	-0.55		0.30	0.09		

Source: ECB.
* In the case of transactions, underlying stocks are used in the denominator, and comparable transaction data are not available for non-euro area countries. Percentage differences can be inflated when values are very small.

Annex 2: Methodological documentation of quality indicators

A.2.1 Descriptive indicators

Upward revision ratio

The upward revision ratio is the number of upward revisions as a percentage of the total number of observations considered (N) – i.e. the total number of revisions over time and across vintages, excluding zero values:

$$\text{Upward revision ratio} = \frac{\#\text{ upward revisions}}{\text{N}}\ (\%)$$

The prescriptive target for this indicator is between 30% and 70%. Since positive and negative revisions should occur with roughly the same frequency, revisions should be positive around half of the time.

Directional reliability indicator

In order to assess whether revisions systematically alter the sign of changes over time, as contained in earlier assessments, a 2 x 2 contingency table can be drawn up. In that table, the columns consist of positive and negative differences in initial estimates:

$$\Delta x_t^I = x_t^I - x_{t-1}^I$$

The rows consist of positive and negative changes in the latest assessment:

$$\Delta x_t^L = x_t^L - x_{t-1}^L$$

Table A.2.1

Contingency table for directional reliability

	$\Delta x_t^I > 0$	$\Delta x_t^I \leq 0$	**Subtotal**
$\Delta x_t^L > 0$	n11	n12	n11 + n12
$\Delta x_t^I \leq 0$	n21	n22	n21 + n22
Subtotal	**n11+ n21**	**n12 + n22**	**N**

The directional reliability indicator (Q) is defined as:

$$\text{Q} = \frac{\text{n}_{11} + \text{n}_{22}}{\text{N}}\ (\%)$$

This indicator (Q) shows the percentage of cases in which earlier and later assessments have the same sign. It is equal to 1 (100%) if the final assessment always has the same sign as the first assessment, and it is equal to zero if that is never the case. High values for this indicator are optimal in terms of confirming the reliability of data.

A.2.2 Indicators of size

Mean absolute percentage errors

For strictly positive data, the relative size of revisions is measured as the percentage change versus the initial assessment:

$$\%\ \text{change} = \left(\frac{x_t^L - x_t^I}{x_t^I}\right)$$

If the average over time is then computed, this is called the mean percentage error (MPE):

$$\text{MPE} = \overline{\left(\frac{x_t^L - x_t^I}{x_t^I}\right)}$$

As revisions can be either positive or negative, it is usually more appropriate to use the absolute value, in order to avoid revisions with opposite signs cancelling each other out in the resulting indicator. If the average is calculated using absolute values, the result is the mean absolute percentage error (MAPE):

$$\text{MAPE}_{\text{average of ratios}} = \frac{1}{\text{T}}\sum_{\text{t}=1}^{\text{T}}\left|\frac{\text{x}_\text{t}^\text{L} - \text{x}_\text{t}^\text{I}}{\text{x}_\text{t}^\text{I}}\right|\ (\%)$$

There are two alternative definitions of this indicator: the average of ratios and the ratio of averages.

$$\text{MAPE}_{\text{ratio of averages}} = \frac{\sum_{t=1}^{T}|x_t^L - x_t^I|/T}{\sum_{t=1}^{T}|x_t^I|\,/T}\ (\%)$$

The second method has an advantage over the first. If a single data point for the denominator is close to zero, the MAPE will be artificially magnified if it is calculated as an average of ratios, which will not necessarily be the case with the second method. Consequently, the second method is preferred to the first.

To overcome the fact that transactions can be either positive or negative, so cannot be used in the denominator, the MAPE for transactions is calculated as a percentage of underlying stocks. When it is calculated in that way, the resulting indicator is usually referred to as a mean absolute comparative error (MACE), as revisions in series containing observations that have different signs or are close to zero cannot be properly related to the series value itself and must instead be related to an alternative measure (such as outstanding amounts or GDP).

Symmetric mean absolute percentage errors

A MAPE is an asymmetric indicator: if revisions are, on average, positive, the MAPE will be lower than if those revisions are, on average, negative. Where the denominator is identified in terms of the latest assessments, the results will be the opposite. A symmetric mean absolute percentage error (SMAPE) fixes those issues of asymmetry and is bounded between 0 and 1 (100%), whereas a MAPE is not bounded on the upper side. In other words, a SMAPE gives relevance to the initial observation, whereas a MAPE does not.

$$\mathrm{SMAPE} = \frac{\sum_{t=1}^{T} |x_t^L - x_t^I| /\ T}{\sum_{t=1}^{T} (|x_t^L| + |x_t^I|)/T}\ (\%)$$

As with MAPEs, this indicator is calculated as a percentage of underlying stocks (and usually referred to as a MACE) in the case of transactions.

Additional notes:

Whenever GDP is used, it is the latest value available (in this case, 2021).

For revisions, all figures are calculated as the difference between the data in the October 2022 transmission and the data in the October 2020 transmission.

For all other tables and charts, unless otherwise indicated, figures are calculated using the data in the October 2022 transmission.

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For specific terminology please refer to the ECB glossary (available in English only).

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