



EUROPEAN CENTRAL BANK

EUROSYSTEM

# **Euro area and national balance of payments and international investment position statistics**

Quality Report 2019

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# Executive summary

This annual report provides a quality review of the national balance of payments (b.o.p.), international investment position (i.i.p.) and international reserves template of the Eurosystem (international reserves), as well as the associated euro area aggregates.<sup>1</sup> The report fulfils the formal requirement for the Executive Board of the European Central Bank (ECB) to inform its Governing Council of the quality of these statistics, as set out in Article 6(1) of Guideline ECB/2011/23 (hereinafter the “ECB Guideline”).<sup>2</sup> Furthermore, the report provides information supporting the Macroeconomic Imbalance Procedure (MIP) data quality assurance process, 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”](#) (“the MoU”).

The main principles and elements guiding the production of ECB statistics are set out in the ECB Statistics Quality Framework (SQF)<sup>3</sup> and quality assurance procedures, which are published on the ECB’s website. This report therefore provides a quality analysis of the statistical output, covering the elements of: (i) methodological soundness; (ii) timeliness; (iii) reliability and stability; (iv) internal consistency (completeness and validation, and net errors and omissions); and (v) external consistency/coherence with other comparable statistical domains (euro area accounts, foreign trade in goods statistics, Monetary Financial Institutions (MFI) balance sheet items, money market funds, investment funds and securities holdings statistics).

The descriptive and quantitative indicators used throughout this report are based on monthly data from September 2016 to June 2019 (unless otherwise indicated) and on quarterly data from the third quarter of 2016 until the second quarter of 2019 (unless otherwise indicated). Data and revisions published up to 23 October 2019 are included. Supporting tables/charts and details of how the indicators are computed can be found in the respective annexes to this report.

Given the specific MIP requirements and the responsibilities entrusted to the ECB in the context of the MoU, the box at the end of the report presents some indicators relating to the fitness for purpose of the data for all EU countries. The box draws on annual data up to 2018 and revisions up to 2017 and focuses on the following quality dimensions: (i) data availability; (ii) revisions; (iii) errors and omissions; and (iv) external consistency with sector accounts.

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<sup>1</sup> The principles underpinning this report can be found in the [Public commitment on European Statistics by the ESCB. The ECB Statistics Quality Framework and quality assurance procedures](#), published in April 2008, build upon the ESCB public commitment.

<sup>2</sup> Recast of Guideline ECB/2004/15 of 16 July 2004 (as amended).

<sup>3</sup> The [SQF is available on the ECB website](#).

## Statistical developments between 2018 and 2019

In general, euro area countries have broadly implemented the sixth edition of the [International Monetary Fund's \(IMF's\) Balance of Payments and International Investment Position Manual \(BPM6\)](#) and the respective ECB data requirements. This has enabled national compilers (national central banks (NCBs) and national statistical institutes (NSIs)) to both report relevant data and make them publicly available with sufficient accuracy and within the agreed deadlines. Nevertheless, some additional efforts are still needed to disseminate more quality data and improve comparability and consistency with other datasets.

While statistical standards are generally observed, there is still room for improvement in terms of methodological soundness. Luxembourg, the Netherlands and Malta<sup>4</sup> are encouraged to continue working to increase the coverage and quality of data on special purpose entities (SPEs). While major progress was observed in 2019, Cyprus is still invited to closely monitor the SPE “sector” and continue improving the counterpart – geographical – detail. Greece should start reporting data for financial intermediation services indirectly measured (FISIM). Germany and France should improve their reporting of financial derivatives positions/transactions for general government. Regarding foreign direct investment, some countries should make an extra effort to correctly report transactions – and associated positions – in debt securities and trade credits between companies engaged in foreign direct investment relationships in the appropriate functional category. The Netherlands should correctly identify transactions and positions between fellow enterprises, particularly as regards debt instruments<sup>5</sup>. Furthermore, national compilers should in general continue their efforts to improve the coverage of assets held abroad by resident households.

The majority of countries have complied on a continuous basis with the deadlines for data transmission, with a few exceptions. Countries that have failed to comply should put in place contingency measures to ensure that such situations do not reoccur. In terms of data availability, Malta should take the necessary steps to start reporting complete monthly and quarterly datasets for “other flows” as soon as possible<sup>6</sup>.

Regarding accuracy and reliability, most countries record regular revisions that do not fundamentally change the economic assessment of first vintages. However, it is also worth noting that 19 countries have implemented major national accounts and b.o.p./i.i.p. benchmark revisions in 2019, which supported the alignment of national accounts (ESA2010) with b.o.p./i.i.p. data. Moreover, countries are encouraged to continue regularly providing the ECB with information on major events and revisions (by means of the “metadata template”) in order to increase both transparency and the analytical value of the data for policy use.

Concerning internal consistency, a large majority of countries provide fully consistent data to the ECB. Austria has recently eliminated inconsistencies between monthly and

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<sup>4</sup> In November 2019, the National Statistical Office of Malta (NSO) initiated a survey on SPEs, which is expected to improve data coverage in the near future.

<sup>5</sup> The implementation of this recommendation is linked to the update of the ECB Guideline.

<sup>6</sup> Malta has started this reporting, but further efforts are necessary to ensure that these data are complete and validated, and that longer time series are available.

quarterly data. Ireland has also improved the consistency of monthly and quarterly data, but at the expense of the reliability of the revised monthly data. Belgium and Malta should ensure that quarterly positions and flows are reconciled for all periods.

With regard to consistency/coherence with other datasets, overall b.o.p./i.i.p. data are in line with other datasets, thus ensuring comparability across statistical domains. However, it is of utmost importance that all countries follow the agreed steps to ensure full consistency vis-à-vis sectoral accounts. Regarding other datasets, the ECB encourages b.o.p./i.i.p. colleagues to interact with their counterparts to structurally reduce discrepancies and/or to reconcile and document differences between datasets where there are objective methodological differences.

Within the European System of Central Banks (ESCB), Working Groups on Financial Accounts (WG FA) and the Working Group on External Statistics (WG ES), along with other sub-structures of the Statistics Committee (STC), e.g. the Working Group on Monetary and Financial Statistics (WG MFS), are working closely together on the following common issues:

- securities held with non-resident custodians that are not covered by national securities holdings statistics;
- coverage of the other financial institutions (OFI) sector and, in particular, the timely coverage of SPEs, given the lack of primary statistics;
- coverage of financial derivatives for all sectors, owing to missing data sources and/or counterpart sector details.
- In addition to the collaborative work listed above, the WG ES and WG FA established a joint group on the valuation of unlisted shares and other equity in January 2020.

On the basis of this report, a list of notable issues affecting certain euro area countries, as well as the scope for improvement, is provided in Table 1 below.

**Table 1****Notable issues and scope for improvement (for euro area countries)**

Concept	Ref.	Recommendation description	Applicable countries/NCBs
<b>Methodological soundness and statistical procedures (Section 2)</b>			
<b>Residency</b>	A1.1	Continue improving SPE geographical detail.	Cyprus
	A1.2	Increase SPE coverage and provide accurate counterpart geographical detail.	The Netherlands, Malta
	A1.3	Decrease as much as possible the remaining coverage gap for SPEs.	Luxembourg
<b>Services</b>	A2.1	Start reporting FISIM data.	Greece
	A2.2	Enhance data sources and procedures to record service margins on buying and selling financial assets <sup>1)</sup> .	All countries
<b>Portfolio investment</b>	A3.1	Follow the accrual principle when reporting financial account transactions for portfolio investment.	France, Germany
	A3.2	Provide accurate values for monthly first assessments of transactions in holdings of money market funds.	France, the Netherlands (assets)
<b>Financial derivatives</b>	A4.1	Enhance data sources and procedures to record financial derivatives for all sectors.	All countries
	A4.2	Include in the accounts an estimate for employee stock options.	Luxembourg
	A4.3	Either include an estimate for employee stock options in the accounts or provide evidence of negligibility.	Cyprus
<b>Functional classification</b>	A5.1	Report transactions (and associated positions) in debt securities between companies engaged in a direct investment relationship under the appropriate functional category.	A number of countries (including Germany, Greece, France, Luxembourg, the Netherlands)
	A5.2	Classify trade credits between companies in a direct investment relationship as direct investment instead of other investment. <sup>2)</sup>	Belgium, Spain
	A5.3	Extend the correct reporting of transactions/positions between fellow enterprises for equity for reference periods before 2019.	France
<b>Foreign direct investment</b>	A6.1	Assess and confirm whether transactions/positions between fellow enterprises in equity are negligible.	Germany, Greece, Malta, Austria, Slovenia, Slovakia, Finland
	A6.2	Assess and confirm whether reverse direct investment transactions/positions in equity are negligible.	Belgium, Germany, France, Lithuania, Austria, Slovenia, Slovakia, Malta
	A6.3	Correct the negative liability positions for reverse direct investment in equity.	Malta
	A6.4	Correctly report transactions/positions between fellow enterprises for debt instruments.	The Netherlands
<b>Other investment</b>	A7.1	Correctly report the assets and liabilities of insurance, pension and standardised guarantee schemes.	Ireland (assets), Finland (assets), Malta
	A7.2	Properly report holdings of euro banknotes abroad (stocks).	Ireland, Malta, Finland
<b>Reconciliation of positions and flows</b>	A8	Continue improving the breakdown between price changes, exchange rate changes and other volume changes in order to ensure a realistic reconciliation of positions and flows.	Ireland
<b>Securities held with non-resident custodians and other foreign assets in particular, of households</b>	A9	Improve the estimation models for assets held abroad by residents, in particular for the household sector, in cooperation with the WG FA.	All countries
	A9.1	Securities: integrate third-party holdings from the Securities Holding Statistics by sector (SHSS), in particular for households.	Germany, Estonia, Ireland, Greece, Latvia, Malta, the Netherlands, Austria, Portugal, Slovakia, Finland
	A9.2	Deposits with non-euro area banks: integrate available mirror-data provided by the BIS.	Germany, Estonia, Ireland, Greece, Latvia, Malta, the Netherlands, Slovakia, Finland
<b>Reserve assets</b>	A10	Value the reserve assets at end-month market prices and produce consistent monthly revaluation changes.	Ireland
<b>Goods</b>	A11	Provide a high-quality estimate for goods on a monthly basis, in particular for the community concept.	Ireland

<b>Unlisted shares and other equity</b>	A12	Enhance data sources and procedures to record unlisted shares and other equity.	Concerns several countries – guidance to be developed jointly by WG FA and WG ES
<b>Timeliness and punctuality (Section 3)</b>			
<b>Timeliness</b>	B1	Put measures in place to avoid future instances of non-compliance (data transmissions after the deadline).	Ireland, Latvia, Finland
<b>Data and metadata availability (Section 4)</b>			
<b>Non-compliance (data availability)</b>	C1	Report high-quality quarterly other flows as well as provide data for missing periods. <sup>3)</sup>	Malta
	C2	Start reporting equity by type: listed, unlisted and investment fund shares.	Malta
<b>Internal consistency (Sections 6.1 and 6.2)</b>			
<b>Validation and integrity rules</b>	D1	Ensure that quarterly positions and flows are appropriately reconciled.	Belgium, Malta
	D2	Eliminate the plausibility problems of monthly b.o.p. data by improving the reconciliation of monthly and quarterly data, using as much as possible existing monthly data sources.	Ireland
<b>Net errors and omissions (n.e.o.)</b>	E1	Investigate the reasons behind the level of n.e.o. and their negative bias (in reference periods before 2018).	Finland
<b>External consistency: b.o.p./i.i.p. data with euro area sector accounts (Section 7.2)</b>			
<b>b.o.p./i.i.p. with RoW data</b>	F1	Address, as soon as possible, the pending discrepancies as agreed in the context of the STC work programme.	Belgium, Germany, Ireland, Greece, France, Malta and Luxembourg. See Charts 9 to 11 for more details.
<b>External coherence: b.o.p./i.i.p. data with MFI balance sheet data (Section 7.3)</b>			
<b>b.o.p./i.i.p. with MFI data</b>	G1	Continue regularly assessing the difference between the BSI and b.o.p. datasets and their development.	All countries
<b>External coherence: b.o.p./i.i.p. data with other investment fund data (Section 7.4)</b>			
<b>b.o.p./i.i.p. with IVF data</b>	H1	Start reporting investment fund data, as reported in analogous Investment Funds Balance Sheet Statistics (IVF).	Malta
<b>External coherence: b.o.p./i.i.p. data with securities holdings statistics (Section 7.6)</b>			
<b>b.o.p./i.i.p. with SHSS data</b>	I1	Account for third-party holdings, in particular for listed shares, in the b.o.p./i.i.p. data.	Germany
<b>Asymmetries (Sections 8.1 and 8.2)</b>			
<b>Asymmetries</b>	J1	Make efforts to continue (or start) providing bilateral data on a voluntary basis to better address asymmetries.	All countries

Notes:

1) According to BPM6 standards, margins on buying and selling financial assets should be included in the service account. However, due to the complexity of including this item in the accounts, the WG ES, in cooperation with national compilers and other international organisations, will provide guidance during the course of 2020 on estimating margins in the EU.

2) The implementation of this recommendation is linked to the update of the ECB Guideline, which requires a breakdown of the debt instruments in direct investment (including debt securities, loans, trade credits and other). This recommendation also impacts other investment.

3) This also applies to the Central Bank of Malta in terms of completeness and validation checks. Malta has started to report these data, but further efforts are required to achieve a complete and validated dataset.

## Statistical issues affecting MIP indicators

The ECB, in collaboration with Eurostat, has continued to monitor specific quality aspects of the statistical outputs, as required under the MoU. In fact, some of the quality dimensions addressed in the report are also relevant for assessing the quality of data for MIP purposes (e.g. methodological issues A1 to A10, C3, F1 and G1 in Table 1). Some recommendations, such as those related to the functional classification (e.g. A5.1 to A5.3) or to the reconciliation of stocks and flows (C1), do not impact the computation of the main MIP indicators, but do play a role in the calculation



and analysis of auxiliary indicators. However, the particularities of the annual data and of the MIP process, as well as the scope of the ECB's responsibilities in the context of the MoU on the MIP (for those EU28 Member States that have designated the respective NCB to produce the b.o.p./i.i.p. datasets), create special analytical needs. In particular, longer time series (up to 15 years) are necessary for an accurate construction and analysis of the main MIP scoreboard indicators. All necessary data are available for the calculation of the main indicators (with a few exceptions for the goods and services balance). Certain coverage limitations remain, which will naturally vanish in the coming years, as each new release will limit the extent of the backdata required. Nonetheless, further data are needed for the calculation of auxiliary indicators (in particular the new auxiliary indicator, net international investment position excluding "non-defaultable" instruments<sup>7</sup> as a percentage of GDP) from Malta, Croatia (from 2014), the Czech Republic and Greece (from 2013), Romania (from 2011), and Poland and Bulgaria (from 2010).

All in all, the impact of revisions on the direction (information) of first assessments is relatively minor. National errors and omissions in general remained stable in the last review period, but on average they are still above 2% of GDP in Ireland, Cyprus, Malta, Finland, Denmark and Sweden (see Chart MIP 1).

Last but not least, the analysis shows that discrepancies between b.o.p./i.i.p. statistics and sectoral accounts persist for several countries. This negatively affects the analytical combination of the two datasets and signals a lack of reliability or adequacy of the methodology of at least one of the two statistics. Despite this, the situation has improved compared to the previous quality report, in part due to the benchmark revisions.

For more information on the assessment of data quality for MIP purposes, please see the MIP box at the end of the main body of the report.

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<sup>7</sup> Instruments that cannot be subject to default: foreign direct investment equity and equity shares and inter-company cross-border-FDI debt.

# 1 Introduction

This annual report provides a quality review of statistics on the balance of payments (b.o.p.), international investment position (i.i.p.) and international reserves template of the Eurosystem (international reserves).<sup>8</sup> It fulfils the formal requirement of the ECB Executive Board to inform the Governing Council of the quality of these statistics, as set out in Article 6(1) of the ECB Guideline.<sup>9</sup> Furthermore, the report provides information supporting the MIP data quality assurance process, as laid down in the [MoU](#). The report follows the [recommendations](#) adopted by the Committee on Monetary, Financial and Balance of Payments Statistics (CMFB) in this domain.

The focus of the report is on national data for the 19 euro area countries and euro area aggregates. The data for EU Member States (EU28) are commented on in the MIP box at the end of the report and are also available in the annexed tables<sup>10</sup>.

## Scope of data coverage and structure of the report

This report analyses a number of aspects by which data quality can be measured. These include: (i) a review of methodological issues where national compilers diverge from statistical standards or need to enhance statistical procedures; (ii) an assessment of compliance by NCBs with their obligations to transmit data to the ECB, in terms of timeliness and coverage; (iii) the reliability of the statistical data; (iv) the internal consistency of the statistics, particularly as regards consistency over time, across frequencies and between accounts (net errors and omissions); and (v) external consistency/coherence, i.e. consistency vis-à-vis other statistical domains/datasets, namely foreign trade statistics, euro area sector accounts, MFI balance sheet statistics (including money market funds), investment fund statistics and securities holdings statistics.

The analysis covers quarterly and, in the case of euro area aggregates, monthly data. Section 3 (timeliness and punctuality), Section 4 (data and metadata availability) and Section 6.1 (validation/integrity rules) focus on one year of observations (July 2018/Q3 2018 to June 2019/Q2 2019). Section 5 (accuracy and reliability) analyses the impact of three years of revisions (April 2016/Q2 2016 to March 2019/Q1 2019), and the remainder of the sections focus on three years of data (Q3 2016 to Q2 2019).

The last data vintage used throughout the report is the one available as of 23 October 2019 and the country coverage is mostly the euro area, although the annexed tables provide information on the quality of the data for the EU28.

<sup>8</sup> The principles underpinning this report can be found in the “[Public commitment on European Statistics by the ESCB](#)” on the ECB’s website. The [ECB Statistics Quality Framework \(SQF\) and quality assurance procedures](#), published in April 2008, build upon the ESCB public commitment.

<sup>9</sup> Recast of Guideline ECB/2004/15 of 16 July 2004 (as amended).

<sup>10</sup> While Eurostat publishes a similar report assessing the quality of the same data, the calculation of the indicator sometimes yielded marginally different results owing to different vintages used. Both reports cover figures vis-à-vis the rest of the world. The ECB report additionally analyses figures vis-à-vis the extra-euro area, whereas the Eurostat report assesses figures vis-à-vis outside of the EU.

Given the specificities of the MIP process, some indicators on the fitness for purpose of the data are presented in a box at the end of the report for all EU Member States. The need for such a box arises from the fact that annual data display different properties compared with monthly and quarterly data, as well as from the need to assess the quality of data from non-euro area EU countries. The box draws on annual data up to 2018 and focuses on: (i) data availability, (ii) revisions; (iii) errors and omissions; and (iv) external consistency with sector accounts, i.e. MIP-relevant data quality dimensions. All indicators presented in the MIP box relate to national GDP to facilitate the analysis relating to the actual MIP scoreboard indicators.

## 2 Methodological soundness and statistical procedures

Methodological soundness means that concepts and definitions used to compile b.o.p./i.i.p. statistics broadly conform with the principles and guidelines outlined in BPM6 and take into consideration the agreements of the STC (and respective sub-structures) on the compilation of euro area aggregates.

One of the key elements of compiling consistent data is to adhere to the agreed standards and to transparently describe deviations. A detailed description of the data sources and compilation methods used by all Member States is available on the ECB's website<sup>11</sup>. The assessment included in this section is based on this ECB publication, as well as on the regular ECB contacts with national compilers regarding general data quality issues.<sup>12</sup>

This quality report provides a succinct overview of the methodological soundness of b.o.p. and i.i.p. data for the main dimensions/principles.

### 2.1 Residency

The residency of institutional units should be defined in conformity with BPM6, particularly taking into account whether they have a predominant centre of economic interest in the country. This applies in particular to "Special Purpose Entities (SPEs)", which are considered to be resident in the economy where they are incorporated.

Most countries correctly apply the residency concept. In the euro area, several countries host a large population of SPEs and therefore face certain challenges in achieving full coverage, and sometimes even in defining the residency of a certain entity. The current collection of Malta is based on a combination of administrative sources and surveys which are hampered by many limitations (e.g. low response rate, annual frequency with relevant delays, very limited geographical and instrument details).<sup>13</sup> The 2018 revisions in the geographical allocation of positions for Malta introduced a series break in Q1 2016 that has not yet been solved. Malta should further improve the coverage, frequency and data quality following the established implementation plan.

In 2019, Cyprus substantially improved the coverage of SPEs, and this was reflected in large revisions and a better geographical allocation of external assets and liabilities from the reference period 2008 onwards. However, some limitations still apply to the

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<sup>11</sup> [European Union Balance of Payments and International Investment Position statistical sources and methods](#).

<sup>12</sup> The ECB and Eurostat are also carrying out country visits to better understand output quality and the respective contributing factors in the context of the MoU on MIP.

<sup>13</sup> In November 2019, the National Statistical Office of Malta (NSO) initiated a survey on SPEs, which is expected to improve data coverage in the near future.

geographical details, especially for debt instruments in FDI and other investment transactions and positions. These changes are visible in the improvement of the bilateral asymmetry indicators for direct investment positions (see Section 8.2).

Luxembourg's SPE survey covers all SPEs with a balance sheet of over €500 million. Grossing up is performed for SPEs with balance sheets of between €300 and €500 million, which results in a final coverage of approximately 90% of total assets/liabilities. While additional improvements would represent a major effort for the country, the 10% missing is still quite sizable, taking into account the importance of this sector.

The Netherlands has also improved the accuracy of SPE data compared with 2018 through its efforts to integrate the compilation of b.o.p. and RoW statistics. However, the geographical allocation and the stock/flow reconciliation, as well as the identification of the type of relationship between FDI entities, still require further improvements. Last but not least, the link between the new quarterly data and the monthly estimates needs further attention to safeguard the quality of the more frequent data.

## 2.2 Functional classification

Most countries classify b.o.p. and i.i.p. data by function in conformity with BPM6 methodology. However, there is still room for improvement.

Regarding foreign direct investment (FDI), a number of countries, including Germany, Greece, France, Luxembourg and the Netherlands, classify transactions and related positions in debt securities between companies in a direct investment relationship as portfolio investment. This deviation creates internal inconsistencies at the euro area level, owing particularly to the residual approach used to calculate euro area portfolio investment liabilities. In the context of the implementation of the ECB Guideline, these misclassifications will become more transparent. Therefore the compiler should assess the potential relevance of the issue and implement a plan to address it. Similarly, trade credits and advances between companies in a direct investment relationship are included in other investment by Belgium and Spain, while Portugal has started to classify them under direct investment consistently for data from 2013 onwards. Germany classifies all transactions and positions in loans/deposits as other investment if at least one of the counterparts under a direct investment relation is an MFI. Malta includes most of the securities assets of the SPEs under portfolio investment, as no information is available regarding the relationship with the debtor.

Transactions and positions between fellow enterprises are not fully recorded under FDI. In particular, the Netherlands does not yet identify transactions and positions in either equity or debt instruments, while Germany, Greece, Austria, Slovenia, Slovakia and Finland do not include transactions and positions in equity.<sup>14</sup> France records

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<sup>14</sup> Latvia and Malta have confirmed that the transactions and positions between fellow enterprises are covered, but mostly negligible (less than EUR 1 million) and therefore reported as zero. Indeed, in most cases transactions and positions in equity between fellow enterprises are negligible. However, the status of this information is due to be reassessed periodically.

transactions and positions between fellow enterprises in equity from reference period Q1 2019 onwards. Moreover, Belgium, Germany, Estonia<sup>15</sup>, France, Cyprus, Lithuania<sup>16</sup>, Austria, Slovenia, Slovakia<sup>17</sup> and Finland do not identify reverse direct investment in equity, and Malta shows negative values for liability positions.

## 2.3 Coverage

Financial intermediation services indirectly measured (FISIM) are not yet classified in the services account in Greece, but are instead still classified with income. Similarly, in a lot of countries service margins on buying and selling financial assets are not recorded or the compilation of this item is not sufficiently sound. Given the complexity of this issue, the WG ES, in collaboration with national compilers and other international organisations, has started investigating approaches to defining best practices and supporting those countries that have not yet estimated this financial service. Work is ongoing and specific guidance is expected during 2020.

According to public metadata, Cyprus<sup>18</sup> and Luxembourg do not currently estimate employee stock options.

Germany should improve the data quality for transactions in financial derivatives for the government sector, as they are currently reported as zero, while positions are non-negligible. In addition, France does not record any transactions and positions in financial derivatives by the government sector. Ireland and Luxembourg should improve the stock/flow reconciliation for certain sectors. Irish financial derivatives data is quite implausible for investment funds as most of the changes in stocks are reported as other volume changes. Luxembourg also exhibits a reconciliation problem for deposit-taking corporations and financial corporations other than MFIs. Furthermore there is scope for increasing the quality of financial derivatives data in general. The WG ES, in cooperation with the WG FA, mandated a task force to issue recommendations on data sources and data collection and compilation methods. The task force is scheduled to provide guidance in the course of 2020.

In April 2015, the STC approved a new treatment for the recording of transactions and positions in euro currency in b.o.p./i.i.p. statistics. Most euro area countries have been following the new guidance in a timely and accurate manner, at least from reference period January 2014 onwards – with the exception of Ireland, Malta and Finland.

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<sup>15</sup> In the case of Estonia, under Estonian national legislation foreign subsidiaries are not allowed to invest in the equity of their Estonian parent companies and therefore reverse investment on the liability side is not possible. Estonia collects reverse investment on the asset side but no such transactions have been reported yet, therefore Estonia reports zero values.

<sup>16</sup> Compilers do not currently provide information on reverse investment. Lithuania is working towards improving the sources and quality of this data.

<sup>17</sup> Slovakia confirmed that transactions and positions between fellow enterprises in equity and reverse direct investment in equity are negligible.

<sup>18</sup> Cyprus is encouraged to either reassess the inclusion of employee stock options or provide formal proof of their negligibility.

Ireland<sup>19</sup>, Finland<sup>20</sup> and Malta<sup>21</sup> have started to report accurate monthly and quarterly intra-Eurosystem technical liabilities, though they still show diverse problems in the recording of euro currency holdings abroad (stocks).

Finland<sup>22</sup> does not report insurance, pension schemes and standardised guarantee schemes before reference periods 2016 Q1 on the asset side. Ireland does cover the assets of these instruments but they are reported netted under the liabilities of the financial sectors other than MFIs, while Malta does not cover either assets or liabilities.

Furthermore, Malta does not report the breakdown of equity (into listed and unlisted shares, other equity and investment fund shares).

The WG ES in cooperation with the WG FA continued the work on estimating households' assets held abroad, and broadly agreed on recommendations regarding the further development and use of data sources.

In general, most countries have difficulties in producing an accurate estimation of cross-border transactions and positions for the non-financial sector (particularly households); this under-coverage is believed to be relevant in particular for assets held outside the euro area, including those held with custodians. Most euro area countries use mirror data from: (i) the locational banking statistics of the Bank for International Settlements (BIS) and MFI balance sheet statistics from other euro area countries, to cover deposits and loans vis-à-vis non-resident banks; and (ii) so-called third-party holdings<sup>23</sup> collected in securities holdings statistics to improve the estimates for securities. Therefore, NCBs are encouraged: (i) to report the breakdown "vis-à-vis households" by counterpart country to the BIS; and (ii) to integrate available mirror-data (reported by other NCBs) provided for their country and incorporate this information in their national data when appropriate.

Finland<sup>24</sup> does not include any adjustment for households' securities held abroad. The Netherlands does not observe securities held by households with custodians outside the Netherlands. Additionally, Germany does not collect information on securities held (positions) in custody abroad by non-bank enterprises and does not attempt any estimation.<sup>25</sup> Many countries also have difficulties in accounting for real estate holdings, in particular those of resident households abroad. To complement the

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<sup>19</sup> Ireland has started to report euro currency as a liability for Q3 2019, period that is not covered by this report. However the amount reported as "of which" does not increase the total external liabilities of the central bank.

<sup>20</sup> Finland reported estimations for exports of EUR banknotes (liabilities of the central bank; however, the estimation of stocks for EUR currency outside the country is done by accumulating the flows of technical claims).

<sup>21</sup> Malta has reported estimations of exports of EUR banknotes (liabilities of the central bank) as from reference period Q1 2018. However the related (accumulated) stocks are wrongly shown as assets.

<sup>22</sup> In Finland, data for the asset side are not available prior to 2016, i.e. before the availability of Solvency II data.

<sup>23</sup> Securities held with non-resident custodians: in the context of SHSS, this refers to custodians' residents in other euro area countries.

<sup>24</sup> In the benchmark revision, Finland included an estimate of households' transactions and positions in deposits (assets) and loans (liabilities) abroad.

<sup>25</sup> For transactions, Germany collects cross-border flows on securities, irrespectively of whether they are held with domestic or foreign custodians.

available information, the WG ES collects bilateral EU data that can be used as mirror data by compilers to cover resident holdings in other EU countries.

The majority of euro area countries estimate, to varying degrees, the impact of illegal economic activities. According to the b.o.p./i.i.p. book and bilateral contacts, Portugal started to include illegal trade in goods in its accounts as requested at EU level (smuggling, trafficking, illegal drugs) with the benchmark revision in October 2019.

Finally, national compilers in general should improve the measurement of reinvested earnings on FDI. They should implement, as much as possible, the recommendations of the Task Force on FDI (TF FDI), which are based on a closer control over the data they are collecting from reporting agents, whether through dedicated surveys or from business accounting data. The valuation of unlisted shares and other equity should also in general be improved and be carried out in a harmonised way. For this purpose a joint WG ES and WG FA<sup>26</sup> group on unlisted shares and other equity was established in January 2020.

## 2.4 Other methodological issues

Horizontal and vertical inconsistencies in Malta's i.i.p. data prevent the ECB from validating the figures reported for net external debt. Only the Maltese net external debt total is available and not its representation by sector, instrument and original maturity.

France and Germany estimate accrued interest for debt securities under portfolio investment income on a security-by-security (s-b-s) basis; however, no equivalent entry is recorded in the underlying instrument in the financial account.

For Ireland, other volume changes owing to changes in methodology or coverage are in some cases reported together with exchange rate and price revaluations, impacting the reliability of its stock/flow reconciliation.

Ireland does not value monthly reserve assets at end-month market prices (not even to account for exchange rate changes), thereby not reporting revaluation changes for inter-quarter months.

In the case of Ireland, the monthly estimate for goods (according to the community concept) does not display the expected seasonal pattern and often shows negative values for exports and imports following the community concept for periods from 2015 to 2017. The quality of the monthly Irish data frequently has a negative impact on the quality of euro area aggregates for goods.

France and the Netherlands systematically report zero monthly transactions in assets for money market funds (MMF) shares in their first estimates (intra and extra-euro area). France also reports zero transactions in MMFs liabilities. They usually fix this misreporting during subsequent quarterly transmissions.

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<sup>26</sup> In 2019 the WG FA undertook a stocktaking exercise and prioritised work streams on data sources, market value estimation, derivation of transactions and other changes, as well as on the distinction between unlisted shares and other equity. This work is to be continued by a joint WG FA and WG ES virtual group in 2020-21.



In Belgium and Finland from 2008 to 2012 the resident banks classified some of the liabilities as loans.

### 3 Timeliness and punctuality

Non-compliance is defined with regard to (transmission) timeliness/punctuality and quality standards vis-à-vis the requirements laid down in the ECB Guideline ECB/2011/23 (as amended).<sup>27</sup>

In the period under review (reference period July 2018 to June 2019), a persistent non-compliance case was recorded in the case of the Central Bank of Malta for not reporting the complete quarterly “other flows” detail and for recording delays in some monthly and quarterly transmissions.

In addition, the following ad hoc cases of non-compliance were recorded:

- The Central Bank of Ireland failed to transmit the banknote shipments data for the reference period February 2019 within the production window.
- The Central Bank of Latvia transmitted the monthly reserve assets data for the reference period August 2018 one day of delay. Attempts were made to transmit data prior to the deadline, but technical issues prevented their timely sending.
- The Bank of Finland transmitted the complete quarterly balance of payment data for the reference period Q2 2019 three days of delay. Furthermore, several data transmissions were necessary to reach a sufficient level of data quality for the revised periods.

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<sup>27</sup> The ECB prepares bi-annual compliance reports for the Internal Compliance Coordination Group, which are submitted to the Governing Council.

## 4 Data and metadata availability

### 4.1 Completeness

For the reference period July 2018 to June 2019, the production of b.o.p., i.i.p. and international reserves statistics was smooth.

In terms of completeness, virtually all countries submitted all the mandatory items, albeit sometimes with delays (thus giving rise to cases of non-compliance – see Section 3 above). While complete datasets were eventually transmitted to the ECB, some delays in the correction of data quality issues detected during the data validation phase adversely influenced the production process. In some cases this created obstacles to the publication of timely and accurate euro area aggregates.

### 4.2 Accessibility and clarity

Accessibility refers to the conditions by which users can obtain, use and interpret data, ultimately reflecting how straightforward these are to access and the extent to which confidentiality constraints hamper the analytical work.

In line with the ECB legal framework on data confidentiality,<sup>28</sup> all national data must be transmitted with a flag indicating its level of confidentiality. The ECB encourages national compilers to make as much data available as possible to final users (i.e. by marking observations as “free for publication”) and to ensure that statistical confidentiality flags are appropriately used.

Table 2 below summarises the share of observations marked as “free for publication” for the data requested under Tables 2A and 4A of Annex II to the ECB Guideline<sup>29</sup> (i.e. the “main items”). The shares are calculated at dataset level for the reference period Q3 2018 to Q2 2019. Table A.1.1 in the Annex shows the same indicator for “all (mandatory) items” transmitted under the ECB Guideline.

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<sup>28</sup> Council Regulation No 2533/98 concerning the collection of statistical information by the ECB defines the ESCB statistical confidentiality regime. In addition, the so-called ECB Confidentiality Guideline of 22 December 1998 ([ECB/1998/NP28](#)) defines the common rules and minimum standards to protect the confidentiality of the individual statistical information collected by the ECB assisted by the national central banks.

<sup>29</sup> The ECB Guideline recommends that all items contained in Tables 2A and 4A should be marked as “free for publication”. The provision applies to data as of reference period Q1 2014.

**Table 2**

Average share of observations marked as “free for publication” per dataset (main items), for the period Q3 2017 to Q2 2018

Country	Quarterly b.o.p. main items	Quarterly i.i.p. main items
BE	100	100
DE	100	100
EE	100	100
IE	95	92
GR	100	100
ES	90	92
FR	100	100
IT	100	100
CY	94	94
LV	100	100
LT	100	100
LU	100	100
MT	92	80
NL	100	100
AT	100	100
PT	99	100
SI	100	100
SK	100	100
FI	94	89

Source: ECB.

The majority of the euro area countries (Belgium, Germany, Estonia, Greece, France, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Austria, Slovenia and Slovakia) released all “main items” to the general public. Among the remaining countries, Ireland, Spain, Cyprus and Portugal released more than 90% of this dataset, while only Malta and Finland released less than 90% of the observations in the Table 4A of Annex II to the ECB Guideline (i.i.p. data).

The overall situation for Tables 2A and 4A did not change significantly compared with last year’s assessment (small improvements were made by Ireland, Cyprus and Malta, while the share of free observations decreased slightly for Finland). It should be noted that the percentages are calculated based on the number of observations, without taking into account the relative importance (magnitude) of the data.

Full monthly b.o.p. datasets were flagged as “non-publishable” or “confidential” by Ireland, Cyprus, the Netherlands and Austria (generally on the basis of national dissemination policies). Concerning the full extent of quarterly data transmitted to the ECB (of which Tables 2A and 4A are only a small subset), and in line with last year’s results, nine euro area countries have made all the data required in the legal act available to final users for the quarterly b.o.p. and six euro area countries have done so for the quarterly i.i.p. (see Table A.1.1).

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

The ECB publishes monthly and quarterly b.o.p. and quarterly i.i.p. revaluations and other changes in volume for the euro area as a single economic area. Twelve monthly and four quarterly press releases, outlining the latest data and relevant economic developments, are published through wire services and on the [ECB's website](#). Furthermore, dissemination dates for all these press releases are announced at the beginning of each calendar year in the ECB's [Statistical Calendars](#).

The concepts and definitions used in the euro area b.o.p. and i.i.p. statistics are in line with international statistical standards. The “[B.o.p. and i.i.p. book](#)”, made available on the ECB website, aims at providing users with an overview of the main features of the b.o.p. and i.i.p. methodological framework and of the data sources and compilation methods used by the ECB (for the euro area) and in individual EU Member States.

The data can be accessed via the ECB's [Statistical Data Warehouse](#) or in the [External Transactions and Positions](#) section of the Statistics Bulletin. Furthermore, the ECB has a [Statistical Information Request](#) facility to help external users of statistics access and analyse the data.

A subset of the statistics produced under the ECB Guideline can also be accessed via the [Euro area statistics](#) website. The aim of this dedicated website is to facilitate the understanding, use and comparison of euro area and national statistics by presenting the data in a user-friendly manner. This website also offers the possibility to easily download or share data by embedding the graphics into other websites, emails or social media.

Table A.1.2 in the Annex presents a summary of the national practices regarding data and metadata accessibility. Similarly to the ECB, all euro area countries provide technical facilities for downloading data in different formats (in Excel tables, CSV files, PDF documents or via interactive statistical databases). Furthermore, the majority of the euro area countries have statistical and/or economic bulletins providing a visual representation of the data in the form of charts, graphs and/or tables. Most euro area countries publish regular press release updates on their websites: on a monthly and/or quarterly basis. Last but not least, all countries present extensive information on their institutional environment and statistical processes in the “[B.o.p. and i.i.p. book](#)”, as well as on their national websites.

### 4.3 Availability of metadata

The ECB Guideline requires that the “data shall be accompanied by readily available information on single major events and on reasons for revisions, when the magnitude of the change to data caused by such single major events or revisions is significant [...]”. Therefore, national compilers are encouraged to make regular and consistent use of the metadata template in all production cycles and publication means. In

general, in the review period, the metadata transmitted by national compilers has been of sufficiently high quality to allow for the production of the euro area aggregates as well as to explain major developments in the aggregate. The ECB welcomes further efforts to improve the accuracy and level of detail in the metadata transmitted to the ECB and also encourages euro national compilers to exchange information with other euro area NCBs within the framework of existing arrangements, for instance in the context of FDI.

## 5 Accuracy and reliability (including stability)

This section reviews the stability of the data in terms of revisions to the “first assessment” or “first vintage”. In general, revisions are necessary to improve the accuracy of the data as first assessments may be based on incomplete, late or erroneous responses by reporting agents. However, large recurrent (biased) revisions may indicate low quality of data sources and/or methods that need to be addressed. Conversely, minimal or no revisions does not necessarily mean that the first assessment was of high quality; it may simply indicate a national preference for not revising the data.

In this report, quarterly revisions (for all euro area countries and for the euro area as a whole) and monthly revisions (for the euro area as a whole only) are assessed using indicators based on the comparison between first and “last”/most recent assessments.

Different indicators are applied depending on the features of the time series in question. Two basic types of indicators are used:<sup>30</sup>

Relative size indicators measure the difference between the first and last assessments either in relation to the underlying series (when strictly positive; symmetric mean absolute percentage error – SMAPE) or otherwise in relation to a reference series (e.g. GDP or the underlying outstanding amounts for b.o.p. financial transactions; mean absolute comparative error – MACE). In the case of non-strictly positive (net/balance) time series, revisions cannot be properly related to the series value itself because observations may have different signs and, even more importantly, the value of the series may be close to zero. Therefore, for net/balance series the indicator used is the net relative revisions (NRR). The NRR puts the absolute revisions in relation to the average underlying gross flows for current account items and average positions of assets and liabilities for financial account transactions and positions. Owing to the different denominators employed, the SMAPE, MACE and NRR are not directly comparable.

Directional stability/reliability indicators measure how frequently first assessments are revised in the same direction (the upward revisions ratio and the directional reliability indicator).<sup>31</sup>

All charts depict the indicators calculated for a revision window of three years (Q2 2016 to Q1 2019 for national and euro area aggregates – quarterly series – and April 2016 to March 2019 for euro area aggregates – monthly series).

In general, the revisions recorded for the period Q2 2016 to Q1 2019 were not fundamentally different from those recorded in the equivalent period analysed in last

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<sup>30</sup> The indicators are explained in more detail in Annex 9.2.

<sup>31</sup> In this report, directional stability/reliability indicators are only used to complement the analysis based on the relative size indicators.

year's quality report. However, since the last version of this report was published, 19 countries have implemented major national accounts and b.o.p./i.i.p. [benchmark revisions](#), which has supported the alignment of national accounts (ESA 2010 data) with b.o.p./i.i.p. statistics. While increasing the accuracy, generally these revisions have not fundamentally altered the analytical interpretation of the first assessments.

## 5.1 Current account

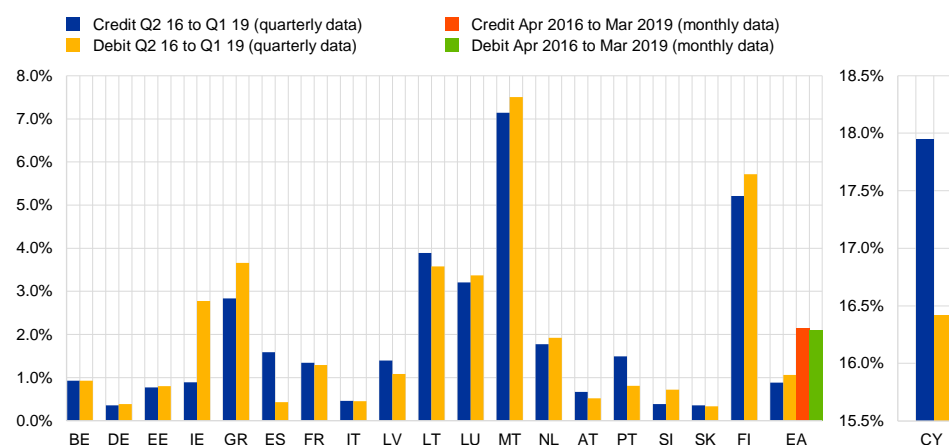
In general, revisions to the euro area current account credits and debits were comparable for monthly and quarterly data as can be seen in Chart 1 below. The euro area aggregates recorded revisions comparable to the euro area country median (1% for the quarterly current account credits and debits), with the monthly data recording slightly higher revisions.

Cyprus<sup>32</sup> and Malta had the highest revisions among euro area countries for current account credits and debits. Generally, Malta displayed a random pattern of revising its current account both upwards or downwards. By contrast, Cyprus revised its current account upwards in the majority of cases. However, both countries show high directional reliability in their revisions.

In terms of current account sub-items, in particular for monthly data, Ireland displayed a higher number of monthly revisions with weaker directional reliability compared with the quarterly data. These revisions had a negative impact on the quality of the monthly euro area aggregates.

**Chart 1**  
Revisions to current account credits and debits

(symmetric mean absolute percentage error – SMAPE)



Source: ECB.

Concerning revisions to the quarterly current account balance (see Chart 2 below), the euro area as a whole recorded comparable revisions to the median of the euro area

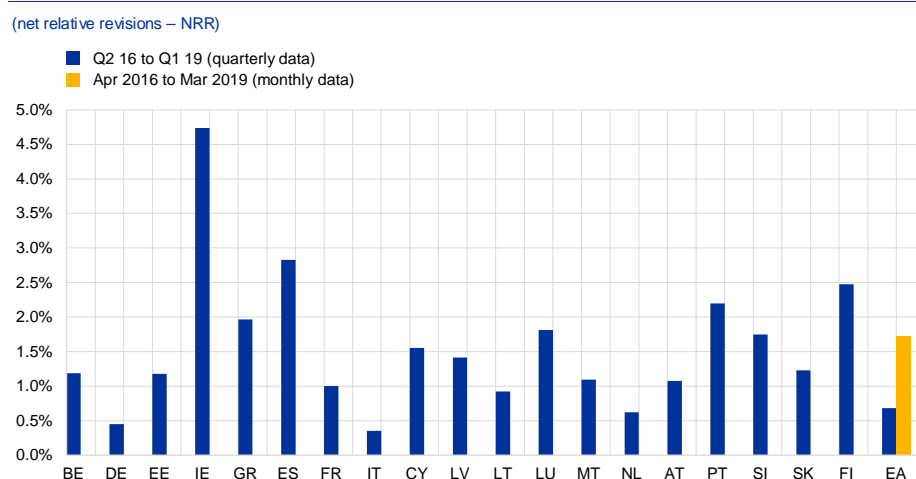
<sup>32</sup> Cyprus revisions can be mostly attributed to better/enhanced coverage of SPEs.



countries (1%). Monthly revisions were slightly higher than quarterly revisions as assessed by the NRR indicator.

For the current account balance, the most sizable revisions were recorded by Ireland.

**Chart 2**  
Revisions to the current account balance



Source: ECB.

Detailed information on SMAPE, upward revisions and directional reliability indicators is available in Tables A.2.1 to A.6.2 in the Annex.

## 5.2 Financial account transactions

To overcome the fact that transactions in financial assets and liabilities can be either positive or negative, revisions to financial assets and liabilities are related to the respective i.i.p. item for assessing their relative size. MACE is therefore used to assess revisions to the financial account.

For the quarterly euro area aggregates, recorded revisions amounted to 0.2% of the underlying positions for total transactions in financial assets and liabilities, which is slightly lower than the median of euro area countries. Revisions to monthly euro area aggregates were considerably higher, as can be seen in Chart 3 below. Monthly revisions to euro area direct investment data were the highest, at close to 1% for both assets and liabilities, followed by revisions to other investment and portfolio investment.

All euro area countries recorded revisions of less than 1% of the underlying positions for quarterly financial transactions. The highest revisions were recorded by Cyprus<sup>33</sup>, the Netherlands<sup>34</sup>, and Finland<sup>35</sup>.

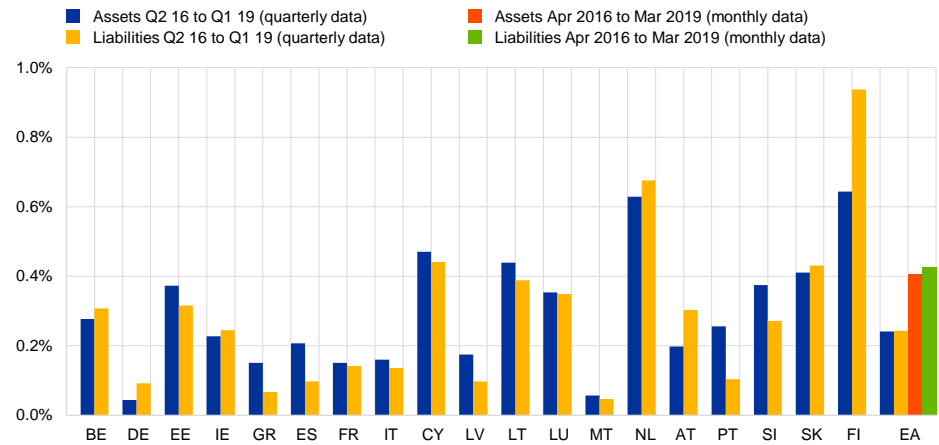
<sup>33</sup> As already mentioned, revisions for Cyprus can be mostly attributed to better/enhanced coverage of SPEs.

<sup>34</sup> Dutch revisions can be largely attributed to the annual (time series) revision of the financial accounts and balance sheets (in both national accounts and the b.o.p./i.i.p.).

### Chart 3

#### Revisions to financial account

(mean absolute comparative error – MACE)



Source: ECB.

Concerning revisions to net quarterly financial transactions, the euro area as a whole recorded NRR comparable with the median of euro area countries (0.1%), while revisions to the monthly series were substantially higher (across all functional categories).

In terms of net financial account transactions for individual countries, Lithuania<sup>36</sup> and Finland recorded the highest level of revisions among euro area countries (see Chart 4 below).

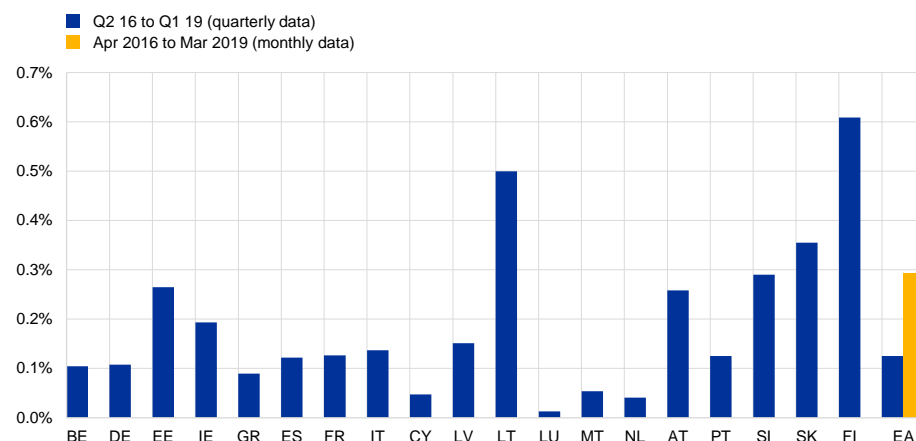
<sup>35</sup> Revisions for Finland are largely explained by achieving consistency between b.o.p. and financial accounts in the context of the benchmark revision.

<sup>36</sup> The revision of b.o.p./i.i.p. statistics was carried out in September 2019 (in the context of the benchmark revision) and data were revised back to 2004.

## Chart 4

### Revisions to net financial account transactions

(net relative revisions - NRR)



Source: ECB.

Detailed information on MACE, upward revisions and directional reliability indicators is available in Tables A.2.1 to A.6.2 in the Annex.

## 5.3 International investment position

Revisions to quarterly i.i.p. (financial account positions) are shown below in Charts 5 and 6. The euro area as a whole recorded revisions (as measured by SMAPE) of approximately 2% for both assets and liabilities, double the median for euro area countries.

At country level, revisions for assets and liabilities were generally comparable (with the exception of Slovenia). Lithuania and Slovenia recorded the highest revisions in the euro area. However, with the exception of revisions to Slovenian assets, this level of revision was comparable to other euro area countries. In the majority of cases, Lithuania<sup>37</sup> and Slovenia revised upwards their first assessments of total i.i.p. (for both assets and liabilities)<sup>38</sup>. However, the degree of directional reliability was very high for both Lithuania and Slovenia.

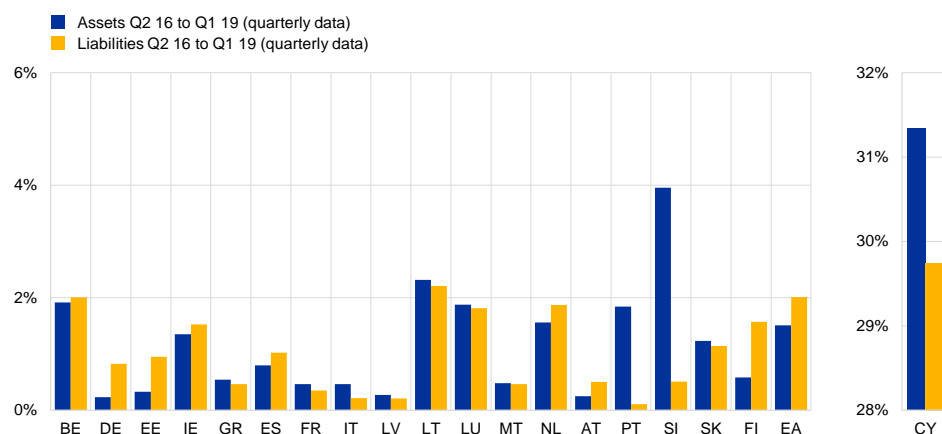
<sup>37</sup> Lithuania revised FDI equity (to account for provisions for bad loans in the valuation of equity). This change also influenced the degree of directional reliability.

<sup>38</sup> This was possibly connected to improvements to data sources in the context of the benchmark revision.

**Chart 5**

Revisions to the international investment position

(symmetric mean absolute percentage error -SMAPE)



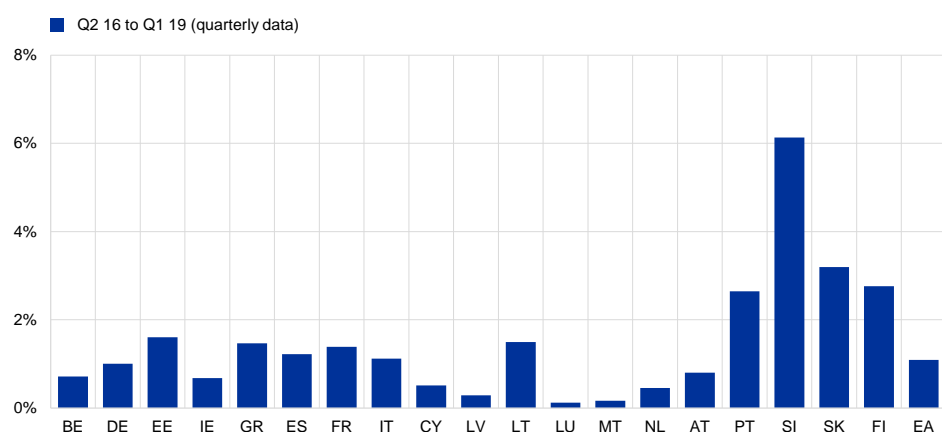
Source: ECB.

As regards revisions to net i.i.p., the euro area as a whole recorded revisions totalling 1.1% of the underlying average positions during the period under review (comparable to the median level of revisions for euro area countries). Slightly higher revisions (between 1.9% and 3.1%) were recorded in net positions for the various functional categories (direct, portfolio and other investment). At the level of individual countries, the highest NRR for net i.i.p. was recorded in Cyprus. Even if by a considerable distance, Slovenia was next, owing in particular to its revisions to assets.

**Chart 6**

Revisions to the net international investment position

(net relative revisions (NRR))



Source: ECB.

Detailed information on SMAPE, NRR, upward revisions and directional reliability indicators is available in Tables A.2.1 to A.6.2 in the Annex.

## 6 Internal consistency

This section comprises two parts, assessing the reported national b.o.p. and i.i.p. data for internal coherence and consistency respectively. This comprises consistency over time (i.e. potential breaks in series), reconciliation across different frequencies (monthly and quarterly data) and an assessment of the arithmetic and accounting identities (including *net errors and omissions*).

### 6.1 Validation/integrity rules

This section reviews to what extent the transmitted national datasets were complete and met all basic accounting validation rules. These include linear constraints that apply to the b.o.p., i.i.p. and international reserves template statements, namely whether credits/assets minus debits/liabilities match the respective net flows/positions for each item, and whether sub-items add up to the respective items/totals, etc. Furthermore, it is strongly encouraged that datasets for different frequencies (i.e. monthly and quarterly) or data recorded in different datasets (e.g. reserve assets transmitted in the i.i.p. statement and in the reserve assets template) are kept consistent at all times.

In order to summarise compliance with validation rules, the average share of satisfied validations is used as an indicator (see section “Methodological documentation for quality indicators” for more details). The quarterly data generally had more validation issues than monthly data, but in both cases the failed validations did not impair the overall quality of the national data or euro area aggregates.

These results are fundamentally in line with last year’s assessment. For Ireland, a larger number of validation problems were detected in the monthly data (especially in counterpart and resident sector breakdowns and in the geographical detail) owing to the use of an incorrect methodology to reconcile monthly and quarterly data. Furthermore, Malta recorded inconsistencies in the intra/extra-EU geographical breakdown of the quarterly i.i.p. and reconciliation issues caused by the incomplete reporting of “other flows”. The share of satisfied integrity rules was also below 95% for Belgium (owing to reconciliation issues) and France (owing to issues in the functional detail, the geographical breakdown, and the resident and counterpart sector breakdowns).

Consistency between datasets is very important to ensure the overall quality of the b.o.p. As a result, average time consistency (ATC) and average relative explained changes (AREC) can be used as indicators to summarise consistency problems between frequencies and between positions and flows respectively.

In terms of time consistency, the vast majority of countries exhibit full consistency between monthly and quarterly data, with only a few exceptions. Relative to last year, Austria improved time consistency for most of its current account items, which are now

fully consistent with the monthly figures. Meanwhile, Ireland continues to display, for most of the analysed b.o.p. and i.i.p. series, a level of time consistency below the euro area median, with extra-euro area secondary income and services showing consistent monthly and quarterly values in only 83% of cases (see Table A.8.1 in the Annex for more details).

In terms of average reconciled amounts for main items, all countries achieved full reconciliation between positions and flows, with the exception of Malta, which did not provide complete information on other flows (see Tables A.7.5 and A.7.6 in the Annex for more details).

Although the transmission of backdata is not mandatory, greater efforts by national compilers have resulted in the availability of longer time series for analytical use, including in the context of the MIP. While most countries have provided complete and validated datasets for periods before 2013, there are still several cases where these data are either incomplete or have serious validation problems. In general, despite improvements in data coverage and quality, it is of the utmost importance that countries continue their efforts to provide backdata of acceptable quality as agreed by the WG ES.

As regards series breaks, the following issues were identified:<sup>39</sup>

**Germany:** Major breaks are observed due to the reclassification of positions between fellow companies from other investment to direct investment in Q4 2012. Major breaks are also present in Q4 2015 due to different estimation methods applied to portfolio investment debt securities liabilities.

**The Netherlands:** Major breaks are visible for several items from Q1 2015 onwards due to the introduction of new data sources and an updated compilation system.

**France:** Breaks are observed for secondary income credits of other sectors in Q1 2014, mainly reflecting the inclusion of net non-life insurance premiums and claims, and social benefits (new data collection method for insurance).

**Luxembourg:** relevant series breaks in foreign direct investment positions are observed in Q4 2011 and Q4 2014 as a result of changes in the coverage of SPEs.

**Austria:** certain breaks apply in primary income credits and debits (from Q1 2013 to Q1 2016) as explained by SPE activity.

It should be noted, however, that countries are making continuous efforts to improve their data. Data transmissions submitted after the review period have already resulted in improved data quality.

Values for the validation indicators are available in Tables A.7.1 to A.7.3 in the Annex.

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<sup>39</sup> For periods before 2013, the transmission of data to the ECB is on a best efforts basis. For more information on breaks before 2013, please refer to the MIP box.

## 6.2 Net errors and omissions

Net errors and omissions (n.e.o.) (the difference between net lending/borrowing as compiled from the current plus capital accounts and the financial account) provide an indication of the internal consistency of the b.o.p. In fact, the principle of double-entry bookkeeping implies that the sum of all credit and debit transactions should be equal to zero in the b.o.p. statement (i.e. that n.e.o. are zero). Normal random imbalances commonly result from imperfections in source data and compilation practices. However, if these imbalances are large and/or persistent, they indicate problems in sources and/or methods.

In the context of b.o.p. compilation practices, it is not uncommon that statistical modelling and/or expert judgements are applied with the intent of imposing certain properties on net errors and omissions. This involves using statistical techniques to account for a lack of source data coverage or uncertainty about certain pre-identified items. Such mechanisms are typically incorporated in the compilation system and are applicable during each data production round. At [euro area level](#), a correction mechanism that minimises net errors and omissions is also in place. The assumption behind the adjustment is that certain items in portfolio investment and other investment categories are not appropriately captured in the compilation of national data.

The average relative error for current account provides a measure of the magnitude of net errors and omissions in relation to average gross current account flows. Chart 7 below provides a graphical representation of the situation in euro area countries and the euro area aggregate (Chart A.7.7 in the Annex shows the average absolute n.e.o. in relation to the i.i.p.).

Overall, this year's results are in line with those presented in last year's quality report.

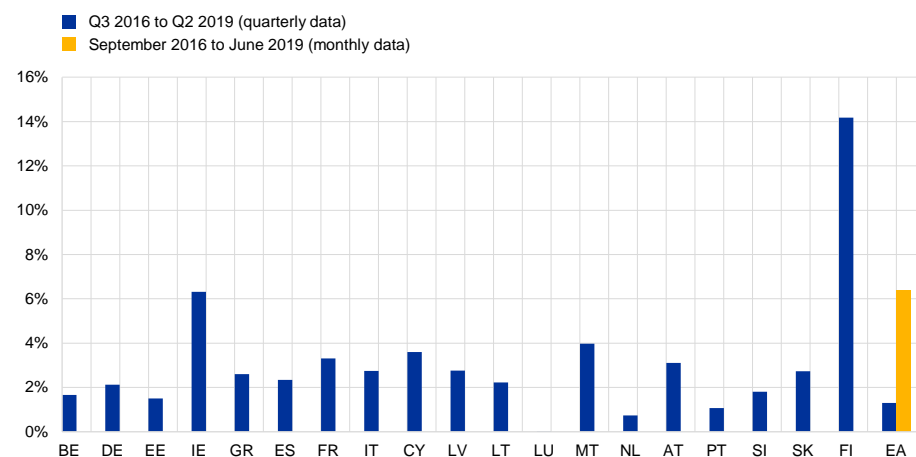
As expected (because of the correction mechanism), the euro area as a whole did not exhibit high n.e.o. compared with individual euro area countries. Monthly errors and omissions were substantially higher than quarterly ones. (The average absolute n.e.o. relative to average gross current account flows was 6% for monthly data and less than 2% for quarterly data.)

Quarterly n.e.o. for euro area countries generally exceeded 2% of the average current account gross flows. Over the period under review (Q3 2016 to Q2 2019), Finland displayed the highest average n.e.o. as a percentage of average current account gross flows at 14% (Ireland, which had the second highest n.e.o. in the euro area, recorded a value two times smaller than Finland). Countries are encouraged to continuously monitor the size of their n.e.o. and the underlying causes and address structural problems as soon as possible.

## Chart 7

### Relative net errors and omissions<sup>40</sup>

(average absolute net errors and omissions relative to average gross current account flows)



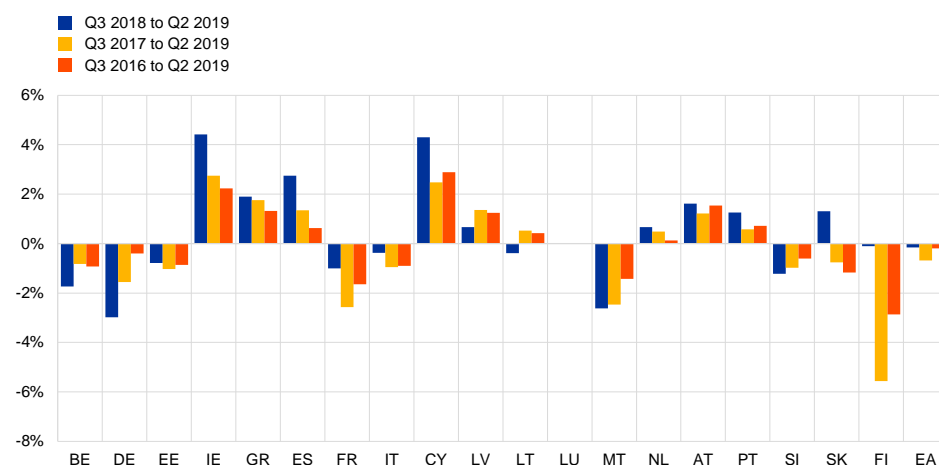
Source: ECB.

The persistence of the sign of errors and omissions is also relevant as a quality measure as it helps to identify biases in the accounts. Chart 8 below shows the cumulative n.e.o. in relation to current account gross flows.

## Chart 8

### Bias in net errors and omissions

(cumulative net errors and omissions relative to average gross current account flows)



Source: ECB.

Neither the euro area as a whole nor the vast majority of euro area countries display a significant statistical bias in their net errors and omissions.

Values for the validation indicators (including n.e.o.) are available in Tables A.7.1 to A.7.7 in the Annex.

<sup>40</sup> Ideally, the average absolute n.e.o. relative to current account gross flows should be computed using the first assessment (the first time data are transmitted to the ECB). However, an insufficient number of first assessments for n.e.o. means that a proper calculation of this indicator is not possible for the time being. Future quality reports should correct this problem.



## 7 External consistency/coherence

External consistency is defined as the coherence of b.o.p. and i.i.p. data with other related statistical domains. In this report, the external consistency/coherence of the b.o.p. and i.i.p. is assessed against foreign trade statistics, euro area (sector) accounts, MFI balance sheet statistics (including money market funds), investment fund statistics and securities holdings statistics.

### 7.1 Coherence with foreign trade statistics

International trade in goods statistics (ITGS) is typically the main data source used to compile the b.o.p. goods account in all euro area countries. However, when comparing the two datasets, important conceptual differences should be taken into account. Differences in concepts and definitions are linked primarily to the fact that b.o.p. follows the so-called change-of-economic-ownership principle, whereas ITGS record physical cross-border movements of goods<sup>41</sup>.

Given the methodological differences between the two datasets, a direct comparison would not convey an accurate picture. Instead, a directional reliability indicator is used to assess whether b.o.p. and ITGS data exhibit consistent developments and can hence be used as complementary analytical data sources. Furthermore, several countries publish reconciliation tables between the two datasets, which are available on the websites of the respective national central bank or national statistical institute.

Table A.8.1 in the Annex shows the individual national directional reliability indicators for the period Q3 2016 to Q2 2019 for the counterpart areas “rest of the world” and “extra-euro area”. The results are comparable to those presented in last year’s quality report.

For the euro area as a whole, there was full directional reliability for both imports and exports. Four euro area countries displayed full directional reliability for both exports and imports for the two counterpart areas analysed. A limited number of countries, including Malta,<sup>42</sup> showed a lower degree of directional reliability.<sup>43</sup> On average, data for exports/credits were as directionally reliable as data for imports/debits.

It should be noted that full directional reliability is not necessarily a sign of quality and that inconsistencies in the developments of the two datasets may be explained by the economic structure of the external trade in goods account of the respective country.

<sup>41</sup> A complete list of the conceptual differences between BPM6 and international merchandise trade statistics (IMTS) is provided in Annex F to “[International Merchandise Trade Statistics: Concepts and Definitions 2010](#)”.

<sup>42</sup> In the case of Malta, yachts and aircraft are only deemed to be operationally leased and are therefore removed from goods for b.o.p. purposes.

<sup>43</sup> B.o.p. goods sub-item general merchandise (G1), national concept, was used to calculate the directional reliability indicator.

## 7.2 Consistency with euro area sector accounts

Euro area b.o.p. and i.i.p. data constitute one of the “building blocks” of the euro area accounts (EAA) and are widely used at national level for the compilation of the rest of the world (RoW) 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 RoW account (national accounts) were removed with the introduction of ESA 2010 and the BPM6, albeit some challenges still remain when it comes to interpretation.<sup>44</sup> analysis showed that inconsistencies between the two statistical domains persisted in many countries, negatively affecting the combined use of the two datasets and their reliability. Acknowledging this, the ESCB worked to precisely identify the differences and to develop national medium-term work plans to be generally observed by September 2019.<sup>45</sup> In this context, while the removal of inconsistencies between the two statistical domains has progressed and most countries already compile the two sets of statistics in a consistent manner, a few countries still observe large discrepancies with a substantial impact on euro area and EU aggregates. Such issues are tackled in the context of the MIP quality assurance framework.

### 7.2.1 Current account

Chart 9<sup>46</sup> shows the differences between the b.o.p. and RoW current accounts. As an indicative benchmark, relative differences should ideally be no higher than 0.5% of the underlying average b.o.p. and RoW values, as agreed by the STC.<sup>47</sup>

For the euro area as a whole, the differences were not significant and were broadly unchanged relative to last year, with a high level of consistency between the two datasets. At country level, however, differences above 0.5% were recorded for several countries (Belgium,<sup>48</sup> Germany (only for debits), Ireland, Greece, France and Luxembourg). Ireland, Greece (only for debits), France (only for credits) and Luxembourg recorded notable discrepancies (above 6%) for their current accounts, with sizeable discrepancies for services (Greece, France and Luxembourg) and primary income (Ireland, France and Luxembourg). In addition, differences above the threshold were also observed for a few other countries (Austria, Portugal, and Slovakia), without affecting consistency between the two datasets.

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<sup>44</sup> The harmonised EU revisions policy also supports consistency between the two statistical domains.

<sup>45</sup> Or at the time of the next European benchmark revision, which for most EU countries (17 out of 28) occurred in 2019. The remaining countries either implemented it in 2018 or plan to do so in 2020.

<sup>46</sup> Some national contributions to RoW data were not shared with the ECB in Q2 2019 owing to data validation issues. This affects the comparability of detailed current account data for Bulgaria, Croatia, Poland and Romania.

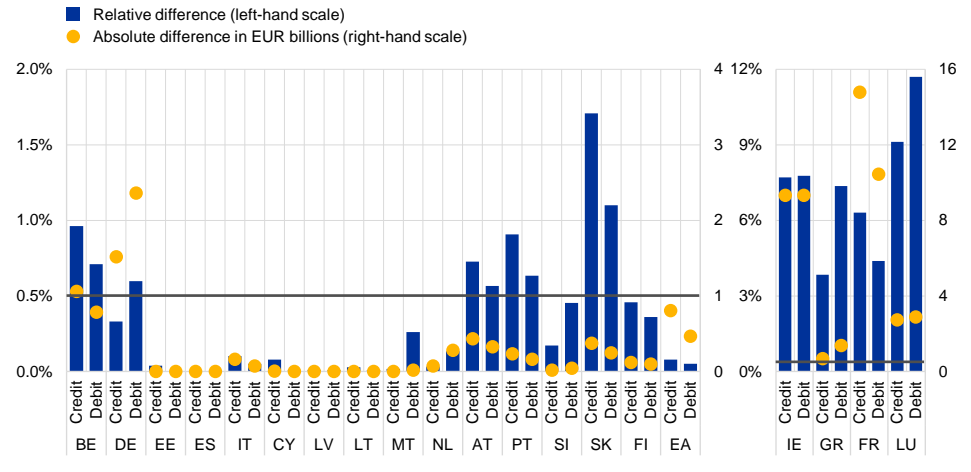
<sup>47</sup> Some countries have achieved the aforementioned consistency between the two statistical domains but still record differences between b.o.p./i.i.p. and RoW data, implying small deviations from the different thresholds agreed by the STC.

<sup>48</sup> Improvements to quarterly data will be introduced in 2022 with the production of quarterly “supply and use tables”.

**Chart 9**

**Current account discrepancies between the b.o.p. and RoW account**

(average absolute and relative difference (as a percentage of respective quarterly b.o.p. and RoW items) for the period Q3 2016 to Q2 2019 (b.o.p. vs EAA))



Source: ECB.

**7.2.2 Financial transactions**

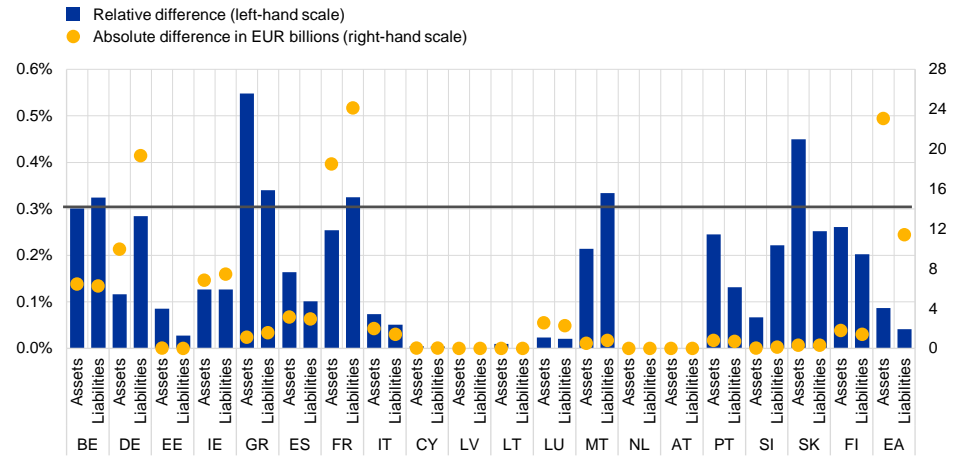
Chart 10 shows the differences between the b.o.p. and the RoW account for financial transactions. In this case, discrepancies may be accounted for by time of recording differences, as well as by the reconciliation of national sectoral accounts. Both “vertical” reconciliation (a correction for errors and omissions) and “horizontal” reconciliation (asset/liability equality across sectors) may entail larger adjustments to the financial transactions in the RoW account. Nonetheless, as an indicative benchmark, the relative differences should ideally not exceed 0.3% of the average value of the underlying positions.

For the euro area as a whole, the differences were not significant (a bit higher than last year for assets and broadly unchanged for liabilities) and showed a relatively high level of consistency between the two datasets. At country level, differences of above 0.3% were recorded for several countries (Belgium, Greece, France (only for liabilities) and Malta (only for liabilities)). Greece recorded the highest relative discrepancies, while the largest absolute differences were observed in Germany (only for liabilities) and France. In addition, a difference above the threshold was also observed for Slovakia, but it did not affect the consistency of the two datasets.

**Chart 10**

**Financial account transactions' discrepancies between the b.o.p. and RoW account**

(average absolute and relative difference (as a percentage of respective quarterly b.o.p. and RoW stocks of financial assets/liabilities) for the period Q3 2016 to Q2 2019 (b.o.p. vs EAA))



Source: ECB.

**7.2.3 Financial positions**

Chart 11 below presents the differences between the i.i.p. and the RoW account for financial assets and liabilities (balance sheets/positions). As expected, the differences between the two datasets are larger for positions than for transactions. Relative differences should, as an indicative benchmark, be below 0.5% of the average financial assets/liabilities totals in the i.i.p. and sectoral accounts.

The euro area recorded discrepancies of 4% for both assets and liabilities, similar to last year. These discrepancies arose mostly from differences between the compilation and reconciliation processes for the euro area i.i.p. and the RoW. At country level, differences above 0.5% were recorded by Germany (only for liabilities), Greece, France and Malta. The highest discrepancies were recorded for France (assets) and Malta, with values exceeding 3%. In addition, differences above the threshold were observed for some countries – Italy, Portugal, Slovenia (only for liabilities), Slovakia (only for assets) and Finland – though this did not affect the consistency between the two datasets.

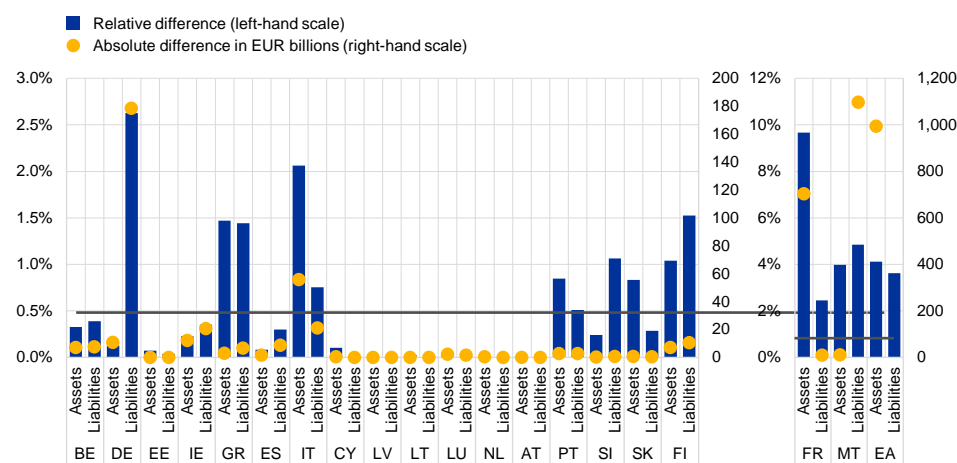
A detailed analysis at the instrument level reveals sizeable differences for equity instruments that are mostly triggered by different valuation practices (e.g. in the case of France regarding unlisted equity instruments)<sup>49</sup>. Other reasons behind the differences also affecting the remaining instrument types include discrepancies in vintages, data sources and estimation methods.

<sup>49</sup> In the RoW dataset an elaborate method is used to estimate market prices, while in i.i.p. statistics the own funds at book value methodology is consistently applied.

**Chart 11**

**Financial account position discrepancies between the i.i.p. and RoW account**

(average absolute and relative difference (as a percentage of respective quarterly i.i.p. and RoW stocks of financial assets/liabilities) for the period Q3 2016 to Q2 2019 (i.i.p. vs EAA))



Source: ECB.

Further details of these comparisons are available in Tables A.9.1 to A.9.4 in the Annex.

### 7.3 Coherence with MFI balance sheet data

Data on cross-border transactions and positions of the euro area MFI sector are recorded in the euro area b.o.p./i.i.p. and collected under the MFI Balance Sheet statistics (BSI)<sup>50</sup>.

Consistency between b.o.p. data for the MFI sector and transactions in external assets and liabilities derived from the BSI statistics of euro area MFIs is essential for the construction of the “monetary presentation of the balance of payments” and its use for monetary policy purposes.<sup>51</sup> Furthermore, this consistency is also paramount for the compilers of euro area accounts, who use both datasets as “building blocks”. On these grounds, the ECB assesses the consistency between the two datasets in every regular production cycle, taking into account details by sector and instrument. Persistent discrepancies between the two datasets are generally explained by methodological differences (see below).

For the euro area as a whole, the discrepancies in comparable monthly figures between the two datasets were in general not significant for the period under analysis. Comparability issues were, however, observed for quarterly data on asset positions in equity. Discrepancies of around €60 billion, representing more than 17% of the average i.i.p. and BSI positions, were recorded for the euro area and explained by French data.

<sup>50</sup> See Regulation ECB/2013/33 of the European Central Bank concerning the consolidated balance sheet of the monetary financial institutions sector.

<sup>51</sup> See Bê Duc, L., Mayerlen, F. and Sola, P., “The monetary presentation of the euro area balance of payments”, *Occasional Paper Series*, No 96, ECB, September 2008.

At the level of individual euro area countries, monthly transactions were generally consistent across datasets, representing an improvement relative to the previous review period. Exceptions were the discrepancies in equity transactions that were recorded for Ireland (9%) and Finland (15%). At a quarterly frequency, discrepancies in transactions mostly affected equity assets in Ireland (9.3%) and Luxembourg (7.3%).

In terms of positions, Ireland, France, Luxembourg and Slovenia all recorded discrepancies exceeding 25% of average positions for equity securities, but the French discrepancy of over €60 billion was the driver of the euro area discrepancy. In the case of loans and deposits, the highest discrepancy was found in Maltese liabilities, averaging 12% over the reference period. The highest discrepancy in debt securities was seen in Cyprus (5.7%).

The main reasons for these inconsistencies include: (i) differences in the classification of instruments (e.g. the b.o.p./i.i.p. may classify an instrument as a deposit, whereas it is classified as “remaining assets and liabilities” in BSI statistics);<sup>52</sup> (ii) differences in the treatment of short-selling of securities in certain countries (off-balance-sheet treatment instead of a reduction in assets); (iii) reliance on distinct data collection systems, namely s-b-s for the b.o.p. and monthly aggregated sources for BSI, which leads in particular to differences in valuation criteria (i.e. the b.o.p./i.i.p. are calculated at transaction/market prices, while BSI transactions are derived from positions reported at fair, cost or nominal value, depending on accounting practices).

## Eurosystem

Most of the discrepancies in the data for the Eurosystem as a whole (i.e. euro area aggregates) are related to the inclusion in the b.o.p. of estimates for foreign holdings of euro banknotes,<sup>53</sup> while in BSI statistics all holdings of euro banknotes are deemed in circulation in the euro area.

At country level, the treatment of intra-Eurosystem technical claims is also a source of discrepancies, as these are included under remaining assets and liabilities without geographical breakdown in BSI, and under currency and deposits in the b.o.p./i.i.p. Additionally, the b.o.p. estimations for foreign holdings of euro banknotes are not included in BSI statistics.

Further details of these comparisons are available in Charts A.10.1 to A.10.6 in the Annex.

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<sup>52</sup> Inconsistent classification of instruments leads to discrepancies between the two datasets because remaining assets and liabilities in BSI statistics are considered to be entirely domestic and never classified as external assets.

<sup>53</sup> See ECB, “[Estimation of euro area currency in circulation outside the euro area](#)”, April 2017.

## 7.4 Coherence with money market fund statistics

Data on cross-border investment in euro area money market fund (MMF) shares are recorded within the portfolio investment account of the euro area b.o.p./i.i.p. Data on assets and liabilities of euro area MMFs are also collected under BSI statistics<sup>54</sup>, as MMFs is a sub-sector of MFIs.

At the euro area level, the i.i.p. consistently exceeded the BSI outstanding amounts of MMF shares issued by euro area residents and held by non-euro area residents. At country level, small discrepancies were recorded in the period under review for Ireland, France and Luxembourg (the only countries in the euro area with relevant MMF activity).

The discrepancies between the two sets of statistics were related to the use of different compilation methods in b.o.p., i.i.p. and MFI balance sheet statistics. While the “residual approach” is used to calculate b.o.p. and i.i.p. portfolio investment liabilities,<sup>55</sup> MMF liabilities are allocated geographically by respondents in BSI statistics. Although in the case of MMF shares there is, in principle, no significant trading in secondary markets, the intervention of intermediaries buying, holding and selling shares on behalf of their clients can make it difficult to identify the place of residence of the actual holders. In such cases, the first counterpart – the custodian or other intermediary – may be known, but the final investor often is not. Identifying the place of residence becomes increasingly complicated as the length of the chain of intermediaries increases, so the residual approach of the b.o.p. and i.i.p. may be more accurate.

Further details of these comparisons are available in Charts A.11.1 and A.11.2 in the Annex.

## 7.5 Coherence with investment fund statistics

Details on cross-border investments in non-MMF investment fund (IF) shares are recorded in the b.o.p. and i.i.p. statistics within portfolio investment. Data on IF assets and liabilities are collected under the Regulation on Investment Funds<sup>56</sup> (IF dataset).

At the euro area level, the i.i.p. consistently exceeds the IF dataset in terms of euro area investment fund liabilities. The average absolute discrepancy reached a value close to €170 billion for positions and €3 billion for transactions throughout the period under analysis. The discrepancies at the euro area level are partly explained by the

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<sup>54</sup> See Regulation ECB/2013/33 of the European Central Bank concerning the consolidated balance sheet of the monetary financial institutions sector.

<sup>55</sup> In the b.o.p. and i.i.p., portfolio investment liabilities (broken down by resident sector) are estimated residually by deducting the holdings reported by residents from the total securities issued by residents. This method is applied to circumvent the practical difficulty of identifying the place of residence of the holders of securities.

<sup>56</sup> See Regulation ECB/2013/38 of the European Central Bank concerning statistics on the assets and liabilities of investment funds. Investment funds are defined as “other financial intermediaries except insurance corporations and pension funds” and exclude MMFs.

use of the residual approach to calculate portfolio investment liabilities (see Section 7.4 above).

At country level, Greece (133%) has the highest relative inconsistencies for IF shares held by non-residents, although outstanding amounts are small. The i.i.p. data reported by Malta are zero, whereas the IF dataset shows positive (although not very sizeable) outstanding amounts. In addition, while France displays a relative discrepancy of 5%, the average absolute discrepancy stands at €7.3 billion for stocks. The two datasets are fairly consistent as regards transactions, with the largest discrepancy affecting Irish data (€7 billion).

Further details of these comparisons are available in Charts A.12.1 and A.12.2 in the Annex.

## 7.6 Coherence with securities holdings statistics

The ECB Guideline stipulates that portfolio investment collection systems of euro area countries shall as much as possible rely on s-b-s information (see Annex VI of the ECB Guideline). In particular, it is stated that “the target coverage is defined as follows: stocks of securities reported to the national compiler on an aggregate basis, i.e. not using standard (ISIN or similar) codes, should not exceed 15% of the total portfolio investment stocks of assets or liabilities”. Therefore, it is expected that b.o.p. and i.i.p. statistics and SHSS<sup>57</sup> provide consistent results, mainly because national portfolio investment assets and SHSS should rely on the same s-b-s sources of information.<sup>58</sup>

This section compares the positions at market value of (i) debt securities and (ii) listed shares and investment fund shares/units as available in the SHSS dataset.<sup>59</sup> This analysis considers, on the SHSS side, the cross-border holdings by residents of each euro area country as collected by the respective country, as well as holdings by non-financial investors of each euro area country held in custody in other euro area countries (i.e. the so-called third-party holdings).

### 7.6.1 Debt securities

Taking into account the scope of the compilation of portfolio investment on an s-b-s basis as indicated above, the focus should be on discrepancies that are above 15% of the respective position.

For the euro area as a whole, the level of discrepancies for debt securities was 7% of the underlying i.i.p., which signals a good degree of consistency with SHSS. At the

<sup>57</sup> SHS data are collected by the Eurosystem in accordance with Regulation ECB/2012/24 (as amended).

<sup>58</sup> I.i.p. and SHSS figures both comprise portfolio investment holdings of debt securities and equity only – i.e. they exclude any investment in debt securities and equity that is classified as direct investment. On the SHSS side, securities with the functional category “not specified” are included: these represent around 20% of total euro area debt securities and equity positions, and are mainly attributable to Ireland and, to a lesser extent, Italy.

<sup>59</sup> Unlisted shares and other equity both fall outside the scope of SHS statistics.



level of individual countries, there were, for the first time, no cases of relative discrepancies above 15% owing to SHSS under-coverage. Conversely, Cyprus recorded a difference slightly above 15% owing to over-coverage of SHSS amounts. This reflects the inclusion of third-party holdings data in SHSS in relation to long-term debt securities held by non-financial investors.<sup>60</sup>

The decline in SHSS holdings by financial corporations other than MFIs of long-term debt securities issued by non-euro area countries explains, to a large extent, the (positive) b.o.p.-SHS gap. The lack of comprehensive coverage of non-ISIN securities data in SHSS,<sup>61</sup> the different revision policies for SHSS and the i.i.p., and the i.i.p.'s attempts to cover securities held with custodians outside the euro area explain a significant part of this discrepancy.

Further details of these comparisons are available in Chart A.13.1 in the Annex.

## 7.6.2 Listed shares and investment funds shares/units

For the euro area as a whole, the total discrepancy as a percentage of the underlying i.i.p. was 5%. At country level, discrepancies above the 15% threshold owing to SHSS under-coverage<sup>62</sup> were recorded in Italy, Portugal and Finland. Some countries also recorded over-coverage of SHSS amounts – which was fairly significant, in absolute terms – in respect of investment fund shares held by German financial corporations other than MFIs and non-financial investors, which were issued mainly by other euro area countries (with the latter being linked to the inclusion of third-party holdings data in SHSS). Finally, Malta continued to report zero holdings of listed shares and investment fund shares within its b.o.p. and i.i.p. statistics, meaning that indicators were not calculated for this country despite relevant amounts being reported in the context of SHSS for these instruments.

To a large extent, the decline in SHSS holdings by financial corporations other than MFIs of listed shares and investment fund shares issued by non-euro area countries explains the positive b.o.p.-SHSS gap. The caveats mentioned for debt securities also hold when it comes to explaining this discrepancy.

Further details of these comparisons are available in Chart A.13.2 in the Annex.

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<sup>60</sup> These SHS third-party holdings may be wrongly allocated to non-financial investors, except household.

<sup>61</sup> Significant non-ISIN debt securities holdings are only reported to the SHSDB for Germany, Ireland, Greece, Latvia and the Netherlands.

<sup>62</sup> The discrepancies recorded by Cyprus and Slovenia reflect an over-coverage of SHSS amounts.

## 8 Asymmetries

Asymmetries are an inherent feature of all statistics for which “mirror” data are collected, i.e. for which two countries collect the same type of information in relation to each other. They occur when one country’s data do not correspond to the data for the same transaction reported by its partner country. In reality, however, for a variety of reasons it is rarely the case that two data sources provide exactly the same results, and this leads to the emergence of asymmetries.

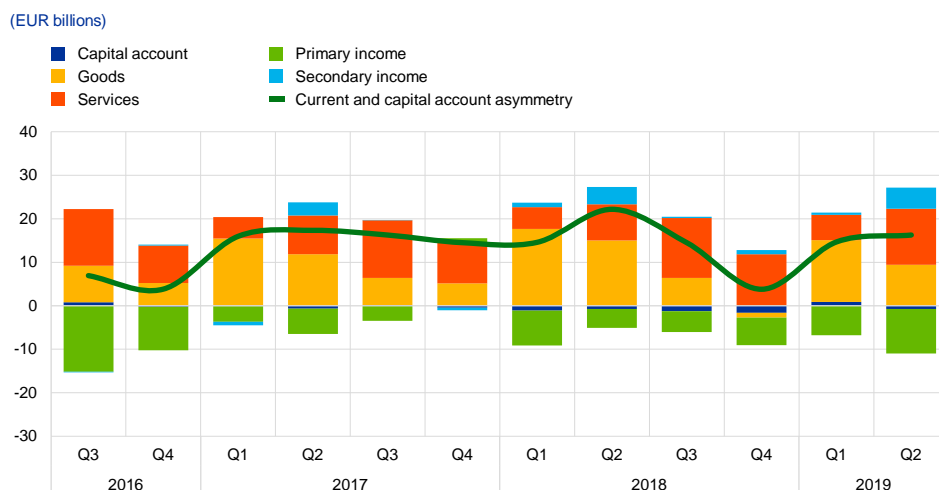
Asymmetries can be observed at the level of the global economy (where total world assets should equal total world liabilities), at the level of geographical aggregates (where total intra-euro area assets should match total intra-euro area liabilities) and at the level of bilateral pairs (where flows and positions between pairs of countries should match perfectly).

### 8.1 Intra-euro area asymmetries

Charts 12 and 13 provide an overview of intra-euro area asymmetries in the current and capital accounts and the financial account respectively.

**Chart 12**

Intra-euro area current and capital account asymmetries

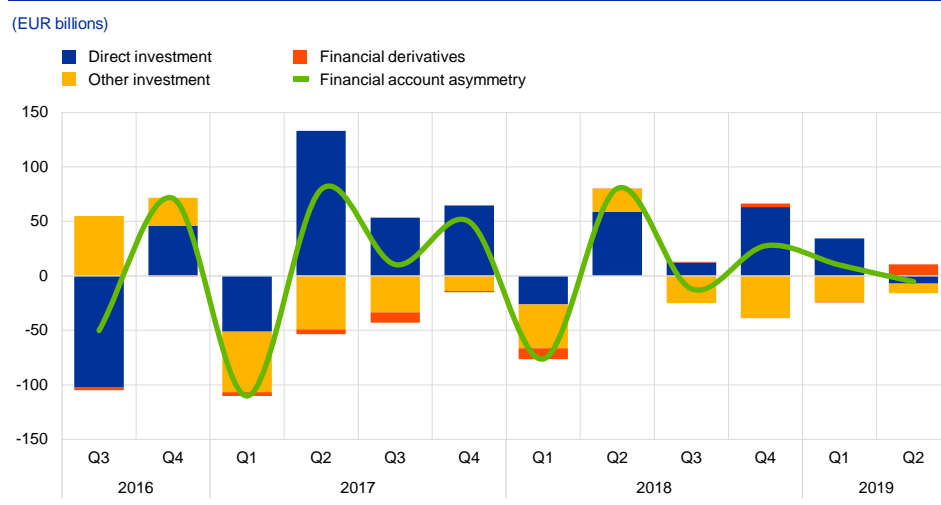


Source: ECB.

Current and capital account asymmetries (credits minus debits) were always positive over the period under review. The main contributors to the overall asymmetries show structural biases: consistently positive asymmetries in goods and services accounts, with negative contributions being made by the primary income account. The secondary income and capital accounts only contributed to overall asymmetries in particular quarters.

**Chart 13**

**Intra-euro area financial account asymmetries**



Source: ECB.

In the financial account, asymmetries were mainly recorded in direct and other investment. Portfolio investment and related income do not show asymmetries by construction, owing to the residual compilation approach at the euro area level. Financial account asymmetries were fairly volatile in the period under review, with periods where asymmetries in direct and other investment offset each other alternating with periods where they both contributed in the same direction to the overall asymmetry.

## 8.2 Bilateral asymmetries

Quarterly bilateral transactions and positions between euro area countries are transmitted to the ECB on a voluntary basis, hence a full bilateral dataset is not yet available. Owing to data availability, the analysis of bilateral asymmetries between euro area countries is performed only for direct investment. The analysis will be extended to other items as data becomes available.

The internal and external country geographical quality indicators (ICGQ and XCGQ respectively) are measures that summarise the quality of the geographical breakdown. The ICGQ aims to assess the accuracy of individual countries' geographical classification within the sample of countries for which bilateral data are available by aggregating absolute bilateral asymmetries. Meanwhile, the XCGQ aims to show how well a country's reported intra-euro area aggregate matches its mirror data, calculating the difference between the intra-euro area figure reported by the country under consideration and the corresponding figure derived from counterpart data. More information on these indicators can be found in the section on "Methodological documentation for quality indicators".

The results of the ICGQ indicator for FDI transactions were characterised by significant variability across countries and over time. Several countries consistently

recorded high scores across the entire time period, indicating structural problems in matching counterparties' transactions. Meanwhile, the majority of countries experienced high volatility in the measures over time, pointing to quarter-specific problems in capturing the geographical detail of transactions, rather than structural issues.

Results for the XCGQ indicator were generally better than those recorded for the ICGQ, as that indicator is less specifically about matching up individual country counterparts and merely measures how well the counterparts as a group match a country's estimate for that group. Consequently, most of the countries performed relatively well across the entire time period. This finding is obviously welcome from the point of view of the quality of overall euro area data. Nonetheless, several countries still recorded fairly poor results in several quarters.

For both quality measures, the results recorded for FDI positions were better than those observed for transaction data.

Overall, it appears that countries that are characterised by large numbers of SPEs and face well-known challenges when it comes to capturing and measuring the activities of those institutions were found to have structural problems matching the figures provided by their euro area counterparts.

Further information on summary indicators of bilateral asymmetries is available in Tables A.14.1 to A.14.4 in the Annex.<sup>63</sup>

## Box 1

### Quality indicators on b.o.p. and i.i.p. statistics underlying the MIP

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

Balance of payments (b.o.p.) and international investment position (i.i.p.) data underpin the construction of the following three headline indicators:

1. current account balance (percentage of GDP), three-year backward-moving average (up to 13 years of data required);
2. net international investment position (percentage of GDP) (up to ten years of data required);

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<sup>63</sup> The following principles underlie this exercise and the results provided in the main text and associated annex tables:

- The analysis was performed on data for the reporting period Q3 2015 to Q2 2018.
- The measures were calculated for each reporting period, with analysis only carried out for countries that met a coverage threshold of 80% (i.e. if more than 20% of the value allocated to the euro area aggregate was not geographically specified, the cell was suppressed).
- The results are presented using a traffic light approach. Each cell is coloured using a continuous scale, ranging from green (value of 0) to red (value of 1).

3. export market share (percentage of world exports), five-year percentage change (up to 15 years of data required).

Additionally, b.o.p. and i.i.p. data are also used for five auxiliary indicators:

4. current plus capital account balance (net lending/borrowing) (percentage of GDP) (ten years of data required);
5. net international investment position excluding “non-defaultable” instruments<sup>64</sup> (NENDI) (percentage of GDP) (ten years of data required);
6. foreign direct investment in the reporting economy, flows (percentage of GDP) (ten years of data required);
7. foreign direct investment in the reporting economy, positions (percentage of GDP) (ten years of data required);
8. export performance against advanced economies (percentage of OECD exports), five-year percentage change (15 years of data required).

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

The following sections assess the fitness for purpose of b.o.p. and i.i.p. data used for the MIP, analysing the data vintage used in the [2019 Alert Mechanism Report](#).

### **Institutional set-up**

B.o.p. and i.i.p. data are transmitted to the ECB on the basis of Guideline ECB/2011/23 and to Eurostat on the basis of Regulation (EC) No 184/2005. This annual quality report follows the basic principles of the “Public commitment on European statistics by the ESCB” and is a requirement under Article 6(1) of Guideline ECB/2011/23. This report is fully coordinated with the report produced by the European Commission (Eurostat) on the basis of Article 4(4) of Regulation (EC) No 184/2005. The quality assessment of the Eurostat report is conducted in accordance with the “European Statistics Code of Practice”.

The indicators used for the MIP are provided by Eurostat on the basis of statistics compiled in the Member States by either NSIs or NCBs. The MoU was therefore signed in November 2016. In the MoU (and the related letters that were exchanged), the European Commission and the ECB mutually recognise the quality assurance frameworks in place in the European Statistical System (ESS) and the ESCB and establish practical working arrangements for cooperation with regard to the quality assurance of statistics underlying the MIP.

The MoU specifies that Eurostat and the ECB’s Directorate General Statistics (DG-S) should regularly conduct assessments of the quality of national datasets. In particular, the ECB/DG-S should run its quality procedures for the datasets reported by NCBs and provide Eurostat with quality-assured datasets and/or information on the quality of the data after the regular data transmission in September/October each year. The MoU also envisages visits by the ECB/DG-S and Eurostat to NCBs and/or NSIs to help assess the output quality of MIP-relevant data. In 2019, country

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<sup>64</sup> Instruments that cannot be subject to default: foreign direct investment equity and equity shares and inter-company cross-border FDI debt.

visits to Germany, Malta and Ireland took place, and as a result of those visits, recommendations for improving data quality were included in the relevant sections of this report.

To ensure full transparency with regard to 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, in turn, feed into the domain-specific quality reports (Level 2) – including this report – which are coordinated between 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](#).

### **Data availability and confidentiality**

The relevant ECB and European Parliament and Council legal acts do not impose backdata requirements in compliance with the BPM6 statistical standard. Despite this, the majority of national compilers have provided the thirteen years of current account backdata and ten years of net international investment position backdata that are required for the calculation and analysis of the main indicators. Certain coverage limitations remain, but these will naturally vanish in the coming years as each new release will reduce the required backdata.

As regards the auxiliary indicators, there are coverage limitations affecting the calculation of the indicator added in 2018 (net international investment position excluding “non-defaultable” instruments – NENDI), which uses positions in equity securities. Information from the following countries is unavailable or of poor quality (as it also includes investment fund shares): Malta, Croatia (from 2014), the Czech Republic (from 2013), Greece (from 2013), Romania (from 2011), Poland (from 2010) and Bulgaria (from 2010). In general, all available MIP-relevant data are free for publication.

### **Sources and methods**

The introduction of BPM6 provided an opportunity for a large group of countries to move over to survey-based systems as an alternative to traditional international transaction reporting (“settlement”) systems. B.o.p. and i.i.p. statistics are, by nature, based on a multitude of data sources, relying on micro datasets (e.g. the Centralised Securities Database (CSDB)), macro datasets, direct reporting and counterpart information, statistical surveys and administrative datasets (e.g. for the general government sector).

While the compilation of b.o.p. and i.i.p. data in EU Member States is deemed methodologically sound, there are challenges when it comes to measuring some components and complying with all EU recommendations and/or BPM6 standards. In particular: (i) Luxembourg, the Netherlands, Cyprus and Malta would benefit from further improvements in the coverage of resident SPEs; (ii) all EU countries should make an effort to implement estimates for service margins as regards the buying and selling of financial assets (financial services); (iii) some countries need to follow EU recommendations and include estimates for certain illegal economic trade activities (illegal drugs, prostitution services, and smuggling of tobacco and alcohol); (iv) most countries have difficulties capturing households' assets held abroad; and (v) all countries should improve the measurement of reinvested earnings on foreign direct investment and the valuation of unlisted shares and other equity. For more detailed information, see Table 1 in the executive summary and Section 2.

### Accuracy and reliability

Since the last review period, 19 countries have implemented major national accounts and b.o.p./i.i.p. benchmark revisions, which have supported the alignment of national accounts (ESA 2010 data) with b.o.p./i.i.p. statistics. These revisions and other regular revisions have not significantly altered the analytical interpretation of the indicators, with the exception of the 2017 current account indicator for Cyprus, which now records a value between the threshold limits, in contrast with the last review period.

### Internal consistency

For the quarterly b.o.p., most countries fulfil all validation (accounting) rules. One of the most common issues among countries concerns the reconciliation of positions and flows, which is very important for confirming the plausibility of the net i.i.p.

As regards series breaks, in addition to the issues mentioned in Section 6.1 (validation/integrity rules), the following breaks apply to periods before 2013 (transmission of data for periods before Q1 2013 is not mandatory):

**Czech Republic:** Breaks apply to the services balance between 2004 and 2014, primary income credit in Q4 2005, and financial account assets and liabilities in Q1 2017.

**Germany:** Breaks are present in Q2 2012 owing to the introduction of a new survey that allows positions between fellow companies to be reallocated from “other investment” to “direct investment”. Breaks are also present in Q4 2015 owing to a change to the estimation method applied for portfolio investment debt securities liabilities.

**Ireland:** Available foreign direct investment position data before 2008 follow the directional principle.

**Croatia:** Breaks are observed for stocks of financial derivatives assets (2014), stocks of direct investment assets (between 2010 and 2014), and secondary income (2013).

**Italy:** Breaks in the series for financial derivatives (assets and liabilities) are observed in 2008 as a result of the introduction of a more accurate quarterly i.i.p. data source for financial derivatives held by resident deposit-taking corporations;

**Luxembourg:** relevant series breaks in foreign direct investment positions for 2011 are related to improvements in the coverage of SPEs;

**The Netherlands:** a break was recorded in 2015 due to the introduction of an update compilation system;

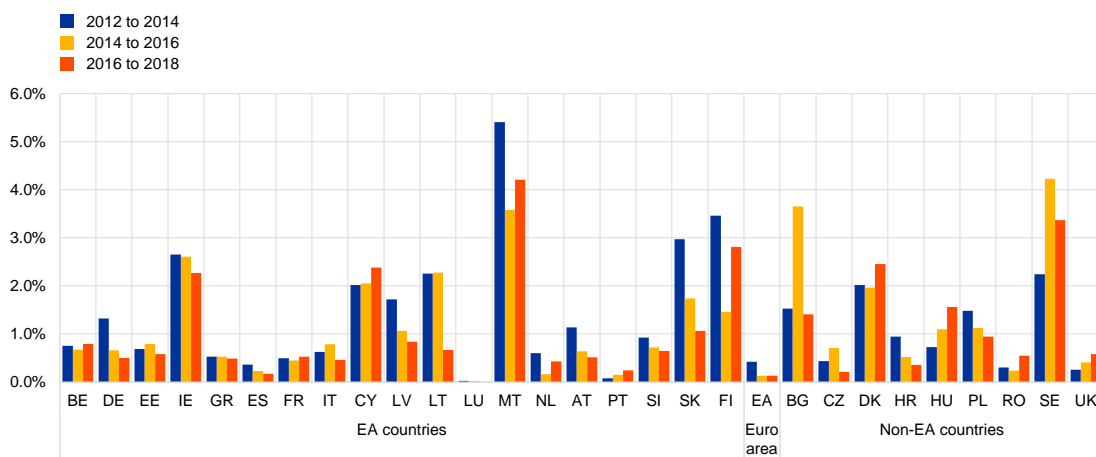
**Austria:** some breaks apply in foreign direct investment positions (in 2005, due to the introduction of data for SPEs) and financial derivatives (before 2006 the reported value for positions in financial derivatives is zero, whereas non-zero values are reported for transactions);

National **net errors and omissions** in general remained stable in the last review period, however they are still above 2% of GDP in Ireland, Cyprus, Malta, Finland, Denmark and Sweden (see Chart MIP 1). In this context, it is important to highlight that some euro area countries have formal correction mechanisms to address this problem, naturally leading to reduced levels of errors and omissions.

## Chart MIP 1

### Average absolute net errors and omissions

(percentage of GDP)



Source: ECB.

In cumulative terms for the period 2016-18, a bias (at least 2% of GDP) can be statistically identified in Cyprus, Bulgaria and Sweden.

### External consistency

The methodological differences between the b.o.p./i.i.p. and the RoW account (national accounts) were removed with the introduction of ESA 2010 and BPM6. However, analysis shows that inconsistencies between the two statistical domains persist in several EU Member States, negatively affecting the combined use of these two datasets, as well as their reliability. The CMFB endorsed a medium-term work plan designed to eliminate most discrepancies by September 2019. The remaining discrepancies will be analysed in depth by ECB and Eurostat, and the most relevant outstanding differences will be addressed.

Discrepancies above 0.5% of GDP are still recorded (for either credits/debits or both) for the current accounts of one-third of EU countries (Ireland, Greece, France, Luxembourg, Malta, Portugal, Slovakia, the Czech Republic and Denmark).<sup>65</sup> Nonetheless, with one minor exception (Ireland), none of the discrepancies recorded was above 2% of GDP. For financial account positions, the discrepancies between the i.i.p. and the RoW account are more pervasive, totalling more than 10% of GDP in three cases: France (assets only), Malta and Croatia (assets only).

<sup>65</sup> In the case of Denmark, revisions transmitted after the cut-off date brought the level of discrepancies below 0.5% of GDP.



## MIP Annex Table 1

### Annual absolute revisions – balance/net items for 2017

(percentage of GDP)

	Current and capital accounts								Financial account transactions		Financial account positions			
	Current account	Goods	Services	Goods and services	Primary income	Secondary income	Capital account	Current and capital account	Direct investment transactions	Direct investment transactions	Direct investment positions	Portfolio investment equity securities positions		
												Assets	Liabilities	
<b>Euro area</b>														
<b>AT</b>	0.40	0.17	0.03	0.20	0.62	0.03	0.01	0.40	0.24	0.81	0.89	0.03	0.41	0.01
<b>BE</b>	0.52	0.64	0.22	0.42	0.11	0.21	0.04	0.55	1.60	0.32	5.28	0.09	0.53	0.05
<b>CY</b>	3.16	1.28	4.41	3.13	0.39	0.42	0.10	3.06	4.64	16.08	8.01	0.19	1.24	0.00
<b>DE</b>	0.13	0.38	0.03	0.41	0.40	0.14	0.05	0.08	0.09	0.20	0.64	0.14	0.00	0.05
<b>EE</b>	0.48	0.09	0.16	0.24	0.37	0.13	0.00	0.48	0.79	0.28	1.28	0.00	0.21	0.05
<b>ES</b>	0.82	0.02	0.71	0.68	0.08	0.06	0.01	0.84	0.96	0.42	1.36	0.25	0.01	0.00
<b>FI</b>	0.09	0.09	0.08	0.17	0.08	0.00	0.00	0.09	1.95	0.60	2.22	0.02	0.09	0.44
<b>FR</b>	0.14	0.13	0.27	0.14	0.01	0.01	0.04	0.18	0.04	0.12	3.51	0.53	0.28	0.93
<b>GR</b>	0.90	0.82	0.34	0.48	0.43	0.01	0.00	0.90	0.64	0.14	0.23	0.00	0.00	0.00
<b>IE</b>	7.90	0.50	8.46	7.96	0.43	0.50	0.78	7.12	7.19	5.05	19.39	0.29	0.38	0.19
<b>IT</b>	0.10	0.05	0.06	0.01	0.09	0.00	0.10	0.01	0.83	0.16	2.43	0.10	0.56	0.07
<b>LU</b>	0.09	2.21	1.51	3.72	1.95	1.67	0.00	0.09	0.09	296.01	6.04	0.20	1.85	0.79
<b>LV</b>	0.30	0.33	0.26	0.06	0.25	0.01	0.17	0.13	0.25	0.18	0.51	0.00	0.00	0.10
<b>LT</b>	0.37	0.24	0.15	0.39	0.27	0.25	0.00	0.37	1.50	0.71	2.12	0.01	0.01	0.00
<b>MT</b>	2.12	1.20	2.98	1.77	1.60	2.29	0.07	2.05	0.62	2.05	1.33	0.02	0.09	0.01
<b>NL</b>	0.35	0.14	0.11	0.04	0.34	0.03	0.05	0.40	0.06	3.93	0.19	0.66	0.29	1.72
<b>PT</b>	0.77	0.61	0.30	0.32	0.09	1.00	0.08	0.69	0.70	0.73	5.76	-	0.43	1.00
<b>SI</b>	1.03	0.04	1.11	1.07	0.09	0.05	0.00	1.03	0.78	0.19	8.02	0.00	1.45	0.00
<b>SK</b>	0.14	0.05	0.00	0.05	0.19	0.00	0.82	0.68	0.50	0.79	2.44	0.02	0.00	0.00
<b>EA</b>	0.02	0.14	0.26	0.11	0.04	0.05	0.06	0.04	0.53	0.73	1.60	0.95	0.10	0.46
<b>Non-euro area</b>														
<b>BG</b>	2.95	0.00	0.55	0.55	3.48	0.02	0.00	2.95	0.31	0.45	1.98	2.20	0.00	0.00
<b>CZ</b>	0.58	0.33	0.10	0.43	0.14	0.00	0.12	0.46	0.07	1.78	1.50	3.29	0.00	0.00
<b>DK</b>	0.43	0.59	0.82	0.22	0.21	0.00	0.01	0.42	0.54	0.06	2.35	2.18	0.51	0.71
<b>UK</b>	0.21	0.06	0.17	0.10	0.39	0.07	0.01	0.22	0.58	2.47	-	1.66	2.69	0.13
<b>HR</b>	0.36	0.37	1.02	1.39	0.48	0.55	0.47	0.10	1.22	0.17	3.35	1.13	0.00	0.00
<b>HU</b>	0.88	0.00	0.08	0.08	0.15	0.65	0.10	0.99	0.52	0.44	2.60	1.83	0.03	0.00
<b>PL</b>	0.10	0.00	0.02	0.02	0.07	0.00	0.01	0.11	0.25	0.23	0.22	0.07	0.00	0.21
<b>RO</b>	0.01	0.03	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
<b>SE</b>	0.49	0.26	0.28	0.54	0.05	0.00	0.04	0.45	1.85	0.11	2.63	2.77	0.00	0.00
<b>B5</b>	0.07	0.09	0.16	0.07	0.13	0.01	0.01	0.08	-	0.85	-	-	-	-

Source: ECB.

Note: All indicators are compiled using neither seasonally adjusted nor calendar adjusted data.

# Annexes

## Annex 1: Detailed tables

### A.1.1 Accessibility and clarity

**Table A.1.1.1**

Average share of observations marked as “free for publication” per dataset (all items)

(July 2018 to June 2019/Q3 2018 to Q2 2019)

Country	Monthly b.o.p.	Quarterly b.o.p.	Quarterly i.i.p.
	All items	All items	All items
<b>Euro area</b>			
BE	100	100	100
DE	98	98	100
EE	100	98	99
IE	0	92	91
GR	100	100	100
ES	13	9	35
FR	94	96	95
IT	100	100	100
CY	0	89	89
LV	100	99	100
LT	100	98	100
LU	66	60	50
MT	100	62	58
NL	0	100	100
AT	0	61	60
PT	84	57	66
SI	100	100	100
SK	100	100	100
FI	94	98	92
<b>Euro area median</b>	98	98	99
<b>Non-euro area</b>			
BG	100	100	100
CZ	98	96	92
DK	100	84	97
HR	100	100	100
HU	99	98	100
PL	100	100	100
RO	92	96	98
SE	94	96	93
UK	0	33	12

Source: ECB.

**Table A.1.1.2**

Clarity of accessibility to b.o.p./i.i.p. data

	Website	Download available	Charts and tables	Press release	Hotline
<b>Euro area</b>					
BE	Y	Y	Y	N	Y
DE	Y	Y	Y	Y	Y
EE	Y	b.o.p. i.i.p.	b.o.p. i.i.p.	Y	Y
IE	Y	b.o.p. i.i.p.	b.o.p. i.i.p.	Y	Y
GR	Y	Y	Y	Y	N
ES	Y	Y	Y	Y	Y
FR	Y	Y	Y	Y	Y
IT	Y	Y	Y	Y	Y
CY	Y	Y	Y	Y	N
LV	Y	Y	Y	N	Y
LT	Y	Y	Y	Y	Y
LU	NCB	NCB	NCB	NCB NSI	NCB NSI
MT	Y	Y	Y	Y	Y
NL	Y	Y	Y	Y	Y
AT	Y	Y/Y	Y/Y	Y	Y
PT	Y	Y	Y	Y	Y
SI	Y	Y	Y	N	N
SK	Y	b.o.p. i.i.p.	N	N	Y
FI	Y	Y	Y	Y	Y
Euro area data	Y	Y	Y	Y	Y
<b>Non-euro area</b>					
BG	b.o.p. i.i.p.	b.o.p. i.i.p.	b.o.p. i.i.p.	b.o.p.	Y
CZ	Y	Y	Y	Y	N
DK	Y	Y	Y	Y	Y
UK	Y	Q A	Q A	Q A	Y
HR	Y	Y	Y	Y	N
HU	Y	Y	Y	Y	Y
PL	Y	Y/Y	Y	Y	N
RO	Y	Y	Y	Y	Y
SE	Y	Y	Y	Y	Y

Source: ECB.

## A.1.2 Upward revisions ratio

**Table A.1.2.1**

Upward revisions ratio for current account (monthly data)

### Percentage of revised periods

(April 2016 to March 2019)

	Current account				Goods				Services				Primary Income				Secondary Income			
	Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																				
<b>BE</b>	89	89	-	80	49	37	37	49	74	80	77	74	94	100	-	94	100	100	83	91
<b>DE</b>	43	91	-	91	9	23	17	86	97	97	97	97	100	100	-	46	46	57	37	60
<b>EE</b>	89	100	-	86	46	57	26	43	49	63	69	80	77	89	-	86	74	83	60	66
<b>IE</b>	91	83	-	91	91	49	37	14	91	91	77	63	46	66	-	100	100	100	100	100
<b>GR</b>	80	80	-	83	64	64	100	100	80	86	91	97	80	46	-	80	96	100	100	100
<b>ES</b>	80	91	-	63	51	91	63	80	60	57	37	3	89	91	-	77	43	54	31	37
<b>FR</b>	91	94	-	100	94	89	77	86	80	94	86	94	77	86	-	71	89	91	91	86
<b>IT</b>	66	77	-	77	31	40	20	46	74	77	51	83	86	91	-	94	63	46	69	66
<b>CY</b>	71	54	-	89	68	71	83	94	NA	NA	NA	NA	62	54	-	58	65	68	43	NA
<b>LV</b>	86	94	-	94	58	89	61	79	94	91	97	100	71	56	-	89	68	62	NA	48
<b>LT</b>	50	3	-	6	34	0	17	0	56	66	41	40	74	83	-	94	3	29	68	71
<b>LU</b>	60	86	-	89	89	77	74	91	60	89	31	83	54	66	-	77	31	11	46	60
<b>MT</b>	43	46	-	43	89	89	83	91	34	91	31	89	34	77	-	80	9	9	40	17
<b>NL</b>	91	94	-	89	46	34	57	23	44	97	49	97	91	94	-	83	63	63	40	34
<b>AT</b>	86	71	-	80	89	57	69	71	74	71	86	86	51	63	-	60	77	66	71	77
<b>PT</b>	94	89	-	77	20	17	68	91	85	60	91	66	80	80	-	60	89	100	86	91
<b>SI</b>	43	34	-	94	49	66	57	97	57	46	100	100	37	26	-	43	49	34	83	66
<b>SK</b>	83	66	-	77	40	17	49	31	94	91	89	97	43	77	-	66	42	60	81	91
<b>FI</b>	86	66	-	77	91	74	74	94	57	51	43	63	74	60	-	66	77	89	85	97
<b>Euro area median</b>	83	83	-	83	51	57	61	80	74	83	77	84	74	77	-	77	65	63	70	69
<b>Euro area</b>	100	-	100	-	71	-	43	-	100	-	91	-	100	-	100	-	71	-	66	-
<b>Non-euro area</b>																				
<b>BG</b>	-	100	-	89	-	26	-	3	-	91	-	100	-	54	-	97	-	100	-	97
<b>CZ</b>	-	91	-	91	-	74	-	77	-	89	-	86	-	91	-	91	-	60	-	60
<b>DK</b>	-	100	-	100	-	43	-	97	-	100	-	97	-	86	-	94	-	63	-	63
<b>HR</b>	-	69	-	54	-	51	-	69	-	54	-	66	-	77	-	51	-	80	-	71
<b>HU</b>	-	29	-	49	-	6	-	11	-	89	-	89	-	77	-	60	-	31	-	54
<b>PL</b>	-	94	-	89	-	94	-	83	-	83	-	69	-	80	-	80	-	66	-	86
<b>RO</b>	-	94	-	83	-	69	-	89	-	89	-	63	-	63	-	77	-	60	-	63
<b>SE</b>	-	60	-	74	-	91	-	66	-	60	-	69	-	69	-	94	-	37	-	43
<b>UK</b>	-	86	-	71	-	49	-	54	-	69	-	77	-	91	-	89	-	66	-	29

Source: ECB.

**Table A.1.2.2**
**Upward revisions ratio for current account (quarterly data)**
**Percentage of revised periods**

(Q2 2016 to Q1 2019 (April))

	Current account				Goods				Services				Primary Income				Secondary Income			
	Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																				
<b>BE</b>	92	75	-	42	33	8	33	17	58	50	58	33	100	100	-	100	83	92	67	92
<b>DE</b>	25	67	-	100	0	0	83	83	100	91	100	100	100	100	-	42	40	60	30	60
<b>EE</b>	75	83	-	83	67	58	33	25	67	92	92	92	58	67	-	100	58	75	58	67
<b>IE</b>	100	100	-	91	91	91	64	82	100	75	82	75	64	73	-	92	82	58	36	33
<b>GR</b>	75	75	-	75	67	89	90	100	100	100	100	91	75	42	-	75	100	91	100	100
<b>ES</b>	75	92	-	67	100	100	58	100	50	75	33	0	75	75	-	83	0	50	0	0
<b>FR</b>	92	100	-	92	100	92	83	83	67	83	92	92	50	25	-	42	83	92	92	83
<b>IT</b>	92	92	-	92	8	0	0	0	92	92	83	100	92	100	-	92	75	82	92	92
<b>CY</b>	100	100	-	100	92	92	100	100	100	100	100	100	100	100	-	100	100	100	57	30
<b>LV</b>	75	100	-	83	75	100	58	75	58	82	92	100	55	33	-	83	64	60	33	56
<b>LT</b>	55	0	-	0	33	0	17	0	33	42	73	75	75	75	-	75	0	17	50	67
<b>LU</b>	42	58	-	50	83	83	83	92	92	83	50	67	33	33	-	50	25	0	25	42
<b>MT</b>	50	50	-	42	100	100	83	100	33	83	25	75	50	83	-	75	25	25	42	25
<b>NL</b>	83	92	-	83	42	27	58	27	67	100	42	73	92	92	-	83	75	67	42	25
<b>AT</b>	75	92	-	92	92	83	50	75	100	100	92	100	42	67	-	50	73	58	67	42
<b>PT</b>	92	92	-	83	17	8	67	100	92	58	100	67	92	92	-	75	83	100	92	92
<b>SI</b>	50	33	-	92	58	42	42	100	58	33	100	100	58	25	-	50	50	33	83	67
<b>SK</b>	42	33	-	58	17	0	42	25	92	100	100	100	17	75	-	42	33	100	60	100
<b>FI</b>	92	58	-	92	92	50	58	83	25	33	33	58	92	67	-	75	83	92	64	83
<b>Euro area median</b>	75	83	-	83	67	58	58	83	67	83	92	91	75	75	-	75	73	67	58	67
<b>Euro area</b>	100	-	100	-	33	-	42	-	100	-	83	-	100	-	100	-	75	-	42	-
<b>Non-euro area</b>																				
<b>BG</b>	-	100	-	100	-	100	-	17	-	100	-	100	-	50	-	92	-	100	-	75
<b>CZ</b>	-	75	-	75	-	58	-	67	-	92	-	50	-	75	-	83	-	83	-	67
<b>DK</b>	-	100	-	92	-	42	-	75	-	92	-	100	-	75	-	92	-	58	-	67
<b>HR</b>	-	33	-	67	-	67	-	92	-	33	-	83	-	33	-	17	-	100	-	100
<b>HU</b>	-	17	-	42	-	0	-	0	-	83	-	83	-	67	-	42	-	33	-	75
<b>PL</b>	-	100	-	100	-	100	-	83	-	67	-	83	-	100	-	83	-	33	-	75
<b>RO</b>	-	75	-	50	-	33	-	92	-	83	-	25	-	67	-	58	-	67	-	58
<b>SE</b>	-	58	-	100	-	25	-	67	-	100	-	100	-	58	-	92	-	67	-	75
<b>UK</b>	-	100	-	100	-	17	-	8	-	100	-	100	-	67	-	75	-	0	-	33

Source: ECB.

**Table A.1.2.3**

## Upward revisions ratio for international investment position (quarterly data)

**Percentage of revised periods**

(Q2 2016 to Q1 2019 (April))

	Financial account				Direct investment				Portfolio investment				Other investment			
	Assets		Liabilities		Assets		Liabilities		Assets		Liabilities		Assets		Liabilities	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																
<b>BE</b>	83	92	-	100	83	92	75	58	50	83	-	58	83	83	58	67
<b>DE</b>	67	100	-	100	67	100	70	73	NA	NA	-	50	42	58	40	42
<b>EE</b>	50	67	-	100	50	67	83	83	83	100	-	67	58	50	58	50
<b>IE</b>	92	100	-	100	100	92	64	64	64	75	-	25	100	100	55	64
<b>GR</b>	33	17	-	67	33	17	17	33	43	NA	-	NA	88	67	67	70
<b>ES</b>	83	100	-	100	92	100	92	92	25	42	-	33	83	100	33	58
<b>FR</b>	100	100	-	33	92	92	17	25	83	100	-	58	100	67	50	75
<b>IT</b>	100	58	-	83	42	42	58	50	33	33	-	83	100	100	33	50
<b>CY</b>	100	100	-	100	100	100	92	67	33	58	-	82	100	100	8	17
<b>LV</b>	33	100	-	92	83	83	75	58	60	75	-	42	33	67	75	75
<b>LT</b>	100	100	-	100	92	100	67	92	100	100	-	67	83	92	58	58
<b>LU</b>	92	100	-	100	92	100	58	58	75	75	-	75	67	75	42	50
<b>MT</b>	25	75	-	75	25	75	25	83	25	58	-	67	33	83	50	42
<b>NL</b>	92	100	-	100	92	83	58	50	92	92	-	33	100	100	75	58
<b>AT</b>	25	50	-	83	17	17	25	42	91	92	-	58	92	83	75	58
<b>PT</b>	100	0	-	33	100	33	33	67	0	0	-	42	50	50	25	42
<b>SI</b>	100	100	-	58	100	100	42	58	100	100	-	42	100	100	58	58
<b>SK</b>	100	42	-	75	100	42	42	33	83	83	-	18	67	33	75	75
<b>FI</b>	75	100	-	92	50	50	58	58	83	67	-	33	75	75	75	75
<b>Euro area median</b>	92	100	-	92	92	83	58	58	69	75	-	54	83	83	58	58
<b>Euro area</b>	100	-	100	-	100	-	67	-	100	-	42	-	100	-	42	-
<b>Non-euro area</b>																
<b>BG</b>	-	100	-	92	-	58	-	50	-	75	-	67	-	100	-	25
<b>CZ</b>	-	75	-	58	-	92	-	83	-	67	-	50	-	8	-	33
<b>DK</b>	-	67	-	100	-	75	-	33	-	17	-	50	-	67	-	17
<b>HR</b>	-	8	-	50	-	8	-	50	-	83	-	50	-	100	-	42
<b>HU</b>	-	83	-	100	-	100	-	75	-	75	-	67	-	58	-	67
<b>PL</b>	-	67	-	92	-	58	-	100	-	92	-	50	-	58	-	75
<b>RO</b>	-	83	-	92	-	75	-	58	-	50	-	58	-	92	-	50
<b>SE</b>	-	25	-	100	-	25	-	67	-	33	-	50	-	58	-	42
<b>UK</b>	-	50	-	100	-	83	-	67	-	0	-	42	-	67	-	58

Source: ECB.

## A.1.3 Directional reliability indicator

**Table A.1.3.1**

Directional reliability indicator for current account (monthly data)

### Percentage of revised periods

(April 2016 to March 2019)

	Current account				Goods				Services				Primary Income				Secondary Income			
	Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																				
<b>BE</b>	86	89	-	83	86	89	91	89	91	83	74	86	86	86	-	80	80	71	86	86
<b>DE</b>	97	97	-	91	97	97	91	100	91	91	100	100	77	83	-	97	86	94	86	86
<b>EE</b>	89	91	-	89	89	97	91	86	89	97	89	89	66	69	-	66	74	77	77	86
<b>IE</b>	77	80	-	89	89	86	89	97	83	83	83	86	80	71	-	74	60	71	89	89
<b>GR</b>	94	94	-	94	96	96	93	93	97	100	80	83	97	100	-	100	100	100	97	97
<b>ES</b>	83	91	-	89	83	86	71	91	80	83	80	77	71	80	-	77	74	86	91	91
<b>FR</b>	91	89	-	91	100	94	91	97	86	94	86	97	80	77	-	94	86	91	77	71
<b>IT</b>	97	91	-	89	100	97	94	83	97	97	80	89	86	86	-	97	77	77	80	77
<b>CY</b>	97	97	-	97	71	77	69	86	NA	NA	NA	NA	91	91	-	100	70	68	76	NA
<b>LV</b>	89	83	-	83	88	83	88	88	57	71	77	80	94	88	-	83	76	81	NA	86
<b>LT</b>	100	91	-	86	91	94	94	86	76	91	88	89	80	83	-	57	69	80	85	91
<b>LU</b>	66	74	-	94	80	69	66	91	89	83	94	94	57	80	-	91	71	71	86	80
<b>MT</b>	71	69	-	63	89	77	69	63	66	74	49	40	94	83	-	80	37	34	57	49
<b>NL</b>	66	74	-	49	89	86	97	89	59	60	74	80	49	49	-	49	71	83	63	60
<b>AT</b>	63	91	-	66	71	77	66	71	66	63	57	60	71	77	-	77	51	46	40	37
<b>PT</b>	91	91	-	94	97	94	97	100	79	86	85	83	83	94	-	97	89	86	80	80
<b>SI</b>	94	94	-	86	94	97	94	97	86	94	100	97	74	86	-	66	83	91	97	94
<b>SK</b>	89	100	-	94	89	100	91	97	54	60	69	60	74	77	-	77	79	80	78	83
<b>FI</b>	57	63	-	63	86	94	83	89	51	54	60	66	54	49	-	66	51	49	50	51
<b>Euro area median</b>	89	91	-	89	89	94	91	89	81	83	80	84	80	83	-	80	74	80	80	84
<b>Euro area</b>	94	-	89	-	97	-	94	-	97	-	89	-	77	-	91	-	89	-	91	-
<b>Non-euro area</b>																				
<b>BG</b>	-	94	-	89	-	91	-	97	-	83	-	86	-	83	-	74	-	100	-	94
<b>CZ</b>	-	94	-	86	-	94	-	89	-	69	-	86	-	89	-	83	-	100	-	97
<b>DK</b>	-	91	-	80	-	91	-	91	-	80	-	89	-	77	-	86	-	86	-	74
<b>HR</b>	-	77	-	60	-	71	-	57	-	94	-	74	-	57	-	66	-	71	-	54
<b>HU</b>	-	86	-	86	-	97	-	97	-	69	-	60	-	54	-	80	-	66	-	80
<b>PL</b>	-	89	-	77	-	91	-	89	-	74	-	60	-	86	-	71	-	94	-	89
<b>RO</b>	-	86	-	86	-	94	-	94	-	66	-	63	-	91	-	54	-	71	-	74
<b>SE</b>	-	89	-	94	-	97	-	91	-	66	-	71	-	83	-	91	-	60	-	37
<b>UK</b>	-	77	-	60	-	83	-	66	-	63	-	86	-	60	-	63	-	71	-	66

Source: ECB.

**Table A.1.3.2**
**Directional reliability indicator for current account (quarterly data)**
**Percentage of revised periods**

(Q2 2016 to Q1 2019)

	Current account				Goods				Services				Primary Income				Secondary Income			
	Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																				
<b>BE</b>	91	73	-	91	82	100	82	91	100	100	100	100	91	82	-	82	73	64	64	91
<b>DE</b>	100	100	-	91	91	100	100	100	89	100	90	100	78	100	-	91	56	78	100	100
<b>EE</b>	100	91	-	91	82	91	100	82	91	100	91	91	27	55	-	64	82	73	82	91
<b>IE</b>	100	100	-	100	70	90	90	90	90	91	100	100	90	100	-	82	100	91	80	82
<b>GR</b>	100	100	-	91	100	100	100	88	100	100	75	80	91	91	-	91	100	100	100	100
<b>ES</b>	91	100	-	91	91	91	100	100	100	100	73	100	82	100	-	82	91	91	100	100
<b>FR</b>	100	100	-	91	91	100	91	91	91	82	91	73	91	100	-	100	82	73	73	91
<b>IT</b>	100	100	-	100	100	100	100	91	100	100	91	100	91	100	-	73	100	100	100	91
<b>CY</b>	91	91	-	73	91	82	100	91	100	100	82	100	100	73	-	82	73	82	83	89
<b>LV</b>	73	100	-	91	91	100	82	100	100	100	73	100	100	100	-	91	90	90	100	100
<b>LT</b>	90	100	-	91	100	91	91	100	91	100	80	91	91	82	-	73	90	100	91	82
<b>LU</b>	55	91	-	73	64	64	82	100	82	91	64	73	64	64	-	64	55	55	91	91
<b>MT</b>	100	100	-	64	91	91	100	82	73	73	64	100	82	73	-	73	64	45	64	73
<b>NL</b>	64	82	-	45	100	70	100	100	36	70	45	80	64	73	-	55	82	73	73	91
<b>AT</b>	91	100	-	91	55	73	64	82	100	100	100	100	100	100	-	82	100	91	100	100
<b>PT</b>	82	82	-	100	91	100	100	100	100	100	73	82	73	100	-	100	73	45	82	100
<b>SI</b>	91	82	-	100	100	100	82	100	100	100	100	91	91	82	-	55	100	91	100	82
<b>SK</b>	82	91	-	100	91	91	100	100	91	100	100	100	100	100	-	73	100	100	100	100
<b>FI</b>	91	91	-	82	100	91	100	91	82	82	91	100	82	82	-	100	55	55	80	91
<b>Euro area median</b>	91	100	-	91	91	91	100	91	91	100	90	100	91	91	-	82	82	82	91	91
<b>Euro area</b>	100	-	100	-	100	-	91	-	100	-	100	-	100	-	73	-	100	-	100	-
<b>Non-euro area</b>																				
<b>BG</b>	-	91	-	100	-	100	-	100	-	91	-	91	-	73	-	73	-	100	-	100
<b>CZ</b>	-	91	-	100	-	100	-	100	-	91	-	100	-	73	-	100	-	100	-	100
<b>DK</b>	-	73	-	73	-	64	-	91	-	100	-	73	-	64	-	82	-	91	-	82
<b>HR</b>	-	82	-	91	-	100	-	100	-	100	-	91	-	73	-	91	-	100	-	91
<b>HU</b>	-	91	-	100	-	100	-	100	-	100	-	91	-	100	-	91	-	73	-	100
<b>PL</b>	-	82	-	100	-	82	-	91	-	100	-	100	-	100	-	55	-	100	-	100
<b>RO</b>	-	91	-	73	-	100	-	100	-	100	-	100	-	91	-	82	-	91	-	73
<b>SE</b>	-	100	-	100	-	91	-	91	-	100	-	91	-	100	-	100	-	100	-	91
<b>UK</b>	-	82	-	91	-	82	-	91	-	73	-	82	-	55	-	91	-	82	-	91

Source: ECB.



**Table A.1.3.3**

## Directional reliability indicator for international investment position (quarterly data)

## Percentage of revised periods

(Q2 2016 to Q2 2019)

	Financial account				Direct investment				Portfolio investment				Other investment			
	Assets		Liabilities		Assets		Liabilities		Assets		Liabilities		Assets		Liabilities	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																
<b>BE</b>	91	91	-	55	82	100	82	55	91	91	-	100	91	91	82	91
<b>DE</b>	100	100	-	100	89	80	67	100	100	100	-	100	91	100	100	100
<b>EE</b>	100	82	-	82	82	91	82	82	100	100	-	100	100	100	100	100
<b>IE</b>	64	100	-	100	91	91	100	100	91	100	-	100	82	91	90	90
<b>GR</b>	100	100	-	73	100	100	80	73	NA	100	-	NA	NA	NA	NA	NA
<b>ES</b>	73	100	-	73	64	100	55	73	100	73	-	91	82	82	82	100
<b>FR</b>	80	100	-	91	80	82	70	91	100	80	-	100	90	90	90	100
<b>IT</b>	73	100	-	64	82	73	73	64	100	100	-	100	100	100	91	100
<b>CY</b>	73	73	-	91	82	82	91	91	91	100	-	100	91	100	100	73
<b>LV</b>	91	100	-	90	78	100	91	90	100	100	-	100	100	100	100	100
<b>LT</b>	100	100	-	100	100	91	100	100	90	100	-	100	100	100	100	100
<b>LU</b>	82	91	-	91	82	73	73	91	100	100	-	73	91	82	91	73
<b>MT</b>	91	100	-	100	55	64	91	100	100	100	-	73	100	100	100	100
<b>NL</b>	73	91	-	91	73	91	82	91	100	91	-	100	91	91	100	100
<b>AT</b>	64	91	-	91	82	82	73	91	100	100	-	100	100	91	100	91
<b>PT</b>	100	90	-	82	78	73	89	82	67	100	-	100	100	90	100	100
<b>SI</b>	73	100	-	64	100	91	82	64	100	100	-	100	100	100	100	100
<b>SK</b>	91	82	-	91	91	91	100	91	89	100	-	100	73	100	100	91
<b>FI</b>	100	100	-	91	100	100	64	91	100	100	-	82	91	100	100	100
<b>Euro area median</b>	91	100	-	91	82	91	82	91	100	100	-	100	91	100	100	100
<b>Euro area</b>	91	-	73	-	91	-	73	-	91	-	82	-	100	-	100	-
<b>Non-euro area</b>																
<b>BG</b>	-	91	-	82	-	91	-	82	-	100	-	91	-	73	-	82
<b>CZ</b>	-	73	-	91	-	73	-	91	-	91	-	91	-	91	-	91
<b>DK</b>	-	100	-	73	-	100	-	73	-	100	-	91	-	82	-	82
<b>HR</b>	-	100	-	91	-	100	-	91	-	91	-	100	-	100	-	100
<b>HU</b>	-	73	-	91	-	73	-	91	-	82	-	100	-	100	-	91
<b>PL</b>	-	73	-	82	-	73	-	82	-	100	-	100	-	100	-	91
<b>RO</b>	-	55	-	73	-	55	-	73	-	100	-	100	-	100	-	91
<b>SE</b>	-	82	-	73	-	82	-	73	-	100	-	100	-	100	-	100
<b>UK</b>	-	82	-	82	-	82	-	82	-	64	-	82	-	82	-	91

Source: ECB.

## A.1.4 Symmetric mean absolute percentage error

**Table A.1.4.1**

Symmetric mean absolute percentage error for current account (monthly data)

As a percentage of average underlying first and last assessments

April 2016 to March 2019

	Current account				Goods				Services				Primary Income				Secondary Income			
	Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																				
BE	3	2	-	2	2	2	3	2	4	3	4	3	18	12	-	9	12	22	5	7
DE	1	1	-	1	2	1	1	0	2	3	3	2	7	5	-	2	3	3	2	2
EE	1	1	-	1	2	1	1	1	1	1	2	2	10	6	-	7	11	10	8	6
IE	5	3	-	7	6	3	4	3	5	5	8	7	5	4	-	13	26	29	32	34
GR	6	3	-	4	0	0	2	1	11	6	18	13	3	3	-	8	1	2	1	1
ES	2	2	-	1	1	1	2	1	3	3	2	3	10	9	-	5	8	5	2	3
FR	3	3	-	2	2	1	1	1	4	4	2	2	9	8	-	8	11	13	7	8
IT	1	1	-	2	1	1	1	1	2	2	2	2	7	7	-	6	5	4	10	8
CY	29	27	-	25	9	9	10	7	9	10	10	9	48	46	-	43	22	22	16	13
LV	2	2	-	3	2	2	1	1	5	4	8	5	3	3	-	15	6	5	3	2
LT	1	3	-	2	1	6	1	5	3	4	4	3	27	24	-	19	7	3	4	4
LU	4	3	-	3	12	8	9	6	2	2	2	2	6	5	-	4	4	3	2	4
MT	17	8	-	8	13	10	8	7	6	6	10	6	19	1	-	2	88	93	83	88
NL	5	4	-	4	2	2	1	1	5	5	3	5	15	13	-	13	19	13	16	12
AT	3	2	-	2	3	2	4	2	4	4	4	4	6	4	-	3	7	7	6	5
PT	2	2	-	1	0	1	0	0	3	3	3	2	8	5	-	5	11	15	3	4
SI	1	0	-	1	1	0	0	1	1	1	4	5	8	9	-	9	4	3	1	4
SK	1	1	-	1	1	1	1	1	9	7	7	6	14	7	-	3	16	12	6	5
FI	3	2	-	3	2	1	1	1	5	5	4	4	13	9	-	15	22	22	8	10
<b>Euro area median</b>	3	2	-	2	2	1	1	1	4	4	4	4	9	7	-	8	11	10	6	5
<b>Euro area</b>	2	-	2	-	1	-	1	-	3	-	3	-	7	-	8	-	3	-	3	-
<b>Non-euro area</b>																				
BG	-	2	-	2	-	1	-	2	-	7	-	8	-	4	-	35	-	4	-	3
CZ	-	1	-	2	-	1	-	1	-	4	-	3	-	10	-	9	-	3	-	1
DK	-	2	-	2	-	1	-	1	-	5	-	2	-	3	-	4	-	4	-	5
HR	-	5	-	5	-	7	-	3	-	4	-	4	-	38	-	36	-	12	-	13
HU	-	1	-	1	-	2	-	1	-	3	-	4	-	6	-	4	-	19	-	3
PL	-	2	-	2	-	1	-	1	-	3	-	2	-	5	-	5	-	2	-	4
RO	-	1	-	2	-	0	-	0	-	4	-	4	-	3	-	21	-	7	-	3
SE	-	2	-	2	-	1	-	1	-	4	-	4	-	3	-	3	-	15	-	8
UK	-	2	-	1	-	2	-	1	-	3	-	3	-	4	-	4	-	3	-	5

Source: ECB.

**Table A.1.4.2**

## Symmetric mean absolute percentage error for current account (quarterly data)

As a percentage of average underlying first and last assessments

(Q2 2016 to Q1 2019)

	Current account				Goods				Services				Primary Income				Secondary Income			
	Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit		Credit		Debit	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																				
BE	1	1	-	1	1	2	2	2	1	1	2	1	14	10	-	10	8	14	4	5
DE	0	0	-	0	1	1	0	0	2	2	3	2	5	4	-	1	2	2	1	2
EE	1	1	-	1	1	1	1	1	1	1	1	2	7	4	-	5	6	4	1	2
IE	1	1	-	3	2	1	2	2	2	1	7	5	1	1	-	2	2	2	5	6
GR	5	3	-	4	0	0	2	1	10	6	16	11	3	2	-	6	1	2	0	0
ES	2	2	-	0	1	1	0	1	2	2	1	3	6	5	-	4	4	2	2	2
FR	1	1	-	1	1	1	1	1	2	2	1	1	2	1	-	1	4	4	4	4
IT	0	0	-	0	0	0	0	0	1	1	1	1	5	5	-	5	3	1	1	1
CY	20	18	-	16	7	5	3	4	9	9	11	10	28	27	-	27	9	7	4	3
LV	1	1	-	1	1	2	1	1	0	1	2	2	1	2	-	3	3	2	0	0
LT	1	4	-	4	0	6	1	5	2	1	2	1	22	18	-	4	3	2	3	4
LU	4	3	-	3	9	7	5	4	1	1	1	1	6	5	-	5	5	3	4	3
MT	15	7	-	8	7	6	2	4	5	5	9	5	16	1	-	1	87	92	82	87
NL	3	2	-	2	1	1	1	1	5	3	3	2	7	6	-	6	8	4	3	3
AT	1	1	-	1	1	1	1	0	1	1	1	1	5	3	-	2	2	3	1	1
PT	2	1	-	1	0	0	0	0	3	3	3	2	6	4	-	3	10	14	2	3
SI	0	0	-	1	0	0	0	0	1	1	4	5	5	7	-	7	3	2	0	3
SK	0	0	-	0	1	1	0	1	4	3	2	3	2	0	-	2	0	0	0	0
FI	2	5	-	6	1	1	1	1	2	1	2	1	6	3	-	5	16	17	9	5
<b>Euro area median</b>	1	1	-	1	1	1	1	1	2	1	2	2	6	4	-	4	4	3	2	3
<b>Euro area</b>	1	-	1	-	0	-	0	-	2	-	2	-	3	-	4	-	1	-	1	-
<b>Non-euro area</b>																				
BG	-	2	-	2	-	2	-	0	-	3	-	7	-	3	-	21	-	2	-	0
CZ	-	1	-	0	-	0	-	0	-	1	-	0	-	5	-	3	-	1	-	0
DK	-	1	-	1	-	1	-	0	-	3	-	2	-	2	-	2	-	1	-	1
HR	-	1	-	1	-	1	-	0	-	3	-	5	-	3	-	2	-	6	-	2
HU	-	2	-	2	-	0	-	1	-	2	-	1	-	29	-	19	-	9	-	6
PL	-	1	-	1	-	2	-	1	-	2	-	2	-	4	-	4	-	9	-	3
RO	-	1	-	1	-	1	-	1	-	1	-	1	-	4	-	4	-	1	-	1
SE	-	0	-	1	-	0	-	0	-	1	-	1	-	1	-	6	-	2	-	2
UK	-	0	-	1	-	0	-	0	-	1	-	2	-	1	-	1	-	2	-	2

Source: ECB.

**Table A.1.4.3**

Symmetric mean absolute percentage error for international investment position (quarterly data)

As a percentage of average underlying first and last assessments

(Q2 2016 to Q1 2019)

	Financial account				Direct investment				Portfolio investment				Other investment			
	Assets		Liabilities		Assets		Liabilities		Assets		Liabilities		Assets		Liabilities	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																
BE	2	2	-	2	2	3	2	3	1	1	-	2	2	1	1	2
DE	0	0	-	1	1	1	2	1	0	0	-	2	0	0	0	0
EE	0	0	-	1	1	1	2	1	0	0	-	0	1	0	1	0
IE	1	1	-	2	2	2	2	3	1	1	-	0	3	2	4	4
GR	0	1	-	0	3	5	3	1	0	0	-	1	0	0	1	1
ES	1	1	-	1	1	1	2	4	0	0	-	0	2	1	1	0
FR	1	0	-	0	1	1	1	1	0	1	-	1	1	1	0	0
IT	1	0	-	0	0	1	1	0	0	1	-	0	3	2	1	1
CY	33	31	-	30	37	38	51	35	1	1	-	1	15	7	27	18
LV	0	0	-	0	2	2	1	0	0	0	-	0	1	0	0	0
LT	2	2	-	2	3	7	3	5	5	2	-	0	0	0	1	1
LU	1	2	-	2	3	4	4	3	0	0	-	1	1	1	1	1
MT	16	0	-	0	18	1	18	1	18	0	-	0	9	1	5	0
NL	2	2	-	2	3	2	4	2	0	1	-	2	1	1	3	2
AT	1	0	-	1	2	1	3	1	0	0	-	0	2	1	3	2
PT	1	2	-	0	9	2	3	3	5	4	-	0	2	2	1	2
SI	5	4	-	1	2	2	1	1	2	3	-	1	10	6	2	1
SK	1	1	-	1	6	6	3	3	1	1	-	0	0	1	0	0
FI	0	1	-	2	2	1	4	3	0	1	-	2	1	1	2	2
Euro area median	1	1	-	1	2	2	3	2	0	1	-	0	1	1	1	1
Euro area	2	-	2	-	3	-	4	-	0	-	1	-	1	-	1	-
<b>Non-euro area</b>																
BG	-	1	-	1	-	2	-	2	-	0	-	0	-	2	-	1
CZ	-	0	-	0	-	5	-	1	-	0	-	1	-	3	-	1
DK	-	0	-	1	-	1	-	3	-	0	-	0	-	1	-	1
HR	-	3	-	1	-	51	-	6	-	4	-	0	-	15	-	6
HU	-	2	-	2	-	2	-	2	-	0	-	0	-	1	-	1
PL	-	0	-	0	-	1	-	0	-	1	-	0	-	1	-	0
RO	-	1	-	1	-	5	-	1	-	1	-	1	-	2	-	1
SE	-	1	-	1	-	1	-	2	-	1	-	0	-	0	-	0
UK	-	0	-	1	-	3	-	4	-	3	-	1	-	1	-	1

Source: ECB.

## A.1.5 Mean absolute comparative error

**Table A.1.5.1**

Mean absolute comparative error for financial account (monthly data)

As a percentage of average underlying first and last assessments

(April 2016 to March 2019)

	Financial account				Direct investment				Portfolio investment				Other investment			
	Assets		Liabilities		Assets		Liabilities		Assets		Liabilities		Assets		Liabilities	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																
<b>BE</b>	1.4	0.8	-	0.8	2.2	1.5	3.8	1.7	0.9	0.5	-	0.6	3.7	2.3	5.0	2.8
<b>DE</b>	0.3	0.2	-	0.3	0.7	0.5	0.9	0.6	0.1	0.1	-	0.3	0.4	0.2	0.2	0.4
<b>EE</b>	2.1	1.1	-	0.9	4.6	2.6	2.6	1.3	1.3	0.6	-	1.4	4.6	1.6	1.2	0.9
<b>IE</b>	0.9	0.6	-	0.8	2.7	2.3	4.9	2.2	0.8	0.7	-	0.7	1.7	2.0	2.1	1.7
<b>GR</b>	0.3	0.2	-	0.1	0.6	0.7	1.2	0.4	0.1	0.1	-	0.5	0.5	0.4	0.3	0.1
<b>ES</b>	0.7	0.5	-	0.5	1.1	1.0	1.4	0.9	1.2	0.7	-	0.7	2.2	1.0	1.7	0.7
<b>FR</b>	0.9	0.6	-	0.6	1.0	0.9	1.4	0.7	2.6	1.4	-	1.3	1.1	0.9	1.0	0.7
<b>IT</b>	0.7	0.3	-	0.3	1.6	0.9	2.0	1.3	0.4	0.3	-	0.4	1.3	0.5	2.0	0.4
<b>CY</b>	0.8	0.7	-	0.6	0.9	0.8	0.9	0.7	3.6	2.4	-	2.7	5.5	3.2	2.6	2.3
<b>LV</b>	0.7	0.7	-	0.5	4.5	4.9	2.1	1.0	0.2	0.2	-	0.2	1.5	1.0	1.3	0.7
<b>LT</b>	2.6	1.0	-	0.7	12.1	4.0	2.2	1.7	1.5	0.4	-	0.1	5.5	2.9	2.2	1.4
<b>LU</b>	1.1	0.7	-	0.7	1.8	1.5	1.7	1.4	0.6	0.6	-	0.9	4.0	3.1	3.3	1.9
<b>MT</b>	0.1	0.1	-	0.1	1.5	0.1	0.2	0.1	0.9	0.1	-	0.3	0.5	0.3	0.7	0.4
<b>NL</b>	1.0	0.9	-	1.1	1.5	1.4	2.5	1.7	0.9	0.9	-	0.8	1.3	1.1	2.9	1.9
<b>AT</b>	1.2	0.7	-	0.6	2.5	1.8	3.0	1.8	0.5	0.2	-	0.4	4.2	2.4	4.7	2.5
<b>PT</b>	0.8	0.5	-	0.3	1.3	0.8	1.0	0.5	1.5	0.4	-	0.6	2.1	1.5	0.6	0.6
<b>SI</b>	0.5	0.5	-	0.5	0.8	0.9	1.1	0.8	0.2	0.2	-	0.6	1.3	1.2	0.9	0.6
<b>SK</b>	1.6	2.0	-	0.8	6.7	8.8	2.1	1.9	1.7	1.5	-	0.5	1.2	1.8	0.5	0.5
<b>FI</b>	1.5	1.1	-	1.6	3.3	3.1	7.2	6.1	1.6	1.1	-	1.3	4.5	3.6	3.7	3.3
<b>Euro area median</b>	0.9	0.7	-	0.6	1.6	1.4	2.0	1.3	0.9	0.5	-	0.6	1.7	1.5	1.7	0.7
<b>Euro area</b>	0.4	-	0.4	-	0.8	-	1.0	-	0.5	-	0.7	-	0.5	-	0.6	-
<b>Non-euro area</b>																
<b>BG</b>	-	0.8	-	0.6	-	3.2	-	0.8	-	1.9	-	1.0	-	2.0	-	1.4
<b>CZ</b>	-	0.5	-	0.6	-	2.3	-	0.6	-	0.8	-	2.3	-	1.3	-	1.3
<b>DK</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>HR</b>	-	3.9	-	1.5	-	34.2	-	3.2	-	6.7	-	3.0	-	15.3	-	1.4
<b>HU</b>	-	3.8	-	3.1	-	5.1	-	4.2	-	0.1	-	0.1	-	2.7	-	0.8
<b>PL</b>	-	0.8	-	0.6	-	1.6	-	1.0	-	1.8	-	0.5	-	1.6	-	0.5
<b>RO</b>	-	1.7	-	1.0	-	7.1	-	0.9	-	1.2	-	0.5	-	5.6	-	2.5
<b>SE</b>	-	1.2	-	1.2	-	1.1	-	1.4	-	0.4	-	0.3	-	2.0	-	1.9
<b>UK</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Source: ECB.

**Table A.1.5.2**

## Mean absolute comparative error for financial account (quarterly data)

(Q2 2016 to Q1 2019)

	Financial account				Direct investment				Portfolio investment				Other investment			
	Assets		Liabilities		Assets		Liabilities		Assets		Liabilities		Assets		Liabilities	
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																
<b>BE</b>	0.4	0.3	-	0.3	0.8	0.5	2.0	1.0	0.2	0.2	-	0.2	1.9	0.8	1.5	1.7
<b>DE</b>	0.1	0.0	-	0.1	0.2	0.2	0.5	0.2	0.0	0.0	-	0.1	0.3	0.1	0.1	0.3
<b>EE</b>	0.4	0.4	-	0.3	0.6	0.8	0.8	0.5	0.1	0.2	-	0.1	1.7	0.8	0.3	0.2
<b>IE</b>	0.3	0.2	-	0.2	1.1	0.7	2.8	1.0	0.2	0.1	-	0.1	0.7	0.7	0.4	0.4
<b>GR</b>	0.2	0.2	-	0.1	0.6	0.6	0.9	0.3	0.0	0.1	-	0.2	0.2	0.1	0.1	0.0
<b>ES</b>	0.4	0.2	-	0.1	0.4	0.3	0.6	0.4	0.3	0.2	-	0.3	0.9	0.4	0.3	0.1
<b>FR</b>	0.2	0.2	-	0.1	0.6	0.4	0.7	0.4	0.5	0.3	-	0.2	0.3	0.3	0.2	0.2
<b>IT</b>	0.3	0.2	-	0.1	0.8	0.5	0.9	0.6	0.2	0.2	-	0.1	0.3	0.3	0.5	0.2
<b>CY</b>	0.6	0.5	-	0.4	0.7	0.6	0.7	0.5	0.8	0.6	-	0.2	2.1	1.2	0.8	0.7
<b>LV</b>	0.2	0.2	-	0.1	0.9	0.5	0.4	0.2	0.1	0.0	-	0.1	0.6	0.4	0.2	0.2
<b>LT</b>	0.9	0.4	-	0.4	4.9	2.5	0.5	0.7	0.9	0.2	-	0.0	0.5	0.4	0.7	0.4
<b>LU</b>	0.5	0.4	-	0.3	0.9	0.8	1.1	0.6	0.2	0.2	-	0.4	1.8	1.2	1.9	1.0
<b>MT</b>	0.2	0.1	-	0.0	1.1	0.1	0.1	0.1	0.8	0.0	-	0.1	0.4	0.2	0.1	0.1
<b>NL</b>	0.8	0.6	-	0.7	1.2	0.9	1.2	1.2	0.3	0.3	-	0.4	0.6	0.5	0.7	0.6
<b>AT</b>	0.3	0.2	-	0.3	0.5	0.5	1.5	0.8	0.2	0.1	-	0.2	0.9	0.5	1.2	0.9
<b>PT</b>	0.5	0.3	-	0.1	0.6	0.4	0.4	0.2	1.2	0.3	-	0.3	1.5	0.9	0.3	0.3
<b>SI</b>	0.4	0.4	-	0.3	0.7	0.6	0.6	0.4	0.2	0.2	-	0.4	0.9	0.8	0.5	0.4
<b>SK</b>	0.5	0.4	-	0.4	1.4	2.8	0.9	0.8	0.5	0.5	-	0.2	0.1	0.3	0.1	0.0
<b>FI</b>	0.5	0.6	-	0.9	1.6	0.8	3.9	2.3	0.5	0.5	-	0.7	2.0	1.3	1.4	1.3
<b>Euro area median</b>	0.4	0.3	-	0.3	0.8	0.6	0.8	0.5	0.2	0.2	-	0.2	0.7	0.5	0.4	0.3
<b>Euro area</b>	0.2	-	0.2	-	0.5	-	0.6	-	0.1	-	0.2	-	0.3	-	0.1	-
<b>Non-euro area</b>																
<b>BG</b>	-	0.5	-	0.4	-	1.2	-	0.4	-	0.1	-	0.4	-	1.7	-	0.7
<b>CZ</b>	-	0.2	-	0.2	-	1.5	-	0.4	-	0.0	-	0.6	-	1.0	-	0.2
<b>DK</b>	-	0.4	-	0.4	-	0.3	-	0.7	-	0.2	-	0.1	-	2.0	-	1.7
<b>HR</b>	-	1.0	-	0.6	-	14.7	-	1.1	-	1.7	-	0.3	-	1.9	-	0.5
<b>HU</b>	-	2.8	-	2.3	-	3.8	-	3.1	-	0.1	-	0.0	-	1.0	-	0.5
<b>PL</b>	-	0.4	-	0.2	-	1.0	-	0.5	-	0.4	-	0.0	-	0.6	-	0.2
<b>RO</b>	-	0.5	-	0.3	-	2.3	-	0.4	-	0.5	-	0.2	-	1.6	-	0.8
<b>SE</b>	-	0.2	-	0.1	-	0.5	-	0.4	-	0.2	-	0.1	-	0.2	-	0.2
<b>UK</b>	-	0.2	-	0.2	-	0.5	-	1.0	-	0.3	-	0.3	-	0.4	-	0.5

Source: ECB.

## A.1.6 Net relative revisions

**Table A.1.6.1**

Net relative revisions (monthly data) – counterpart area rest of the world

Current account revisions as a percentage of current account items; financial account positions as a percentage of underlying positions

(April 2016 to March 2019)

	Current account					Financial account			
		Goods	Services	Primary income	Secondary income	Direct investment	Portfolio investment	Other investment	
<b>Euro area</b>									
<b>BE</b>	3	3	4	13	14	0.3	1.5	1.0	2.8
<b>DE</b>	1	2	2	12	4	0.3	0.6	0.3	0.5
<b>EE</b>	2	3	3	9	22	0.6	1.3	1.2	1.5
<b>IE</b>	9	6	12	27	37	0.3	1.1	0.8	2.0
<b>GR</b>	3	3	3	17	2	0.2	0.5	0.4	0.2
<b>ES</b>	3	2	9	12	9	0.5	0.8	1.1	1.0
<b>FR</b>	3	2	6	11	12	0.5	1.0	1.5	1.1
<b>IT</b>	1	1	4	8	20	0.4	1.3	0.5	0.6
<b>CY</b>	5	16	9	3	29	0.3	0.7	4.3	3.3
<b>LV</b>	3	3	6	27	8	0.7	1.5	0.3	1.1
<b>LT</b>	2	1	7	38	13	1.2	3.0	0.5	3.0
<b>LU</b>	3	8	2	4	9	0.0	1.1	1.2	3.5
<b>MT</b>	2	13	4	4	105	0.1	0.1	0.1	0.5
<b>NL</b>	4	4	4	12	41	0.5	0.8	1.2	2.0
<b>AT</b>	4	5	5	9	11	0.8	1.7	0.6	2.5
<b>PT</b>	3	2	8	12	29	0.2	0.8	0.8	0.8
<b>SI</b>	3	1	7	26	11	0.5	1.0	0.7	1.1
<b>SK</b>	1	1	4	14	16	1.0	1.6	1.9	1.6
<b>FI</b>	4	2	7	21	20	1.4	3.8	2.0	2.8
<b>Euro area median</b>	3	3	5	12	14	0.5	1.1	0.8	1.5
<b>Euro area</b>	2	1	4	6	7	0.3	1.0	0.7	0.6
<b>Non-euro area</b>									
<b>BG</b>	2	3	0	69	9	1.1	1.4	2.6	2.7
<b>CZ</b>	2	1	6	14	4	0.6	1.1	3.0	2.0
<b>DK</b>	2	4	5	7	12	-	-	-	-
<b>HR</b>	13	10	13	197	31	2.4	7.5	6.5	7.5
<b>HU</b>	2	2	3	4	33	0.4	0.4	0.2	2.5
<b>PL</b>	1	1	5	12	8	0.5	1.6	0.7	1.1
<b>RO</b>	3	1	7	54	20	1.3	1.5	1.1	4.3
<b>SE</b>	2	2	7	7	30	0.6	1.3	0.5	1.0
<b>UK</b>	3	4	4	5	15	-	-	-	-

Source: ECB.

**Table A.1.6.2****Net relative revisions (quarterly data) – counterpart area rest of the world**

Current account revisions as a percentage of current account items; financial account positions as a percentage of underlying positions

(Q2 2016 to Q1 2019)

	Current account				Financial account transactions			Financial account positions						
	Goods	Services	Primary income	Secondary income	Direct investment	Portfolio investment	Other investment	Direct investment	Portfolio investment	Other investment				
<b>Euro area</b>														
<b>BE</b>	1	1	3	9	9	0.1	0.8	0.4	1.5	0.7	3.2	2.3	4.0	
<b>DE</b>	0	1	2	9	2	0.1	0.1	0.1	0.4	1.0	1.0	3.3	0.7	
<b>EE</b>	1	2	1	9	9	0.3	0.3	0.3	0.7	1.6	3.4	0.8	0.9	
<b>IE</b>	5	2	11	4	18	0.2	0.8	0.2	0.6	0.7	2.4	2.3	4.8	
<b>GR</b>	2	3	2	14	3	0.1	0.4	0.0	0.1	1.5	7.2	1.5	1.7	
<b>ES</b>	3	1	8	8	5	0.1	0.4	0.4	0.2	1.2	5.0	0.9	1.5	
<b>FR</b>	1	1	4	4	8	0.1	0.4	0.4	0.4	1.4	3.2	2.4	1.1	
<b>IT</b>	0	0	1	4	2	0.1	0.6	0.2	0.3	1.1	1.7	3.2	1.2	
<b>CY</b>	2	6	8	1	15	0.0	0.2	0.7	0.9	0.5	4.7	3.5	27.1	
<b>LV</b>	1	2	2	7	5	0.2	0.4	0.1	0.3	0.3	1.2	0.4	0.7	
<b>LT</b>	1	0	2	17	8	0.5	1.4	0.2	0.6	1.5	8.2	3.4	1.9	
<b>LU</b>	2	6	2	2	6	0.0	0.5	0.4	1.2	0.1	1.6	1.3	1.6	
<b>MT</b>	1	4	3	2	94	0.1	0.1	0.0	0.2	0.2	0.9	0.1	2.3	
<b>NL</b>	1	2	5	2	12	0.0	0.2	0.6	0.3	0.5	1.7	4.6	2.6	
<b>AT</b>	1	1	1	7	2	0.3	0.8	0.2	0.6	0.8	2.4	0.5	2.1	
<b>PT</b>	2	2	7	7	27	0.1	0.3	0.4	0.4	2.6	8.5	8.5	5.3	
<b>SI</b>	2	0	7	17	10	0.3	0.5	0.4	0.9	6.1	1.7	3.7	14.6	
<b>SK</b>	1	1	1	4	1	0.4	0.7	0.7	0.3	3.2	8.8	1.9	1.6	
<b>FI</b>	2	1	2	12	16	0.6	1.8	0.9	1.2	2.8	7.1	4.5	3.4	
<b>Euro area median</b>	1	1	2	7	8	0.1	0.4	0.4	0.4	1.1	3.2	2.3	1.9	
<b>Euro area</b>	1	1	3	3	3	0.1	0.3	0.2	0.2	1.1	1.4	2.5	1.1	
<b>Non-euro area</b>														
<b>BG</b>	1	4	5	46	5	0.7	0.9	0.4	2.0	1.7	5.3	0.5	4.5	
<b>CZ</b>	1	0	1	3	1	0.2	0.6	0.8	0.9	1.0	3.5	2.4	2.5	
<b>DK</b>	1	2	4	6	3	0.1	0.6	0.3	0.8	1.3	3.0	1.1	1.5	
<b>HR</b>	2	2	6	23	17	0.5	0.4	1.0	1.1	3.8	4.8	2.9	5.2	
<b>HU</b>	1	1	2	5	19	0.1	0.1	0.1	0.9	1.3	1.5	0.2	2.5	
<b>PL</b>	1	1	2	9	3	0.3	0.9	0.2	0.5	0.6	1.5	1.2	1.1	
<b>RO</b>	1	0	2	15	5	0.4	0.4	0.4	1.5	1.5	3.4	2.3	3.1	
<b>SE</b>	1	1	3	4	3	0.2	0.7	0.3	0.3	2.7	6.2	2.4	0.5	
<b>UK</b>	1	1	3	6	5	0.1	0.8	0.4	0.2	1.6	2.1	6.4	1.5	

Source: ECB.



## A.1.7 Indicators on validation rules and consistency of balance of payments-related datasets

**Table A.1.7.1**

Average share of satisfied integrity rules/validations for monthly balance of payments

### Percentage of possible integrity rules

(July 2018 to June 2019)

	CS	EQ0	FUNC	GEO2	GEO3	IAI	RS	RSCS
<b>Euro area</b>								
<b>BE</b>	100	100	100	100	100	100	100	100
<b>DE</b>	100	100	100	100	100	100	100	100
<b>EE</b>	100	100	100	100	100	100	100	100
<b>IE</b>	64	100	100	92	95	100	95	64
<b>GR</b>	100	100	100	100	100	100	100	100
<b>ES</b>	100	100	100	100	100	100	100	100
<b>FR</b>	100	100	100	100	100	100	100	100
<b>IT</b>	100	100	100	100	100	100	100	100
<b>CY</b>	100	100	100	100	100	100	100	100
<b>LV</b>	100	100	100	100	100	100	100	100
<b>LT</b>	100	100	100	100	100	100	100	100
<b>LU</b>	100	100	100	100	100	100	100	100
<b>MT</b>	100	100	100	100	100	100	100	100
<b>NL</b>	100	100	100	100	100	100	100	100
<b>AT</b>	100	100	100	100	100	100	100	100
<b>PT</b>	100	100	100	100	100	100	100	100
<b>SI</b>	100	100	100	100	100	100	100	100
<b>SK</b>	100	100	100	100	100	100	100	100
<b>FI</b>	100	100	100	100	100	100	100	100
<b>Euro area median</b>	100	100	100	100	100	100	100	100
<b>Non-euro area</b>								
<b>BG</b>	N/A	N/A	N/A	100	100	100	100	N/A
<b>CZ</b>	N/A	N/A	N/A	100	100	100	100	N/A
<b>DK</b>	N/A	N/A	N/A	100	100	100	100	N/A
<b>HR</b>	N/A	N/A	N/A	88	87	100	83	N/A
<b>HU</b>	N/A	N/A	N/A	100	100	100	100	N/A
<b>PL</b>	N/A	N/A	N/A	100	100	100	100	N/A
<b>RO</b>	N/A	N/A	N/A	100	100	100	100	N/A
<b>SE</b>	N/A	N/A	N/A	100	100	100	100	N/A
<b>UK</b>	N/A	N/A	N/A	100	100	100	100	N/A

Source: ECB.

Note: The non-availability of results for non-euro area countries is due to voluntary transmission requirements (Eurostat Regulation).

**Table A.1.7.2**

## Average share of satisfied integrity rules/validations for quarterly balance of payments

## Percentage of possible integrity rules

(Q3 2018 to Q2 2019)

	ACC	BAL	CONS	CS	EQ0	FUNC	GEO2	GEO3	GEO4	IAI	MAT	OTH	OW	RS	RSCS	STR
<b>Euro area</b>																
<b>BE</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>DE</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>EE</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>IE</b>	100	100	72	100	100	99	100	100	100	100	99	100	100	100	100	100
<b>GR</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>ES</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>FR</b>	100	100	100	99	100	94	100	100	93	100	100	100	100	99	92	100
<b>IT</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>CY</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>LV</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>LT</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>LU</b>	100	100	97	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>MT</b>	100	100	100	100	100	100	100	100	100	100	100	97	99	100	98	100
<b>NL</b>	100	100	100	99	100	100	100	100	100	100	100	100	99	100	100	100
<b>AT</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>PT</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>SI</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>SK</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>FI</b>	100	100	99	100	100	99	100	99	100	100	100	100	100	100	100	100
<b>Euro area median</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Non-euro area</b>																
<b>BG</b>	100	100	100	100	100	100	100	100	92	100	N/A	100	100	100	100	100
<b>CZ</b>	100	100	100	100	100	100	100	100	100	100	N/A	100	100	100	100	100
<b>DK</b>	100	100	98	100	100	100	100	100	69	100	N/A	100	100	100	88	100
<b>HR</b>	100	100	53	100	100	100	100	100	100	100	N/A	100	100	100	100	100
<b>HU</b>	100	100	100	100	100	100	100	100	100	100	N/A	100	100	100	98	100
<b>PL</b>	100	100	99	100	100	100	100	100	100	100	N/A	100	100	100	100	100
<b>RO</b>	100	100	99	100	100	100	100	100	100	100	N/A	100	100	100	100	100
<b>SE</b>	100	100	100	100	88	100	100	100	74	100	N/A	100	100	100	100	100
<b>UK</b>	100	100	73	100	100	100	100	100	68	100	N/A	100	100	100	100	100

Source: ECB.

Note: The non-availability of results for non-euro area countries is due to voluntary transmission requirements (Eurostat Regulation).

**Table A.1.7.3**

## Average share of satisfied integrity rules/validations for quarterly international investment position

## Percentage of possible integrity rules

(Q3 2018 to Q2 2019)

	ACC	CS	CURR	EQ0	FUNC	GEO2	GEO3	GEO4	MAT	OTH	OW	REC	RS	RSCS	STR	ACC
<b>Euro area</b>																
<b>BE</b>	100	100	100	100	100	100	100	100	100	100	100	90	100	100	99	100
<b>DE</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>EE</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>IE</b>	100	100	100	100	100	99	100	100	99	100	100	100	100	100	100	100
<b>GR</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>ES</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>FR</b>	100	100	100	100	100	100	100	96	100	100	100	100	100	100	100	100
<b>IT</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>CY</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>LV</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>LT</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>LU</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>MT</b>	100	99	100	100	100	100	100	85	100	100	100	67	100	100	100	100
<b>NL</b>	100	100	100	100	100	100	100	100	100	100	100	99	100	100	100	100
<b>AT</b>	100	100	100	100	100	100	100	100	100	100	100	95	100	100	100	100
<b>PT</b>	100	100	100	100	100	100	100	100	99	100	100	99	100	100	100	100
<b>SI</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>SK</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>FI</b>	100	100	100	100	98	100	92	100	100	100	100	100	100	100	100	100
<b>Euro area median</b>	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Non-euro area</b>																
<b>BG</b>	100	100	100	100	100	100	100	82	96	100	N/A	N/A	100	100	100	100
<b>CZ</b>	100	100	100	100	100	100	100	100	100	100	N/A	N/A	100	100	100	100
<b>DK</b>	100	100	100	100	100	100	100	97	100	100	N/A	N/A	100	100	100	100
<b>HR</b>	100	100	86	100	100	100	100	100	89	100	N/A	N/A	100	100	100	100
<b>HU</b>	100	100	100	100	100	100	100	100	100	100	N/A	N/A	100	100	100	100
<b>PL</b>	100	100	100	100	100	100	100	100	100	100	N/A	N/A	100	100	100	100
<b>RO</b>	100	100	100	100	100	100	100	100	100	100	N/A	N/A	100	100	100	100
<b>SE</b>	100	100	100	100	100	100	100	84	100	100	N/A	N/A	100	100	100	100
<b>UK</b>	100	100	100	100	100	100	100	100	100	100	N/A	N/A	100	100	100	100

Source: ECB.

Note: The non-availability of results for non-euro area countries is due to voluntary transmission requirements (Eurostat Regulation).

**Table A.1.7.4**
**Average time consistency for current account**
**Consistency between monthly and quarterly data as a percentage of respective item**

(Q3 2018 to Q2 2019)

	Current account				Goods				Services				Primary Income				Secondary Income			
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>																				
<b>BE</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>DE</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>EE</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>IE</b>	98	98	-	92	97	98	93	94	97	97	83	87	96	99	-	97	94	93	90	83
<b>GR</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>ES</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>FR</b>	99	99	-	99	100	100	100	100	100	100	100	100	95	94	-	94	100	100	100	100
<b>IT</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>CY</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	99	99	99	99
<b>LV</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>LT</b>	100	100	-	100	100	100	100	100	100	100	100	100	99	99	-	100	100	100	100	100
<b>LU</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>MT</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>NL</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>AT</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>PT</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>SI</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>SK</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>FI</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	92	90
<b>Euro area median</b>	100	100	-	100	100	100	100	100	100	100	100	100	100	100	-	100	100	100	100	100
<b>Euro area</b>	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-
<b>Non-euro area</b>																				
<b>BG</b>	-	99	-	100	-	100	-	100	-	98	-	98	-	98	-	97	-	100	-	100
<b>CZ</b>	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100
<b>DK</b>	-	98	-	99	-	99	-	100	-	94	-	99	-	98	-	100	-	99	-	100
<b>HR</b>	-	99	-	97	-	99	-	97	-	96	-	96	-	89	-	90	-	95	-	96
<b>HU</b>	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100
<b>PL</b>	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100
<b>RO</b>	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100
<b>SE</b>	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100	-	100
<b>UK</b>	-	99	-	99	-	99	-	99	-	96	-	96	-	96	-	96	-	97	-	99

Source: ECB.

**Table A.1.7.5**
**Average time consistency for financial account**
**Consistency between monthly and quarterly data as a percentage of underlying i.i.p. item**

(Q3 2018 to Q2 2019)

	Direct investment				Portfolio investment				Other investment			
	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW	Extra EA	RoW
<b>Euro area</b>												
<b>BE</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>DE</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>EE</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>IE</b>	100	100	98	99	100	100	-	100	100	100	99	100
<b>GR</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>ES</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>FR</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>IT</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>CY</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>LV</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>LT</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>LU</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>MT</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>NL</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>AT</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>PT</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>SI</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>SK</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>FI</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>Euro area median</b>	100	100	100	100	100	100	-	100	100	100	100	100
<b>Euro area</b>	100	-	100	-	100	-	100	-	100	-	100	-
<b>Non-euro area</b>												
<b>BG</b>	-	100	-	100	-	100	-	100	-	100	-	100
<b>CZ</b>	-	100	-	100	-	100	-	100	-	100	-	100
<b>DK</b>	-	100	-	100	-	100	-	100	-	100	-	100
<b>HR</b>	-	100	-	99	-	100	-	99	-	93	-	100
<b>HU</b>	-	100	-	100	-	100	-	100	-	100	-	100
<b>PL</b>	-	100	-	100	-	100	-	100	-	100	-	100
<b>RO</b>	-	100	-	100	-	100	-	100	-	100	-	100
<b>SE</b>	-	100	-	100	-	100	-	100	-	100	-	100
<b>UK</b>	-	-	-	-	-	-	-	-	-	-	-	-

Source: ECB.

**Table A.1.7.6**

## Average relative explained changes for financial account sub-components

## Consistency between positions and flows as a percentage of underlying i.i.p. item

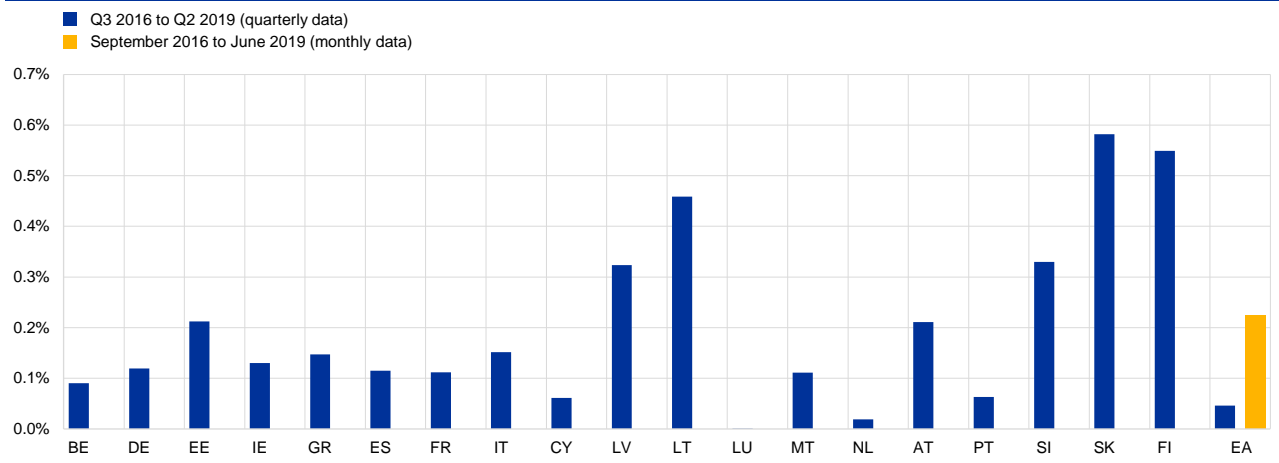
(Q3 2018 to Q2 2019)

	Direct investment		Portfolio investment		Other investment	
	Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
<b>Euro area</b>						
BE	100	100	100	100	100	100
DE	100	100	100	100	100	100
EE	100	100	100	100	100	100
IE	100	100	100	100	100	100
GR	100	100	100	100	100	100
ES	100	100	100	100	100	100
FR	100	100	100	100	100	100
IT	100	100	100	100	100	100
CY	100	100	100	100	100	100
LV	100	100	100	100	100	100
LT	100	100	100	100	100	100
LU	100	100	100	100	100	100
MT	-	-	-	-	-	-
NL	100	100	100	100	100	100
AT	100	100	100	100	100	100
PT	100	100	100	100	100	100
SI	100	100	100	100	100	100
SK	100	100	100	100	100	100
FI	100	100	100	100	100	100
<b>Euro area median</b>	100	100	100	100	100	100
<b>Euro area</b>	100	100	100	100	100	100
<b>Non-euro area</b>						
BG	99	99	100	100	100	100
CZ	100	100	100	100	100	100
DK	97	95	99	99	99	98
HR	-	-	-	-	-	-
HU	100	100	100	100	100	100
PL	-	-	-	-	-	-
RO	100	100	100	100	100	100
SE	-	-	-	-	-	-
UK	-	-	-	-	-	-

Source: ECB.

**Chart A.1.7.1**

Average net errors and omissions relative to average international investment position



Source: ECB.

## A.1.8 Coherence with international trade in goods statistics

**Table A.1.8.1**

Directional consistency for b.o.p. total goods and ITGS (merchandise trade)

Percentage of analysed period (Q3 2015 to Q2 2018)				
	Exports/goods credits		Imports/goods debits	
	Rest of the world	Extra-euro area	Rest of the world	Extra-euro area
<b>Euro area</b>				
BE	91	73	100	82
DE	100	100	100	100
EE	73	82	73	100
IE	91	45	91	73
GR	91	100	91	91
ES	91	100	91	100
FR	100	91	100	100
IT	100	100	100	100
CY	100	100	100	91
LV	100	100	100	91
LT	100	100	100	100
LU	100	73	100	100
MT	55	73	55	45
NL	91	82	91	82
AT	91	82	91	73
PT	100	82	100	100
SI	100	91	100	91
SK	100	100	100	100
FI	91	91	91	91
<b>Euro area median</b>	100	91	100	91
<b>Euro area</b>	-	100	-	100
<b>Non-euro area</b>				
BG	100	-	100	-
CZ	100	-	100	-
DK	82	-	82	-
HR	91	-	91	-
HU	73	-	73	-
PL	91	-	91	-
RO	82	-	82	-
SE	91	-	91	-
UK	82	-	82	-

Source: ECB.



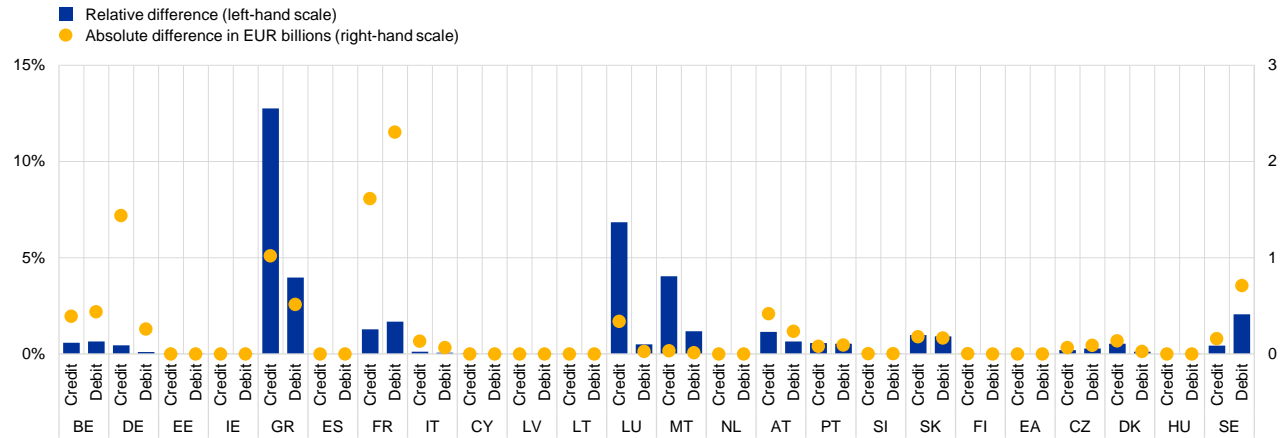
## A.1.9 Consistency with sectoral accounts

### Chart A.1.9.1

Discrepancies in goods between b.o.p. and RoW account

Average absolute and relative differences (as a percentage of respective b.o.p. and RoW account item)

(Q3 2016 to Q2 2019)



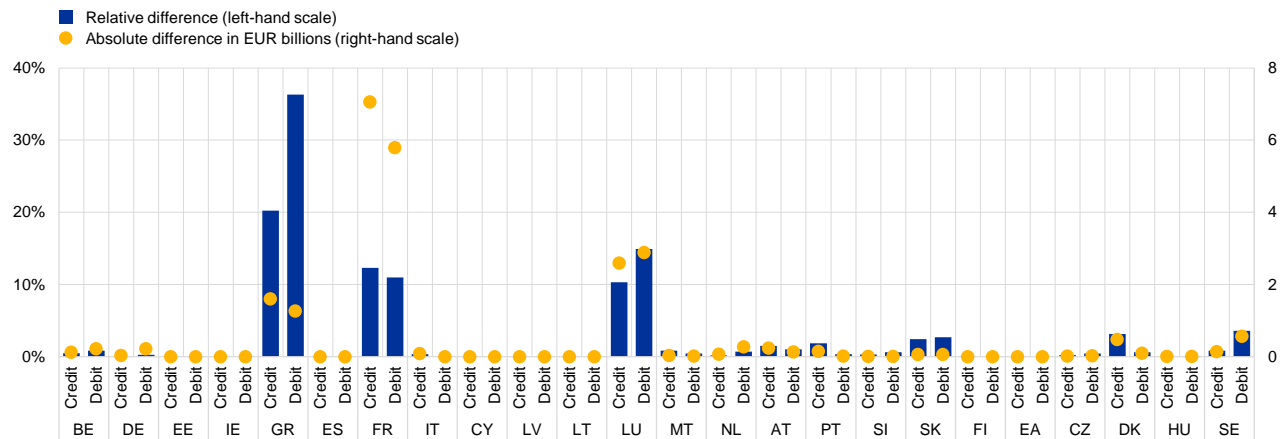
Source: ECB.

### Chart A.1.9.2

Discrepancies in services between b.o.p. and RoW account

Average absolute and relative differences (as a percentage of respective b.o.p. and RoW account item)

(Q3 2016 to Q2 2019)



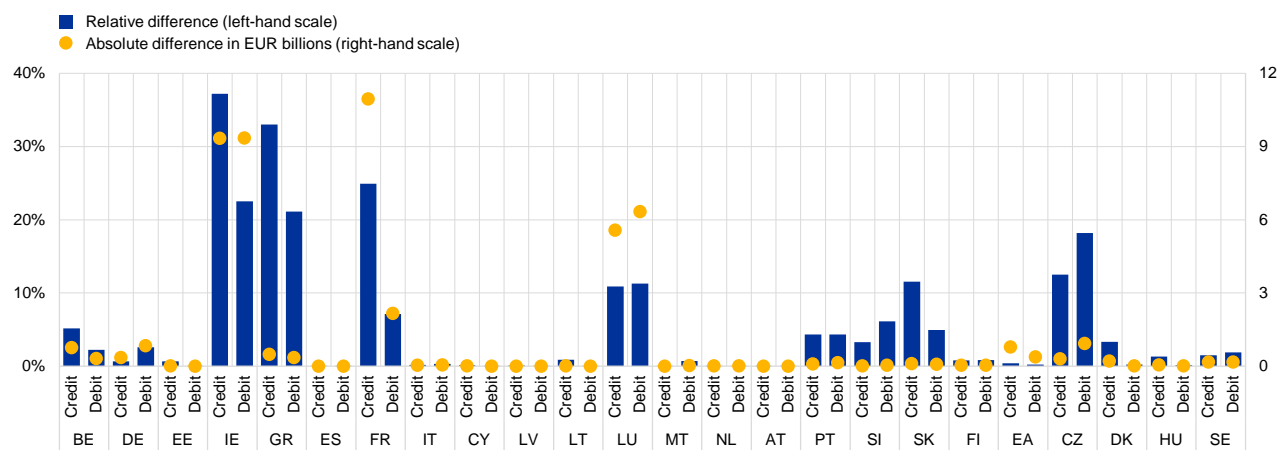
Source: ECB.

### Chart A.1.9.3

#### Discrepancies in primary income between b.o.p. and RoW account

Average absolute and relative differences (as a percentage of respective b.o.p. and RoW account item)

(Q3 2016 to Q2 2019)



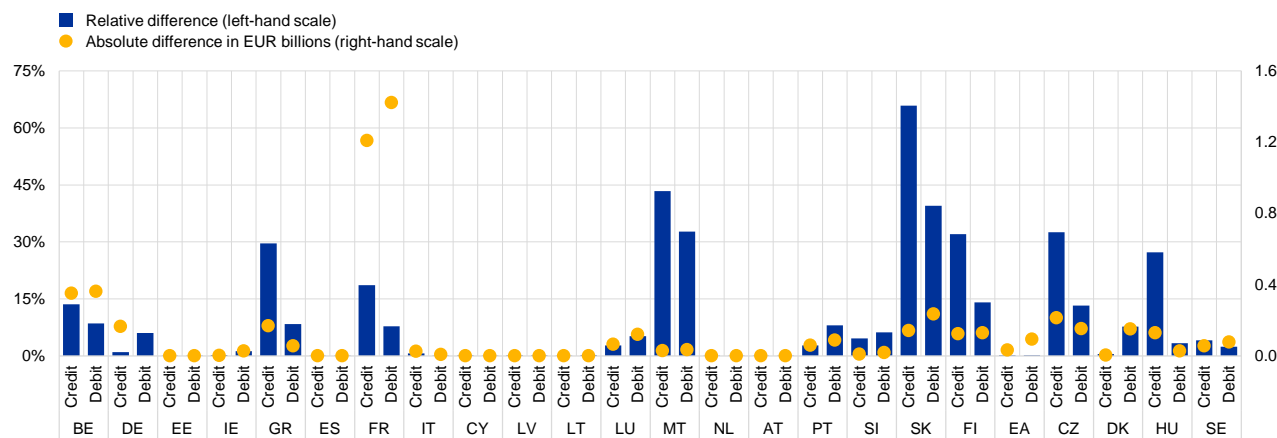
Source: ECB.

### Chart A.1.9.4

#### Discrepancies in secondary income between b.o.p. and RoW account

Average absolute and relative differences (as a percentage of respective b.o.p. and RoW account item)

(Q3 2016 to Q2 2019)



Source: ECB.

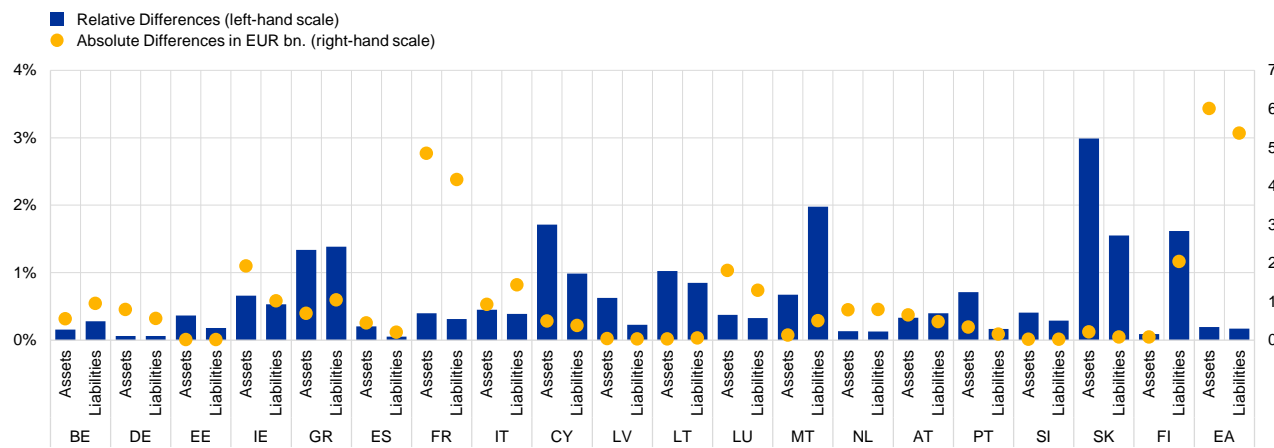
## A.1.10 Coherence with MFI balance sheet data

### Chart A.1.10.1

Loans and deposits transactions discrepancies between b.o.p. and BSI – quarterly data (MFI excluding Eurosystem)

Average absolute and relative differences (as a percentage of respective i.i.p. and BSI positions)

(Q3 2016 to Q2 2019)



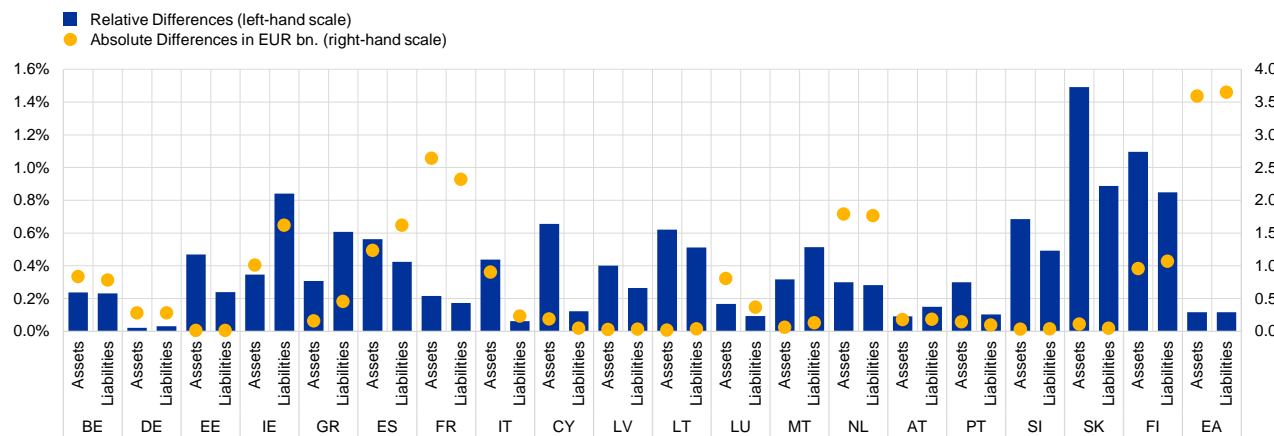
Source: ECB.

### Chart A.1.10.2

Loans and deposits transactions discrepancies between b.o.p. and BSI – monthly data (MFI excluding Eurosystem)

Average absolute and relative differences (as a percentage of respective i.i.p. and BSI positions)

(Q3 2016 to Q2 2019)



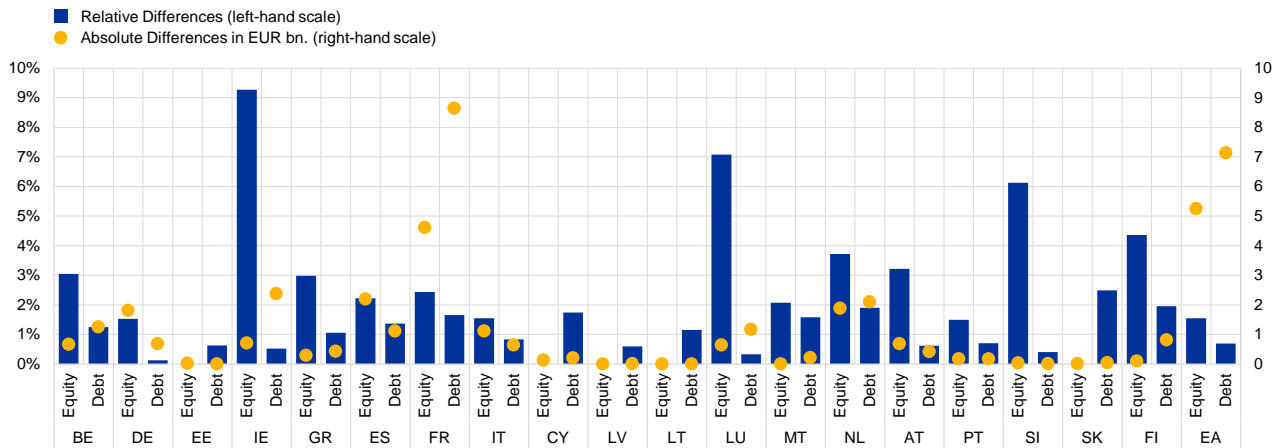
Source: ECB.

**Chart A.1.10.3**

Equity and debt securities assets transactions discrepancies between b.o.p. and BSI – quarterly data (MFI excluding Eurosystem)

Average absolute and relative differences (as a percentage of respective i.i.p. and BSI positions)

(Q3 2016 to Q2 2019)



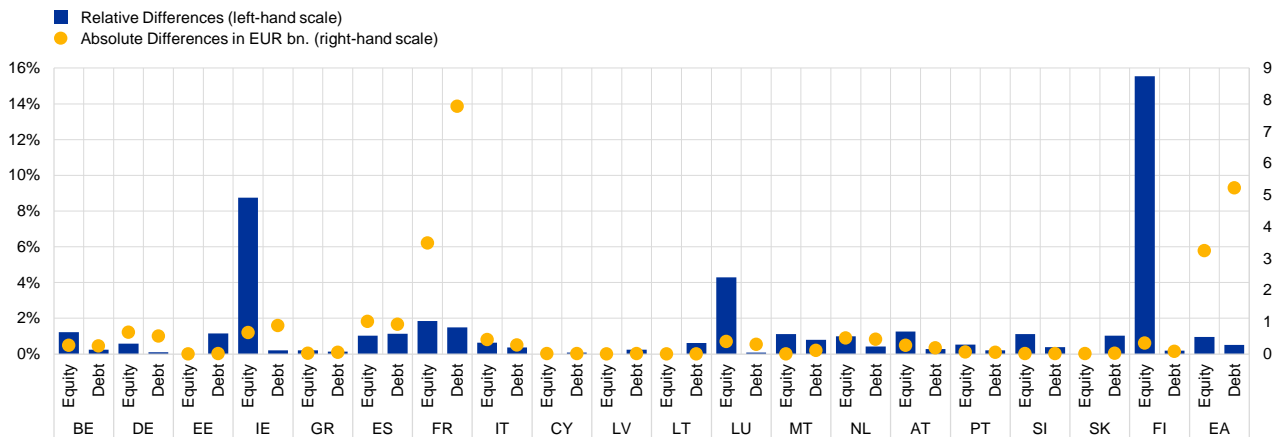
Source: ECB.

**Chart A.1.10.4**

Equity and debt securities assets transactions discrepancies between b.o.p. and BSI – monthly data (MFI excluding Eurosystem)

Average absolute and relative differences (as a percentage of respective i.i.p. and BSI positions)

(Q3 2016 to Q2 2019)



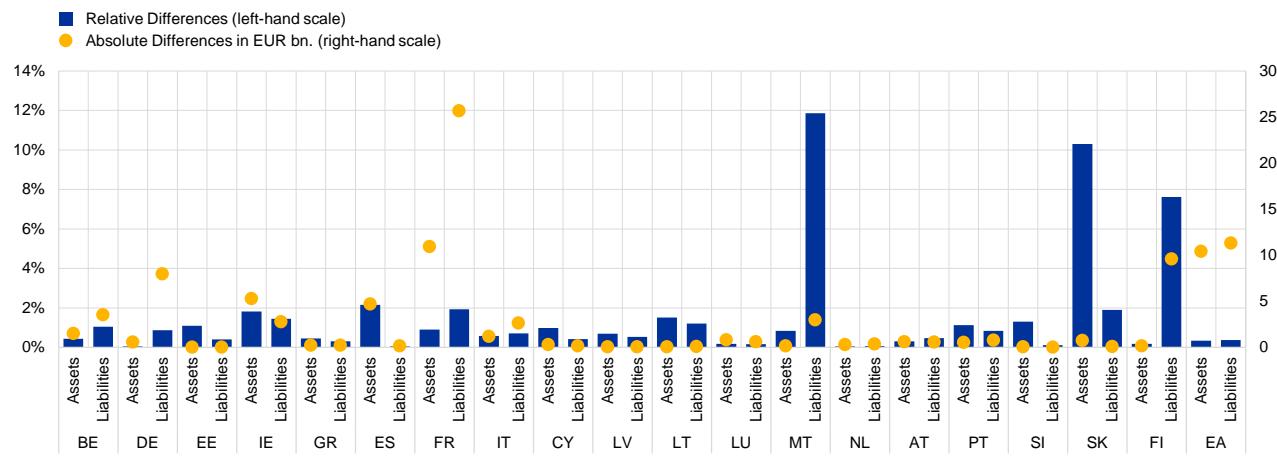
Source: ECB.

### Chart A.1.10.5

#### Loans and deposits positions discrepancies between i.i.p. and BSI – quarterly data (MFI excluding Eurosystem)

##### Average absolute and relative differences (as a percentage of respective i.i.p. and BSI positions)

(Q3 2016 to Q2 2019)



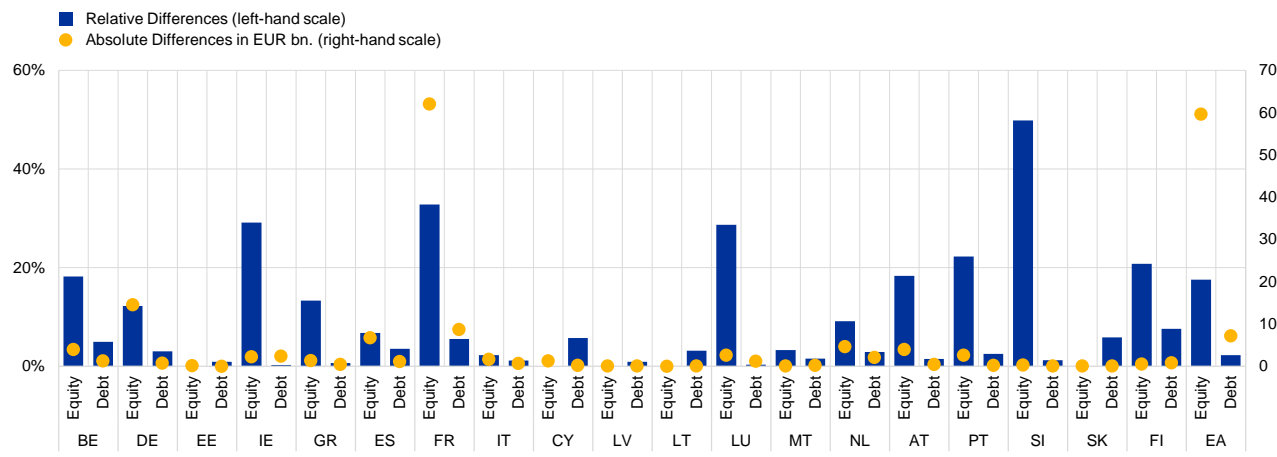
Source: ECB.

### Chart A.1.10.6

#### Equity and debt securities assets positions discrepancies between i.i.p. and BSI – quarterly data (MFI excluding Eurosystem)

##### Average absolute and relative differences (as a percentage of respective i.i.p. and BSI positions)

(Q3 2016 to Q2 2019)



Source: ECB.

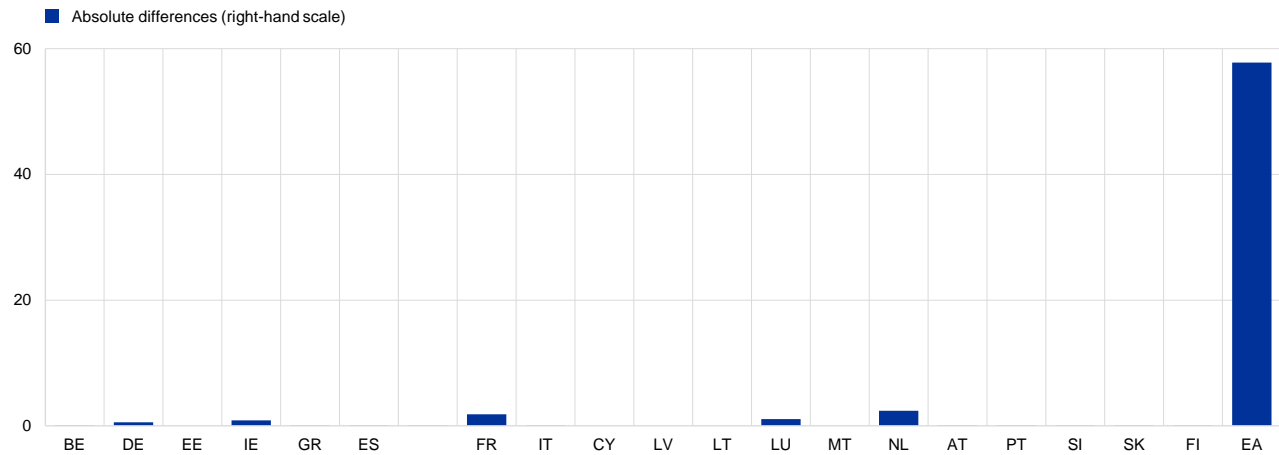
## A.1.11 Coherence with money market fund statistics

### Chart A.1.11.1

MMF shares liabilities positions discrepancies between i.i.p. and MMF statistics

#### Average absolute difference

(Q3 2016 to Q2 2019)



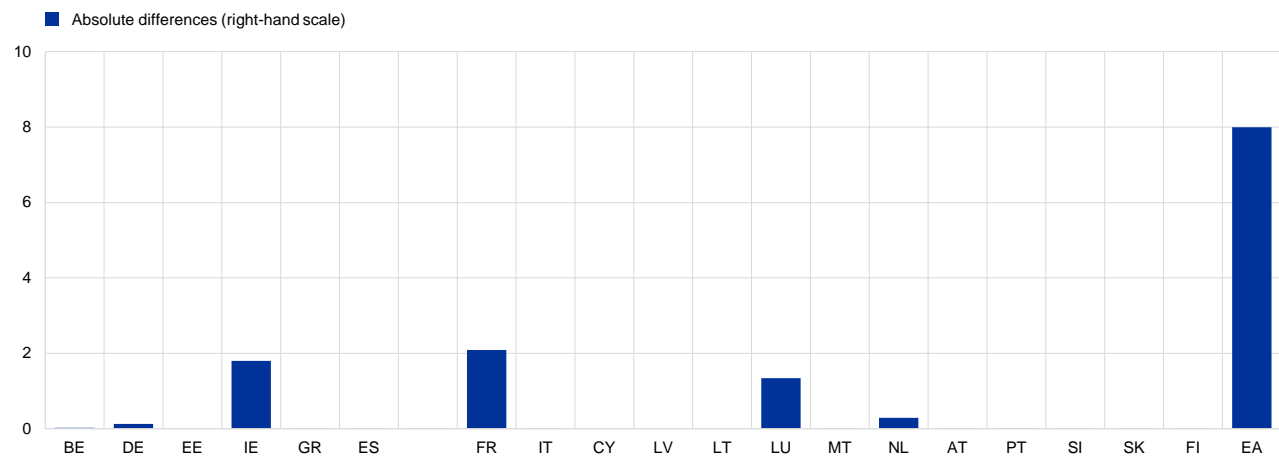
Source: ECB.

### Chart A.1.11.2

MMF shares liabilities transactions discrepancies between b.o.p. and MMF statistics

#### Average absolute difference

(Q3 2016 to Q2 2019)



Source: ECB.

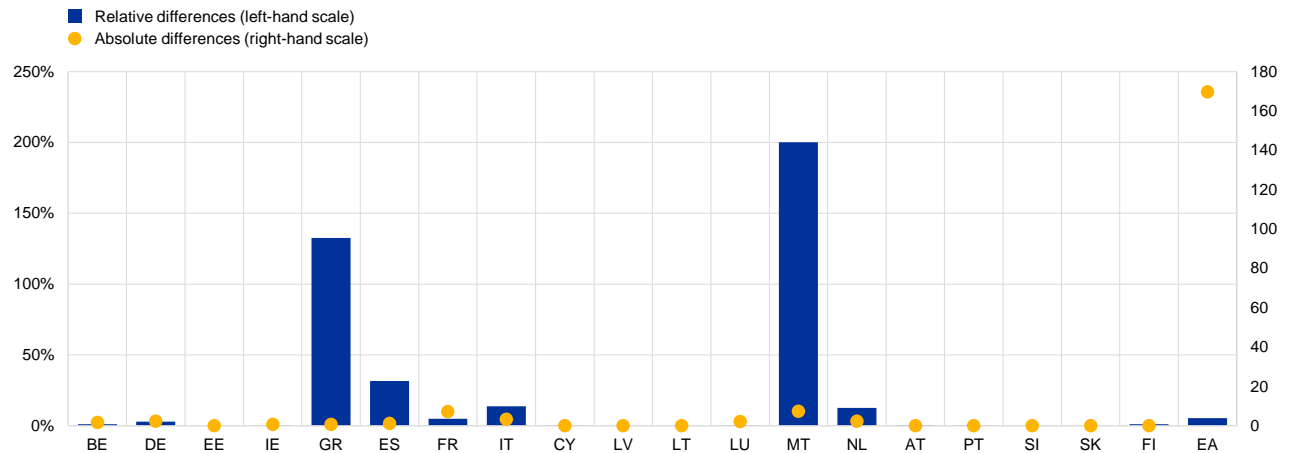
## A.1.12 Coherence with investment fund statistics

### Chart A.1.12.1

IVF positions liabilities discrepancies between i.i.p. and IF statistics

Average absolute and relative differences (as a percentage of respective i.i.p. and IF positions)

(Q3 2016 to Q2 2019; left-hand scale: percentages; right-hand scale: EUR billions)



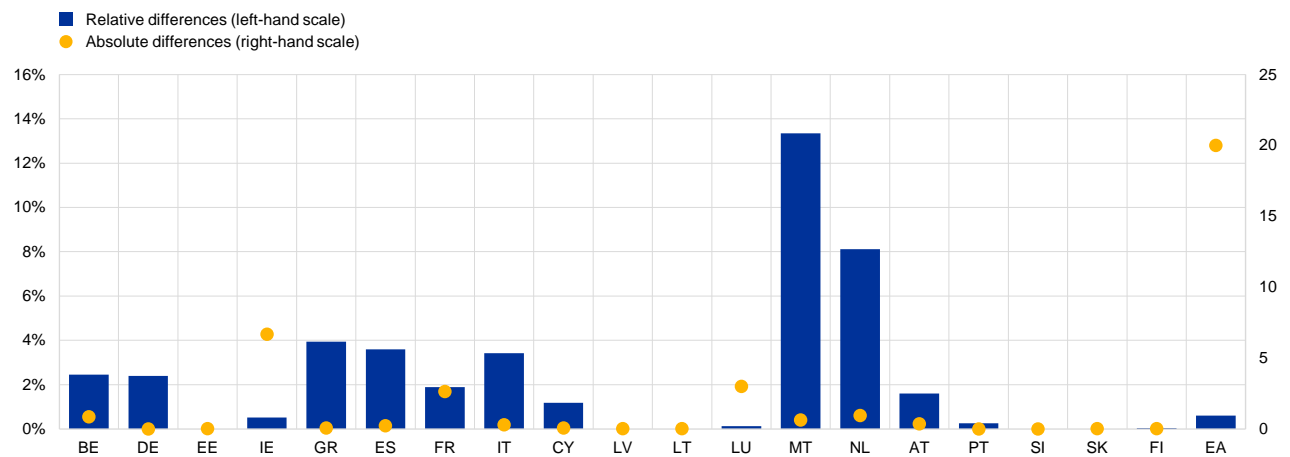
Source: ECB.

### Chart A.1.12.2

IVF transaction liabilities discrepancies between b.o.p. and IF statistics

Average absolute and relative differences (as a percentage of respective i.i.p. and IF positions)

(Q3 2016 to Q2 2019; left-hand scale: percentages; right-hand scale: EUR billions)



Source: ECB.

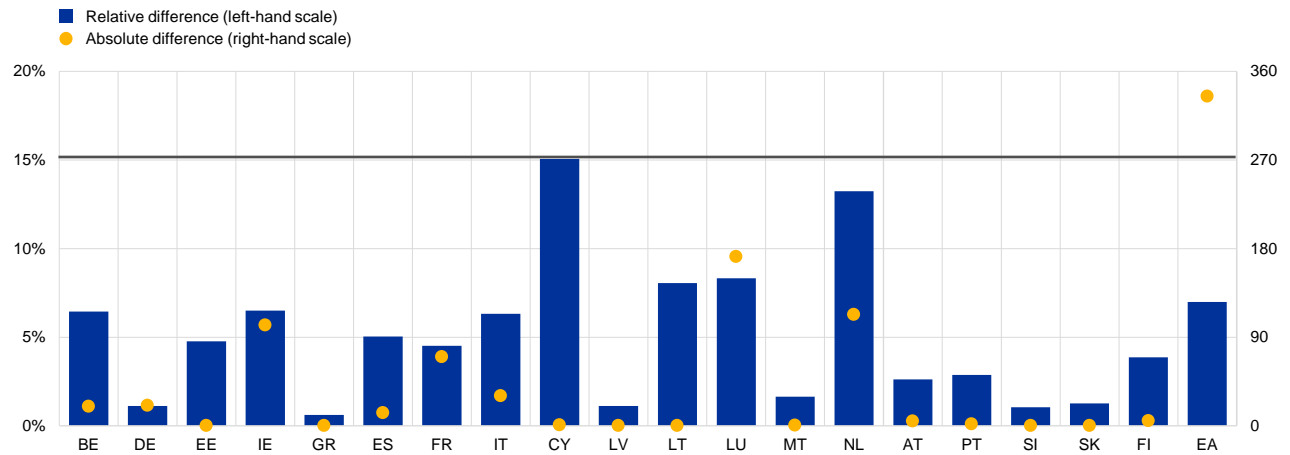
## A.1.13 Coherence with securities holdings statistics

### Chart A.1.13.1

Portfolio investment debt securities positions discrepancies between i.i.p. and SHSS statistics

Average absolute and relative differences (as a percentage of respective i.i.p. and SHSS positions)

(Q3 2016 to Q2 2019; left-hand scale: percentages; right-hand scale: EUR billions)



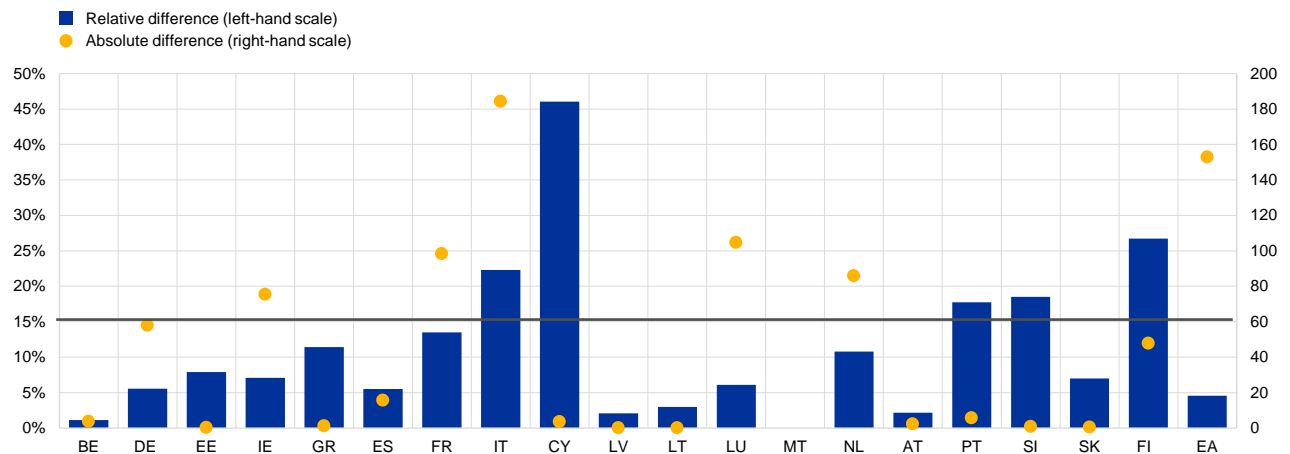
Source: ECB.

### Chart A.1.13.2

Portfolio investment equity (listed shares and investment funds shares) positions discrepancies between i.i.p. and SHSS statistics

Average absolute and relative differences (as a percentage of respective i.i.p. and SHSS positions)

(Q3 2016 to Q2 2019; left-hand scale: percentages; right-hand scale: EUR billions)



Source: ECB.



## A.1.14 Summary indicators on bilateral asymmetries

**Table A.1.14.1**

Internal geographical quality indicator, foreign direct investment transactions

(Q3 2016 to Q2 2019)

Date	AT	BE	CY	DE	EE	ES	IE	IT	LT	LV	MT	NL	PT	SI	FI	FR	GR	LU	SK
2016Q3	0.75	0.70	0.79	0.60	0.72	0.37	0.68	0.56	0.74	0.46	-	0.72	0.45	0.57	0.59	0.49	-	0.51	-
2016Q4	0.22	0.40	0.86	0.49	0.81	0.28	0.57	0.37	0.83	0.94	0.91	0.47	0.56	0.75	0.70	0.49	-	0.50	-
2017Q1	0.42	0.38	0.77	0.28	0.72	0.31	0.58	0.42	0.80	0.70	0.83	0.53	0.68	0.33	0.40	0.48	-	0.37	-
2017Q2	0.57	0.66	0.62	0.35	0.43	0.31	0.61	0.15	0.54	0.79	0.85	0.59	0.46	0.38	0.89	0.37	-	0.45	-
2017Q3	0.34	0.55	0.72	0.37	0.66	0.72	0.86	0.47	0.58	0.68	0.90	0.67	0.80	0.52	0.60	0.51	-	0.78	-
2017Q4	0.26	0.42	0.53	0.27	0.70	0.64	0.80	0.34	0.90	0.87	0.88	0.55	0.54	0.54	0.67	0.63	-	0.53	-
2018Q1	0.50	0.74	0.81	0.50	0.75	0.77	0.57	0.55	0.81	-	-	0.31	0.60	0.61	0.44	0.57	-	0.45	-
2018Q2	0.57	0.50	0.89	0.20	0.69	0.34	0.61	0.47	0.55	0.87	-	0.36	0.62	0.60	0.65	0.33	-	0.79	-
2018Q3	0.53	0.55	0.95	0.47	0.47	0.46	0.78	0.53	0.77	0.64	-	0.25	0.57	0.63	0.84	0.51	-	0.28	-
2018Q4	0.83	0.51	0.96	0.48	0.91	0.32	0.80	0.29	0.67	0.75	-	0.49	0.82	0.54	0.68	0.23	-	0.35	-
2019Q1	0.71	0.57	0.95	0.65	0.27	0.52	0.81	0.47	0.21	-	-	0.54	0.66	0.48	0.49	0.32	-	0.58	-
2019Q2	0.63	0.68	0.83	0.47	0.62	0.34	0.69	0.57	0.69	-	0.84	0.60	0.59	0.77	0.46	0.52	-	0.79	-

Source: ECB.

**Table A.1.14.2**

External geographical quality indicator, foreign direct investment transactions

(Q3 2016 to Q2 2019)

Date	AT	BE	CY	DE	EE	ES	IE	IT	LT	LV	MT	NL	PT	SI	FI	FR	GR	LU	SK
2016Q3	0.39	0.12	0.35	0.32	0.43	0.23	0.43	0.12	0.43	0.12	-	0.33	0.15	0.08	0.02	0.19	-	0.36	-
2016Q4	0.05	0.17	0.47	0.21	0.30	0.04	0.23	0.18	0.38	0.26	0.63	0.10	0.36	0.26	0.58	0.05	-	0.07	-
2017Q1	0.03	0.33	0.34	0.13	0.43	0.12	0.51	0.12	0.45	0.38	0.43	0.28	0.38	0.12	0.31	0.28	-	0.27	-
2017Q2	0.28	0.29	0.25	0.15	0.26	0.02	0.57	0.03	0.10	0.53	0.11	0.28	0.21	0.22	0.37	0.11	-	0.28	-
2017Q3	0.19	0.17	0.41	0.10	0.14	0.42	0.11	0.27	0.14	0.10	0.07	0.34	0.18	0.21	0.09	0.13	-	0.14	-
2017Q4	0.08	0.08	0.22	0.07	0.56	0.59	0.67	0.12	0.06	0.52	0.82	0.15	0.31	0.09	0.35	0.33	-	0.43	-
2018Q1	0.27	0.52	0.46	0.35	0.11	0.45	0.45	0.22	0.44	-	-	0.07	0.36	0.33	0.14	0.27	-	0.30	-
2018Q2	0.15	0.33	0.41	0.01	0.42	0.14	0.37	0.19	0.28	0.27	-	0.05	0.50	0.24	0.24	0.12	-	0.43	-
2018Q3	0.45	0.10	0.55	0.23	0.09	0.38	0.01	0.27	0.31	0.40	-	0.07	0.06	0.37	0.19	0.34	-	0.21	-
2018Q4	0.25	0.36	0.31	0.33	0.32	0.14	0.45	0.18	0.28	0.66	-	0.40	0.27	0.14	0.52	0.11	-	0.05	-
2019Q1	0.10	0.40	0.79	0.33	0.24	0.20	0.29	0.32	0.05	-	-	0.36	0.10	0.43	0.13	0.18	-	0.26	-
2019Q2	0.23	0.59	0.66	0.41	0.43	0.14	0.38	0.30	0.31	-	0.76	0.15	0.49	0.21	0.29	0.11	-	0.48	-

Source: ECB.

**Table A.1.14.3**

## Internal geographical quality indicator, foreign direct investment positions

(Q3 2016 to Q2 2019)

Date	AT	BE	CY	DE	EE	ES	IE	IT	LT	LV	MT	NL	PT	SI	FI	FR	GR	LU	SK
2016Q3	0.13	0.10	0.21	0.09	0.35	0.07	0.21	0.09	0.19	0.33	0.36	0.10	0.13	0.26	0.20	0.08	-	0.13	-
2016Q4	0.14	0.10	0.19	0.08	0.34	0.06	0.22	0.09	0.24	0.37	0.45	0.11	0.15	0.27	0.18	0.07	-	0.13	-
2017Q1	0.14	0.10	0.20	0.09	0.36	0.07	0.18	0.10	0.25	0.38	0.47	0.10	0.15	0.26	0.18	0.07	-	0.12	-
2017Q2	0.14	0.09	0.20	0.10	0.36	0.07	0.18	0.09	0.25	0.34	0.49	0.09	0.15	0.25	0.28	0.07	-	0.11	-
2017Q3	0.14	0.09	0.24	0.10	0.36	0.07	0.19	0.09	0.25	0.34	0.49	0.10	0.15	0.27	0.27	0.08	-	0.12	-
2017Q4	0.15	0.10	0.27	0.10	0.30	0.06	0.26	0.08	0.24	0.33	0.51	0.11	0.16	0.27	0.11	0.08	-	0.15	-
2018Q1	0.15	0.09	0.29	0.08	0.31	0.07	0.25	0.09	0.25	0.35	0.51	0.11	0.15	0.26	0.13	0.10	-	0.15	-
2018Q2	0.14	0.08	0.27	0.08	0.32	0.07	0.28	0.09	0.24	0.36	0.53	0.11	0.15	0.26	0.14	0.10	-	0.17	-
2018Q3	0.15	0.07	0.28	0.07	0.32	0.07	0.27	0.09	0.23	0.33	0.53	0.10	0.15	0.28	0.15	0.10	-	0.16	-
2018Q4	0.15	0.08	0.26	0.07	0.30	0.06	0.23	0.09	0.22	0.32	0.51	0.09	0.14	0.28	0.20	0.09	-	0.16	-
2019Q1	0.13	0.08	0.29	0.08	0.29	0.08	0.25	0.10	0.19	0.33	0.50	0.11	0.16	0.29	0.19	0.08	-	0.16	-
2019Q2	0.13	0.09	0.31	0.08	0.28	0.08	0.27	0.10	0.19	0.32	0.49	0.11	0.16	0.29	0.19	0.08	-	0.16	-

Source: ECB.

**Table A.1.14.4**

## External geographical quality indicator, foreign direct investment positions

(Q3 2016 to Q2 2019)

Date	AT	BE	CY	DE	EE	ES	IE	IT	LT	LV	MT	NL	PT	SI	FI	FR	GR	LU	SK
2016Q3	0.11	0.05	0.13	0.04	0.25	0.03	0.18	0.08	0.12	0.20	0.12	0.05	0.08	0.21	0.12	0.05	-	0.08	-
2016Q4	0.09	0.05	0.12	0.05	0.23	0.02	0.19	0.07	0.13	0.16	0.13	0.06	0.07	0.22	0.09	0.04	-	0.10	-
2017Q1	0.09	0.04	0.12	0.05	0.25	0.03	0.17	0.07	0.13	0.18	0.14	0.05	0.07	0.21	0.07	0.04	-	0.08	-
2017Q2	0.10	0.03	0.11	0.05	0.25	0.03	0.17	0.07	0.13	0.21	0.14	0.04	0.08	0.21	0.11	0.03	-	0.08	-
2017Q3	0.10	0.03	0.14	0.05	0.25	0.03	0.19	0.07	0.13	0.21	0.15	0.05	0.09	0.21	0.11	0.03	-	0.08	-
2017Q4	0.12	0.04	0.15	0.06	0.20	0.02	0.25	0.07	0.11	0.17	0.22	0.05	0.10	0.22	0.06	0.06	-	0.11	-
2018Q1	0.11	0.03	0.17	0.05	0.20	0.04	0.22	0.06	0.13	0.16	0.23	0.05	0.09	0.22	0.07	0.07	-	0.10	-
2018Q2	0.11	0.03	0.15	0.05	0.21	0.03	0.24	0.06	0.11	0.16	0.23	0.05	0.09	0.22	0.06	0.07	-	0.12	-
2018Q3	0.11	0.04	0.17	0.04	0.22	0.03	0.23	0.06	0.13	0.16	0.23	0.04	0.08	0.25	0.06	0.06	-	0.12	-
2018Q4	0.11	0.07	0.14	0.04	0.20	0.03	0.21	0.07	0.12	0.20	0.26	0.03	0.08	0.25	0.11	0.06	-	0.12	-
2019Q1	0.07	0.04	0.18	0.04	0.21	0.04	0.23	0.09	0.09	0.18	0.24	0.03	0.10	0.27	0.09	0.05	-	0.12	-
2019Q2	0.08	0.07	0.20	0.05	0.19	0.05	0.23	0.08	0.10	0.19	0.23	0.03	0.08	0.26	0.09	0.05	-	0.12	-

## Annex 2: Methodological documentation for quality indicators

### A.2.1 Data availability

#### Completeness

BPM6 requirements are broken down into three types: mandatory series, agreed by the WG ES/WG BOP and voluntary series. Any indicator related to data completeness should strictly take into account the mandatory series in accordance with Guideline ECB/2011/23 and Regulation (EC) 184/2005.

The recommended indicator to be used to measure data availability for all datasets considers the average number of reported observations per period by the number of total mandatory series requested (ACR – average completeness ratio).

There should be a breakdown by dataset (DSET): monthly b.o.p. (MBOP), quarterly b.o.p. (QBOP), quarterly i.i.p. (QIIP) and quarterly revaluations.

$$ACR_{DSET} = \frac{\sum_{t=1}^N \text{mandatory observations transmitted} / N}{\sum_{t=1}^N \text{Total no. of observations required per dataset per period} / N}$$

where N stands for the number of periods.

As the indicator only takes into account the number of mandatory series, the target value for the indicator is 100%.

#### Accessibility

Accessibility refers to the conditions by which users can obtain, use and interpret data, ultimately reflecting how easy it is for users to access the data and the extent to which confidentiality constraints hamper data availability. Council Regulation No 2533/98 concerning the collection of statistical information by the ECB defines the ESCB statistical confidentiality regime. In addition, the so-called ECB Confidentiality Guideline<sup>66</sup> defines the common rules and minimum standards to protect the confidentiality of the individual statistical information collected by the ECB assisted by the NCBs.

Regulation 2015/759 of 29 April 2015, amending Regulation (EC) No 223/2009 on European statistics of 11 March 2009 (recital 24 and Article 20(4)), stipulates the need

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<sup>66</sup> See Guideline of the ECB of 22 December 1998 concerning the common rules and minimum standards to protect the confidentiality of the individual statistical information collected by the ECB assisted by the national central banks ([ECB/1998/NP28](#)).

to establish common principles and guidelines ensuring the confidentiality of data used for the production of European statistics and the access to those data.

In line with this legal framework, all data must be sent with a flag indicating its confidentiality level. There are clear guidelines on how to use these confidentiality flags. The ECB and Eurostat encourage national compilers to make as much data available to users (i.e. mark observations “free for publication”) as possible and ensure that flags are appropriately used.

The recommended indicator in this domain is the average share of observations (obs.) marked as “free for publication” per period and per dataset:

$$\text{Average share of free obs.}_{DSET} = \frac{\sum_{t=1}^N \text{No. of obs. marked as free}}{\sum_{t=1}^N \frac{\text{No. of obs. required per dataset per period}}{N}}$$

## A.2.2 Accuracy and reliability (including stability)

### Upward revisions ratio

In principle, positive and negative revisions should occur with roughly the same frequency. If the revisions are, for example, systematically positive, this may point to under-coverage in early estimates, which needs to be corrected. A simple indicator for this phenomenon is the ratio between upward revisions and the number of observations considered (N).

$$\text{Upward revisions ratio} = (\# \text{ upward revisions}) / N$$

The number of observations considered should exclude near-zero revisions, defined as revisions that are lower than 0.5% of the later assessment of the series for current account items and financial account positions, and 0.01% of the underlying positions for financial account transactions.

Since positive and negative revisions should occur with roughly the same frequency, around half of the revisions should be upward. The prescriptive target for this indicator is therefore between 40% and 60%.

### Directional reliability indicator

To assess whether the information on the direction of changes as contained in earlier estimates has been altered by the revisions, a two-by-two contingency table can be used. In this contingency table, the columns consist of positive and negative first differences in the initial estimates:

$$\Delta x_{tI} = x_{tI} - x_{(t-1)I}$$

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

$$\Delta x_{tL} = x_{tL} - x_{(t-1)L}$$

**Table A.2.2.1**

Contingency table for directional reliability

	$\Delta x_{tL} > 0$	$\Delta x_{tL} \leq 0$	<i>Subtotal</i>
$\Delta x_{tL} > 0$	$n_{11}$	$n_{12}$	$n_{11} + n_{12}$
$\Delta x_{tL} \leq 0$	$n_{21}$	$n_{22}$	$n_{21} + n_{22}$
<i>Subtotal</i>	$n_{11} + n_{21}$	$n_{12} + n_{22}$	$N$

The directional reliability indicator (Q) is then defined as follows:

$$Q = \frac{n_{11} + n_{22}}{N}$$

When the changes either in the initial or latest assessments are near zero, these observations should be excluded from the calculation of the indicators. Near-zero changes are defined in the same way as near-zero revisions (see previous section on upward revisions).

This coefficient Q is equal to one if the changes following the first and latest estimates always have the same sign ( $n_{11} + n_{22} = N$ ), and is equal to zero when there is a total dissociation ( $n_{11} + n_{22} = 0$ ). Higher values of this indicator are therefore preferred.

Since revisions should not substantially alter the economic message of the first assessments, the prescriptive target for the directional reliability indicator is somewhat high at 80%. This would mean that in at least eight out of ten cases, the first assessments correctly predicted the movement of the series between two consecutive observations.

### Relative size: mean absolute percentage error (MAPE)

In the case of strictly positive data, the relative revision equals the percentage change of the initial assessment:

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

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

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

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

The existing research oscillates between two alternative definitions of the indicator: (a) an average of the ratios and (b) a ratio of averages. This second definition has a significant advantage over the first: if a single data point of the denominator is close to zero, the indicator according to definition (a) will be artificially magnified, but not necessarily in the case of definition (b). An additional advantage of using the ratio of averages is, according to van Kempen and van Vliet<sup>67</sup>, that its expectation is asymptotically unbiased, while the average of the ratio is biased.

$$MAPE_{average\ of\ ratios} = \frac{1}{T} \sum_{t=1}^T \left| \frac{x_t^L - x_t^I}{x_t^I} \right|$$

$$MAPE_{ratio\ of\ averages} = \frac{\sum_{t=1}^T |x_t^L - x_t^I| / T}{\sum_{t=1}^T |x_t^I| / T}$$

It is therefore recommended to calculate the mean absolute percentage error as a ratio of averages.

The prescriptive target should be a suitable measure of central tendency for all EU or euro area countries for each item. The median would provide a more robust measure, the arithmetic mean would potentially be sensitive to outlying observations, and extreme values would need to be removed.

### Relative size: symmetric mean absolute percentage error (SMAPE)

MAPE is an asymmetric indicator. Consider the example used by Makridakis<sup>68</sup> for forecast errors: if the actual value is 150 and the forecast is 100, MAPE would yield a result of 33.33%; however, if the actual value is 100 and the forecast is 150, MAPE would yield a result of 50% (MAPE is defined over the actual value). If, on average, revisions are positive, MAPE would be higher than if those revisions were negative. In the case of the denominator being defined in terms of the latest estimates, the result would be the opposite.

Symmetric mean absolute percentage error (SMAPE) was proposed in order to get a symmetric indicator. According to Makridakis, this indicator would be (with a couple of modifications from Makridakis' proposal):

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

Compared with MAPE, this indicator fixes the previous issue of asymmetry and is bounded between 0 and 1 (or 100%), while MAPE is not bounded on the upper side. However, SMAPE shows a different class of asymmetry. Following Goodwin and Lawton<sup>69</sup>, if the actual value is 100 (again using forecast errors as an example) and the

<sup>67</sup> van Kempen, G.M.P. and van Vliet, L.J., "Mean and variance of ratio estimators used in fluorescence ratio imaging", *Cytometry*, Vol. 39, No 4, 2000, pp. 300-305.

<sup>68</sup> Makridakis, S., "Accuracy measures: theoretical and practical concerns", *International Journal of Forecasting*, Vol. 9, Issue 4, 1993, pp. 527-529.

<sup>69</sup> Goodwin, P. and Lawton, R., "On the asymmetry of the symmetric MAPE", *International Journal of Forecasting*, Vol. 15, Issue 4, 1999, pp. 405-408

forecast error is +10 or -10, SMAPE would result in 4.7% in the first case and 5.2% in the second. Conversely, MAPE would result in 10% in both cases. In other words, SMAPE gives relevance to the initial observation (the forecast of the initial estimates), while MAPE does not.

### Relative size: mean absolute comparative error (MACE)

To overcome the fact that transactions in financial assets and liabilities can be positive and negative, and therefore not usable in the denominator, revisions to financial assets and liabilities can be related to the respective i.i.p. item for assessing their relative size. The indicator will be expressed as  $\frac{R}{P}$ , where P is the related i.i.p. item. As for the strictly positive data, an average of the absolute value of this ratio can be taken over time in order to avoid revisions of opposite signs cancelling each other out in the resulting indicator.

Mean absolute comparative error (MACE) is defined as:

$$MACE_{average\ of\ ratios} = \frac{1}{T} \sum_{t=1}^T \left| \frac{x_t^L - x_t^I}{p_t^L} \right|$$

Likewise, the recommendation would be to calculate MACE as a ratio of averages.

$$MACE_{ratio\ of\ averages} = \frac{\sum_{t=1}^T |x_t^L - x_t^I| / T}{\sum_{t=1}^T |p_t^L| / T}$$

As the i.i.p. is not available at a monthly frequency, MACE calculations for revisions to monthly b.o.p. data use the i.i.p. level at the end of the corresponding quarter.

### Relative size: indicators assessing revisions for balance/net items

In the case of balance/net time series, revisions cannot be properly related to the series value itself because the observations may have different signs and, more importantly, the values of the series may often be close to zero. As the revision of these balance/net data cannot meaningfully be related to the size of the variable itself, alternative dimensional measures of the series must be used. To enhance understanding of the size of the revisions for the balance/net items, the revisions can be related to average current account flows or the underlying positions of financial assets/liabilities, as applicable. The indicators are named net relative revisions (NRR):

$$NRR_{CA} = \frac{\sum_{t=1}^T |x_t^L - x_t^I| / T}{\frac{1}{2} \sum_{t=1}^T (x_t^{L\ credit} + x_t^{L\ debit}) / T}$$

$$NRR_{FA} = \frac{\sum_{t=1}^T |x_t^L - x_t^I| / T}{\frac{1}{2} \sum_{t=1}^T (p_t^{L\ assets} + p_t^{L\ liabilities}) / T}$$

The following table shows which measures of revisions for the b.o.p./i.i.p. are to be used in the annual quality report:

**Table A.2.2.2**

## Measures of b.o.p./i.i.p. revisions

	Current account	Financial account – transactions	Financial account – positions
Debits	SMAPE	-	-
Credits	SMAPE	-	-
Net	NRR	-	-
Assets	-	MACE	SMAPE
Liabilities	-	MACE	SMAPE
Balance	-	NRR	NRR

### A.2.3 Internal consistency

#### Validation/integrity rules

National compilers perform data validation to ensure full accounting consistency of their data. The ECB and Eurostat provide a comprehensive record (Booklet and Vademecum) of all the validations and rules that BPM6 data are subject to upon data reception. Therefore, this section of the quality report should focus on the extent to which national datasets comply with these linear accounting constraints and consistency checks. For an overview of the linear constraints applied upon data reception by the ECB, please see below:

**CONS:** time consistency (monthly data summed up should be equal to data reported on a quarterly basis);

**GEO2,3,4:** geographical breakdown, e.g. intra- and extra-euro area/EU transactions should sum up to transactions vis-à-vis the rest of the world;

**RS:** reference sector (total economy should be consistent with the sum of the sub-sectors (S121, S12T, S13, S1P));

**CS:** counterpart sector (follows the same intuition as the reference sector type);

**REC:** position/flow reconciliation (positions, transactions and other flows are interlinked: position in period t is equal to position in period t-1 plus transactions in period t plus other flows in period t);

**ACC:** accounting item, e.g. the balance should be equal to credit minus debit;

**IAI:** international accounts item, e.g. the current account is equal to the sum of its components (goods, services, primary and secondary income);

**FUNC:** functional category (equality between the financial account and its sub-account following BPM6 conventions);



**STR:** instrument and assets classification, e.g. gross external debt is equal to the sum of its sub-components;

**MAT:** maturity classification, e.g. long-term and short-term maturities add up to all original maturities;

**CURR:** currency classification, e.g. the currency breakdown of debt securities adds up to the total;

**RSCS:** resident sector – counterpart issuer sector consistency (rule ensuring that total portfolio investment by resident and counterpart issuer sectors is identical in the case of intra- and extra-euro area transactions);

**Multidimensional checks:** ensure, for example, that for other investment the sum of instruments by sector is smaller than or equal to total other investment for that sector. This only applies to positions.

An indicator can be devised per type of validation rule in the following manner (average share of satisfied validations – ASSV):

$$ASSV_{DSET}^{TYPE} = 1 - \frac{(\sum_{t=1}^N \text{Total no. of validations not satisfied} / N)}{(\sum_{t=1}^N \text{Total no. of validations to be satisfied} / N)}$$

where TYPE refers to the type of validation, DSET to the dataset in question and N to the number of observations for the period under analysis.

Since the indicator is applied only to mandatory series, national compilers are expected to provide fully validated data and/or explanations when the target is not met. The recommended target should therefore be 100%.

### Consistency across frequencies

Consistency between monthly and quarterly datasets is normally ensured by national compilers. However, some national compilers only produce monthly data for the compilation of euro area aggregates, usually following a simplified compilation approach (e.g. only partial accrual accounting). In some periods, quarterly and monthly data are thus not necessarily fully reconciled. An indicator assessing the monthly/quarterly consistency should be compiled as the ATC:

$$ATC = 1 - \frac{\sum_{t=1}^N [Q_t - SUM(M_{t_1}, M_{t_2}, M_{t_3})] / N}{\sum_{t=1}^N |Q_t| / N}$$

where  $Q_t$  represents the quarterly value for a given item and  $M_{t_1}, M_{t_2}, M_{t_3}$  the corresponding monthly observations.

For the financial account, because transactions can be zero, the indicator should use the respective position series as a denominator (similar to the MACE indicator for revisions).

As national compilers should make an effort to provide fully consistent data across monthly and quarterly frequencies, the recommended target is 100%.

### Reconciliation between positions and flows

The position/flow reconciliation equation<sup>70</sup> ensures that b.o.p. and i.i.p. data are consistent. In order to ensure comparability between countries, the average relative explained changes can be expressed as a percentage of the corresponding i.i.p. item.

$$AREC = 1 - \frac{(\sum_{t=1}^N |(LE(t) - LE(t-1) + T(t) + K7A(t) + K7B(t) + KA(t))|) / N}{\sum_{t=1}^N LE(t) / N}$$

It is important to note that the degree to which the data are reconciled can only be performed for the “rest of the world” counterpart area, as the other changes in volume are only requested (as agreed by the WG ES and WG BOP) with the rest of the world (“W1”) as the counterpart area.

Position/flow consistency is one of the core features of the accounting framework and a necessary condition for a quality dataset. Full reconciliation (i.e. 100%) between positions and flows should therefore be the target.

### Net errors and omissions

#### Average relative error for current account

The average relative error (ARE) for the current account can be calculated in the following manner:

$$ARE(EO)_{CA} = \frac{(\sum_{t=1}^N |EO_t|) / N}{\frac{1}{2} \sum_{t=1}^N ([CA, t]_C^{W1} + [CA, t]_D^{W1}) / N}$$

where  $EO_t$  represents net errors and omissions in reference quarter t, N is the number of periods analysed (12 quarterly observations over three years),  $[CA, t]_C^{W1}$  is the current account in reference quarter t for credit vis-à-vis the rest of the world (W1) and  $[CA, t]_D^{W1}$  represents the corresponding current account debit entry.

Since n.e.o. are a residual (error) item in b.o.p., they are expected to be relatively small and not persistently positive or negative. ARE assesses the absolute size of the n.e.o. in relation to the current account. The choice of the target is subjective as n.e.o. are not a direct result of the current account but of the inconsistencies between all the accounts. The prescriptive target should be the median of all EU countries.

#### Average relative error for i.i.p.

The average relative error for the i.i.p. can be calculated in the following manner:

<sup>70</sup>  $LE(t) = LE(t-1) + T(t) + K7A(t) + K7B(t) + KA(t)$ ; LE – positions, T – transactions, K7A – exchange rate changes, K7B – other price changes, KA – other changes in volume.

$$ARE(EO)_{i.i.p.} = \frac{(\sum_{t=1}^N |EO_t|)/N}{\frac{1}{2} \sum_{t=1}^N ([FA_{LE,t}]_A^{W1} + [FA_{LE,t}]_L^{W1}) / N}$$

where  $EO_t$  represents net errors and omissions in reference quarter t, N is the number of periods analysed (12 quarterly observations over three years),  $[FA_{LE,t}]_A^{W1}$  is the i.i.p. in reference quarter t for assets vis-à-vis the rest of the world (W1) and  $[FA_{LE,t}]_L^{W1}$  represents the corresponding liabilities entry.

### Cumulative net errors and omissions in relation to the current account/i.i.p.

Cumulative relative error (CRE) can be expressed as follows:

$$CRE(EO)_{CA}^T = \frac{\sum_{t=1}^N EO_t}{([CA,T]_C^{W1} + [CA,T]_D^{W1})/2}$$

where T is a given time period and CA the current account.

Likewise, this indicator can be calculated in relation to the i.i.p. The denominator is defined as  $([FA_{LE,t}]_A^{W1} + [FA_{LE,t}]_L^{W1})/2$  in this case.

This indicator should be presented for several time periods (e.g. one year, five years, ten years) in order to show long-term behaviour and to isolate sensitivity to significant outliers.

This indicator tests the persistency of the sign of n.e.o. or the bias. A value of zero would therefore be expected in the medium to long term. This target assumes that n.e.o. should be a white noise process, i.e. one with a zero mean and no correlation between its values at different times. Cumulated errors and omissions should therefore tend to zero in the long run.

## A.2.4 Asymmetries

### Bilateral asymmetries

Several measures can summarise the level of geographical quality by country. Here we make use of two indicators, each aimed at capturing different aspects of geographical quality:

1. internal country geographical indicator (ICQG), providing information on the quality of the pure bilateral data;
2. external country geographical quality indicator (XCGQ), providing information on country totals vis-à-vis the overall mirror data.

Given the following notation, the formulas for the two measures are listed below:

i is the index of the country to which the quality index applies, c is the index of the counterpart country, w is a predefined weight that applies to all countries, which by default is equal to 0.5, and  $\sum_c |A_{i,c}|$  reflects the sum of absolute values of the assets

reported by country  $i$  (positions or transactions), broken down by counterpart country  $c$ . Likewise,  $\sum_c |L_{i,c}|$  reflects the sum of absolute values of the liabilities reported by country  $i$ .  $\sum_c |A_{i,c} - L_{c,i}|$  measures the sum of absolute values of the bilateral asymmetries of the assets of country  $i$  vis-à-vis its counterparts, and  $\sum_c |L_{i,c} - A_{c,i}|$  represents the sum of absolute values of the bilateral asymmetries of the liabilities of the same country  $i$  vis-à-vis its counterparts.

The ICGQ is expressed as follows:

$$ICGQ_i = \left[ w \cdot \frac{\sum_c |A_{i,c} - L_{c,i}|}{\sum_c |A_{i,c}| + \sum_c |L_{c,i}|} + (1 - w) \cdot \frac{\sum_c |L_{i,c} - A_{c,i}|}{\sum_c |L_{i,c}| + \sum_c |A_{c,i}|} \right]$$

The ICGQ is constrained to be within the range [0, 1], with zero being optimal and one being the worst score.

It assesses the quality of the geographical breakdown vis-à-vis each of the countries that also provide geographical information, calculating the accuracy of the geographic classification within the sample of countries where bilateral data are provided by aggregating the absolute bilateral asymmetries. It could have higher values even when a country on balance reports a correct aggregate intra-euro area estimate, but would be challenged in obtaining the right allocation across individual counterpart countries.

The XCGQ takes the absolute difference between the total values reported and the total available mirror data. The purpose of the XCGQ is to assess how well a country's intra-EU or intra-euro area aggregate is reflected in mirror data, thus providing an indicator of the quality of a country's intra-/extra-breakdown. XCGQ is in the range [0, 1], with values close to zero indicating a good value and values close to one indicating low quality, and one component being over or underestimated vis-à-vis the other:

$$XCGQ_i = \left[ w \cdot \frac{|\sum_c A_{i,c} - \sum_c L_{c,i}|}{\sum_c |A_{i,c}| + \sum_c |L_{c,i}|} + (1 - w) \cdot \frac{|\sum_c L_{i,c} - \sum_c A_{c,i}|}{\sum_c |L_{i,c}| + \sum_c |A_{c,i}|} \right]$$

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