

Quality report on National and Regional Accounts

2018 DATA

2019 edition



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**Quality report on
National and
Regional Accounts**
2018 DATA | 2019 edition

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Table of Contents

| | |
|--|-----------|
| Executive summary | 5 |
| 1 Introduction | 7 |
| 2 Scope of the quality assessment | 8 |
| 3 Legislation, classifications, manuals | 10 |
| 3.1 Legislation | 10 |
| 3.1.1 Legal basis for ESA 2010 | 10 |
| 3.1.2 Other legal acts..... | 11 |
| 3.2 Classifications used in ESA 2010 | 12 |
| 3.3 Manuals and guidelines | 13 |
| 3.4 Other information | 13 |
| 3.5 ESA 2010 application | 14 |
| 4 Relevance | 15 |
| 4.1 User satisfaction | 15 |
| 4.2 Actions to meet user needs | 17 |
| 4.3 Completeness rate | 19 |
| 4.3.1 Quarterly data | 19 |
| 4.3.2 Annual data..... | 21 |
| 4.4 Completeness rate of data underlying key indicators | 24 |
| 4.5 Evolution of data availability | 24 |
| 5 Accuracy | 27 |
| 5.1 Revision policy | 27 |
| 5.1.1 Harmonised European revision policy | 28 |
| 5.1.2 National revision policies | 28 |
| 5.2 Revision practice | 28 |
| 5.2.1 Revisions of national data..... | 29 |
| 5.2.2 Analysis of revisions of national data..... | 30 |
| 5.2.3 Revisions of European aggregates..... | 37 |
| 6 Timeliness and punctuality | 45 |
| 6.1 Timeliness | 45 |
| 6.2 Punctuality of ESA 2010 tables | 46 |
| 6.2.1 Quarterly data | 46 |
| 6.2.2 Annual data..... | 47 |
| 6.3 Punctuality of data underlying key indicators | 49 |
| 6.3.1 MIP indicators | 49 |
| 6.3.2 Principal European Economic Indicators (PEEIs)..... | 50 |
| 7 Accessibility and clarity | 54 |

| | | |
|---|--|------------|
| 7.1 | Dissemination by Eurostat | 54 |
| 7.2 | ESA 2010 metadata | 54 |
| 7.3 | Use of data flags to promote accessibility and clarity | 55 |
| 7.4 | Inventories | 56 |
| 7.4.1 | Mandatory inventories | 56 |
| 7.4.2 | Voluntary inventories | 58 |
| 8 | Comparability | 60 |
| 8.1 | Methodological soundness | 60 |
| 8.1.1 | Validation process for national accounts | 60 |
| 8.1.2 | Statistical cooperation and harmonisation | 61 |
| 8.1.3 | Gross national income (GNI) | 63 |
| 8.1.4 | Excessive deficit procedure (EDP) and government finance statistics | 65 |
| 8.2 | Comparability over time | 66 |
| 9 | Coherence | 67 |
| 9.1 | Cross domain coherence | 67 |
| 9.1.1 | Coherence between non-financial sector accounts and financial accounts – net lending / net borrowing | 68 |
| 9.2 | Coherence between quarterly and annual data | 71 |
| 9.3 | Coherence between totals and sum of components | 72 |
| 9.4 | Coherence of identical variables across national accounts main aggregates tables | 72 |
| 10 | Overall quality assessment and recommendations | 74 |
| 10.1.1 | Conclusions | 74 |
| Annexes | | 78 |
| Annex 1: ESA 2010 Transmission Programme | | 78 |
| Annex 2: Completeness rates per ESA 2010 domain and table | | 79 |
| Annex 3: Punctuality indicators per ESA 2010 domain and table | | 86 |
| Annex 4: Analysis of revisions of selected national accounts data series | | 89 |
| Analysis of revisions of quarterly data | | 89 |
| Analysis of revisions of annual data | | 96 |
| List of figures | | 122 |
| List of tables | | 124 |
| List of acronyms | | 125 |

Executive summary

This document presents Eurostat's assessment of the quality of the national and regional accounts data submitted by the EU Member States, Iceland, Norway and Switzerland in 2018, and quality information on Eurostat's own publications of European aggregates.

The assessment in this quality report is based on national quality reports for data transmissions during 2018. It is the third such report since the European System of Accounts 2010 (ESA 2010) was introduced in September 2014.

The quality assessment was carried out in accordance with Article 4 of Regulation (EU) No 549/2013, also called the ESA 2010 Regulation, which requires the quality of national and regional accounts data sent to Eurostat to be assessed against the quality criteria set out in Regulation (EC) No 223/2009 on European statistics. Commission Implementing Regulation (EU) 2016/2304 sets out the modalities, structure, periodicity and indicators of the assessment process.

The quality report covers a number of quality indicators (completeness, revision policy and practice, punctuality, coherence and documentation on methodology). This year, the report has been extended to include additional indicators on revision rates of quarterly and annual data for selected variables, as well as coherence between non-financial and financial accounts. In 2021, the quality reporting will be expanded to include all the quality indicators within the scope of Commission Implementing Regulation (EU) 2016/2304. The report in 2021 will also be the first to assess the full scope of data transmission under ESA 2010, as the existing ESA 2010 derogations fully expire in 2020.

Chapters 1 and 2 of the document introduce the quality reporting and assessment framework of the European Statistical System (ESS) applied to national and regional accounts. Chapter 3 presents the body of legislation and guidance documents pertinent to ESA 2010. Chapters 4 to 9 provide an analysis of country data sent in 2018, as well as some European aggregates published by Eurostat, in line with the ESS quality criteria, namely relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability and coherence. Where appropriate, this analysis interprets the results of data delivery in the context of the compilation of EU policy indicators such as the Principal European Economic Indicators (PEEIs) and indicators in support of the Macroeconomic Imbalance Procedure (MIP). The overall assessment results and Eurostat's recommendations to countries are summarised in Chapter 10 of the report.

As a general assessment, most Member States have continued to progress in complying with the new data requirements and methodology and in adapting national data compilation systems, a process that is expected to continue until 2020. The data sent in 2018 were broadly in line with the ESS quality standards and the ESA 2010 Regulation, and there has been improvements in both data completeness and punctuality since the first quality report on data submissions in 2016. The overall results for the different quality criteria are as follows:

Relevance

In 2018, both quarterly and annual national accounts mandatory data had high completeness. Since the last Eurostat report, generally for most countries both the completeness rates increased, and the number of incomplete tables decreased. The average completeness rates for tables for national accounts main aggregates (NAMA), government finance statistics (GFS), non-financial sector accounts (NFSA) and annual financial accounts (AFA) were between 93.4 % and 100 %; for supply, use and input-output tables (SUIOT) and regional accounts (RA) tables, they

ranged between 94.5 % and 100 %.

Overall, data availability since the last quality report has increased for the EU-28 as a whole, as well as for the majority of individual EU Member States and EFTA countries. This trend seems stable.

Accuracy

In 2018, nine EU Member States and Switzerland performed either major routine or benchmark revisions of their national accounts data. These revisions aimed to improve the quality of data. Most EU Member States as well as the two EFTA countries make information on their national revision policies available online.

Timeliness and punctuality

Overall, the punctuality of transmission of quarterly national accounts was high in 2018 with most countries submitting all mandatory quarterly accounts on time or with a short delay on only one table. Fifteen EU Member States submitted all mandatory quarterly accounts at or before the legal deadline. For the seventeen ESA 2010 tables transmitted annually, ten Member States, plus Norway, submitted all required annual national and regional accounts tables on time, four more than in 2017.

Accessibility and clarity

All EU Member States and EFTA countries publish online documentation on national accounts methodology and compilation methods. Progress was marked in 2018 compared to 2017 with four more Member States publishing EDP inventories and one more Member State publishing voluntary ASA inventories.

Coherence

Overall internal coherence within (Table 1) and between Tables (between 1 and 3, and between 1 and 22) was very high for nearly all countries in 2018. The coherence between non-financial sector accounts and financial accounts for net lending and net borrowing has also been assessed for the first time in this report. The absolute differences range from above 2 %, in the household (S.14) and non-financial corporation (S.11) sectors where data sources tend to be less complete or reliable, to below 0.2 % for the general government sector (S.13).

Based on the quality assessment, Eurostat makes the following general recommendations to countries, encouraging them to strive to:

- continue the adaptation of national statistical systems to achieve full implementation of ESA 2010;
- ensure full data completeness of mandatory data in line with Regulation (EC) No 549/2013;
- respect the transmission deadlines set out in Regulation (EC) No 549/2013 and address the overall delayed delivery of annual data;
- implement the improvement actions on the ESA 2010 methodology which have been identified in the context of GNI for own resource purposes (as of May 2019);
- make specific information on implemented major revisions by ESA 2010 table or domain publicly available on national websites;
- transmit reference metadata in accordance with the Single Integrated Metadata Structure (SIMS) v. 2.0, as well as explanatory metadata on major events, major revisions, and series breaks.

In addition, in 2019 Eurostat provided country-specific recommendations bilaterally, based on national quality reports and the analysis of submitted data.

1

Introduction

Data on national and regional accounts underpin the development, implementation and monitoring of a broad range of European policies. These data are indispensable for the description and analysis of the economy of the EU, the euro area (EA), and individual Member States and EU regions. They are used for administrative purposes as well, e.g. for the calculation of Member State contributions to the EU budget. Therefore, it is of high importance that these European statistics are accurate, timely and complete and that information about their quality is communicated to users regularly and in a transparent way.

Publication of national accounts data aggregated at European level started in the 1970s. Since then, the methodological framework has been updated several times, in line with the developments of the United Nations System of National Accounts (SNA). The current framework defining the European system of national and regional accounts is the European System of Accounts 2010 (ESA 2010), for which requirements have been established by Regulation (EU) No 549/2013 (hereafter referred to as the ESA 2010 Regulation). ESA 2010 corresponds to the 2008 edition of the SNA and has been used in the EU since September 2014.

The ESA 2010 Regulation prescribes that the quality of national and regional accounts data sent to Eurostat are assessed according to the quality criteria set out by Regulation (EC) No 223/2009 on European statistics. The modalities, structure and assessment indicators of the quality assessment process are defined in Commission Implementing Regulation (EU) 2016/2304 (hereafter referred to as the Implementing Act). Each year, according to Article 4(2) of the ESA 2010 Regulation, Member States provide a report on the quality of national and regional accounts data sent to Eurostat. Based on these national quality reports, Eurostat prepares an overall assessment in accordance with Article 4(4). Additionally, under Article 12, every fifth year, starting from 2018, the Commission reports to the European Parliament and the Council about the quality of data on national and regional accounts. Both the national reports and the Eurostat assessment follow the recommendations of the European Statistical System (ESS) Handbook for Quality Reports. The information provided in these quality reports covers all ESA 2010 domains, namely the main aggregates, government finance statistics, non-financial sector accounts, regional accounts, and supply, use and input-output tables.

The assessment in this quality report shows results for transmissions of national and regional accounts data during 2018. It is the third such report since the introduction of the European System of Accounts 2010 (ESA 2010) in September 2014. It also includes information on the quality of key European aggregates published by Eurostat. The intended audience of the report are data users. Therefore, it is structured to provide information which helps to understand the published data and, where applicable, the factors that improve or limit their quality. The report focusses solely on data quality, so while it contains specific information and indicators for individual Member States, the Commission (Eurostat) assesses Member States' adherence to the requirements of the ESA 2010 Regulation separately.

2

Scope of the quality assessment

Eurostat's quality assessment of national and regional accounts covers data submitted by EU Member States, EFTA countries and Switzerland as well as its own publications of EU and euro area aggregates.

The quality reporting and assessment exercise starts every year on 15 February. Eurostat provides countries with pre-filled national quality reports containing quantitative indicators and qualitative information. The countries complement the national quality reports and send them back to Eurostat, no later than 31 May. Eurostat assesses the results, and then prepares and publishes an overall assessment based on the national quality reports and other available information. This is an annual exercise which was carried out for the first time in 2017 on the basis of data submissions in 2016.

Data transmissions according to the ESA 2010 methodology started from 1 September 2014. In 2020, the derogations granted by the Commission to the Member States will expire. At that time all data transmission must be in line with all the provisions set out in the ESA 2010 Transmission Programme. The quality reporting is being introduced gradually in three steps. The first two quality exercises in 2017 and 2018 required that countries report to Eurostat on a limited number of quality indicators (completeness, published revision policy, punctuality, coherence between sub-annual and annual statistics and within tables for selected variables, documentation on methodology). In this third quality exercise, the quality reporting has been extended to include additional indicators on revision rates of quarterly and annual data for selected variables, and the coherence between non-financial and financial accounts. In 2021, when the existing ESA 2010 derogations fully expire, quality reporting will be conducted fully within the scope of the Transmission Programme and will include the last envisaged indicators (e.g. revision rates of other quarterly variables as well as cross-table consistency).

This assessment report concerns the ESA 2010 mandatory data submitted by countries to Eurostat in 2018. Due to the derogations, not all countries submitted the same data. Only Czechia was due to submit all data since the start of ESA 2010 data submission. By the end of 2016, Greece and the Netherlands closed their derogations and were due to submit a full set of data in 2018. Estonia, Italy, Lithuania and the United Kingdom closed their derogations in 2018. The other 21 EU Member States continued to be exempt from certain data requirements in 2018, as does Iceland and Norway. Furthermore, for the NFSA domain, data requirements differ depending on whether the country is a small or a big economy and whether it is a member of the euro area or not. It is important to note that Eurostat's assessment reflects these differences in mandatory data requirements.

As in past quality reports, national data submitted on a voluntary basis are not part of this quality assessment. The references to voluntary data made in this report acknowledge the efforts of countries to make additional data available to users, but do not comprise measured assessments.

In addition to national quality reports, the following sources were also used to prepare this quality assessment: information collected during the data validation process; information

contained in the provided mandatory and voluntary inventories of methods and data sources; information collected in surveys, during the verification processes for Excessive Deficit Procedure (EDP) and Gross National Income (GNI) and from country visits. More specifically, for data used to compile the Macroeconomic Imbalance Procedure (MIP) indicators, available country self-assessment reports and European Central Bank (ECB) metadata for data compiled by national central banks were taken into account.

When national data, or aggregates for the EU or euro area (EA), are used to compile policy indicators such as the MIP indicators and the Principal European Economic Indicators (PEEIs), the assessment draws information from the quality requirements applied to these indicators. This report covers the headline MIP indicators based on national ESA 2010 data, namely the nominal unit labour cost (ULC) index, general government gross debt, private sector credit flow, private sector debt and total non-consolidated financial sector liabilities. The report also includes the quarterly EU/EA aggregates published in Eurostat's news releases as PEEIs: GDP growth rates, employment volume growth rates, investment rates and profit share of non-financial institutions, and investment rates and saving rates for household and non-profit institutions serving households.

3

Legislation, classifications, manuals

3.1 Legislation

3.1.1 Legal basis for ESA 2010

- Regulation (EU) No 549/2013 of the European Parliament and of the Council of 21 May 2013, on the European system of national and regional accounts in the European Union, OJ L 174, 26.6.2013, p. 1-727
- Commission Implementing Decision 2014/403/EU of 26 June 2014 on granting derogations to Member States with respect to the transmission of statistics pursuant to Regulation (EU) No 549/2013 of the European Parliament and of the Council concerning the European system of national and regional accounts in the European Union (notified under document C(2014) 4164), OJ L 175, 2.7.2014, p. 1-131
- Commission Implementing Decision (EU) 2018/1891 of 30 November 2018 amending Implementing Decision 2014/403/EU on granting derogations to Member States with respect to the transmission of statistics pursuant to Regulation (EU) No 549/2013 of the European Parliament and of the Council concerning the European system of national and regional accounts in the European Union, OJ L 309, 5.12.2018, p. 5-39
- Commission Implementing Regulation (EU) No 724/2014 of 26 June 2014 on the interchange standard for the transmission of data required under Regulation (EU) No 549/2013 of the European Parliament and of the Council on the European system of national and regional accounts in the European Union, OJ L 192, 1.7.2014, p. 38
- Commission Delegated Regulation (EU) No 2015/1365 of 30 April 2015 on the transmission format for research and development expenditure data, OJ L 211, 8.8.2015, p. 1
- Commission Delegated Regulation (EU) No 2015/1342 of 22 April 2015 amending the methodology for the classification of products by activity given in Annex A to Regulation (EU) No 549/2013 of the European Parliament and of the Council, OJ L 207, 4.8.2015, p. 35-36
- Commission Implementing Regulation (EU) No 2016/2304 of 19 December 2016 on the modalities, structure, periodicity and assessment indicators of the quality reports on data transmitted under Regulation (EU) No 549/2013 of the European Parliament and the Council of 21 May 2013 on the European system of national and regional accounts in the European Union, OJ L 345, 20.12.2016, p. 27-36

The ESA 2010 Regulation defines the methodology (Annex A) and the transmission programme (called ESA 2010 Transmission Programme, Annex B) for the compilation of national and regional accounts. Methodology comprises the common standards, definitions, classifications and accounting rules. The transmission programme sets out the accounts and tables as well as the legal deadlines by which EU Member States must submit data to the European Commission (Eurostat).

The complete list of tables is presented in the overview in Annex 1, Table 15. For the purpose of this report, these tables are organised into the following seven groups, covering the six ESA 2010 domains, plus pension entitlements:

| ESA 2010 domain | Tables of the ESA 2010 Transmission Programme |
|---|---|
| National accounts main aggregates (NAMA) | 1A, 1Q, 3, 5, 20, 22, 26 |
| Government finance statistics (GFS) | 2, 9, 11, 27, 28 |
| Annual financial accounts (AFA) | 6, 7 |
| Non-financial sector accounts (NFSA) | 8, 801 |
| Regional accounts (RA) | 10, 12, 13 |
| Supply, use and input-output tables (SUIOT) | 15, 16, 17 |
| Supplementary table on pensions in national accounts ¹ | 29 |

The Commission granted 888 derogations⁽²⁾ from mandatory data transmission requirements on the request of EU Member States. These temporary derogations expire progressively by 2020, with two-thirds of them (607 derogations) having already been closed by end-2018. In 2018, the Commission prepared a report which included a review of justification of derogations performed by Eurostat in close collaboration with the statistical offices in all EU Member States. Based on that review, on 30 November 2018, the Commission reduced the number of valid derogations from 365 to 267, and changed the description of 23 of those derogations.

Derogations vary in substance and in the number of variables included, e.g. different years (quarters), different prices, seasonally or non-seasonally adjusted data, and breakdowns of the Statistical Classification of Economic Activities in the European Community (NACE Rev. 2). Since all derogations expire on 1 January 2020, Member States should ensure complete data transmissions according to ESA 2010 by the end of 2020.. Derogations have also been agreed with Iceland and Norway and are being discussed with Switzerland.

3.1.2 Other legal acts

- [Regulation \(EC\) No 223/2009 of the European Parliament and of the Council of 11 March 2009 on European statistics, OJ L 087 31.3.2009, p. 164, as amended by Regulation \(EU\) 2015/759 of the European Parliament and of the Council of 29 April 2015, OJ L 123, 19.5.2015, p. 90–97](#)

⁽¹⁾ No submissions for the supplementary table on pensions in national accounts were mandatory in 2018, therefore Table 29 is not considered in this report.

⁽²⁾ The Commission adopted Commission Implementing Decision 2014/403/EU granting 888 temporary derogations to 27 Member States. In addition, the EFTA Surveillance Authority granted 145 derogations to Norway and Iceland.

- Council Regulation (EC, Euratom) No 1287/2003 of 15 July 2003 on the harmonisation of gross national income at market prices (GNI Regulation), OJ L 181, 19.7.2003, p. 1-3
- Regulation (EU) No 99/2013 of the European Parliament and of the Council of 15 January 2013 on the European statistical programme 2013-2017, OJ L 39, 9.2.2013, p. 12–29
- Regulation (EU) 2017/1951 of the European Parliament and of the Council of 25 October 2017 amending Regulation (EU) No 99/2013 on the European statistical programme 2013-17, by extending it to 2020, OJ L 284, 31.10.2017, p. 1–11
- European Statistics Annual Work Programme 2018

Regulation (EC) No 223/2009 (hereafter, the European Statistics Regulation) sets out the legal framework for the development, production and dissemination of European statistics, and defines the European Statistical System (ESS), which is the partnership between the Commission (Eurostat) and national statistical institutes (NSIs) and other national authorities responsible in each EU Member State for the development, production and dissemination of European statistics. European statistics are determined in the European statistical programmes and are developed according to the statistical principles of professional independence, impartiality, objectivity, reliability, statistical confidentiality and cost effectiveness. National and regional accounts data submitted in 2018 and covered by this report are produced under the European statistical programme 2013-2017, which has been extended to 2020, and the European Statistics Annual Work Programme 2018.

Furthermore, the European Statistics Regulation (Article 12) sets out the requirements on the statistical quality of European statistics according to the following quality criteria: relevance, accuracy, timeliness, punctuality, accessibility and clarity, comparability and coherence. EU Member States provide the Commission (Eurostat) with reports on the quality of data submitted, including any concerns they have regarding data accuracy. The Commission (Eurostat) assesses the quality of submitted data based on an appropriate analysis, and prepares and publishes reports and communications on the quality of European statistics. In the interest of transparency, the Commission (Eurostat), where appropriate, makes public its assessment of the quality of national contributions to European statistics. Specific quality requirements, such as target values and minimum standards for the production of statistics, may also be set out in sectoral legislation.

3.2 Classifications used in ESA 2010

- Statistical Classification of Economic Activities in the European Community (NACE), Rev. 2 (2008)
- Statistical Classification of Products by Activity, Version 2.1 (CPA)
- Classification of Individual Consumption by Purpose (COICOP), 1999 version
- Classifications of functions of government, 1999 version,
- Classification of the Purposes of (Private) Non-Profit Institutions Serving Households, 1999 version (COPNI)
- Classification of institutional sectors
- Nomenclature of territorial units for statistics (NUTS), 2016 version

3.3 Manuals and guidelines

- [System of National Accounts 2008 \(SNA 2008\)](#)
- [ESS Manuals and Guidelines on national and regional accounts](#)
- [Practical guidelines for revising ESA 2010 data](#)

The ESA 2010 is aligned with the SNA 2008 to make comparable analysis with non-EU economies possible.

The ESS has put together several manuals and guidelines to facilitate the implementation of the ESA 2010 in EU Member States; however their application is not mandatory.

3.4 Other information

Additional information on national and regional accounts is available on the following sections of Eurostat's website:

- [ESA 2010](#)
- [National accounts \(including GDP\)](#)
- [Government finance statistics](#)
- [European sector accounts](#)
- [Supply, use and input-output tables](#)
- [Regional economic accounts](#)

Data submitted under the ESA 2010 Transmission Programme is assessed in the context of what is needed at policy level for the PEEIs, the MIP indicators, the calculation of GNI for the purposes of EU budget own resources and the EDP indicators. Additional information is available in the following sections of Eurostat's website:

- [Principal European Economic Indicators \(PEEIs\)](#)
- [Macroeconomic Imbalance Procedure \(MIP\)](#)
- [GNI for own resource purposes](#)
- [Excessive Deficit Procedure \(EDP\)](#)

The activities of multinational enterprises are increasingly important for the compilation of national accounts. National compilers and international organisations are working together to further develop the concepts and methods that address the impacts of globalisation on macro-economic statistics.

- [Economic globalisation](#)

3.5 ESA 2010 application

Article 12 of the ESA 2010 Regulation requires that, by 1 July 2018 and every five years thereafter, the Commission shall submit a report on the application of this regulation to the European Parliament and the Council. The report shall evaluate the quality of data on national and regional accounts, the effectiveness of the Regulation and the monitoring process applied, and the progress on contingent liabilities data and on the availability of ESA 2010 data.

Technical work was carried out in 2017 to prepare the first evaluation, which was conducted in 2018. On 29 June 2018, the Commission adopted and provided to the European Parliament and the Council the first such report on the application of the ESA 2010 Regulation and on the application of the granted derogations accompanied by a staff working document on ESA 2010 data availability and derogations and on ESA 2010 data quality.

- [Report from the Commission to the European Parliament and the Council on the application of Regulation \(EU\) No 549/2013 of the European Parliament and of the Council of 21 May 2013 on the European System of national and regional accounts in the European Union and on the application of the granted derogations \(COM\(2018\)506\).](#)

4

Relevance

Relevance is an attribute of statistics measuring the degree to which statistics meet current and potential needs of the users.

It examines whether all the statistics that are needed are produced and the extent to which the concepts used (definitions, classifications, etc.) reflect user needs.

This chapter gives an overview of work carried out on national and regional accounts to meet user needs. It presents assessment results on data completeness, namely the situation regarding data transmitted in 2018 and the evolution of data availability over time.

The results of the Eurostat user satisfaction surveys since 2015 are also presented to show the trends in the appreciation of the overall quality of national accounts data and government finance statistics by the end user.

4.1 User satisfaction

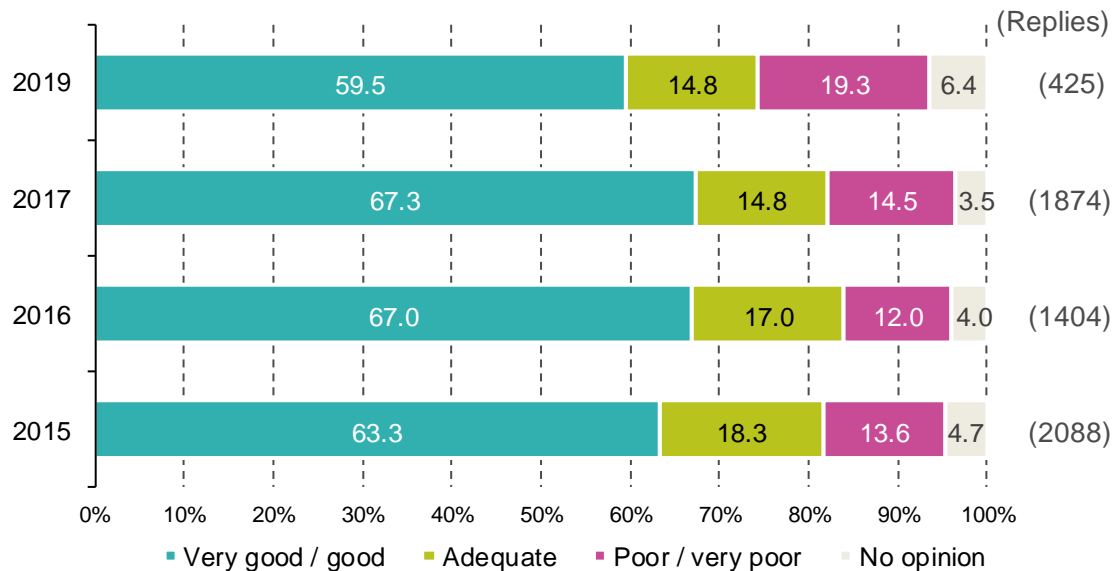
Statistical offices and national central banks conduct regular surveys to better understand the needs of national accounts data users, and the results are usually published at national level. The surveys are typically addressed to a wide range of users, including government authorities, academics, research institutes and professional associations, as well as the larger public. The surveys cover both user satisfaction and data needs. In addition to surveys, user data requests and inquiries are also scrutinised to identify data needs.

Similarly, Eurostat conducts an EU-level user satisfaction survey, normally each year. This survey is based on a model questionnaire designed to obtain a better knowledge about users, their needs and satisfaction with the services provided by Eurostat. The ESA 2010 domains are included in the 'Economy and Finance' theme and grouped as 'National accounts' data (including GDP, main aggregates, sector accounts, input-output tables and regional accounts), 'Financial accounts and monetary indicators' and 'Government finance statistics'.

The most recent user satisfaction survey was conducted in early 2019, and as Eurostat did not conduct the survey in 2018, it is the results of this 2019 survey which are presented here. The users of the 'National accounts' data comprised 425 replies, the users of 'Financial accounts and monetary indicators' comprised 98 replies and the users of 'Government finance statistics' comprised 167 replies. The overall number of respondents for the entire 2019 user satisfaction survey, at just over one thousand, decreased considerably compared to the past because of a decrease in the registered user population following the new personal data protection rules. This reduction in response numbers meant a significant reduction in responses to the ESA 2010 domains compared to previous surveys.

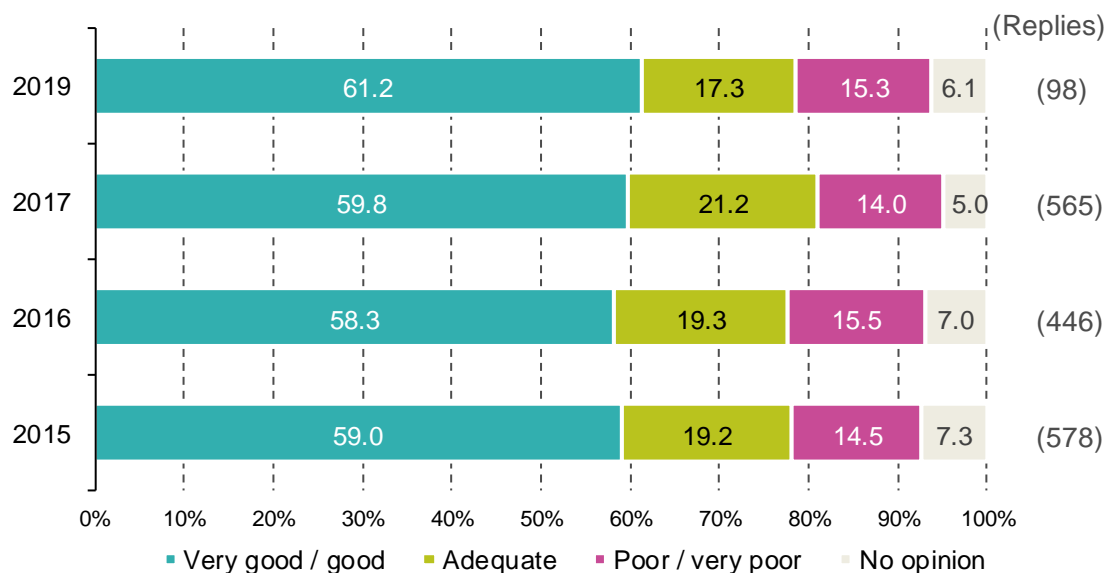
'Economy and finance' is one of the most often utilised statistical areas and typically receives among the highest positive evaluations ('very good' or 'good') for the overall quality of statistics, including for timeliness, completeness and comparability.

Figure 1: User satisfaction survey - overall quality of 'National accounts', surveys since 2015



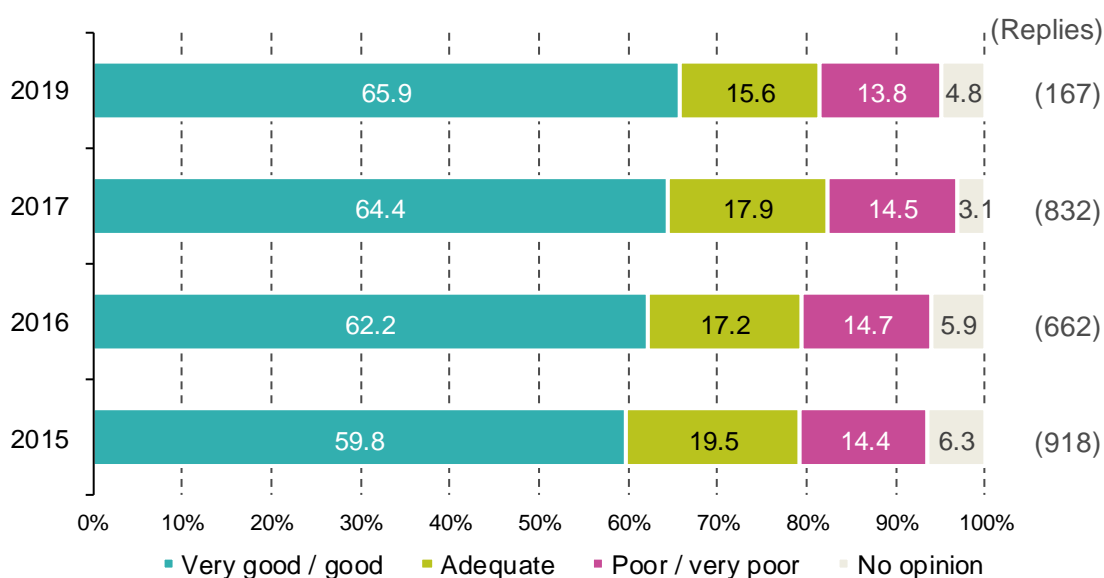
As shown in Figure 1, the overall quality of 'National accounts' was perceived as 'very good' or 'good' by 59.5 % of users in 2019, which represents a decreased share as compared to previous years. The share of users replying with the category 'poor' or 'very poor' increased.

Figure 2: User satisfaction survey - overall quality of 'Financial accounts and monetary indicators', surveys since 2015



By contrast, in the assessments for overall quality of 'Financial accounts and monetary indicators' shown in Figure 2, the share of 'very good' or 'good' assessments rose to 61.2 % in 2019 from 59.8 % in 2017. The share of 'adequate' assessments of overall quality fell, and the share of 'poor' or 'very poor' rose.

Figure 3: User satisfaction survey - overall quality of 'Government finance statistics', surveys since 2015



Similarly, in the assessments for overall quality of 'Government finance statistics' shown in Figure 3, there was an increased share, rising to 65.9 % of 'very good' or 'good' assessments in 2019 from 64.4 % in 2017. The shares of both 'adequate' and 'poor' or 'very poor' compared to past years.

The data completeness of 'National accounts' was assessed as 'very good' or 'good' by 56.2 % of users in 2019, a decrease from 59.5 % in 2017. For 'Financial accounts and monetary indicators' 55.1 % of users assessed data completeness as 'very good' or 'good' and for 'Government finance statistics', 58.7 % of users assessed data completeness as 'very good' or 'good'. The data timeliness of national accounts data and the data comparability were assessed to be 'very good' or 'good' by 56.9 % and 56.2 % of users, respectively. The timeliness and comparability of 'Financial accounts and monetary indicators' was assessed as 'very good' or 'good' by 62.2 % and 56.1 % of users, respectively. For 'Government finance statistics' data, these percentages were 57.5 % for data timeliness and 59.9 % for data comparability. These user satisfaction profiles were mostly comparable to previous years' surveys.

Generally, the results in the various response categories for 'Financial accounts and monetary indicators' and 'Government finance statistics' improved slightly compared to the previous survey in 2017, while those for 'National accounts' data decreased slightly. Eurostat looked in detail at the results of the survey and at the comments provided by individual users in order to understand better these changes. Generally, users suggested improvements to the quality of statistical data by, in particular, improving timeliness and reducing data gaps due to confidentiality and late sending of data for some countries. Other suggestions included: providing data at a more disaggregated level and at a more detailed regional level; correcting data inconsistencies and providing explanations for abnormal data and outliers; and improving metadata. For the latter, individual users pointed to improvements such as: giving clear, easy to understand and less technical explanations, and trying to avoid specialist language; providing metadata at a more detailed level, always giving definitions for all codes and explanations of methodology; and regularly updating metadata, especially when the methodology changes.

4.2 Actions to meet user needs

Many users of national accounts data request longer time series and more granular breakdowns in order to perform additional analysis of macro-economic developments, in particular, users from

European and international organisations, and from the research community. To address these user demands, in 2016 Eurostat together with EU Member States analysed the potential for voluntary transmission of additional national accounts data that are available at the national level.

In 2017, technical work was conducted in the area of non-financial accounts to allow Member States to send voluntary data that can be disseminated by Eurostat, if available at a country level. The additional voluntary variables that have been addressed by this first request by Eurostat are presented in Table 1, along with the domain and tables covered. Implementation of the voluntary data collection has progressed and for the majority of the datasets, the necessary changes to the templates have been made. Further technical activities continued in 2018 to extend the possibilities for both data transmission and dissemination.

The ESA 2010 Transmission Programme already contains many voluntary variables or series, and these latest variables are in addition to those previously collected. Eurostat strongly encourages EU Member States to submit voluntary data series where feasible.

In the area of financial accounts, there is less readiness for more data transmissions, and the provision of voluntary data needs further development. However, the ECB, Eurostat and the EU Member States are cooperating to make this possible in the near future, in particular with new templates that address the ambitions of the G-20 Data Gaps Initiative (DGI-2). Under DGI-2, by 2021, the G-20 economies are expected to compile and disseminate data for institutional sector accounts consistent with the core or target elements of the internationally agreed templates.

Table 1: Requests for additional voluntary variables in non-financial accounts addressed by Eurostat since 2018

| Domain | ESA 2010 table | Requests | |
|---------|--|---|---|
| NAMA | 1 | Final consumption expenditure by durability | |
| | | Further detail by asset on GFCF, in particular intellectual property products (i.e. R&D assets, software and databases) and ICT equipment | |
| | | Trade breakdown intra/extra EU | |
| | | Add contributions to GDP growth | |
| | 3 | Addition of P1 and P2 in previous year's prices and chain-linked volumes | |
| | | Further asset detail for GFCF, in particular intellectual property products (i.e. R&D assets, software and databases) and ICT equipment | |
| | | Transmission of A64 NACE breakdown by countries should be further completed (A*88 NACE Rev. 2 breakdown) | |
| | | Further industry detail (beyond the compulsory A*10) for GFCF | |
| | 20 and 22 | Include consumption of fixed capital in same industry breakdown as GFCF | |
| | | Increase details of industry breakdown to A*88 for those assets for which currently a less detailed breakdown is requested | |
| | | Industry breakdown at A*38 (or A*21) level for those assets for which currently no asset breakdown is required | |
| | | 20 only | Further asset detail for intellectual property products |
| | | | Further industry detail (beyond the compulsory A*21) |
| 22 only | Further industry detail (beyond the compulsory A*21) for GFCF | | |
| | Further asset detail for intellectual property products | | |
| 26 | Breakdown of households sector into S14 and S15 | | |
| | Further asset detail, in particular intellectual property products and ICT equipment | | |
| NFSA | 8 | Addition of subsectors S121+122+123, S124+125+126+127, S128+129 | |
| | | Breakdown of P51 by asset type (dwellings, other buildings and structures, buildings other than dwellings, other structures, other structures of which transport-related); limited breakdown of investment by asset type and sector | |
| | | Asset breakdown for GFCF in current prices; limited breakdown of investment by asset type and sector | |

| | | |
|--------------------|-------------------------|--|
| | | Volumes for GFCF (in particular for general government); limited breakdown of investment by asset type and sector |
| | 801 | More seasonally adjusted data - open the entire table for voluntary transmission of seasonally adjusted data / current prices and in volumes (prices) |
| SUIOT | 15 and 16 | Additional split of use table between domestic use and import use |
| | | Breakdown by industry of total employment in persons, and of employees in persons and hours worked |
| | | Increase of details for industry (from A*64 to A*88) and products |
| | 3, 20 and 22 | Industry detail below the legal requirements, e.g. at the A*64 breakdown, or, should it be available, at the A*88 breakdown |
| All domains | 1, 3, 20, 22, 26 | GFCF by sector and by assets – volume data: partially fulfilled by the addition of a limited breakdown of investment by asset type and sector from domain: sector accounts, Table 8 |
| | 1, 3, 20, 22, 26 | Components for GFCF data by major assets for the total economy and the private sector (in particular "business" sector capital) in volume terms: partially fulfilled by the addition of a limited breakdown of investment by asset type and sector from domain: sector accounts, table 8 |

4.3 Completeness rate

The ESA 2010 Transmission Programme specifies the data requirements for EU Member States. However, due to the temporary derogations from the data transmission requirements until 2020, the scope of data to be submitted to Eurostat is not the same for all Member States. Derogations have also been established for Iceland and Norway. Switzerland's derogation from the ESA 2010 Transmission Programme have been provisionally agreed between Eurostat and the Swiss authorities, but have not been formally adopted.

This section provides an overview, by ESA 2010 domain, of the data that countries were expected to submit in 2018 and which were actually received and validated by Eurostat from 1 January to 31 December 2018. To allow for comparable assessment, the percentages are defined based on a completeness indicator calculated from the number of data cells included in the tables, covering all reference periods specified as mandatory in the ESA 2010 Transmission Programme.

4.3.1 Quarterly data

The ESA 2010 Transmission Programme requires EU Member States to submit quarterly tables for:

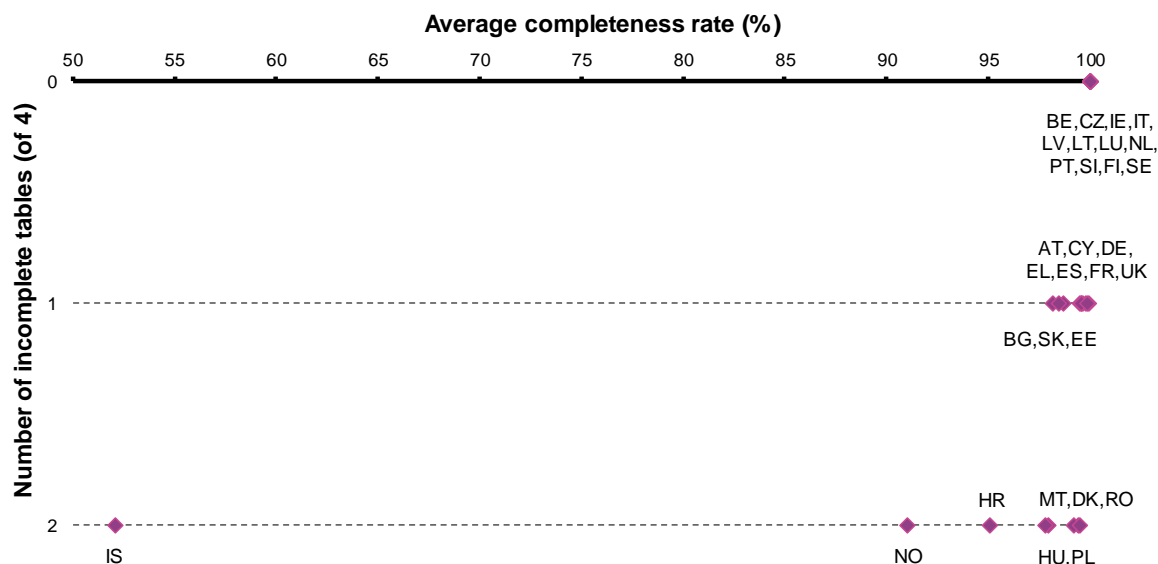
- national accounts main aggregates (Table 1);
- non-financial sector accounts (Table 801);
- government finance statistics (Tables 27 and 28).

The overall average completeness rate of quarterly data continued to be very high in 2018 with the EU-28 average across all four tables reaching 98.6 % (arithmetic average measured at the data cell level), a slight improvement from 2017 (up from 98.0 %). Almost all of the EU Member States (27 out of 28) submitted all, or nearly all, of the required data (rates above 97 % for average overall completeness, see Figure 4). Twelve Member States achieved a full completeness rate for all quarterly tables across all domains: Belgium, Czechia, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Portugal, Slovenia, Finland and Sweden, with five new Member States being added to the seven Member States with full completeness in 2017.

On average, across all four tables of quarterly data submissions, the lowest completeness rate among EU Member States in 2018 was observed for Croatia (74.8 %) due to major data gaps in non-

financial sector accounts. Data submitted by the two EFTA countries had completeness rates among the lowest of EU Member States: 52.1 % for Iceland and 91.0 % for Norway.

Figure 4: Completeness rate of national accounts quarterly tables reported in 2018



The completeness rate for quarterly national accounts data provided by individual EU Member States, as well as Iceland and Norway, can be found in Annex 2. The completeness rate for each country is calculated on the basis of mandatory data submissions in 2018, which covered data submitted for reference quarters up to and including 2018Q3.

For **quarterly national accounts main aggregates**, data completeness was very high, with the EU-28 average at 99.3 % and the EA-19 average at 99.7 %. Twenty EU Member States achieved 100 %, and all Member States had a completeness rate above 92 %. The lowest rate among Member States was for Poland (92.7 %). Iceland had the lowest completeness of EFTA countries (56.2 %).

For **quarterly non-financial sector accounts**, the EU-28 average completeness rate was 98.6 %, an improvement from 2017 (93.3 %). Seventeen Member States submitted all required data. The lowest completeness rates were observed for Croatia (81.2 %) followed by Bulgaria (92.7 %). Both countries have improved the delivery of required data since 2017, but data gaps remain as well as quality issues that impede public dissemination of data by Eurostat (Croatia). Bulgaria and Croatia are in communication with Eurostat in order to address the situation regarding data timeliness and relevance.

Luxembourg addressed previous data gaps and improved to full 100 % completeness (up from 54.2 % in 2017), and the Themis/EU pilot which took place between Eurostat and Luxembourg was brought to successful closure. Norway submitted data with a completeness rate of 78.3 %.

The completeness rate of **quarterly government finance statistics** was on average higher than that observed for tables submitted for the other quarterly national accounts domains. The EU-28 average reached 99.7 % in 2018 for Table 27 (quarterly financial accounts of general government), with 100 % completeness rate for all but three of the 28 EU Member States (Denmark, Germany and Slovakia), as well as for Norway. There was 100 % completeness for Table 28 (quarterly government debt (Maastricht debt) for general government) for all of the 28 EU Member States, as well as for Norway and Iceland⁽³⁾. Most submitted mandatory series were validated and published in the Eurostat database for all EU Member States.

⁽³⁾ Rates calculated taking into account extant derogations.

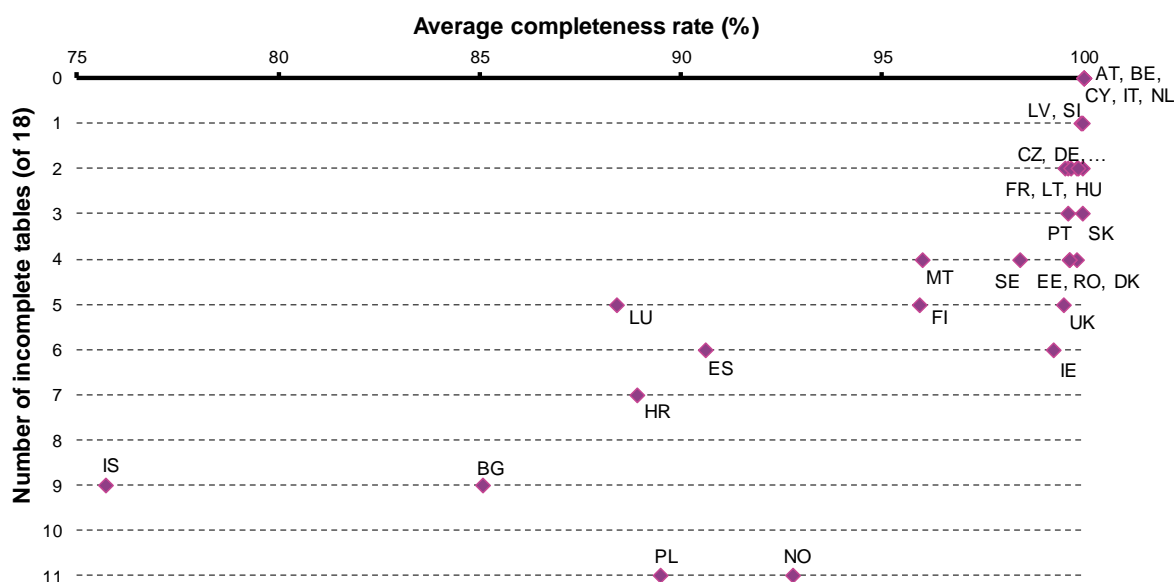
4.3.2 Annual data

In 2018, the 28 EU Member States as well as Norway and Iceland, reported a total of 18 mandatory annual national accounts tables across six domains:

- National accounts main aggregates (Tables 1, 3, 5, 20, 22 and 26);
- Government finance statistics (Tables 2, 9, 11);
- Non-financial sector accounts (Table 8);
- Financial accounts (Tables 6 and 7);
- Supply, use and input-output tables (Tables 15, 16, 17);
- Regional accounts (Tables 10, 12, 13).

In 2018, the average completeness rate of annual data was high for all domains and overall, the EU-28 average across all tables reached 97.3 % (arithmetic average), a slight improvement from 2017. For individual tables, the EU-28 average completeness rates ranged from a low of 93.9 % for balance sheets for non-financial assets (Table 26), to a high of 100 % for the regional accounts table on household accounts by NUTS-2 region (Table 13). Five EU Member States submitted all mandatory data: Austria, Belgium, Cyprus, Italy and the Netherlands, up from only one (the Netherlands) in 2017. Four other Member States: Germany, Latvia, Slovenia and Slovakia, had average completeness rates across all tables which, when rounded, reached 100%, but had very minor data gaps in one or two tables. Eleven other Member States: Czechia, Denmark, Estonia, Ireland, Greece, France, Lithuania, Hungary, Portugal, Romania and the United Kingdom, achieved above 99 % for the average completeness rate across all tables. Among EU Member States, the lowest average rates were observed for Bulgaria, Croatia, Luxembourg and Poland, all below 90 %. The average completeness rate of Iceland was lower than all of the EU Member States, at 75.7 %, and the average completeness rate for Norway was 92.8 %.

Figure 5: Completeness rate of national accounts annual tables reported in 2018



Generally, completeness rates were higher than in 2017, with higher average rates across all tables, higher EU-28 and EA-19 averages for most tables and more countries achieving full completeness. Marked improvements in comparison with 2017 were noted for Cyprus, Ireland and Latvia. However, a number of Member States continued to have significant gaps in several tables and average completeness rates between 85 % and 95 %. Marked deteriorations in the average completeness rates were observed for Bulgaria and Poland, due to gaps in SUIOT tables.

While the majority of countries submitted incomplete data in five or less annual tables, Norway and Poland had missing mandatory data in 11 annual tables, and Bulgaria and Iceland in nine. Lithuania substantially reduced the number of incomplete annual tables submitted, down from eight in 2017 to only two in 2018.

The completeness rates for annual national accounts data provided by individual EU Member States, as well as Iceland and Norway, can be found in Annex 2. The completeness rate for each country is calculated on the basis of mandatory data submissions in 2018, which for majority of the annual tables, covers data submitted for reference years up to and including 2017.

For **annual national accounts main aggregates**, the overall completeness rate continued to be very high in 2018. The EU-28 average rate exceeded 96 % for all tables except Table 26. Seventeen EU Member States submitted all, or nearly all, mandatory data, achieving completeness rate above 99 % for all annual tables.

For annual main aggregates Table 1, 26 countries submitted all, or nearly all, mandatory data (completeness rate above 99 %), while only Iceland had a completeness rate below 95 %. The EU-28 average rate was just below full completeness, at 99.7 %. These consistently high completeness rates are important for the data quality of the MIP scoreboard headline indicator for Unit Labour Cost (ULC) which is derived from Table 1 of national accounts main aggregates, and combines GDP volumes, compensation of employees, employment and employee data.

The annual tables by industry (Table 3) had an EU-28 average completeness rate of 99.5 % with the lowest completeness among EU Member States being observed for Croatia (91.4 %). Bulgaria and Poland addressed previous data gaps and both countries showed a marked improvement in their completeness rates. Twenty-six Member States submitted 99 % or more of the mandatory data for Table 3, up from 22 in 2017. Household final consumption expenditure by purpose (Table 5) had an EU-28 average completeness rate of which rounded to 100 %, with all but one Member State submitting 100 % complete data (the United Kingdom, 99.3 %).

For Tables 20, 22 and 26, low completeness rates were observed for only a small number of countries, but in some cases the data gaps remained large. In 2018, the completeness rates were high for Tables 20 and 22, with EU-28 averages of 96.2 % and 97.7 % respectively. Two EU Member States (Bulgaria and Spain) submitted less than 99 % of mandatory data for Table 20. For Table 22, two EU Member States had completeness rates less than 99 %, Croatia (43.6 %) and Poland (92.9 %). Hungary showed a marked improvement in its completeness rate. The balance sheets table for non-financial assets (Table 26) had the lowest completeness of all annual national accounts tables, with an EU-28 average completeness rate of 93.4 %. Especially low completeness rates continued to be observed for two EU Member States, Spain (14.4 %) and Bulgaria (34.1 %) as well as for Iceland (61.2 %). Croatia has addressed persistent data gaps and raised its completeness rate from 65.6 % in 2017 to 100 % in 2018.

Annual government finance statistics continued to have the average completeness of among all of the annual tables in the ESA 2010 domains. The EU-28 average completeness rate of main aggregates of general government (Table 2) was 99.9 %, while for detailed tax and social contribution receipts (Table 9) it was 99.4% and for general government expenditure by function (Table 11) it was 99.8 %.

For main aggregates of general government (Table 2), among 31 European Economic Area (EEA) countries the lowest completeness rates observed were Iceland (87.4%), Bulgaria (98.3 %) and Norway (98.6 %) with the 28 others, including Switzerland, submitting all, or nearly all, mandatory data (completeness rate above 99 %). Similarly, for Table 9, 23 EEA countries had 100 % completeness and four others had above 99 % completeness. The largest data gaps were observed for Iceland (86.7 %) and France (90.8 %). For Table 11, all countries apart from four (Croatia, Germany, Poland and Iceland), submitted 100 % complete data. It should be noted that lower completeness rates in Tables 2, 9 and 11 for some countries are mainly related to missing observations for some years in back periods.

The overall completeness rate of **annual non-financial sector accounts** (Table 8) was high with an

EU-28 average of 98.2 %, an improvement compared to 2017 (97.1 %) and 2016 (94.7 %). Nineteen countries submitted all, or nearly all, mandatory data (above 99 % completeness). Three EU Member States submitted less than 95 % of mandatory data, Bulgaria (79.0 %), Croatia (91.5 %) and Romania (92.7 %), while nonetheless increasing completeness as compared to 2017. Iceland failed to transmit 2017 data on time.

In 2018, Bulgaria, Croatia and Romania failed to submit a large number of series, and some of the submitted series were incomplete. In addition, there were quality issues with the submitted data. Eurostat continued bilateral communication with these in order to address the situation regarding data timeliness and relevance.

For **annual financial accounts**, the EU-28 average completeness rate of both the annual financial accounts by sector (Table 6) and the balance sheets for financial assets and liabilities (Table 7) reached 99.9 %, with almost all EU Member States submitting all mandatory data apart from some minor data gaps for Ireland (while notably improved) and Romania, and some missing periods for a few sub-components in Czechia (98.2 %). Marked progress was also observed for Malta, reaching full 100 % completeness (up about 60 % in 2017). Completeness rates for Iceland remained at a level similar to 2017, at about 60 %.

Three MIP headline indicators are derived from annual financial accounts: private sector debt, private sector credit flow and total financial sector liabilities. In 2018, the data underlying the MIP indicators were sufficiently complete for their validation for MIP purposes.

For **regional accounts** in 2018, the EU-28 average completeness rate for tables by industry and by NUTS level 2 region (Table 10) rose further to 99.7 %, up from 97.2 % in 2017. Twenty-six EU Member States submitted all mandatory regional accounts tables, with data gaps observed only for Portugal (91.2 % for Table 10.2) and Romania (90.0 % for Table 10.1). Marked progress in completeness was observed for Ireland in 2018, with completeness reaching 100 % in all tables.

For both Table 12 (tables by industry and by NUTS level 3 region) and Table 13 (household accounts by NUTS level 2 region), all the EU Member States submitted all mandatory data cells, apart from a minor data gap for Spain in Table 12. As a result, the EU-28 average completeness rate reached 100 % for both Table 12 and Table 13.

Relative to the other national accounts tables, the average completeness rates for **supply, use and input-output tables** were slightly lower. The EU-28 average completeness rates observed for annual supply and use tables (Tables 15 and 16) for reference year 2015 were 95.0 % and 93.5 %, respectively. These rates were, however, higher than those observed in 2017. Seven EU Member States (Bulgaria, Croatia, Malta, Poland, Finland, Sweden and the United Kingdom) did not submit complete mandatory annual data for 2010-2015 in 2018 (or other mandatory years, as specified in the Derogations Act⁽⁴⁾). For Croatia, despite a persistent data gap, some progress toward completeness was observed. Twenty Member States submitted 100 % complete annual supply and use tables.

For the supply and use tables with lower frequency (every 5 years), data delivery by end-2018 was for the reference year 2015. The overall completeness was higher than for annual tables. The lowest completeness observed was once again for Luxembourg which has not submitted two of the five tables for reference years 2010 and 2015.

The symmetric input-output tables for 2015 were submitted by all 28 EU Member States and Norway. For Table 17, the EU-28 average rate was 96.1 %. Twenty-four EU Member States had completeness rates above 99 % or more of mandatory data cells submitting complete tables, either by product or by industry. The lowest completeness rate was again observed for Luxembourg, which submitted only one mandatory table, followed by Bulgaria and Poland, with significant data gaps. Three Member States (Czechia, Italy and Hungary) submitted both sets of tables, by product and by industry.

⁽⁴⁾ Croatia has a derogation to transmit data for years 2010-2014 in 2018; however data for years 2011 and 2014 had not been finalised. Malta should have submitted data for reference year 2012 and 2013 in 2018.

4.4 Completeness rate of data underlying key indicators

MACROECONOMIC IMBALANCE PROCEDURE INDICATORS

The analysis in the Alert Mechanism Report (AMR) builds on the economic reading of a scoreboard of 14 headline indicators covering the most relevant areas of macroeconomic imbalances, competitiveness, and adjustment issues. These 14 indicators are complemented by 28 auxiliary indicators providing additional information.

The economic rationale defining the medium- to long-term horizon for MIP analysis requires the availability of 10-years' worth of time series for all MIP indicators. The 10-year indicators scoreboard is published in November each year in the Statistical Annex to the AMR. This package forms one of the major components launching the European Semester in the autumn of each year. The latest report was the [Alert Mechanism Report 2019 \(COM\(2018\)758\)](#), published on 21 November 2018.

The national accounts are one of the major sources of data underlining the MIP indicators. Five out of 14 headline MIP scoreboard indicators are derived from national accounts data. The latest AMR introduces some revisions to the set of auxiliary indicators in order to benefit from improvements in available statistics and ensuring the pertinence of the indicators. Following the changes, nine out of 25 auxiliary indicators are now derived from national accounts data. Moreover, many of the MIP indicators are compiled relative to GDP.

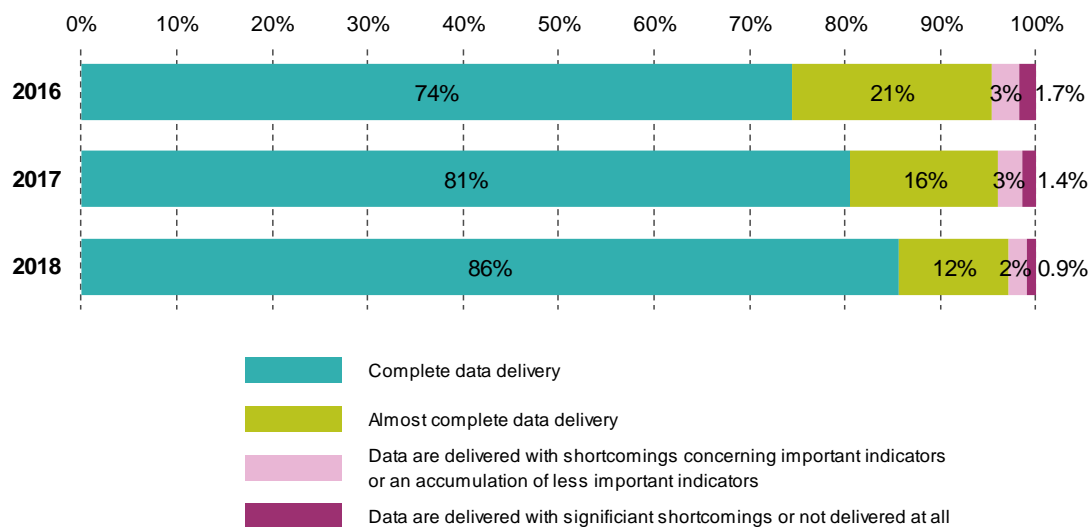
The quality of data underlying the MIP has improved as a consequence of the entry into force of ESA 2010 in 2014. However, the process of implementing the new statistical standard led to revisions and, due to derogations, temporarily shortened the available series. Since 2014, the overall completeness of underlying data for MIP indicators has substantially improved, and in 2018 was very high for all EU Member States. Data coverage for the 10-year timespan needed for the 2019 Statistical Annex (2008-2017) was very high for all headline indicators. The overall completeness rate of auxiliary indicators was also nearly 100 %. For the MIP auxiliary indicator on residential construction (as a % of GDP), Croatia did not transmit any of the required data, while data for latest reference year was missing for Romania.

The key part of the MIP, however, covers in-depth reviews, which in line with [Regulation \(EU\) No 1176/2011 of the European Parliament and of the Council on the prevention and correction of macroeconomic imbalances](#) establish whether imbalances exist. For these in-depth reviews, the completeness of detailed ESA 2010 data is essential. In particular cross-country benchmarking and analytical assessment tools used in the in-depth reviews depend on the timeliness, accuracy and completeness of national accounts, government finance statistics, and non-financial and financial sector accounts.

4.5 Evolution of data availability

Since the start of transmission of ESA 2010 data in September 2014, data availability has significantly improved for the EU-28 as a whole, as well as for the majority of individual EU Member States and EFTA countries. The assessment in this section is based on a more aggregate method than the completeness rate charts for individual tables found in Annex 2. The charts in Figure 6 and Figure 7 provide the trend in data availability from the end of 2016 (extraction done February 2017) through the situation at the end of 2017 (extraction done January 2018) until the situation at the end of 2018 (extraction done January 2019). They illustrate progress in data submissions from one year to the next, as the percentages of tables in each of the four completeness categories.

Figure 6: Evolution of overall data availability from 2016 to 2018

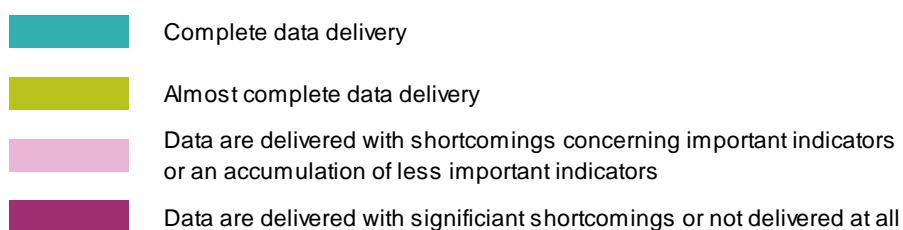


The chart in Figure 6 shows data availability calculated as the average of all EU Member States, Iceland and Norway. It clearly shows trend improvement since the first Eurostat quality report, with the percentage of complete tables increasing from 74 % to 81 % and then to 86 % in 2018. The percentage of almost complete data has fallen from 21 % in 2016 to 12 % in 2018. There was also a reduction in the share of data delivered with significant shortcomings, or not delivered at all, down from 1.7 % in 2016 to 1.4 % in 2017 to 0.9 % in 2018. Overall, data availability has increased for the EU-28 as a whole, as well as for the majority of individual EU Member States and EFTA countries. This trend seems stable.

In Figure 7, the data availability charts per country show in four assessment categories: how many of the 22 tables⁽⁵⁾ under the ESA 2010 transmission programme were delivered complete; almost complete; with some shortcomings; and, with significant shortcomings. For a majority of countries, they show progress in the number of tables delivered fully-complete. In particular, there has been notable progress for Cyprus and Luxembourg. By contrast three countries (Bulgaria, Croatia and Iceland) show mixed progress, with a persistent share of tables that have been delivered with significant shortcomings or not delivered at all.

⁽⁵⁾ Table 29, accrued-to-date pension entitlements in social insurance, only became mandatory by end-2017. Therefore, this table is not considered in the comparative assessment.

Figure 7: Evolution of data availability per country from 2016 to 2018, expressed as the number of the 22 tables under the ESA 2010 transmission programme delivered each year, in each of the four availability categories



5

Accuracy

Accuracy of statistical outputs, in the general statistical sense, is the degree of closeness of computations or estimates to the exact or true values that the statistics were intended to measure.

In national accounts, a direct approach for measuring accuracy is difficult to apply, thus the main instrument used is the analysis of revisions.

Revisions are broadly defined as any change in a value of a statistic released to the public. Revisions are made when new data sources and better information become available and thus result in more accurate observations. Therefore, revisions are inevitable whenever released statistics report promptly on economic developments despite the fact that some relevant information is still outstanding.

Revisions should be considered a normal phenomenon to progressively increase the quality and, in particular, the accuracy of data. Revision policy should be recognised as an important aspect of good governance in statistics. Good governance in statistics, in turn, is part of a broader public sector transparency and accountability.

Revisions and their correct interpretation have two-sided effects on both users and producers of statistical data. From the users' perspective, revisions improve the information available and thus are welcome. However, they may also lead to an adjustment of measures used in economic analysis and, as a consequence, result in a different assessment of the state of the economy. From the producers' perspective, the new information brought by the revisions describes economic developments more accurately; yet, frequent and/or major revisions can damage data credibility. Finally, a lack of revisions can also indicate that indicators for which more accurate source data are available are not being updated and that errors are not being corrected; i.e. that the statistics published are stable but potentially inaccurate.

It follows that a well-established and publicly-communicated revision policy is a sign of strength of the statistical system in question.

This quality report will present an assessment of national data revisions for EU Member States based on an analysis of new quality indicators to be introduced in 2019 (revision rates of quarterly and annual data for selected variables).

5.1 Revision policy

The importance of developing a revision policy and performing revision analysis is being increasingly recognised, and considerable work has been done in this field over the past few years, both by national and international statistical organisations.

5.1.1 Harmonised European revision policy

The 2012 harmonised European revision policy (HERP) endorsed by the Committee on Monetary, Finance and Balance of Payments Statistics (CMFB) was adopted shortly before the introduction of the new statistical manuals and revised transmission programmes in 2014. In principle, the scope of the 2012 HERP extended across the national accounts and balance of payments domains, in major as well as routine revisions, and in both quarterly and annual frequencies. It was envisaged that countries would start implementing the 2012 HERP with the introduction of the new standards under the ESA 2010 and the sixth edition of the IMF's Balance of Payments and International Investment Position Manual in 2014.

A stocktaking, reported to the CMFB in July 2015, conveyed implementation difficulties: nine EU Member States had implemented the policy by 2014, eight had not, and 12 had implemented it only partially. As a follow-up, the CMFB established the Task Force on Harmonised European Revision Policy (Task Force-HERP) in its July 2015 meeting to address issues related to routine revisions. The Directors of Macroeconomic Statistics of the European Statistical System (ESS) mandated a separate Task Force on Benchmark Revision Policy to investigate benchmark revisions. After two years of intensive work, adaptations were made where appropriate and the CMFB published a [communication on Harmonised European Revision Policy for Macroeconomic Statistics](#) supported by Eurostat and the ECB. It was recommended that EU Member States disseminate the results of the next benchmark revisions in 2019 and 2024 and that they follow a specific sequence of routine revisions for annual and quarterly data.

5.1.2 National revision policies

Most EU Member States and both EFTA countries provide information on national revision policies online. Croatia, Ireland, Luxembourg and Malta have not made their revision policies public. Switzerland only provides information on the revision policy of quarterly national accounts data. However, many publicly-available national revision policies often only cover the domain of non-financial accounts or parts of it, and lack information on revisions in the domain of financial accounts. Generally, the alignment of national policies to the HERP still remains a challenge. To address these issues, Eurostat made possible for countries to obtain financial support through grants for work on the national revision policy and practice.

A majority of EU Member States are performing benchmark revisions in 2019 while a few countries will do so in 2020. A fully coordinated benchmark revision for all Member States is foreseen in 2024. Eurostat is collecting information on the benchmark revisions planned by the majority in 2019, in order to design a communication strategy for its users in view of the publication of the results in Autumn 2019.

In January 2019, Eurostat published the handbook on "[Practical guidelines for revising ESA 2010 data — 2019 edition](#)", as a practical tool at the disposal of compilers of ESA 2010-based national and regional accounts. Its objective is to translate the voluntary EU recommendations on data revisions into specific practices ensuring accurate, reliable, consistent and comparable data. The handbook provides good practices for routine and benchmark revisions as well as for non-scheduled revisions.

5.2 Revision practice

According to the HERP, there are two important groups of revisions that represent the core of national accounts compilation, namely routine revisions, and major revisions which are due to changes in methods, data sources and classifications.

Routine revisions are typically revisions which apply to an annual or infra-annual window, combined with a specified depth to backward revisions. In the case of national and regional

accounts the depth is 4 years (including t-1). In other words, routine revisions are changes in published data which are related to the regular data production process (e.g. estimated values for missing responses are replaced by reported figures). Normally, these routine revisions follow a revision policy and are published according to a publicly-available, pre-announced release/revision calendar.

The second group of major revisions can be further broken down into two types:

1. revisions which originate from ad-hoc methodological changes or special events; and
2. benchmark revisions that take place on a regular basis (5 to 10 years) to incorporate results of changes in basic data sources and/ or new estimation methods.

5.2.1 Revisions of national data

In 2018, nine EU Member States and Switzerland carried out major routine revisions or benchmark revisions (France, Netherlands) of their national data.

Table 2: Major routine or benchmark revisions carried out in 2018

| Country | Revisions carried out |
|-----------------|--|
| Bulgaria | Data were revised on the base of the calculation of Supply and Use Tables for 2013 and 2014. Data were revised also for sector reclassification of units. For the period 2014-2016, the data were revised according to the EDP recommendation for reclassification of the units from S.11 to S.13. |
| Cyprus | The year 2016 was revised (finalised), due to data from the Annual Economic Surveys. The impact of the September 2018 revision (for reference year 2016) was 1.5% of GDP. |
| France | France performed a benchmark revision in 2018. The base year is 2014. The main reason for the French benchmark revision in 2018, was to reconcile National Accounts and Balance of Payment statistics. There was no major impact on GDP, but a significant increase in the French GNI. All information can be found at: https://www.insee.fr/en/statistiques/4132171#documentation-sommaire . |
| Ireland | Each year, full time series of backdata is revised for years back to 1995, if appropriate/where required (annual backdata revisions in the National Income & Expenditure (NIE) accounts published in the mid-year, non-seasonally adjusted quarterly backdata at the time of the Quarterly National Accounts Q1 reference quarter that is published in tandem with the annual NIE data, Seasonally & Calendar Adjusted data are revised in all reference quarters Q1-Q4) and so do not distinguish between benchmark and routine revisions. |
| Malta | National accounts and balance of payments data have been revised with the data collection on Arts, entertainment and recreation activities for reference years 2014 and 2015. This had an impact on the extrapolated figures for reference years 2016 to date. Revisions are included under the heading 'Arts, entertainment and recreation, repair of household goods and other services' in the output and income approach. The impact on the expenditure approach may be observed in exports and imports. There were updates from financial statements to past balance of payments estimates. These updates had an impact on the expenditure approach and the GDP to GNI transition. Overall, revisions in GDP and GNI between 2014 and 2017 amounted to an average of 1.2 per cent and -0.2 per cent respectively. https://nso.gov.mt/en/News_Releases/View_by_Unit/Unit_A1/National_Accounts/Documents/2018/News2018_193.pdf . |

| | |
|-----------------------|---|
| Netherlands | There was a benchmark revision, including a revision of the financial accounts. The BOP/IIP and NA are completely aligned from 2015 onwards, as an important result of a cooperation project between the Dutch central bank and Statistics Netherlands. https://www.cbs.nl/nl-nl/nieuws/2018/21/revisie-nationale-rekeningen The results of the 2015 revision can be found in the following publication: https://www.cbs.nl/nl-nl/publicatie/2018/21/nationale-rekeningen-revisie-2015 . |
| Austria | Routine revisions were carried out for the years 2015 and 2016. For 2015 final results from Structural Business Statistics (SBS) and preliminary balanced Supply and Use Tables (SUT) were implemented. For 2016 preliminary results from SBS were available. |
| Romania | Romania made a benchmark revision for non-financial accounts in period 2007-2015 in 2018, and will revise the period 1995-2006 in 2019. The scope of the benchmark revision was the reconciliation with the GFS and BOP revised data for the series 1995-2015. The total impact for the all series was from -0.7% to -0.2% No benchmark revision was made for national financial accounts in 2018. |
| United Kingdom | Benchmark revisions are carried out each year in the annual Blue Book, published either in July or October. The 2018 Blue Book can be found here: https://www.ons.gov.uk/economy/grossdomesticproductgdp/compendium/unitedkingdomnationalaccountsthebluebook/2018 . |
| Switzerland | Quarterly National Accounts only: In 2018 important basic statistics were revised (orders and turnover statistics in the industrial sector (INDPAU) and the construction industry (BAPAU) from 1999 onwards, the job statistics (JOBSTAT) from 2015 onwards) with corresponding revisions in the QNA time series (in particular value added in manufacturing and in the service sector, as well as investment in construction) from 1995 onwards. Additional revisions are due to an improvement of the estimation method (taxes on products, value added in the transportation and information sector). Seasonal adjustment models were also updated. Even though quarterly GDP was impacted, the big picture remains unchanged. |

5.2.2 Analysis of revisions of national data

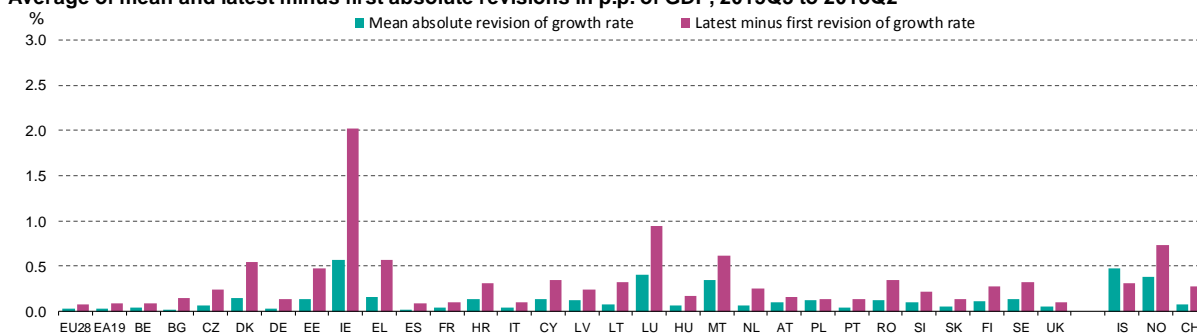
Since revisions are important to progressively improve the accuracy and reliability of national accounts, this paper presents an analysis of the revision indicators which have been introduced for selected series in the ESA 2010 quality reports in 2019, as foreseen in the implementing regulation for quality reporting. According to the regulation, the revision rates may consider both the revisions between the latest and the first transmission and the average revision in subsequent transmissions since the first transmission. For quarterly data, the reporting of both rates is mandatory; for annual data, only the average revision rate is mandatory, however in this analysis the latest minus first revision rate is also considered for the annual national accounts main aggregates series. The definitions of the revision rate indicators used for the analysis is provided in Annex 4.

QUARTERLY GDP GROWTH RATE REVISIONS AS SHOWN BY AVERAGES OF MEAN ABSOLUTE REVISIONS AND LATEST MINUS FIRST REVISIONS

As a starting point to compare revisions across countries Figure 8 shows the absolute revisions of quarter-on-quarter (QoQ) growth rates of GDP in percentage points, with two revision rates combined in the chart: the averages observed for all quarters in the reference period of: (1) the mean absolute revisions, and (2) the difference between the latest minus the first (LMF) growth rate in absolute terms. Since these indicators are averages of revision rates over a 12-quarter period, high values could either indicate substantive regular revisions over the entire period, or generally small revisions punctuated by occasionally very large revisions of the growth rate for a few specific quarters.

Figure 8. Averages of absolute revisions of GDP quarter-on-quarter growth rates

Average of mean and latest minus first absolute revisions in p.p. of GDP, 2015Q3 to 2018Q2



From the average absolute revisions for each country, it can be noted that a group of three EU Member States (Ireland, Luxembourg, Malta) and two EFTA countries (Iceland, Norway) showed higher averages than the other countries. For this group, the average of the mean absolute revisions in percentage points of GDP was between 0.3 and 0.5. There was also a group of about a dozen countries with, on average, low mean absolute revision rates and amongst them, the largest EU economies.

The same group of three EU countries, Ireland, Luxembourg and Malta, as well as Iceland, showed higher average revisions also when considering the LMF estimate of growth rates in absolute terms. While the very large average for Ireland can mainly be explained by globalisation-related accounting effects on revisions in some quarters, impacts of similar magnitude were not yet observed for other countries.

Figure 9. Latest minus first growth rate differences of GDP quarter-on-quarter growth rates

Minimum, maximum and average latest minus first revisions in p.p. of GDP, 2015Q3 to 2018Q2

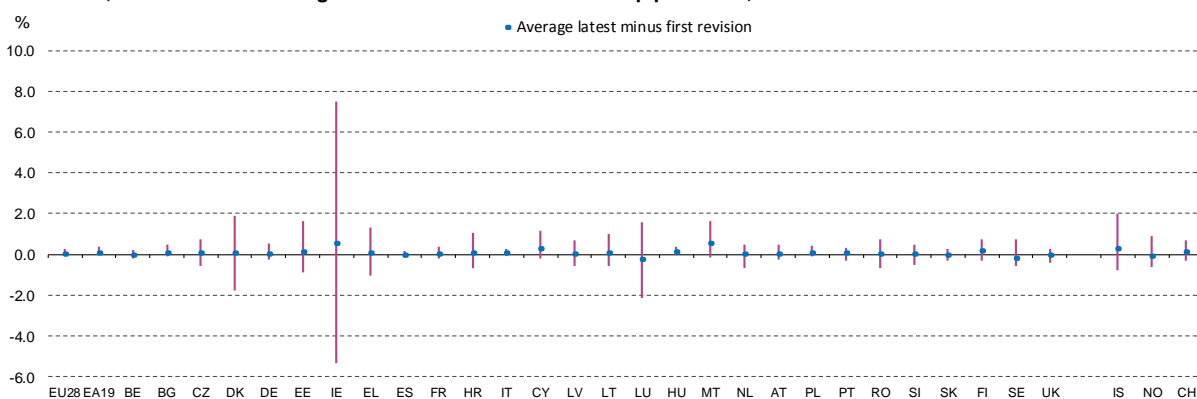
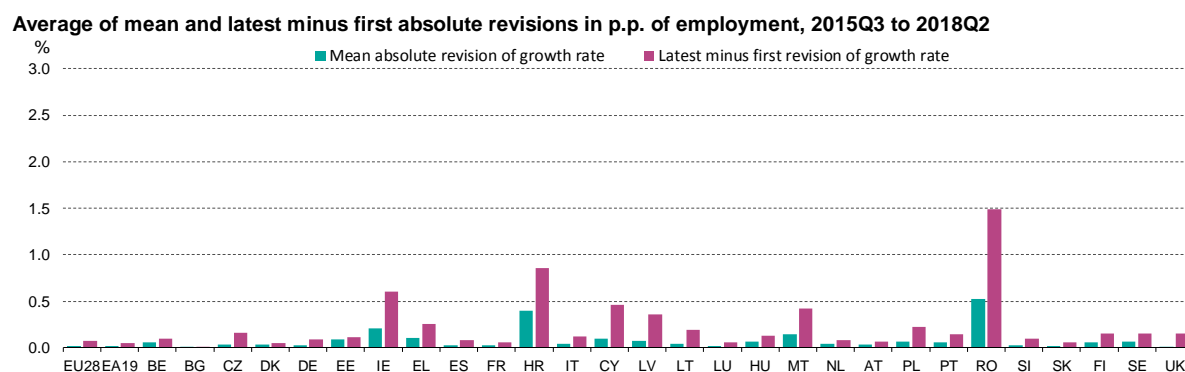


Figure 9 shows the minimum, maximum and average of LMF revisions of the GDP quarter-on-quarter growth rate estimates for the period from 2015Q3 to 2018Q2. The average of the LMF revisions shows that for the majority of countries, the direction of revisions was not strongly biased (i.e. the averages of these revision rates are close to zero). By contrast, the range of maximum to minimum revisions varied across countries. Once again, we observe a group of countries for which the range between the maximum and minimum was more than 2 percentage points, including EU Member States, Denmark, Estonia, Ireland, Luxembourg and the EFTA country Iceland. Ireland stood out in terms of both upward and downward revisions. This group is followed by Greece, Croatia, Lithuania and Malta. For about a dozen countries, as well as the European aggregates, the average of revisions as well as the range between the maximum and minimum revision was small. This latter group includes the countries with the largest economies in terms of GDP.

QUARTERLY EMPLOYMENT GROWTH RATE REVISIONS AS SHOWN BY AVERAGE ABSOLUTE REVISION AND LATEST MINUS FIRST REVISION

The next section presents the analysis of revisions of employment growth rate estimates for the quarters 2015Q3 to 2018Q2. The transmissions used represented countries' first regular estimates based on seasonally-adjusted figures. For Cyprus and Ireland these estimates were only available from 2016Q1 and for Romania from 2016Q4 onwards.

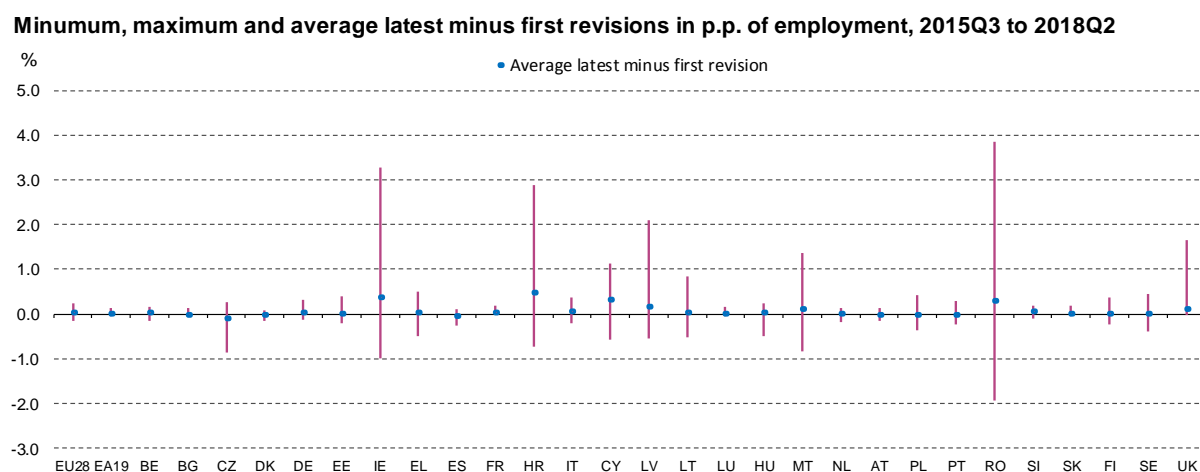
Figure 10. Averages of absolute revisions of employment quarter-on-quarter growth rates



From the combined averages for the mean and LMF absolute revisions for each country shown in Figure 10, the highest averages of revisions were observed for Romania, Croatia and Ireland. This group of Member States was followed by a group of three, Cyprus, Malta and Latvia with high averages for LMF absolute revisions. On the other extreme, Bulgaria had not revised its employment figures at all following the first transmission and about 10 other countries have small averages over the period for the revision rate indicators in absolute terms.

Figure 11 shows the minimum, maximum and average of LMF revisions of the employment QoQ growth rate estimates for the period from 2015Q3 to 2018Q2. The average of the LMF revisions shows that for Ireland, Croatia, Cyprus and Romania, some upward (positive) bias can be observed. However, for most other countries, average revisions were close to zero. Romania, Croatia and Ireland also stand out in terms of both upward and downward revisions when looking at the range of maximum to minimum revisions across countries, followed by Latvia, Malta and Cyprus.

Figure 11. Latest minus first growth rate differences of employment quarter-on-quarter growth rates



GENERAL OBSERVATIONS ON NATIONAL REVISION PRACTICES OF QUARTERLY DATA

Despite some common features, country-specific factors and explanations are actually key to understanding and interpreting revisions. Notably, a country's revision policy usually plays an important role in explaining revision patterns. In the context of information transmitted with the ESA 2010 quality reports and metadata, countries should not only specify when and how new information is incorporated but also include information on the alignment with the European harmonised revision policy (HERP).

With respect to bigger revisions, countries provided some specific information to Eurostat in the context of the national quality reports. Countries have communicated when they have carried benchmark revisions. Cyprus and Denmark carried out a benchmark revision in 2016. Austria performed a benchmark revision in 2017. The Netherlands and France carried out a benchmark revision in 2018.

Other countries, while not performing a benchmark revision, carried out major routine revisions during the period (Bulgaria, Latvia and Switzerland). The United Kingdom revises their data each year.

In part, both benchmark and major routine revisions can explain large contributions to the average absolute revision rates over the whole period. This is especially relevant for the countries for which the largest average revisions in the GDP growth rate has been observed.

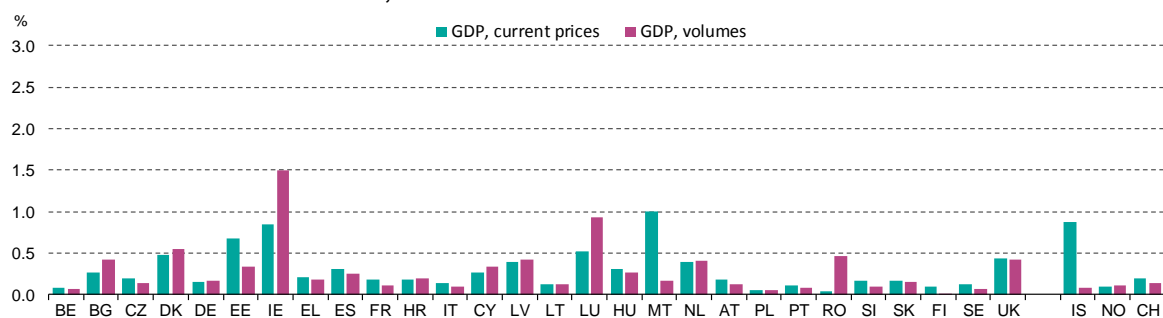
While Ireland performs regular revisions of national accounts data every year (no distinction between routine and benchmark revisions) the large observed quarterly revisions for Ireland can mainly be explained by globalisation-related accounting effects.

Luxembourg has revised national accounts, which had an impact to GDP, in order to avoid a break in statistical series after the reclassification of a statistical unit from the institutional sector of non-financial corporations (S11) to the institutional sector of General Government (S13). Malta has revised their National accounts and balance of payments data with the data collection on Arts, entertainment and recreation activities, which had an effect on GDP as well for the quarters of 2015. Iceland performed a major revision in the year of 2016, which affected 2015Q3 to 2016Q2 quarters, due to revised methods and better source data used in the deflation of actual and imputed rentals for housing in household final consumption expenditure. In the case of Norway, there were no additional major revisions for the indicated period, only regular ones.

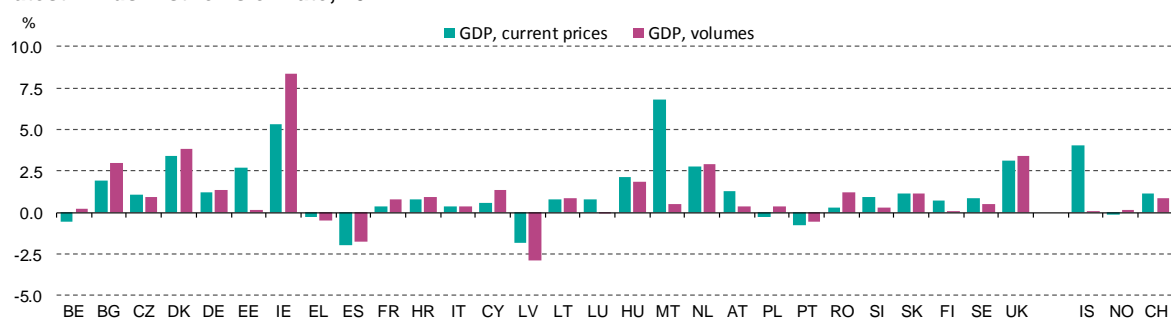
ANNUAL GDP REVISIONS AS SHOWN BY RELATIVE MEAN ABSOLUTE REVISION AND LATEST MINUS FIRST REVISION

Figure 12. GDP in current prices and in volumes, 2014

Relative mean absolute revision rate, 2014



Latest minus first revision rate, 2014

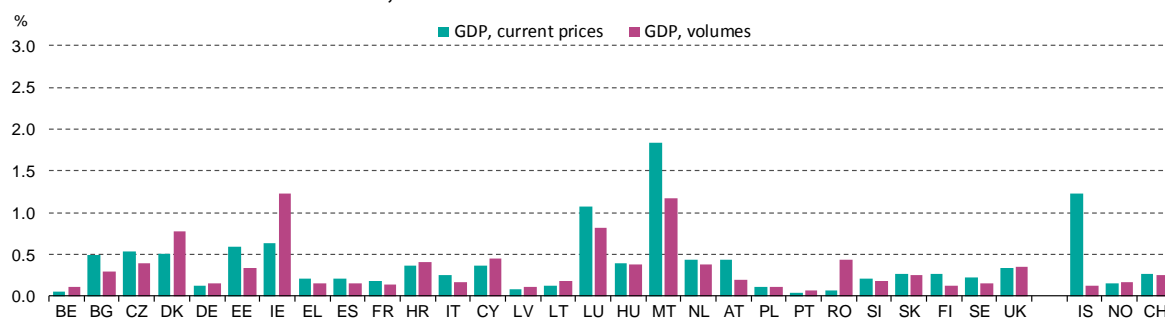


The RMAR and the LMF revision rates for GDP in current prices and in volumes for the year 2014 are shown in Figure 12. A group of six countries (Denmark, Estonia, Ireland, Luxembourg, Malta and Iceland) had higher revision rates than the other countries, having RMAR rates of GDP in current prices roughly between 0.5 % and 1.0 %. Extraordinary, globalisation-caused issues can explain the high revision rate for Denmark. For the LMF revision rate indicator, two of these five countries, Ireland and Malta, also showed exceptionally high revision rates of 5.6 % and 7.8 %, respectively. Negative LMF revision rates were observed for Belgium, Greece, Poland, Portugal, as well as for Spain and Latvia (for which revisions were the result of an ongoing work on GNI reservations). For these latter two countries, the largest negative revision rates were observed (-2.0 % and -1.8 % respectively, based on GDP at current prices).

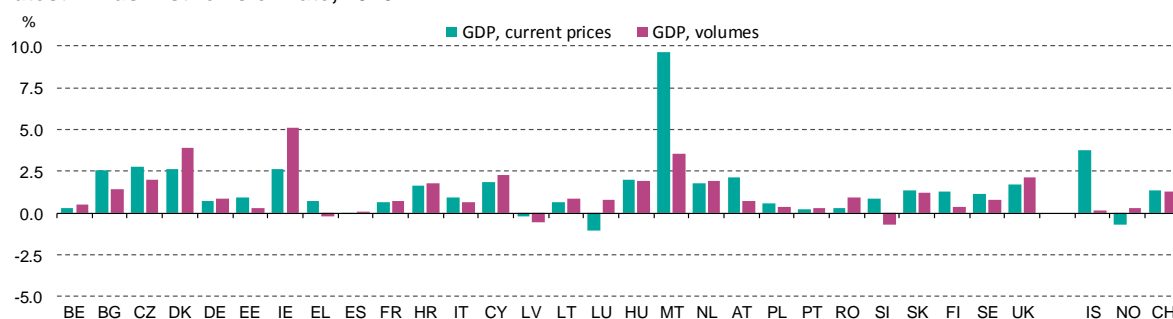
The chart also shows a number of countries for which the both RMAR rate and the LMF revision rates were small, indicating that the GDP series for these countries in 2014 had not been revised substantively over the course of the subsequent three years. Very small revision rates are also somewhat surprising, given that the reference year 2014 was at the beginning of reporting under ESA 2010, and countries may have still been adapting their national accounting systems.

Figure 13. GDP in current prices and in volumes, 2015

Relative mean absolute revision rate, 2015



Latest minus first revision rate, 2015



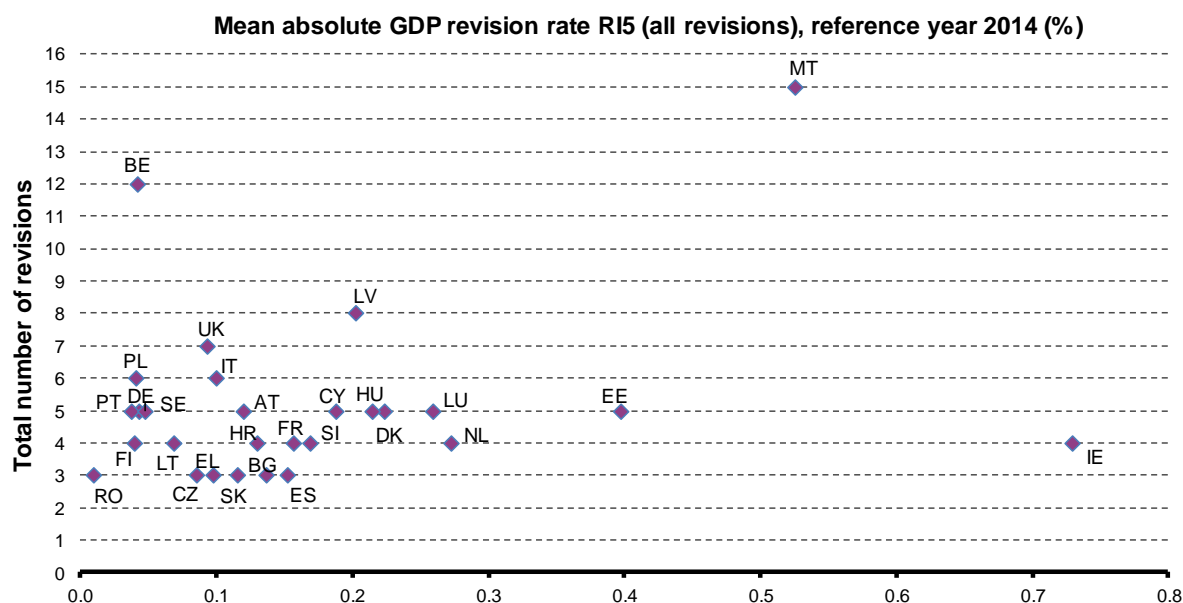
For the year 2015 (Figure 13), the pattern of revision rates are similar to 2014, with the same group of five countries (Estonia, Ireland, Luxembourg, Malta and Iceland) having the highest RMAR rates. For the latter three, the RMAR rate exceeded 1.0 %. In addition, four more countries in 2015, Bulgaria, Czechia and Denmark, had RMAR rates reaching 0.5 % or above for GDP at current prices. For the LMF revision rate, six of these countries (Bulgaria, Czechia, Denmark, Ireland, Malta and Iceland) had rates at or exceeding 2.5 %. However, for Luxembourg, the LMF revision rate was negative with -1.0 %. For Czechia, significant revisions of annual 2015 GDP data were observed between the first and second round of annual data compilation, where final annual input data instead of quarterly estimates were used, which shows the lower reliability inherent in the grossing up of the quarterly surveys.

Several countries had comparatively low RMAR and LMF revision rates for annual GDP series in both 2014 and 2015, among them Belgium, Greece, Italy, Lithuania, Poland, Portugal and Iceland.

REVISION PRACTICE OF EU MEMBER STATES BASED ON THE FREQUENCY OF REVISIONS AND THE SIZE OF THE GDP RELATIVE MEAN ABSOLUTE REVISION, 2014

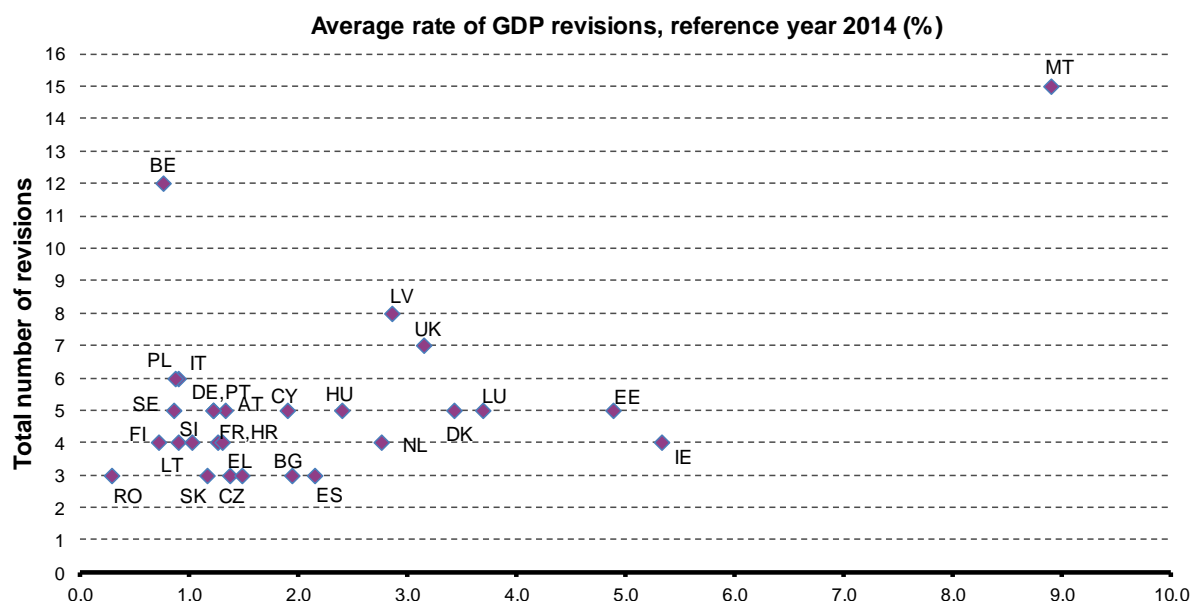
Figure 14 shows the RMAR rates of all the revisions for the reference year 2014. The chart shows that Malta and Belgium had the highest total number of revisions, much above the group of other countries, which was led by Latvia. During the year of 2014, Malta revised GDP 15 times. On average, EU Member States submitted five revisions for the reference year 2014.

Figure 14. Revisions of GDP in current prices: mean absolute revision rate of all revisions of reference year 2014 data



The chart shows that Malta also had one of the highest RMAR rates for GDP, at +0.52 %. By contrast, while Ireland had the highest RMAR rate for 2014 GDP data at 0.73 %, it only made four revisions to the data. On average EU Member States revised GDP by 0.17 %, as measured by the RMAR rate. The chart shows the countries which break away from the main cluster revised their 2014 GDP data more on average, either due to many revisions or a higher RMAR rate. While the Member States with largest economies are part of the cluster, most of those breaking away have smaller economies.

Figure 15. Revisions of GDP in current prices: average revision rate of all revisions of reference year 2014 data, calculated with a multiplicative index of revision rates



The chart in Figure 15 plots the EU Member States by total number of revisions against an alternative indicator of the average revision rate for GDP in reference year 2014. It uses a multiplicative index of revision rates. In this chart, Malta stands out both in number and average

size of revisions. Using this approach, the average revision rate of the United Kingdom rises substantially, while that of Ireland is diminished. The relative position of Belgium, Latvia and Estonia does not change appreciably. The chart still shows a cluster of Member States which revised by less than 2.0 % on average, through six or less revisions.

GENERAL OBSERVATIONS ON NATIONAL REVISION PRACTICES OF ANNUAL MAIN AGGREGATES DATA

The analysis of revision rates of annual data for reference years 2014 and 2015 yields the observation that, similar to the quarterly data analysis, a small number of countries had higher rates, on average, than the others: Ireland, Luxembourg, Malta and Iceland for GDP; Cyprus, the United Kingdom and Iceland for employment.

Recalling from the quarterly analysis, benchmark revisions have been communicated by several countries: Cyprus and Denmark carried out a benchmark revision in 2016; Austria performed a benchmark revision in 2017; and the Netherlands and France carried out a benchmark revision in 2018. Bulgaria, Latvia and Switzerland carried out major routine revisions during the period under analysis and Ireland and the United Kingdom revise their data each year. The results that are shown in many of the charts in this section reflect the country-specific impacts of these major changes.

For many countries, on average, the largest revisions of GDP data occurred in the first transmissions after the initial one. However, breaking down the revisions of GDP to common horizons for the various reference years showed that across all countries there was no specific reference year that was revised more than the others.

Insight can be gained into the sources of revisions for each country, by breaking down revision in GDP into the revisions of income or expenditure components, or by specific time horizons. It is key to relate these sources to country-specific revision information.

Malta showed substantial revisions to all years, but especially 2015, due to revisions in national accounts and balance of payments data with the data collection on arts, entertainment and recreation activities. These revisions are reflected in revisions in the income component for GOS and mixed income, and in the expenditure components GFCF, exports and imports.

Similarly, major revisions by Luxembourg to national accounts data was reflected in the same income and expenditure components as for Malta. However, the adjustments to GDP in Luxembourg came with later revisions to 2014 data and also affected later reference years, from 2015 onward. The major revision to GDP in Iceland which occurred in 2016, impacted several reference years and led to revisions in private final consumption expenditure and GFCF. The revisions were almost all in the GOS and mixed income component.

Ireland performs regular revisions of national accounts data every year with no distinction between routine and benchmark revisions. The analysis shows that the revisions due to globalisation-related accounting effects resulted in especially large revisions to GFCF, and in particular revisions to GDP data for 2014 and 2016. The greatest impact was on GDP volumes for 2014, where Ireland had the highest revision rates of all countries.

5.2.3 Revisions of European aggregates

The revision rates for European aggregates presented are based on two commonly-used statistical measures to gauge the size of revisions of economic variables published on an intra-annual frequency: average revision rates and average absolute revision rates. The latter avoids the offsetting effects of combined negative and positive revisions on the average rate.

For the European aggregates of national accounts data for the euro area and the EU-28, Eurostat publishes quarterly the estimates of GDP and employment from the quarterly **main**

aggregates data; the saving rate and investment rate for households and NPISH, and investment rate and profit share for non-financial corporations from the quarterly **non-financial sector accounts** data; as well as data on the government debt and deficit from quarterly **government finance statistics**. Eurostat also publishes government debt and deficit for the euro area and EU-28 from the provision of data for the **excessive deficit procedure** in the first and second notifications. While information on revisions in the latter government finance statistics is not provided here, it can be found within the [news releases on the Eurostat website](#).

REVISIONS OF GDP AND EMPLOYMENT GROWTH ESTIMATES FOR THE EU AND THE EA

Tables 3 to 6 present the subsequent revisions of EU and EA aggregates released between 2015Q3 and 2018Q3. The **quarter-on-quarter GDP growth rates** and the **year-on-year GDP growth rates** are given in the left part of the tables and the revisions of the growth rates appear on the right part. The last column in both parts contains three cells with missing data prior to 2016Q2 because Eurostat did not estimate GDP at t+100 in the first seven quarters after the transmissions under ESA 2010 started. These estimates were reintroduced in the 2016Q2 and are now regularly done.

In general, the four GDP estimates (at t+30, t+45, t+65 and t+100) were stable as both average revisions and average absolute revisions were small. For the EA GDP estimates, the average absolute revision between the t+100 estimates and the t+30 estimate was 0.07 percentage points for the quarter-on-quarter growth rates, and 0.11 percentage points for the year-on-year growth rates. Upward revisions were most common, and there were upward revisions for all estimates in six of the 13 quarters. For the EU GDP estimates, the average absolute revision between the t+100 estimates and the t+30 estimate was slightly smaller at 0.05 percentage points for the quarter-on-quarter growth rates, and 0.09 percentage points for the year-on-year growth rates. Once again, upward revisions were most common, and there were upward revisions across all estimates in seven of the 13 quarters. The largest revisions in GDP growth estimate for both the EA and EU aggregates occurred between 2017Q1 and 2017Q3.

Tables 7 and 8 present the subsequent revisions of Eurostat's **employment growth estimates** for the EU and EA aggregates released between 2015Q3 and 2018Q3. The revision between the two estimates at t+75 days and at t+165 days is presented. Publication of employment estimates at t+45 days started only for reference quarter 2018Q3, and therefore this release is not presented in the table. Generally, there are low revision rates between the first estimate and the following one. Notwithstanding the EU-28 estimates for quarter 2015Q4, which showed higher revisions than usual due to a transmission error by one of the larger Member States, and the quarters 2016Q4 and 2017Q1, where later growth estimates were notably larger than the earlier ones.

There is a tendency to revise quarter-on-quarter growth rates upwards, even if very slightly. For the period from 2015Q3 to 2018Q3: for the EA-19 estimates and for the EU-28 estimates, upward revisions took place in ten out of 13 quarters.

Table 3: Revisions of quarterly GDP for the EA-19 aggregates (quarter-on-quarter growth rates) based on data for reference quarters from 2015Q3 to 2018Q3

| Quarter-on-quarter, Eurostat growth estimates | | | | | Quarter-on-quarter revisions | | | |
|---|------|------|------|-------|------------------------------|-------|-------|--------|
| EA-19 | t+30 | t+45 | t+65 | t+100 | 45-30 | 65-30 | 65-45 | 100-30 |
| 2015Q3 | 0.26 | 0.30 | 0.29 | | 0.04 | 0.03 | -0.01 | |
| 2015Q4 | 0.24 | 0.27 | 0.31 | | 0.03 | 0.07 | 0.05 | |
| 2016Q1 | 0.55 | 0.52 | 0.55 | | -0.03 | 0.00 | 0.03 | |
| 2016Q2 | 0.29 | 0.28 | 0.30 | 0.29 | -0.01 | 0.01 | 0.02 | 0.01 |
| 2016Q3 | 0.34 | 0.35 | 0.35 | 0.44 | 0.01 | 0.01 | 0.00 | 0.09 |
| 2016Q4 | 0.50 | 0.40 | 0.41 | 0.48 | -0.10 | -0.09 | 0.01 | -0.02 |
| 2017Q1 | 0.46 | 0.49 | 0.58 | 0.51 | 0.03 | 0.13 | 0.09 | 0.05 |
| 2017Q2 | 0.56 | 0.63 | 0.63 | 0.65 | 0.07 | 0.07 | 0.00 | 0.09 |
| 2017Q3 | 0.58 | 0.61 | 0.61 | 0.71 | 0.03 | 0.02 | -0.01 | 0.13 |
| 2017Q4 | 0.56 | 0.59 | 0.60 | 0.67 | 0.03 | 0.04 | 0.01 | 0.11 |
| 2018Q1 | 0.42 | 0.40 | 0.38 | 0.37 | -0.02 | -0.03 | -0.02 | -0.05 |
| 2018Q2 | 0.35 | 0.37 | 0.38 | 0.45 | 0.03 | 0.04 | 0.01 | 0.10 |
| 2018Q3 | 0.16 | 0.18 | 0.16 | 0.16 | 0.03 | 0.00 | -0.03 | 0.00 |
| Average revision | | | | | 0.01 | 0.02 | 0.01 | 0.05 |
| Average absolute revision | | | | | 0.03 | 0.04 | 0.02 | 0.07 |

Table 4: Revisions of quarterly GDP for the EA-19 aggregates (year-on-year growth rates) based on data for reference quarters from 2015Q3 to 2018Q3

| Year-on-year, Eurostat growth estimates | | | | | Year-on-year revisions | | | |
|---|------|------|------|-------|------------------------|-------|-------|--------|
| EA-19 | t+30 | t+45 | t+65 | t+100 | 45-30 | 65-30 | 65-45 | 100-30 |
| 2015Q3 | 1.53 | 1.57 | 1.59 | | 0.04 | 0.06 | 0.02 | |
| 2015Q4 | 1.47 | 1.49 | 1.58 | | 0.03 | 0.11 | 0.09 | |
| 2016Q1 | 1.56 | 1.53 | 1.67 | | -0.03 | 0.11 | 0.14 | |
| 2016Q2 | 1.58 | 1.57 | 1.62 | 1.61 | -0.01 | 0.04 | 0.05 | 0.03 |
| 2016Q3 | 1.61 | 1.62 | 1.67 | 1.76 | 0.01 | 0.06 | 0.06 | 0.15 |
| 2016Q4 | 1.76 | 1.66 | 1.69 | 1.80 | -0.11 | -0.08 | 0.03 | 0.04 |
| 2017Q1 | 1.70 | 1.74 | 1.90 | 1.86 | 0.04 | 0.20 | 0.16 | 0.16 |
| 2017Q2 | 2.08 | 2.15 | 2.30 | 2.31 | 0.07 | 0.22 | 0.15 | 0.22 |
| 2017Q3 | 2.45 | 2.48 | 2.59 | 2.76 | 0.03 | 0.14 | 0.11 | 0.31 |
| 2017Q4 | 2.65 | 2.68 | 2.67 | 2.76 | 0.03 | 0.02 | -0.01 | 0.11 |
| 2018Q1 | 2.52 | 2.51 | 2.54 | 2.51 | -0.02 | 0.02 | 0.03 | -0.01 |
| 2018Q2 | 2.14 | 2.17 | 2.11 | 2.17 | 0.03 | -0.02 | -0.05 | 0.03 |
| 2018Q3 | 1.66 | 1.69 | 1.64 | 1.62 | 0.03 | -0.03 | -0.05 | -0.04 |
| Average revision | | | | | 0.01 | 0.07 | 0.06 | 0.10 |
| Average absolute revision | | | | | 0.04 | 0.09 | 0.07 | 0.11 |

Table 5: Revisions of quarterly GDP for the EU-28 aggregates (quarter-on-quarter growth rates) based on data for reference quarters from 2015Q3 to 2018Q3

| Quarter-on-quarter, Eurostat growth estimates | | | | | Quarter-on-quarter revisions | | | |
|---|------|------|------|-------|------------------------------|-------|-------|--------|
| EU-28 | t+30 | t+45 | t+65 | t+100 | 45-30 | 65-30 | 65-45 | 100-30 |
| 2015Q3 | 0.31 | 0.37 | 0.37 | | 0.06 | 0.06 | 0.00 | |
| 2015Q4 | 0.31 | 0.35 | 0.40 | | 0.03 | 0.09 | 0.06 | |
| 2016Q1 | 0.50 | 0.48 | 0.50 | | -0.02 | 0.00 | 0.02 | |
| 2016Q2 | 0.38 | 0.38 | 0.40 | 0.41 | 0.00 | 0.02 | 0.02 | 0.04 |
| 2016Q3 | 0.37 | 0.38 | 0.38 | 0.45 | 0.01 | 0.01 | 0.00 | 0.09 |
| 2016Q4 | 0.56 | 0.49 | 0.53 | 0.57 | -0.07 | -0.04 | 0.03 | 0.01 |
| 2017Q1 | 0.45 | 0.50 | 0.56 | 0.51 | 0.05 | 0.11 | 0.06 | 0.06 |
| 2017Q2 | 0.59 | 0.65 | 0.66 | 0.66 | 0.06 | 0.07 | 0.01 | 0.07 |
| 2017Q3 | 0.59 | 0.60 | 0.60 | 0.68 | 0.01 | 0.01 | 0.00 | 0.09 |
| 2017Q4 | 0.58 | 0.59 | 0.60 | 0.65 | 0.01 | 0.02 | 0.01 | 0.07 |
| 2018Q1 | 0.42 | 0.39 | 0.40 | 0.41 | -0.03 | -0.02 | 0.01 | -0.01 |
| 2018Q2 | 0.43 | 0.43 | 0.44 | 0.49 | 0.00 | 0.01 | 0.01 | 0.06 |
| 2018Q3 | 0.33 | 0.34 | 0.31 | 0.31 | 0.01 | -0.03 | -0.04 | -0.02 |
| Average revision | | | | | 0.01 | 0.02 | 0.01 | 0.04 |
| Average absolute revision | | | | | 0.03 | 0.04 | 0.02 | 0.05 |

Table 6: Revisions of quarterly GDP for the EU-28 aggregates (year-on-year growth rates) based on data for reference quarters from 2015Q3 to 2018Q3

| Year-on-year, Eurostat growth estimates | | | | | Year-on-year revisions | | | |
|---|------|------|------|-------|------------------------|-------|-------|--------|
| EU-28 | t+30 | t+45 | t+65 | t+100 | 45-30 | 65-30 | 65-45 | 100-30 |
| 2015Q3 | 1.80 | 1.86 | 1.89 | | 0.06 | 0.09 | 0.03 | |
| 2015Q4 | 1.72 | 1.76 | 1.84 | | 0.03 | 0.11 | 0.08 | |
| 2016Q1 | 1.73 | 1.72 | 1.85 | | -0.02 | 0.12 | 0.13 | |
| 2016Q2 | 1.78 | 1.78 | 1.85 | 1.83 | 0.00 | 0.07 | 0.07 | 0.06 |
| 2016Q3 | 1.81 | 1.82 | 1.85 | 1.92 | 0.01 | 0.04 | 0.03 | 0.10 |
| 2016Q4 | 1.91 | 1.83 | 1.85 | 1.93 | -0.07 | -0.06 | 0.02 | 0.02 |
| 2017Q1 | 1.91 | 1.96 | 2.06 | 2.06 | 0.05 | 0.15 | 0.10 | 0.15 |
| 2017Q2 | 2.20 | 2.26 | 2.40 | 2.35 | 0.06 | 0.20 | 0.14 | 0.15 |
| 2017Q3 | 2.50 | 2.50 | 2.59 | 2.76 | 0.01 | 0.10 | 0.09 | 0.26 |
| 2017Q4 | 2.61 | 2.62 | 2.60 | 2.67 | 0.01 | -0.01 | -0.02 | 0.07 |
| 2018Q1 | 2.43 | 2.40 | 2.43 | 2.39 | -0.03 | 0.00 | 0.03 | -0.03 |
| 2018Q2 | 2.17 | 2.17 | 2.14 | 2.15 | 0.00 | -0.03 | -0.04 | -0.02 |
| 2018Q3 | 1.86 | 1.87 | 1.82 | 1.82 | 0.01 | -0.04 | -0.05 | -0.04 |
| Average revision | | | | | 0.01 | 0.06 | 0.05 | 0.07 |
| Average absolute revision | | | | | 0.03 | 0.08 | 0.06 | 0.09 |

Table 7: Revisions of quarterly employment growth estimates for the EA-19 aggregates based on data for reference quarters from 2015Q3 to 2018Q3

| Year-on-year growth estimates | | | | Quarter-on-quarter growth estimates | | | |
|-------------------------------|------|-------|--------|-------------------------------------|------|-------|--------|
| EA-19 | t+75 | t+165 | 165-75 | EA-19 | t+75 | t+165 | 165-75 |
| 2015Q3 | 1.07 | 1.03 | -0.04 | 2015Q3 | 0.28 | 0.31 | 0.03 |
| 2015Q4 | 1.21 | 1.27 | 0.06 | 2015Q4 | 0.31 | 0.32 | 0.01 |
| 2016Q1 | 1.40 | 1.45 | 0.05 | 2016Q1 | 0.34 | 0.35 | 0.01 |
| 2016Q2 | 1.44 | 1.37 | -0.07 | 2016Q2 | 0.39 | 0.35 | -0.04 |
| 2016Q3 | 1.23 | 1.24 | 0.01 | 2016Q3 | 0.21 | 0.20 | -0.01 |
| 2016Q4 | 1.15 | 1.37 | 0.22 | 2016Q4 | 0.25 | 0.36 | 0.11 |
| 2017Q1 | 1.47 | 1.56 | 0.10 | 2017Q1 | 0.43 | 0.50 | 0.07 |
| 2017Q2 | 1.60 | 1.64 | 0.04 | 2017Q2 | 0.42 | 0.44 | 0.02 |
| 2017Q3 | 1.73 | 1.70 | -0.03 | 2017Q3 | 0.39 | 0.38 | -0.01 |
| 2017Q4 | 1.58 | 1.56 | -0.02 | 2017Q4 | 0.27 | 0.26 | 0.00 |
| 2018Q1 | 1.44 | 1.54 | 0.10 | 2018Q1 | 0.38 | 0.41 | 0.04 |
| 2018Q2 | 1.49 | 1.49 | 0.00 | 2018Q2 | 0.36 | 0.36 | 0.00 |
| 2018Q3 | 1.30 | 1.30 | 0.00 | 2018Q3 | 0.20 | 0.20 | 0.00 |
| Average revision | | | 0.033 | Average revision | | | 0.017 |
| Average absolute revision | | | 0.029 | Average absolute revision | | | 0.027 |

Table 8: Revisions of quarterly employment growth estimates for the EU-28 aggregates based on data for reference quarters from 2015Q3 to 2018Q3

| Year-on-year growth estimates | | | | Quarter-on-quarter growth estimates | | | |
|-------------------------------|------|-------|--------|-------------------------------------|------|-------|--------|
| EU-28 | t+75 | t+165 | 165-75 | EU-28 | t+75 | t+165 | 165-75 |
| 2015Q3 | 1.23 | 1.10 | -0.13 | 2015Q3 | 0.36 | 0.35 | -0.01 |
| 2015Q4 | 1.06 | 1.27 | 0.21 | 2015Q4 | 0.14 | 0.35 | 0.21 |
| 2016Q1 | 1.33 | 1.36 | 0.03 | 2016Q1 | 0.35 | 0.35 | 0.00 |
| 2016Q2 | 1.42 | 1.40 | -0.01 | 2016Q2 | 0.33 | 0.34 | 0.01 |
| 2016Q3 | 1.23 | 1.15 | -0.07 | 2016Q3 | 0.19 | 0.18 | -0.01 |
| 2016Q4 | 1.02 | 1.18 | 0.16 | 2016Q4 | 0.23 | 0.39 | 0.16 |
| 2017Q1 | 1.37 | 1.46 | 0.08 | 2017Q1 | 0.41 | 0.47 | 0.06 |
| 2017Q2 | 1.51 | 1.64 | 0.13 | 2017Q2 | 0.42 | 0.51 | 0.09 |
| 2017Q3 | 1.70 | 1.66 | -0.04 | 2017Q3 | 0.28 | 0.23 | -0.05 |
| 2017Q4 | 1.53 | 1.50 | -0.02 | 2017Q4 | 0.24 | 0.24 | 0.00 |
| 2018Q1 | 1.45 | 1.51 | 0.05 | 2018Q1 | 0.43 | 0.46 | 0.03 |
| 2018Q2 | 1.37 | 1.36 | 0.00 | 2018Q2 | 0.36 | 0.37 | 0.00 |
| 2018Q3 | 1.25 | 1.25 | 0.00 | 2018Q3 | 0.16 | 0.16 | 0.00 |
| Average revision | | | 0.030 | Average revision | | | 0.038 |
| Average absolute revision | | | 0.037 | Average absolute revision | | | 0.049 |

REVISIONS OF AGGREGATES FOR HOUSEHOLDS AND NON-FINANCIAL CORPORATIONS FOR THE EU AND THE EA

The revisions for releases of EA-19 quarterly **saving rate and investment rate for households and NPISH**, and **investment rate and profit share for non-financial corporations**, are presented in Tables 9 and 10 on data for reference quarters from 2015Q3 to 2018Q3. The early release of data from seasonally-adjusted quarterly European sector accounts occurs at t+94 days, with the final release at t+120 days. The average revision and average absolute revisions are small for all four indicators. The largest revisions are for the profit share of non-financial corporations, with an average absolute revision of 0.05 percentage points.

Similarly, Tables 11 and 12 present the revisions for releases of EU-28⁽⁶⁾ quarterly saving rate and investment rate for households and NPISH, and investment rate and profit share for non-financial corporations. There are no early releases for these aggregate series, therefore the comparison is between the first transmission data (when the news release is produced) and the second transmission of data in the subsequent quarter. Once again, the largest revisions are for the profit share of non-financial corporations, with an average absolute revision of 0.22 percentage points.

⁽⁶⁾ Due to the conversion to euro, the European Union key indicators may be affected by movements in exchange rates

Table 9: Revisions of quarterly saving and investment rates of households and NPISH, for the EA-19 aggregates (seasonally-adjusted) based on data for reference quarters from 2015Q3 to 2018Q3

| EA-19 Households and NPISH | | | | | | | |
|-----------------------------------|----------------------|-----------------------|------------------------|---------------------------------------|----------------------|-----------------------|------------------------|
| Saving rate (seas. adjusted data) | | | | Investment Rate (seas. adjusted data) | | | |
| Quarter | Early release (t+94) | Final release (t+120) | Revision Final - Early | Quarter | Early release (t+94) | Final release (t+120) | Revision Final - Early |
| 2015Q3 | 12.83 | 12.83 | 0.00 | 2015Q3 | 8.29 | 8.29 | 0.00 |
| 2015Q4 | 12.68 | 12.68 | 0.00 | 2015Q4 | 8.35 | 8.35 | 0.00 |
| 2016Q1 | 12.92 | 12.78 | -0.14 | 2016Q1 | 8.49 | 8.46 | -0.03 |
| 2016Q2 | 12.75 | 12.79 | 0.04 | 2016Q2 | 8.55 | 8.55 | 0.00 |
| 2016Q3 | 12.62 | 12.49 | -0.13 | 2016Q3 | 8.50 | 8.53 | 0.03 |
| 2016Q4 | 11.98 | 11.93 | -0.05 | 2016Q4 | 8.53 | 8.53 | 0.00 |
| 2017Q1 | 12.31 | 12.31 | 0.00 | 2017Q1 | 8.93 | 8.93 | 0.00 |
| 2017Q2 | 12.06 | 12.10 | 0.04 | 2017Q2 | 8.73 | 8.73 | 0.00 |
| 2017Q3 | 12.02 | 12.01 | -0.01 | 2017Q3 | 8.79 | 8.79 | 0.00 |
| 2017Q4 | 12.21 | 12.26 | 0.05 | 2017Q4 | 8.80 | 8.79 | -0.01 |
| 2018Q1 | 11.98 | 11.98 | 0.00 | 2018Q1 | 9.01 | 9.01 | 0.00 |
| 2018Q2 | 12.08 | 12.10 | 0.02 | 2018Q2 | 9.01 | 9.04 | 0.03 |
| 2018Q3 | 12.30 | 12.28 | -0.02 | 2018Q3 | 9.08 | 9.12 | 0.04 |
| Average revision | | | -0.015 | Average revision | | | 0.005 |
| Average absolute revision | | | 0.019 | Average absolute revision | | | 0.011 |

Table 10: Revisions of quarterly investment rates and profit shares of non-financial corporations, for the EA-19 aggregates (seasonally-adjusted) based on data for reference quarters from 2015Q3 to 2018Q3

| EA-19 Non-financial corporations | | | | | | | |
|---------------------------------------|----------------------|-----------------------|------------------------|------------------------------------|----------------------|-----------------------|------------------------|
| Investment rate (seas. adjusted data) | | | | Profit Share (seas. adjusted data) | | | |
| Quarter | Early release (t+94) | Final release (t+120) | Revision Final - Early | Quarter | Early release (t+94) | Final release (t+120) | Revision Final - Early |
| 2015Q3 | 22.12 | 22.09 | -0.03 | 2015Q3 | 39.75 | 39.71 | -0.04 |
| 2015Q4 | 22.18 | 22.17 | -0.01 | 2015Q4 | 40.01 | 39.95 | -0.06 |
| 2016Q1 | 22.20 | 22.14 | -0.06 | 2016Q1 | 40.11 | 40.14 | 0.03 |
| 2016Q2 | 22.17 | 22.16 | -0.01 | 2016Q2 | 40.56 | 40.55 | -0.01 |
| 2016Q3 | 21.91 | 21.88 | -0.03 | 2016Q3 | 40.63 | 40.59 | -0.04 |
| 2016Q4 | 23.51 | 23.53 | 0.02 | 2016Q4 | 40.95 | 40.86 | -0.09 |
| 2017Q1 | 22.15 | 22.15 | 0.00 | 2017Q1 | 40.26 | 40.25 | -0.01 |
| 2017Q2 | 23.24 | 23.27 | 0.03 | 2017Q2 | 40.81 | 40.83 | 0.02 |
| 2017Q3 | 22.44 | 22.44 | 0.00 | 2017Q3 | 41.36 | 41.35 | -0.01 |
| 2017Q4 | 22.80 | 22.89 | 0.09 | 2017Q4 | 41.09 | 41.11 | 0.02 |
| 2018Q1 | 23.10 | 23.10 | 0.00 | 2018Q1 | 40.62 | 40.60 | -0.02 |
| 2018Q2 | 23.00 | 22.94 | -0.06 | 2018Q2 | 40.56 | 40.82 | 0.26 |
| 2018Q3 | 23.34 | 23.44 | 0.10 | 2018Q3 | 40.34 | 40.41 | 0.07 |
| Average revision | | | 0.003 | Average revision | | | 0.009 |
| Average absolute revision | | | 0.017 | Average absolute revision | | | 0.052 |

Table 11: Revisions of quarterly saving and investment rates of households and NPISH, for the EU-28 aggregates (seasonally-adjusted) based on data for reference quarters from 2015Q3 to 2018Q3

| EU-28 Households and NPISH (1) | | | | | | | |
|-----------------------------------|-----------------------|-----------------------|-----------------------|---------------------------------------|-----------------------|-----------------------|-----------------------|
| Saving rate (seas. adjusted data) | | | | Investment Rate (seas. adjusted data) | | | |
| Quarter | 1st trans- mission | 2nd trans- mission | Revision 2nd - 1st | Quarter | 1st trans- mission | 2nd trans- mission | Revision 2nd - 1st |
| 2015Q3 | 9.78 | 9.85 | 0.07 | 2015Q3 | 7.95 | 7.94 | -0.01 |
| 2015Q4 | 10.47 | 10.26 | -0.21 | 2015Q4 | 8.00 | 8.04 | 0.04 |
| 2016Q1 | 10.74 | 10.43 | -0.31 | 2016Q1 | 8.06 | 8.00 | -0.06 |
| 2016Q2 | 10.62 | 10.73 | 0.11 | 2016Q2 | 8.10 | 8.06 | -0.04 |
| 2016Q3 | 10.15 | 9.99 | -0.16 | 2016Q3 | 8.10 | 8.11 | 0.01 |
| 2016Q4 | 10.06 | 9.80 | -0.26 | 2016Q4 | 8.05 | 8.15 | 0.10 |
| 2017Q1 | 10.20 | 9.94 | -0.26 | 2017Q1 | 8.43 | 8.33 | -0.10 |
| 2017Q2 | 10.63 | 10.23 | -0.40 | 2017Q2 | 7.98 | 8.12 | 0.14 |
| 2017Q3 | 10.09 | 9.86 | -0.23 | 2017Q3 | 8.19 | 8.18 | -0.01 |
| 2017Q4 | 10.34 | 10.23 | -0.11 | 2017Q4 | 8.14 | 8.25 | 0.11 |
| 2018Q1 | 10.01 | 9.84 | -0.17 | 2018Q1 | 8.36 | 8.34 | -0.02 |
| 2018Q2 | 10.00 | 9.87 | -0.13 | 2018Q2 | 8.35 | 8.38 | 0.03 |
| 2018Q3 | 10.20 | : | : | 2018Q3 | 8.41 | : | : |
| Average revision | | | -0.172 | Average revision | | | 0.016 |
| Average absolute revision | | | 0.167 | Average absolute revision | | | 0.056 |

(1) Due to the conversion to euro, the European Union key indicators may be affected by movements in exchange rates

Table 12: Revisions of quarterly investment rates and profit shares of non-financial corporations, for the EU-28 aggregates (seasonally-adjusted) based on data for reference quarters from 2015Q3 to 2018Q3

| EU-28 Non-financial corporations (1) | | | | | | | |
|---------------------------------------|-----------------------|-----------------------|-----------------------|------------------------------------|-----------------------|-----------------------|-----------------------|
| Investment rate (seas. adjusted data) | | | | Profit Share (seas. adjusted data) | | | |
| Quarter | 1st trans- mission | 2nd trans- mission | Revision 2nd - 1st | Quarter | 1st trans- mission | 2nd trans- mission | Revision 2nd - 1st |
| 2015Q3 | 22.09 | 22.11 | 0.02 | 2015Q3 | 39.35 | 39.50 | 0.15 |
| 2015Q4 | 22.26 | 21.97 | -0.29 | 2015Q4 | 39.38 | 39.44 | 0.06 |
| 2016Q1 | 22.18 | 22.11 | -0.07 | 2016Q1 | 38.97 | 39.77 | 0.80 |
| 2016Q2 | 22.22 | 22.19 | -0.03 | 2016Q2 | 39.42 | 39.51 | 0.09 |
| 2016Q3 | 21.91 | 21.92 | 0.01 | 2016Q3 | 39.34 | 39.60 | 0.26 |
| 2016Q4 | 23.14 | 23.18 | 0.04 | 2016Q4 | 39.97 | 40.00 | 0.03 |
| 2017Q1 | 22.26 | 22.80 | 0.54 | 2017Q1 | 39.32 | 39.54 | 0.22 |
| 2017Q2 | 23.16 | 23.05 | -0.11 | 2017Q2 | 39.95 | 40.05 | 0.10 |
| 2017Q3 | 22.60 | 22.65 | 0.05 | 2017Q3 | 40.11 | 40.17 | 0.06 |
| 2017Q4 | 22.78 | 22.90 | 0.12 | 2017Q4 | 40.15 | 40.00 | -0.15 |
| 2018Q1 | 23.15 | 23.27 | 0.12 | 2018Q1 | 39.58 | 40.27 | 0.69 |
| 2018Q2 | 23.19 | 23.26 | 0.07 | 2018Q2 | 39.90 | 39.89 | -0.01 |
| 2018Q3 | 23.52 | : | : | 2018Q3 | 39.60 | : | : |
| Average revision | | | 0.039 | Average revision | | | 0.192 |
| Average absolute revision | | | 0.041 | Average absolute revision | | | 0.218 |

(1) Due to the conversion to euro, the European Union key indicators may be affected by movements in exchange rates

6

Timeliness and punctuality

Timeliness refers to the length of time between data availability and the event or phenomenon they describe.

Punctuality is the time lag between the actual delivery of data and the target date on which they were scheduled for release, as announced in an official release calendar, set out by Regulations, or previously agreed among partners.

6.1 Timeliness

With the introduction of the ESA 2010 Transmission Programme in September 2014, new deadlines for countries' submission of data to Eurostat were introduced and allowed for more timely delivery of information to users. Most notably, data for regional accounts became available 12 months after the reference year.

In 2018, the preliminary flash estimates of GDP growth in the EU and the EA continue to be published at 30 days after the end of the quarter. The updated flash estimates of GDP growth for the EU/EA are subsequently published at t+45. The early release of EA quarterly sector accounts continue to be published at around t+94 days after the reference quarter. The early aggregation release of non-financial sector accounts is based on the preliminary data transmitted by EA Member States by t+85 days after the reference period. Complete sector accounts data for the both the EA and the EU are released at around t+120 days.

From 14 November 2018 onwards, Eurostat started to publish [EU/EA flash estimates of quarterly employment at around 45 days after the end of the reference quarter](#) (t+45). This followed the successful project of Eurostat and the EU Member States to compile EU and the EA early estimates for employment at t+30 and t+45 after the reference quarter. The t+45 publication was a milestone not only for Eurostat but also an achievement of the European Statistical System, as Member States contributed by providing their national estimates to Eurostat two weeks ahead of the legal deadline. Furthermore, Eurostat advanced the regular publication of employment from t+75 to around t+65 days.

Eurostat has streamlined its news releases of GDP and employment at t+45 and t+65 days. The first flash estimate of European aggregates after 45 days combining GDP and employment data was published in February 2019. The regular estimates of European main GDP aggregates published after about 65 days were extended to include European employment and labour productivity estimates in December 2018. The employment flash estimates at t+30 days continue to be collected and tested each quarter. Eurostat will assess the progress against the quality criteria in 2021 with a view of a possible publication. This would bring forward the EU and the EA combined GDP and employment publication to a t+30-65-100 days schedule.

6.2 Punctuality of ESA 2010 tables

Punctuality is calculated as the actual date of data delivery minus the scheduled date of transmission to Eurostat. It shows how many calendar days the first data transmission was after the legal deadline. Figure 46 to Figure 48 in Annex 3 present in detail the information on punctuality for each national accounts domain for EU Member States as well as for Iceland, Norway and Switzerland.

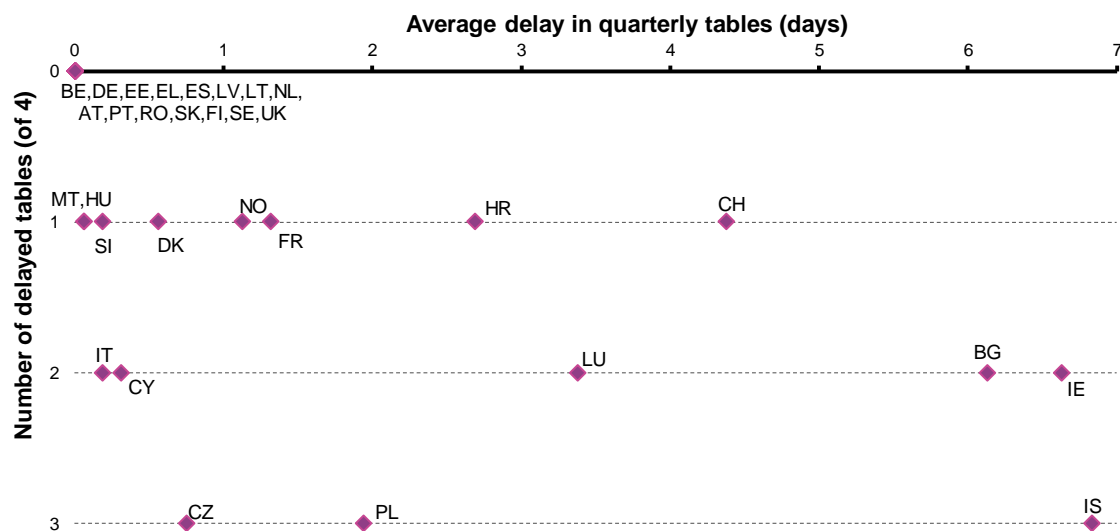
The ESA 2010 Transmission Programme specifies the deadlines for Member States' data deliveries. However, due to derogations, the transmission dates vary across countries. The analyses of punctuality in this section take into account country-specific legal deadlines. The information covers data deliveries made in 2018.

6.2.1 Quarterly data

As defined in the ESA 2010 Transmission Programme, Member States must submit to Eurostat quarterly tables within the legal deadlines shown in Annex 1, Table 16.

The overall punctuality of quarterly national accounts was high in 2018 with 15 EU Member States (Austria, Belgium, Estonia, Finland, Germany, Greece, Latvia, Lithuania, the Netherlands, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom) submitting of their mandatory quarterly data by the legal deadline, one more Member State than in 2017 (Figure 16). Eight other countries (Croatia, Denmark, France, Hungary, Malta, Slovenia, Norway and Switzerland) submitted all but one of their quarterly tables on time. The average delay on the late table submissions was less than two day, except for Croatia and Switzerland. Five countries submitted two tables late (Italy, Cyprus, Luxembourg, Bulgaria and Ireland). Czechia, Poland and Iceland submitted three of the four tables late, at least once in submissions during 2018. The longest average delay of a late table was less than one week past the legal deadline, which was an improvement from 2017.

Figure 16: Punctuality of national accounts quarterly tables reported in 2018



The punctuality indicators for quarterly national accounts data provided by individual EU Member States, as well as Iceland, Norway and Switzerland, can be found in Annex 3. The punctuality for each country is calculated for each of the four reference quarters 2017Q4–2018Q3 which covered the quarterly submissions of all mandatory quarterly tables for each domain in 2018.

The **quarterly main aggregates** of national accounts must be submitted to Eurostat no later than two months after the reference quarter. For the eight sub-tables per quarter of the mandatory Table 1 on main aggregates, twenty EU Member States, as well as Norway submitted their quarterly data by the legal deadline. Five other EU Member States submitted one of their quarterly tables with a slight delay of between one to three days past the legal deadline. The lowest punctuality was observed for Ireland, with delays in each quarter, ranging from two days to more than a month for 2017Q4 and 2018Q1. Punctuality issues were also observed (at least one delay of more than three weeks) for France and Luxembourg as well as for Iceland and Switzerland.

Eighteen countries submitted **quarterly non-financial sector accounts** on time for all quarters. Substantial delays were observed for Bulgaria and Croatia. Both countries are in contact with Eurostat in order to address the situation regarding data timeliness. Delays of more than one week in some quarters were observed for Ireland, Luxembourg, Poland and Iceland.

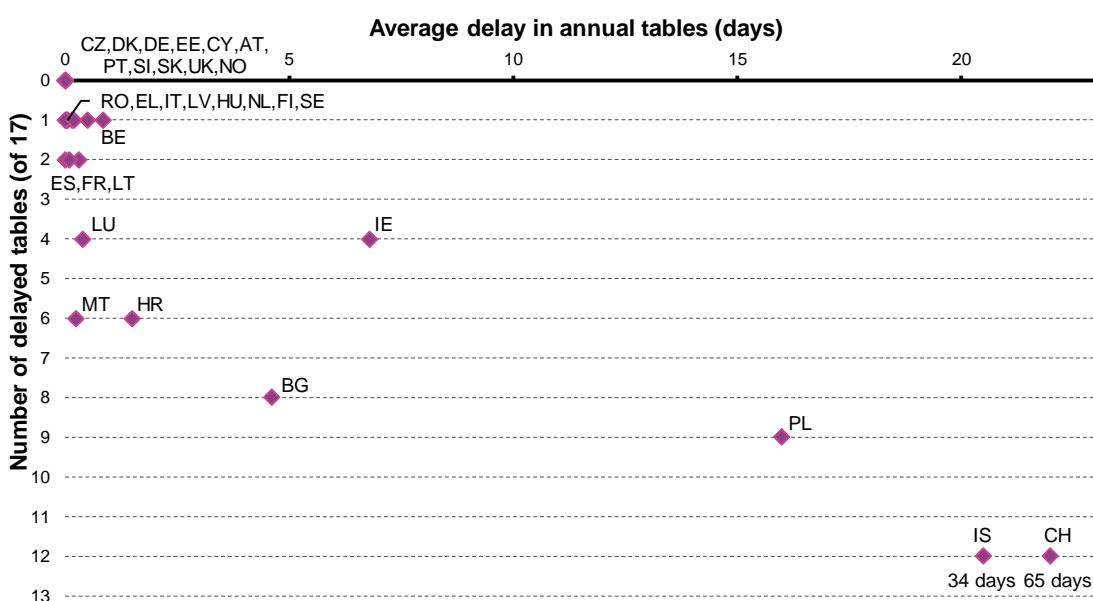
The punctuality of **quarterly government finance statistics** was very high in 2018 and much higher than the punctuality of quarterly main aggregates and non-financial sector accounts. Almost all countries submitted all data before the legal deadline, with short, isolated delays only being observed for Czechia, Poland and Iceland. Switzerland did not submit any quarterly non-financial sector accounts or government finance statistics tables.

6.2.2 Annual data

EU Member States must submit to Eurostat the annual national and regional accounts tables at the transmission deadlines shown in Annex 1, Table 16.

The punctuality indicators for annual national accounts data provided by individual EU Member States, as well as Iceland, Norway and Switzerland, can be found in Annex 3. The punctuality for each country is calculated on the basis of mandatory data submissions in 2018. For the annual tables, this comprised the data submitted for the reference years 2015, 2016 and 2017, depending on the deadlines specified in Annex 1. For the five-yearly use tables (Table 16) and input-output tables (Table 17), this covered data submitted in 2018, or before, for reference year 2015. Figure 17 shows the number of missing or delayed tables out of the 17 ESA 2010 annual tables, and the average delay in days.

Figure 17: Punctuality of national accounts annual tables reported in 2018 (excl. 3-yearly pension tables and 5-yearly use and input-output tables)



The overall punctuality of ESA 2010 annual tables improved in 2018 with ten EU Member States (Austria, Cyprus, Czechia, Denmark, Estonia, Germany, Portugal, Slovenia, Slovakia, and the United Kingdom) and Norway submitted all required annual national and regional accounts tables⁽⁷⁾ on time (four more than in 2017). Six EU Member States (Bulgaria, Croatia, Ireland, Luxembourg, Malta and Poland) submitted more than three tables after the legal deadline. Iceland and Switzerland had 13 missing or delayed tables out of 17.

Fifteen countries submitted annual Table 1⁽⁸⁾ of **national accounts main aggregates** on time. For main aggregates data (Table 1A), Ireland and Poland submitted some of their data with a substantial delay, in particular, between four and five months after the deadline for the t+2 month submissions. Both Iceland and Switzerland were delayed even longer the transmission of some of their Table 1A data for the t+2 submission. Five other EU Member States had shorter delays for the first submission (t+2 months), with delays ranging from about one day (Italy and Hungary) to ten days (Finland).

The MIP headline indicator of ULC is derived from Table 1 data. The cut-off date for data extraction for the MIP scoreboard and the Statistical Annex of the Alert Mechanism Report 2019 was on 24 October 2018. Late submissions of Table 1, in particular, submissions more than one month past the deadline, would impede the full validation of the data for the ULC calculation. Poland in particular continued to have significant delays in providing data on the compensation of employees, which are needed for the calculation of ULC.

The overall punctuality of tables by industry (Table 3) and household final consumption expenditure by purpose (Table 5) was very high. The Netherlands submitted Table 3 with a slight delay of three days, while for Croatia and Poland some data were still missing several months past the deadline. For Table 5, all countries were on time, except for Bulgaria and Luxembourg which had delays of one and three days, respectively.

Several countries failed to submit on time their tables due at t+24 months, in some cases, despite having derogations that expired: Spain for cross-classification of fixed assets by industry and by asset (Table 20); Croatia and Poland for cross-classification of gross fixed capital formation by industry and by asset (Table 22); Spain for balance sheets for non-financial assets (Table 26). Poland submitted data for Table 26 with a delay of less than one month. Tables for 20, 22, and 26 were missing for both Iceland and Switzerland.

The punctuality of **annual government finance statistics** tables was very high: for main aggregates of general government (Table 2); for detailed tax and social contribution receipts by type of tax and social contribution and receiving subsector including the list of taxes and social contributions according to national classification (Table 9⁽⁹⁾); and for general government expenditure by function (Table 11). Twenty-eight countries transmitted all data on time. Bulgaria sent the first transmission of Table 2 slightly late. Croatia failed to deliver Table 11 on time.

Twenty countries transmitted all data on time in 2018 for tables of annual financial and non-financial sector accounts (Table 6, 7 and 8), due in September 2018, an improvement from eighteen in 2017. Eight other countries submitted tables with only a slight delay of less than one week (see Annex 3).

The transmission of the **annual financial accounts** by sector (Table 6) and balance sheets for financial assets and liabilities (Table 7) was mostly punctual for all 28 EU Member States and Norway. Six Member States (Bulgaria, France, Ireland, Lithuania, Luxembourg and Malta) submitted these tables with less than one week delay. Iceland submitted with a delay of almost three months. Of the 23 countries that submitted their annual financial accounts on time, 15 had

⁽⁷⁾ Not including the five-yearly use and input-output tables, or the three-yearly pension tables which are not assessed this year. For BG, HR, LV, MT as well as CH and IS, the chart does not include Tables 15 and 16 in the calculation of average delay in annual tables.

⁽⁸⁾ Including both the t+2 and t+9 submissions of tables T0101A, T0102A, T0103A, T0110A, T0111A, T0117A, T0120A, T0121A, and the submissions of T0301A, T0302A, T0303A, T0501A, T0502A, T2000A, T2200A, T2600A.

⁽⁹⁾ The transmission of National Tax Lists is not separately reported. National Tax Lists were generally sent (as required) at the same time as the ESA 2010 Table 9. Switzerland did not provide a National Tax List.

especially good punctuality, submitting the tables between three and six months prior to the legal deadline of T+9. Countries providing the tables well in advance would transmit updates closer to the deadline.

Three MIP headline indicators (private sector debt, private sector credit flow and total financial sector liabilities) are derived from financial accounts tables. Hence, punctuality in submitting these tables is of utmost importance for MIP purposes. In 2018, all EU Member States submitted the MIP-underlying data on time.

The data on **annual non-financial sector accounts** (Table 8) were submitted on time by 23 countries. Delays of one to five days were observed for Ireland, Greece, Latvia, Malta, and Poland. Bulgaria sent data with a delay of 10 weeks and Switzerland submitted with the longest delay, just over four months. Iceland did not provide annual non-financial sector accounts data in 2018.

In 2018, 25 countries submitted on time their annual **supply and use tables** for reference year 2015: the supply table at basic prices including transformation into purchasers' prices (Table 15) and the use table at purchasers' prices (Table 16). Croatia submitted partial data for annual supply and use tables for 2015 after the legal deadline. Bulgaria, Malta and Poland did not submit data for 2015. Tables were also missing for Iceland and Switzerland.

The ESA 2010 Transmission Programme defines the obligation for EU Member States to deliver five-yearly submissions for use tables (Tables 16XX) and for input-output tables (Table 17). These tables are compulsory, to be compiled at basic process for the reference years ending with 0 and 5. The quality reporting exercise for 2016 was the first to look at the initial delivery of these tables following the ESA 2010 implementation, and this year's quality reporting exercise monitored the subsequent delivery of the data up to and including 2018 of both use tables and the symmetric input-output tables, for the reference year 2015.

The five additional **use tables** (Tables 16XX) are required every five years. They provide data with a higher granularity than annual tables. In addition to Bulgaria, Luxembourg, Malta and Poland not submitting complete data on time in 2018, two other EU Member States, Croatia and Italy, submitted their tables with two and three weeks delay, respectively.

Twenty-three EU Member States, plus Norway, submitted the **input-output tables** (Table 17) for 2015 on time. All EU Member States except Portugal⁽¹⁰⁾ have submitted input-output tables for 2015 either by product, or by industry, while Czechia, Hungary and Italy submitted both types of table. As with the five-yearly use tables, there was a delay of two weeks for Croatia. Bulgaria, Luxembourg, Malta and Poland did not submit complete data on time in 2018. Iceland and Switzerland had not provided input-output tables.

The overall punctuality of **regional accounts** in 2018 was very high. Twenty-six EU Member States, plus Norway, submitted all regional accounts tables on time: data by industry and by region at NUTS level 2 (Table 10); by industry and by region at NUTS level 3 (Table 12); and household accounts by region at NUTS level 2 (Table 13). Poland was the only Member State to have submitted all tables late, with 9 days delay. Belgium submitted data for Table 10 with 17 days delay. Iceland and Switzerland had not provided any regional accounts tables.

6.3 Punctuality of data underlying key indicators

6.3.1 MIP indicators

In November of each year, at the beginning of the European Semester process, the

⁽¹⁰⁾ Portugal submitted input-output tables for the year 2013 and 2015.

Commission publishes the Alert Mechanism Report (AMR) accompanied by a Statistical Annex on MIP indicators.

The cut-off date for extracting data from the Eurostat database to prepare the Alert Mechanism Report analysis and include in the Statistical Annex is fixed each year, usually at the end of October or the beginning of November. The cut-off date for submission of data to be used in the preparation of the Statistical Annex to the AMR 2019 was 24 October 2018. The timing of the cut-off date allows the analysis to include the most recent national accounts data submitted by EU Member States and validated by Eurostat in the autumn transmission cycle.

The Statistical Annex of the AMR 2019 covered the reference years from 2008 to 2017. Data for 2018 had been submitted by EU Member States at t+9 months and successfully passed Eurostat's validation process. The timely submission of all relevant national accounts data underlying the main aggregates, financial and non-financial sector accounts as well as government finance statistics (as discussed in Section 6.2.2) made possible the smooth validation and timely use of this data for MIP purposes.

One consequence of the fixed cut-off dates is that for the timely submission of the latest year's data, some Member States resort to the provision of preliminary estimates, coupled with the extensive use of flags indicating their provisional or estimated nature. For reference year 2017, fourteen EU Member States flagged at least one data cell used for an MIP headline indicator either as "P" (provisional) or as "E" (estimated). The Netherlands flagged as provisional the ULC data, three financial accounts indicators, and eleven auxiliary indicators. Eight other Member States similarly flagged their ULC data. Greece, Cyprus and Portugal flagged eleven auxiliary indicators as provisional, Spain and France flagged ten; Romania nine; Bulgaria flagged five; and Poland flagged four. Overall, the extent of this flagging has not changed markedly from past years.

6.3.2 Principal European Economic Indicators (PEEIs)

PEEIs are the reference point for all users of official statistics dealing with short-term data. They comprise a set of statistical indicators giving an accurate and as timely as possible overview of the economic evolution of the EU, the EA, and individual EU Member States.

In order to supply business-cycle analysts, policy-makers and other users with a comprehensive and high-quality set of information, Eurostat and the National Statistical Institutes publish quarterly national accounts news releases on:

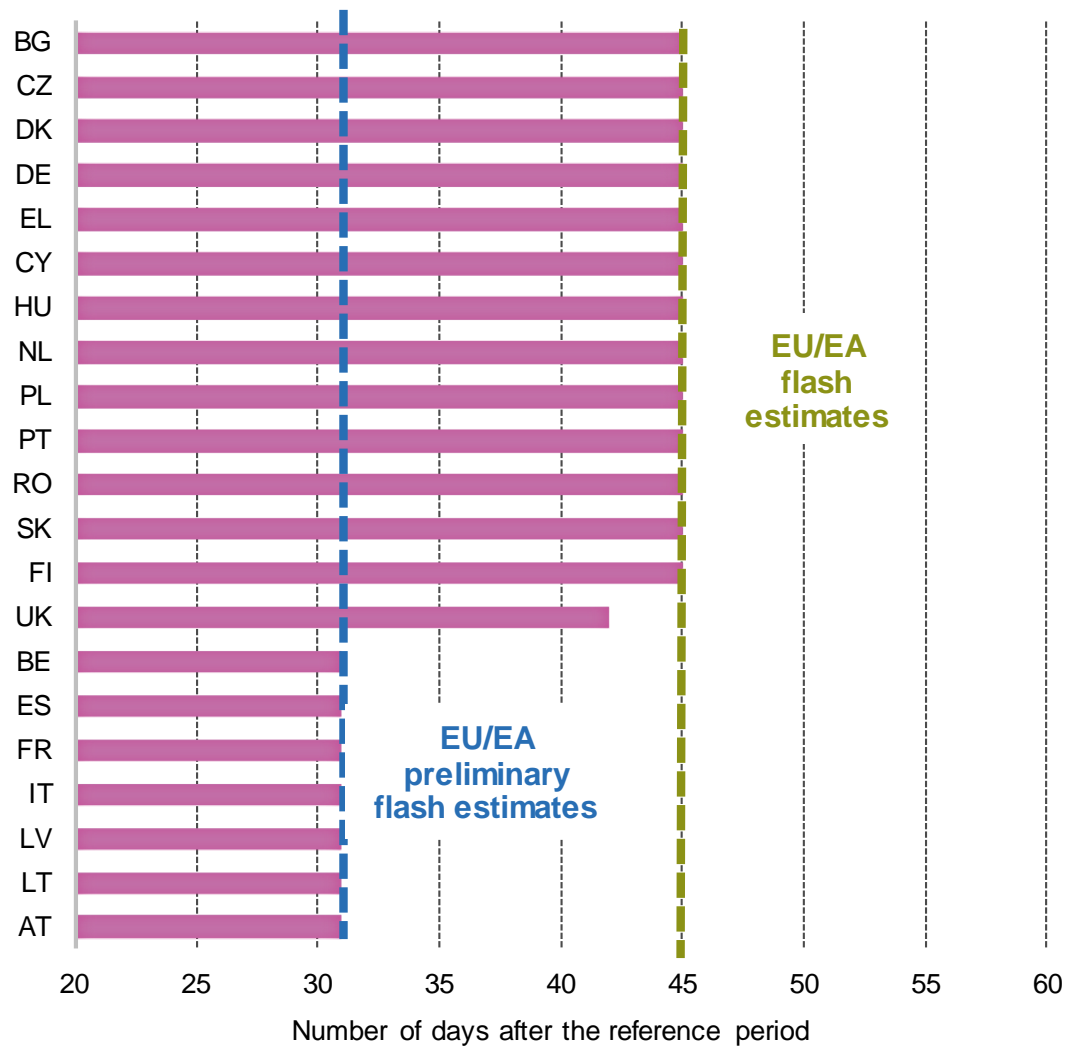
- GDP flash estimates;
- GDP estimates, including GDP components and contributions to growth;
- quarterly sector accounts;
- quarterly government finance statistics.

The transmission dates indicated in Figures 18 and 19 are for data submissions due in the first quarter of 2019, relating to reference fourth quarter of 2018. The transmission dates in Figure 20 are for submissions due in the last quarter of 2018, relating to reference third quarter of 2018.

FIRST GDP (FLASH) ESTIMATES

Eurostat currently publishes two news releases containing GDP flash estimates for the EU/EA: t+30 preliminary flash estimates and updated t+45 GDP flash estimates. The latter news release contains published country estimates. Countries submit estimates to Eurostat on a voluntary basis. The news releases on GDP flash estimates are among Eurostat’s most downloaded news releases.

Figure 18: Punctuality of first GDP flash estimate data transmissions for 2018Q4

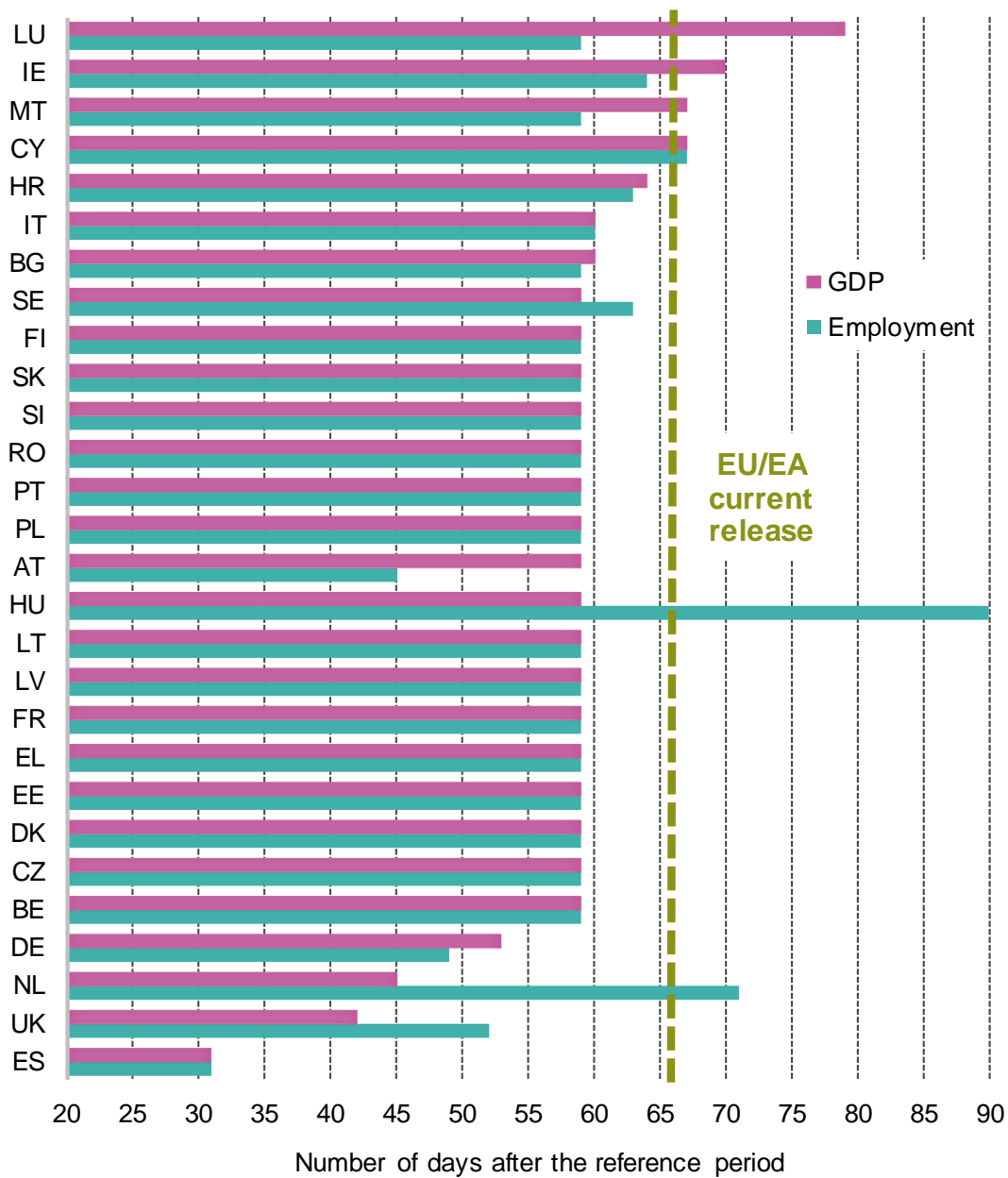


GDP ESTIMATES AND BREAKDOWNS

GDP estimates with breakdowns for the EU/EA are released at around t+65 days each quarter. The exact release dates vary slightly each quarter depending on calendar constraints.

The numbers in Figure 19 refer to the submission of data for the reference fourth quarter of 2018 which are usually published the next day. Validation problems and/or embargos can, however, cause some additional delays.

Figure 19: Release containing components of GDP and employment, transmission of data for 2018Q4

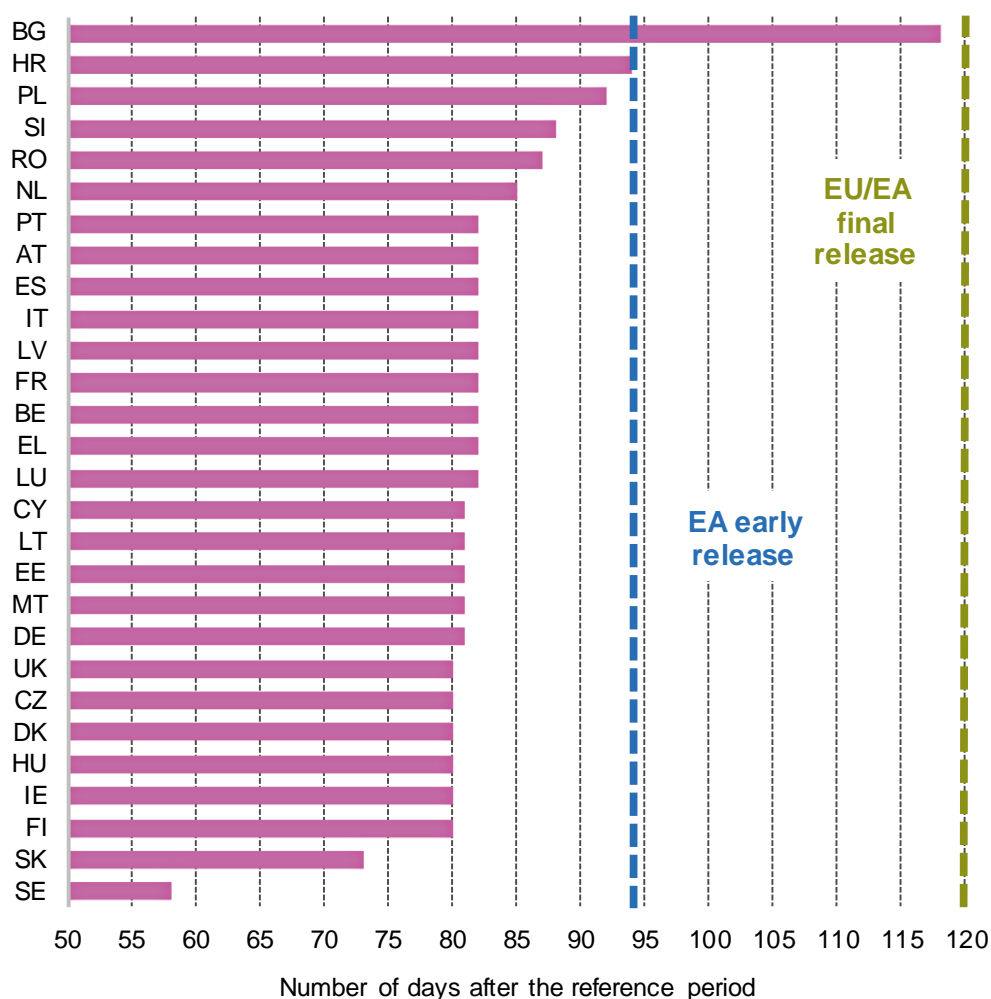


QUARTERLY SECTOR ACCOUNTS (QSA)

Quarterly sector accounts for the reference third quarter of 2018 were due by 24 December 2018 (t+85 days) for EA Member States and by 31 December 2018 (t+3 months) for non-EA Member States. For Member States whose GDP at current prices is less than 1 % of the corresponding EU total GDP, only data for selected items are compulsory.

Key indicators and selected transactions for the euro area aggregates are published at around t+94 days. Complete sector accounts data for the both the EA and the EU are released at around t+120 days.

Figure 20: Household and company accounts, transmission of 2018Q3



QUARTERLY GOVERNMENT FINANCE STATISTICS

Actual timeliness depends on the reference quarter, with data due on 31 March usually coming in later than in other quarters due to the incorporation of annual data. Submissions are due at t+3 months, except for quarterly financial accounts for general government, where provisional data is due at t+85 days for EA Member States. Releases are coordinated for the set of tables comprising quarterly government finance statistics and with EDP data. For this reason, no further improvement in timeliness is feasible in the medium-term. A use of provisional financial accounts data for release is also not feasible due to the high level of revisions in the transmission period.

7

Accessibility and clarity

Accessibility and clarity pertain to the conditions and modalities by which users can obtain, use and interpret data.

They reflect the data's information environment, including whether data are accompanied by appropriate metadata and illustrations such as graphs and maps, and whether information on their quality is also available.

7.1 Dissemination by Eurostat

Eurostat disseminates ESA 2010 data via electronic publications. The data are accessible via predefined tables, extractions from Eurostat's database and through Statistics Explained articles. Key variables are also communicated through the Eurostat news releases on GDP, employment, household saving rate, the business investment rate as well as seasonally adjusted government deficit, taxes and social contributions and general government expenditure by function (COFOG). Information from national and regional accounts as well as government finance statistics is also included in Eurostat's yearbook and regional yearbook. In 2018, all information was published on time.

Eurostat implements a policy of free dissemination thus allowing the widest possible user access.

7.2 ESA 2010 metadata

To make data easily interpretable, Eurostat maintains a rich depository of generic metadata which can be found in [RAMON](#), as well as metadata by ESA 2010 domain:

- Main aggregates ([annual](#) and [quarterly](#));
- Government finance statistics -
 - [Government revenue, expenditure and main aggregates](#);
 - [General government expenditure by function \(COFOG\)](#);
 - [Main national accounts tax aggregates](#);
 - [Quarterly non-financial accounts for general government](#);
 - [Annual and quarterly financial accounts for general government](#);

- Quarterly government debt;
- Non-financial sector accounts;
- Annual financial sector accounts;
- Supply, use and input-output tables;
- Regional accounts.

Eurostat is intending to develop more detailed metadata for each domain of national and regional accounts and, when appropriate, for each table as presented in Eurobase. This project should be developed within the coming two years.

7.3 Use of data flags to promote accessibility and clarity

In early 2019, Eurostat conducted a follow-up study on the use of data flags in the ESA 2010 data production process by EU Member States, as well as countries in the European Economic Area, and EU enlargement countries. The analysis considered the two code lists transmitting ESA 2010 data, one for confidentiality status and one for observation status. Compared to the previous study conducted in 2017, this study included regional accounts data and excluded voluntary data submissions.

Out of a total of over 8.8 million observations across the NAMA, NFSA, AFA and RA domains, a high percentage, 96.3 %, are without flags relating to confidential status, in other words they are transmitted as 'normal' values that are free for publication. Still, the most used confidentiality flags are "N" (not for publication, 2.7 %) and "C" (confidential, 0.6 %), followed by "D" (secondary confidentiality, 0.3 %). These three flags together constitute 3.6 % of all data submissions in these three domains, and as a result, users of ESA 2010 data are deprived of information from a total of about 320 thousand data cells.

The follow-up study showed there was no marked decrease in the use of confidential status flags. One of the main conclusions of the study, and previous analysis, has been that in the national accounts data transmissions, confidentiality flags have not always been used as intended by the meaning of the flag code lists of the Data Structure Definition (DSD), in particular for the confidential status flags "C" and "N". When these flags are used, a sufficient explanation should be provided by submitting countries to Eurostat, in order to assess the appropriateness of the non-publication of the data or non-forwarding to other international institutions. In the case of flag "C", there is a statutory definition which is restrictive¹¹ and should be adhered to. The incidence of the "N" flag is particularly high, though it is often not clear why countries limit the availability of such observations for 'internal use only within organisations'. In some cases, the "N" flag is used only because the data are not published nationally, but this should not, *de facto*, preclude their publication by Eurostat.

Eurostat also found that there is both confusion and lack of coherence in the use of observation flags, especially "M" (missing data), particularly regarding its distinction from related flag "L" (existing, but not collected data), the flag "J" (data are not transmitted due to a temporary derogation), as well as with zero values. The use of "L", "M", and "J" flags also significantly limits the dissemination of data values. The incidence of "L" and "J" flags is monitored closely by Eurostat as part of data compliance. The "M" flag should in principle be used only when the transmission is not applicable (e.g. due to methodological or legal reasons); however, the relatively high share of "M" flags compared to "L" and "J" flags suggests that the former has

⁽¹¹⁾ Regulation (EC) No 223/2009 of the European Parliament and of the Council of 11 March 2009 on European statistics defines confidential data as "data which allow statistical units to be identified either directly or indirectly thereby disclosing information".

been misused to some extent.

As for the special observation status flags as data quality attributes, such as "P" (provisional), "E" (estimate), "U" (low reliability), "D" (definition differs), or "B" (break in series), the follow-up study again showed that they are not being used frequently enough. Eurostat recommended that countries should adopt a wider and more frequent use of these observational flags. When using the flags, countries should provide relevant explanations. While better use of data flags by countries should be pursued, it is possible that the low use of certain flags is a result of limitations in the national production systems, and further development efforts may be needed in this area.

In conclusion, Eurostat recommended that countries examine their national policies and procedures on the use of these flags, and benchmark their practice against other countries, with an objective of improving the accessibility and clarity of national and regional accounts data for users at European level.

7.4 Inventories

In addition to regular metadata, EU Member States also describe their compilation work in dedicated technical documentation. Some of it is produced for the needs of GNI for own resources or EDP verification processes. This documentation is fully or partially accessible through the Eurostat's website.

7.4.1 Mandatory inventories

GROSS NATIONAL INCOME (GNI)

Article 3 of [Council Regulation \(EC, Euratom\) No 1287/2003](#) (hereafter referred to as the GNI Regulation) requires EU Member States to provide Eurostat with an up-to-date inventory of the sources and methods used to calculate GNI and its components according to ESA (the GNI Inventories). These inventories are one of the main instruments enabling Eurostat to assess the comparability, reliability and exhaustiveness of Member States' GNI data. The inventories also include process tables showing all stages of the national accounts compilation process, from the statistical sources to the published national accounts data.

Eurostat checks the GNI inventories and process tables using a GNI Inventory Assessment Questionnaire approved by the GNI Committee. The purpose of the questionnaire is to ensure a systematic, consistent and fair approach to the assessment of the quality of GNI data.

All EU Member States submitted their GNI inventories to Eurostat. The GNI inventories of 10 Member States are entirely available, while 18 other Members States allowed for the publication of only Chapter 1 of their inventories (see Table 13). These are available on [the CIRCABC website "Monitoring GNI for own resource purposes"](#).

EXCESSIVE DEFICIT PROCEDURE (EDP)

EDP statistics are reported to and verified by Eurostat under the legal provisions of Article 126 of the Treaty on the Functioning of the European Union and Protocol 12 and [Council Regulation \(EC\) No 479/2009](#), as amended by [Commission Regulation \(EU\) No 220/2014](#). In this legal context, Eurostat regularly and systematically reports to the Council (Economic and Financial Committee) and the European Parliament.

The availability of detailed and comprehensive EDP inventories is of vital importance for the quality assessment of EDP and government finance statistics data. Under Article 9 of Council Regulation (EC) No 479/2009, as amended, the new ESA 2010-based EDP inventory of the methods, procedures and sources used to compile actual deficit and debt data and the

underlying government accounts was adopted in 2014. All EU Member States are required to complete this EDP inventory, while only 23 Member States have provided these inventories under ESA 2010. The inventories are publicly available on the [Eurostat website](#).

Table 13: Availability of mandatory and voluntary inventories on the Eurostat website and/or CIRCABC public website, as of 31 December 2018

| | Mandatory inventories | | | | | Voluntary inventories | | |
|----------------|---------------------------------------|-----------|-----|-------|--------------------|-----------------------|-----|-----|
| | GNI Entire document ⁽¹⁾ | Chapter 1 | EDP | QFAGG | National Tax Lists | QNA | ASA | QSA |
| Belgium | | ✓ | ✓ | ✓ | ✓ | | | ✓ |
| Bulgaria | | ✓ | ✓ | ✓ | ✓ | | | |
| Czechia | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Denmark | ✓ | | ✓ | ✓ | ✓ | ✓ | | |
| Germany | ✓ | | ✓ | ✓ | ✓ | ✓ | | |
| Estonia | ✓ | | ✓ | ✓ | ✓ | | | |
| Ireland | | ✓ | ✓ | ✓ | ✓ | | | |
| Greece | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Spain | | ✓ | ✓ | ✓ | ✓ | | | |
| France | ✓ | | ✓ | ✓ | ✓ | | | |
| Croatia | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Italy | | ✓ | ✓ | ✓ | ✓ | | | |
| Cyprus | | ✓ | ✓ | ✓ | ✓ | | | |
| Latvia | | ✓ | ✓ | ✓ | ✓ | | | |
| Lithuania | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Luxembourg | | ✓ | ✓ | ✓ | ✓ | | | |
| Hungary | | ✓ | ✓ | ✓ | ✓ | | | |
| Malta | ✓ | | ✓ | ✓ | ✓ | | | |
| Netherlands | ✓ | | | ✓ | ✓ | ✓ | ✓ | |
| Austria | ✓ | | ✓ | ✓ | ✓ | ✓ | | |
| Poland | | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| Portugal | | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| Romania | ✓ | | ✓ | ✓ | ✓ | | | |
| Slovenia | | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| Slovakia | | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| Finland | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Sweden | ✓ | | ✓ | ✓ | ✓ | | | ✓ |
| United Kingdom | | ✓ | ✓ | ✓ | ✓ | | | |
| Switzerland | ✓ | | | | | | | |
| Iceland | | | | | | | ✓ | |
| Norway | ✓ | | | | | ✓ | ✓ | |

(1) Only the publication of Chapter 1 of the GNI inventory is mandatory.

QUARTERLY FINANCIAL ACCOUNTS FOR GENERAL GOVERNMENT (QFAGG) AND NATIONAL TAX LISTS

Under Annex B of the ESA 2010 Regulation, all European Economic Area countries (subject to derogations) must regularly submit to Eurostat, metadata on major events and revisions for

QFAGG. Data sources and compilation methods are described in the updated QFAGG manual. For taxes and social contributions, the transmission programme provides for the transmission of 'National Tax Lists'.

7.4.2 Voluntary inventories

To provide comprehensive information on sources and methods used in the compilation of national accounts data, Eurostat helps countries compile quarterly national accounts inventories as well as annual and quarterly sector account inventories. The compilation and publication of these inventories is voluntary.

QUARTERLY NATIONAL ACCOUNTS (QNA)

Quarterly national accounts inventories are a useful source of information for assessing the quality of QNA data. The methodology descriptions provided by reporting countries include references to relevant manuals, handbooks or guidelines such as the updated Eurostat QNA handbook, the handbook on price and volume measures or the seasonal adjustment guidelines. National Statistical Institutes indicate if they are in line with these handbooks/guidelines and/or provide explanations for the use of different approaches. QNA inventories follow a predefined structure and provide the following information:

- overview of the system of quarterly national accounts, including methods used for estimating volumes and seasonally adjusted figures;
- publication timetable, revisions policy and dissemination of QNA;
- overall QNA compilation approach;
- GDP components: the production approach;
- GDP components: the expenditure approach;
- GDP components: the income approach;
- population and employment;
- flash estimates;
- main data sources used.

Ten EU Member States, plus Norway, submitted QNA inventories to Eurostat (see Table 13); these are publicly available on the [Eurostat website](#).

ANNUAL AND QUARTERLY SECTOR ACCOUNTS (ASA / QSA)

Annual sector account inventories aim to provide a comprehensive overview of national compilation procedures used for annual non-financial accounts by institutional sector, according to the ESA 2010. ASA inventories follow a standard structure and include the following information:

- organisation of annual sector account production;
- consistency with related data sets;
- data sources;
- compilation methods;
- detailed view by transaction and sector.

This information is also important for understanding quarterly sector accounts production since most comprehensive data sources are collected annually; hence the compilation of quarterly accounts relies on annual benchmarks whenever quarterly data are not available.

Five EU Member States, plus Norway, submitted their ASA inventories for publication on the [Eurostat website](#) and three submitted their QSA inventories (see Table 13). Only one EU Member State (Finland) submitted both inventories.

CLASSIFICATION OF THE FUNCTIONS OF GOVERNMENT (COFOG) AND QUARTERLY NON-FINANCIAL ACCOUNTS FOR GENERAL GOVERNMENT

Eurostat is in the process of collecting updates on the methods and sources used for the compilation of COFOG and quarterly non-financial accounts for general government data. Once information for all countries is available, the current manuals based on the ESA95 will be replaced.

8

Comparability

Comparability is the measurement of the impact of differences in the applied statistical concepts, measurement tools and procedures where statistics are compared between geographical areas, sectoral domains, or over time.

8.1 Methodological soundness

The ESA 2010 provides a harmonised methodological framework for the compilation of national and regional accounts throughout the EU, just as the SNA 2008 does across the world.

Eurostat ensures the methodological soundness of national accounts data submitted by EU Member States through its validation process. It monitors the application of accounting rules defined in the ESA 2010 Regulation.

In addition, methodological soundness is monitored through two verification cycles:

- Gross National Income (GNI) for the EU own resources;
- Excessive Deficit Procedure (EDP).

These two verification procedures have their own legal basis (see [GNI](#), [EDP](#)).

When methodological improvements resulting from the GNI own resources and EDP processes are introduced, Eurostat assesses whether they are applied to all sets of concerned accounts; it does so during the ESA 2010 data validation process.

8.1.1 Validation process for national accounts

The validation process for national accounts data follows the rules defined by the Task Force on Data Validation in its main deliverable — the ESA 2010 Validation Handbook. Some of the validation checks included in the Handbook have already been added to the regular validation process for data submitted to Eurostat, while others are in the design and implementation phases. It is an ongoing project to automate validation in accordance with ESS guidelines implementing pre-validation service STRUVAL (structural validation) and CONVAL (content validation). Chapter 4 of the Handbook – *Pre-validation rulesets* – provides an overview of all the checks carried out by the validation task force across the ESA 2010 Transmission Programme areas and the status of these checks in terms of implementation progress. The validation rules will be updated if necessary as the implementation of the pre-validation services STRUVAL and CONVAL progresses.

The Task Force on Data Validation was created in 2014 in order to address frequent errors in

the transmission process, review validation checks performed in Eurostat upon data reception, clarify methodological or practical aspects underlying specific issues, propose validation rules for internal or external pre-validation tools and to investigate possibilities for the collection and dissemination of associated metadata. It followed guidance issued by the ESS Vision Infrastructure Project on Validation when reviewing and developing data validation rules for pre-validation tools. Main deliverables and detailed structural and methodological discussions of the task force are described in the ESA 2010 Validation Handbook. The Task Force created the Handbook as a living document that is being updated as each domain conducts regular reviews in their expert specific task forces and working groups.

The Handbook provides a detailed description of the validation rules discussed and agreed in the Task Force for the national accounts domains, as a blueprint for the validation service. Based on the ESS Vision Infrastructure Project's suggested structure for an efficient validation process, checks are split into five main groups:

1. Structural checks focusing on compliance with the statistical data and metadata exchange standard (SDMX), which identifies valid file format, coding according to the DSD, mandatory fields present, correct usage of data types and dataflow definition;
2. Basic logic checks, which cover consistency between the sender ID and reference area country, ensuring that a table ID is present, correct use of flags for the observation status to accompany missing values, embargo dates, correct coding of the confidentiality status and a valid reference year price for the chain-linked volume series;
3. Basic content checks which identify missing or unexpected series in the transmission along with holes in the series. This group also includes checks for zero and negative values;
4. General plausibility and consistency checks focusing on content within the file. These include checking for additivity of breakdowns, outliers, consistency between prices and comparison between unadjusted and adjusted series;
5. Advanced plausibility and consistency checks focusing on content within the file with information stored outside the file. Examples of these checks include revisions compared to a previous transmission, the sum of quarterly series compared to the annual transmission, and consistency in the value of the series submitted across different tables in the ESA 2010 Transmission Programme.

In addition to automatic pre-validation services, a subsequent stage of data validation is performed using the internal Eurostat production and validation system, in order to run additional checks. Further analysis is then carried out by domain experts in order to decide whether the file can be validated, or if corrections, additional explanations and/or metadata are needed.

8.1.2 Statistical cooperation and harmonisation

Cooperation and harmonisation of national and regional accounts in the ESS are coordinated through the National Accounts Working Group and the EDP Working Group under the guidance of Directors of Macroeconomic Statistics meetings. These groups prepared many manuals and guidance papers on a broad range of subjects before the ESA 2010 was introduced, including in cooperation with international partners. This work is ongoing.

In 2018, the Commission provided its first [report to the European Parliament and the Council on the application of Regulation \(EU\) No 549/2013 of the European Parliament and of the Council of 21 May 2013 on the European System of national and regional accounts in the European Union and on the application of the granted derogations \(COM\(2018\) 506 final\)](#). The report analysed the availability and quality of ESA 2010 data, the effectiveness of the Regulation and monitoring processes and the progress on contingent liabilities, as required by Article 6(3) and Article 12 of the ESA 2010 Regulation. The document was accompanied by the [Commission](#)

[Staff Working Document on ESA 2010 data availability and application of granted derogations \(SWD\(2018\) 354 final\)](#) and the [Quality Report on National and Regional Accounts. 2016 data \(SWD\(2018\) 355 final\)](#).

In its assessment, the Commission observed that the completeness of data had significantly improved. Based on the changes in justifications of existing derogations, the list of derogations valid by January 2020 was consequently updated with the adoption of [Commission Implementing Decision \(EU\) 2018/1891 of 30 November 2018 amending Implementing Decision 2014/403/EU on granting derogations to Member States with respect to the transmission of statistics pursuant to Regulation \(EU\) No 549/2013](#). The Commission also concluded that "the ESA 2010 Regulation, in combination with various monitoring activities based on other legal frameworks, is effective in ensuring the provision of comparable, up-to-date and reliable data by the Member States for EU policy and other purposes" while pointing out that globalisation, digitalisation and national accounts-based measures of well-being, sustainability and inequality represent challenges requiring intensified cooperation internationally.

In the area of national accounts methodology, the challenging subjects of globalisation and digitalisation and well-being and sustainability continued to be priority items on the agenda. The Early Warning System (EWS), established in 2017, reviewed 14 restructuring cases of multinational enterprises (MNE) by the end of 2018. Substantial work was conducted in the GNI MNE Pilot exercise in 2018, with a view to finalise it in 2019. The project on global production and integrated global accounts provided horizontal support on the globalisation topics and will, in 2019, will address some outstanding issues from the GNI MNE pilot. Regarding digitalisation, technical discussions helped to identify the cross-border transactions and the link to globalisation issues (internet purchases, online streaming, cloud computing), the discussion on "free" digital services and the link to the welfare discussion.

The working group led by Eurostat and the OECD on intellectual property products drafted a report with recommendations on the reporting of research and development, software and databases and other intellectual property products. Substantial work has been done in 2018 with a view to finalise the report in 2019. Some measurement issues, however, remain open. An analysis of the impact of digitalisation on price and volume measures was also started in 2018. Eurostat contributed a methodological paper to the 2018 IARIW conference. Eurostat participated to the conceptual development of satellite accounts on the social economy contributing to the update of the UN methodological handbook, and supported its concrete implementation through grants to EU Member States. Eurostat also contributed to the development of a UN methodological handbook for a satellite account for cultural statistics, expected to be finalised in 2019. Work has started to update the "Technical Compilation Guide for Pension Data in National Accounts", in view of the next data transmission foreseen in December 2020.

Eurostat continued to follow up and address quality and compliance issues together with the Member States. The second quality exercise for national and regional accounts for data transmitted in 2017 was implemented and concluded with the publication of the [Eurostat assessment report](#). Eurostat cooperated with several Member States bilaterally, including in the context of the Eurostat-ECB Memorandum of Understanding in the area of MIP.

From 14 November 2018 onwards, Eurostat started to publish [EU/EA flash estimates of quarterly employment at around 45 days after the end of the reference quarter \(t+45\)](#). This earlier publication was an achievement of the European Statistical System, as Member States contribute by providing their national estimates to Eurostat two weeks ahead of the legal deadline. Furthermore, Eurostat advanced the regular publication of employment from t+75 to around t+65 days and streamlined its news releases of GDP and employment at t+45 and t+65 days. The FIGARO project on compilation of EU inter-country input-output tables, and a five-yearly production of EU inter-country supply, use and input-output tables, was implemented successfully and resulted in the publication experimental statistics on the Eurostat website as [EU-inter country Supply, Use and Input-Output Tables](#). The tables provide an analytical tool for measuring detailed economic relationships between EU Member States. The first estimates of [Quality-Adjusted Labour Input](#) were also published as experimental statistics. The Directors of

Macroeconomic Statistics gave mandate for a new phase of the project on Growth and Productivity Accounts for the period 2019-2021. Work continued on the compilation of data on distribution of income, consumption and wealth through micro-macro data linking under the auspices of a joint OECD-Eurostat expert group. Eurostat and Member States started technical preparations for transmission of additional voluntary data to Eurostat, particularly in cases when these data were available at a national level.

Discussions on recommendations for revisions of ESA 2010 detailed tables transmitted at the end of each year, including regional accounts and supply, input and output tables, concluded and were aligned with the harmonised European revision policy, even though these data are outside its scope. Eurostat prepared [Practical guidelines for revising ESA 2010 data](#), thus summarising all recommendations on revisions in a single publication and providing good practices for routine and benchmark revisions as well as for non-scheduled revisions. Under a mandate approved by the Directors of Macroeconomic Statistics, a task force on ESA 2010 cross-domain consistency started to prepare guidelines on achieving high consistency under the current ESA 2010 legal framework, to assess the need of changes in the ESA 2010 transmission programme to improve the consistency and analyse the links between ESA 2010 data and their administrative uses at EU level. Eurostat continued to analyse the [consistency issues in balance of payments and national accounts](#).

Finally, the Directors of Macroeconomic Statistics agreed to set up a new expert-level group on quarterly national accounts and reviewed the mandate of the expert group on sector accounts.

8.1.3 Gross national income (GNI)

GNI at market prices is the main indicator on the basis of which the EU determines Member States' financing of its expenditure, and the GNI concept stems from the ESA definitions. According to the GNI Regulation¹², GNI equals the gross domestic product (GDP) minus primary income payable by resident units to non-resident units plus primary income receivable by resident units from the rest of the world. The specific rules for GNI quality assurance put the focus on the comparability, reliability and exhaustiveness of GNI data, including on the use of harmonised definitions and accounting rules as well as appropriate sources and compilation methods. The Commission (Eurostat) verifies the sources and methods used by EU Member States to calculate GNI and takes measures aimed to improve their quality, with the assistance of a dedicated committee composed of representatives of Member States (GNI Committee)¹³. The verification process for GNI is a stricter procedure compared to the one for national accounts.

Based on the GNI inventories presented by EU Member States at the beginning of 2016, Eurostat examines the implementation of the ESA 2010 methodology relevant to the GNI calculation individually by Member State. Core elements of the verification include information-gathering visits, action points for improvements and, when needed, formal reservations on the quality of GNI data. This process continued in the period covered by this report and has resulted in a number of action points to be addressed by the Member States by September 2019. Some of these have been addressed by the countries in the course of 2018. However, at the end of 2018 the majority of points were still outstanding, as most countries plan to address them at the occasion of the September 2019 major revision of national accounts

Under the GNI verification process, some areas of national accounts are verified through detailed cross-country comparisons (CCCs). In the current GNI verification cycle (2016-2019) the following CCCs have been performed:

- exhaustiveness (absence and misreporting, statistical deficiencies, VAT fraud, use of tax audit information, Illegal activities);

¹² In 2018 the GNI Regulation 1287/2003 was still in force. It was replaced by the new GNI Regulation 2019/516 in March 2019.

¹³ In May 2019 the former GNI Committee was replaced by the GNI Expert Group (Commission Decision of 17.05.2019).

- balancing of GDP;
- dwelling services;
- financial services, including financial intermediation services indirectly measured;
- global production, balance of payments (exports and imports of goods and services, cross-border flows of income of labour, cross-border flows of property income, taxes and subsidies to/from the EU, special purpose entities, global production and relocation of multinational enterprises);
- changes between the ESA 95 and ESA 2010;
- research and development;
- weapon systems.

Progress reports on all CCCs have been presented to the GNI Committee. In 2018 the analyses have been concluded and final reports were presented for the following CCCs: balancing of GDP, financial services (final reports presented at the April 2018 GNI Committee meeting), VAT fraud, use of tax audit information, cross-border flows of income of labour, cross-border flows of property income, taxes and subsidies to/from the EU and weapon systems (final reports presented at the November 2018 GNI Committee meeting)¹⁴.

CCCs have led to the identification of a significant number of issues that should be addressed by the Member States - through the agreed action points – to further enhance the quality of the GNI data.

Concerning the CCCs that have been finalised, in the field of financial services most of the identified deficiencies concern the treatment of services in acquiring and disposing of financial assets and liabilities in financial markets and – to a lesser extent – FISIM and services provided for direct payment.

As to balancing of GDP, for a handful of countries action points have been placed to ensure availability of the SUT- balanced GDP and GNI data in good time for GNI own resource purposes; furthermore some cases of deficiencies with regard to the technicalities and product breakdown of SUT balancing were identified.

In case of CCC on VAT fraud the action points relate to improvements of the estimation methods of the VAT fraud without complicity and inclusion of VAT missing due to insolvencies.

As concerns the use of tax audit information, countries that currently don't make use of this information in their work on exhaustiveness of GDP/GNI have been requested – by means of action points – to investigate the possibility of using it in that context, in accordance with the legal requirements in place.

In the field of cross-border flows of income of labour (compensation of employees from/to the Rest of the World) the main identified deficiencies concerned incomplete inclusion of extra-territorial organisations and full or partial omission of social contributions in the estimates. In cases where large asymmetries between countries were identified, further investigations of underlying reasons have been requested.

Concerning the CCC on the cross-border flows of property income the major deficiency, affecting GNI in the majority of countries, is the use of the Current Operating Performance Concept (COPC) in the calculation of reinvested earnings (RIE). This business accounting item is not considered to be an adequate approximation for operating surplus under ESA 2010. Some other issues concern e.g. the need to include the retained (and reinvested) income of collective investment funds in the cross-border flows of property income attributable to their shareholders, correct treatment of consumption of fixed capital in the calculation of the property income from cross-border ownership of holiday homes, and the need to ensure gross (i.e. before the deduction of current taxes on income withheld at source) recording of cross-border

¹⁴ The work on the remaining CCCs continued after 2018 and additional final reports were presented at the May 2019 meeting of the GNI Expert Group for the following areas: illegal activities, dwelling services, exports and imports of goods and services and Research and Development.

flows of interest and dividends.

Deficiencies identified in the CCC on taxes and subsidies to/from EU don't have a significant impact on GNI. They concern issues like: ensuring of the recording of these taxes gross of the amounts retained to cover collection costs and exclusion of taxes not paid by the resident units.

Finally, as concerns the CCC on the weapon systems, action points were placed with the view to improve the methods applied by some countries to estimate consumption of fixed capital on these assets and to ensure that the transition item 4 for years 2010-2013 is correctly quantified in the GNI questionnaires.

Each year, the GNI Committee examines data supplied in reply to the GNI questionnaire, GNI quality reports and other reports and analyses. This examination takes into account the following:

- the results of work to improve GNI data (including GDP) carried out in previous years;
- the reliability of the sources and methods used to calculate GNI;
- the comparability of GNI data through the use of the same definitions and accounting rules; and
- the exhaustiveness of GNI estimates.

Based on this examination, at its meeting in November 2018 the GNI Committee observed that considerable improvements have been made in the harmonisation and quality of the GNI estimates of the EU27 Member States. It considered that, taking due account of the GNI reservations set for the EU27 between January 2012 and October 2018, these data are appropriate for use for own resource purposes with respect to reliability, comparability and exhaustiveness in accordance with Article 5(2)b of the GNI Regulation. However, the GNI Committee also underlined that the improvement of GNI calculations, and of national accounts in general, is a continuous process. It stressed that research and studies should be taken further and that work should be pursued with an appropriate level of resources. The GNI Committee's opinion on Croatia's GNI data is an integral part of that general opinion.

All compilers of ESA 2010 data closely follow methodological improvements aimed at GNI for own resources. Such improvements are then applied to relevant ESA 2010 tables.

8.1.4 Excessive deficit procedure (EDP) and government finance statistics

Government finance statistics play a key role in the EU's economic monitoring. They include, in particular, data on government debt and deficit, reported under the excessive deficit procedure (EDP). On behalf of the Commission, Eurostat is responsible for assessing the quality of the EDP statistics submitted by EU Member States and for providing the statistics to be used for the EDP ([see also other legal basis](#)). It is solely responsible for the interpretation of the methodology underlying these statistics. This methodology is based on the ESA 2010 and on Eurostat's Manual of Government Deficit and Debt, as well as Eurostat's decisions and guidance notes. It has been developed based on a broad consensus of the EU statistical community.

In the fields of EDP and government finance statistics (GFS), Eurostat's mission is to be the guardian of the EU Member States' implementation of the ESA 2010 and to develop, when necessary, sound interpretations of the ESA 2010 rules based on advice from the EU statistical community. In carrying out this responsibility, Eurostat respects the principles of equal treatment of Member States and of the European statistics Code of Practice, in particular professional independence, objectivity and impartiality. It maintains a continuous dialogue with all relevant institutions in the Member States, and provides in particular bilateral advice for specific past and future transactions.

In its assessment of the quality of EDP statistics submitted by Member States, Eurostat is committed to verifying:

- national reporting authorities' compliance with ESA accounting rules;
- the exhaustiveness of the coverage of the general government sector, in particular by means of a register of government-controlled entities;
- the quality of Member States' 'EDP Inventories of Methods, Procedures and Sources';
- the reliability, timeliness and consistency of statistical data;
- the consistency, sustainability, transparency, documentation and control of the EDP compilation processes within national statistical authorities;
- the conformity of these processes with the European statistics Code of Practice; and
- the degree of assurance provided by internal controls and external audits by supreme audit institutions or other external audit bodies of the quality of public accounts used as inputs to the EDP compilation processes.

Eurostat reports on EDP data in the context of its regular and exhaustive reports to the Council (Economic and Financial Committee) and European Parliament.

In the field of GFS data reported in the ESA 2010 Transmission Programme, Eurostat, in close cooperation with Member States, ensures the consistency of data within the dataset, consistency with other GFS data, and consistency with EDP data. In the context of regular transmission reports¹⁵, Member States and Eurostat ensure data coherence and accuracy.

Results, including on data comparability (methodological interpretation), are reported in the GFS and COFOG task forces in the context of progress reports as well as ad-hoc studies and discussions. These task forces routinely report their findings to the working group on EDP statistics for validation.

8.2 Comparability over time

The availability of consistent historical data on national and regional accounts is essential for the needs of economic analysis. Depending on the ESA 2010 dataset, countries provide time series back to reference years 2000 and even 1995. Quality reporting on breaks in time series of submitted data will be introduced in 2021. This report comments only on the availability of data for the last 10 years in the context of the MIP.

¹⁵ Covering completeness, coherence, basis and advance plausibility checks, revisions, growth rates, unexpected amounts, etc. and providing for Member States' explanations.

9

Coherence

Coherence is the measurement of the adequacy of the data to be reliably combined in different ways and for various uses.

The sufficiency of statistics that are produced for different primary purposes to be used jointly is assessed through checking for cases where there is lack of coherence between these statistics.

Coherence is a key quality criterion to assess the national and regional accounts data. This year's edition of quality reporting introduces an assessment of the coherence between non-financial and financial accounts data from EU Member States based on an analysis of new quality indicators. The new indicator joins the three existing quality indicators, as presented below. The remaining eight coherence indicators will be employed in the assessments carried out in the quality reports from 2021.

The evaluation of consistency within this quality report is based on the following coherence indicators:

- Cross domain coherence, between non-financial sector accounts and financial accounts: net lending / net borrowing;
- coherence between quarterly and annual data;
- coherence between totals and sum of components;
- coherence of identical variables across national accounts main aggregates tables.

9.1 Cross domain coherence

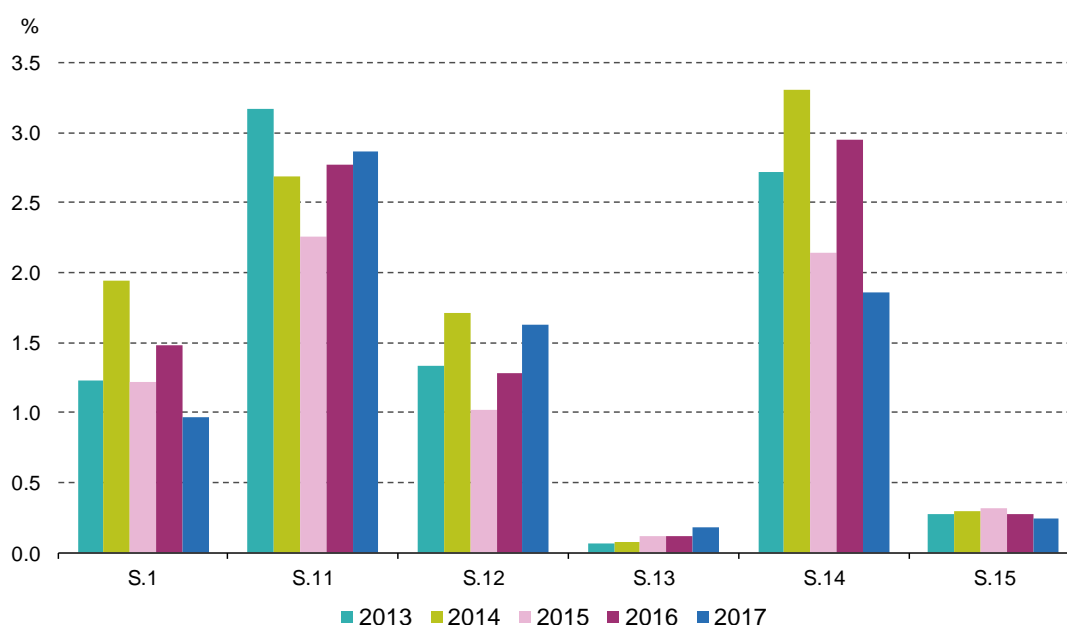
ESA 2010 paragraph 5.18 states that “The balancing item of the financial account is conceptually identical to the balancing item of the capital account. In practice, a discrepancy is usually found between them because they are calculated on the basis of different statistical data”. In other words, ESA 2010 acknowledges that non-financial and financial accounts require different source data, so discrepancies (known as ‘vertical’ discrepancies because of the sequence of accounts) are likely.

9.1.1 Coherence between non-financial sector accounts and financial accounts – net lending / net borrowing

When considering inconsistencies between net lending / net borrowing of the non-financial account (B9) and the financial account (B9F), it might be assumed that, generally, the larger the inconsistency, the more questionable the data quality of the non-financial and/or financial account. However, the interpretation of this inconsistency should be more nuanced.

The differences between net lending / net borrowing in the non-financial and financial accounts can be broken down by institutional sector: S.1: total economy; S.11: non-financial corporations; S.12: financial corporations; S.13: general government; S.14: households; and S.15: non-profit institutions serving households. The absolute differences as a percentage of GDP are shown in Figure 21 for 27 EU Member States (26 for year 2017). These are based on the data extractions for the two domains from the national quality reports.

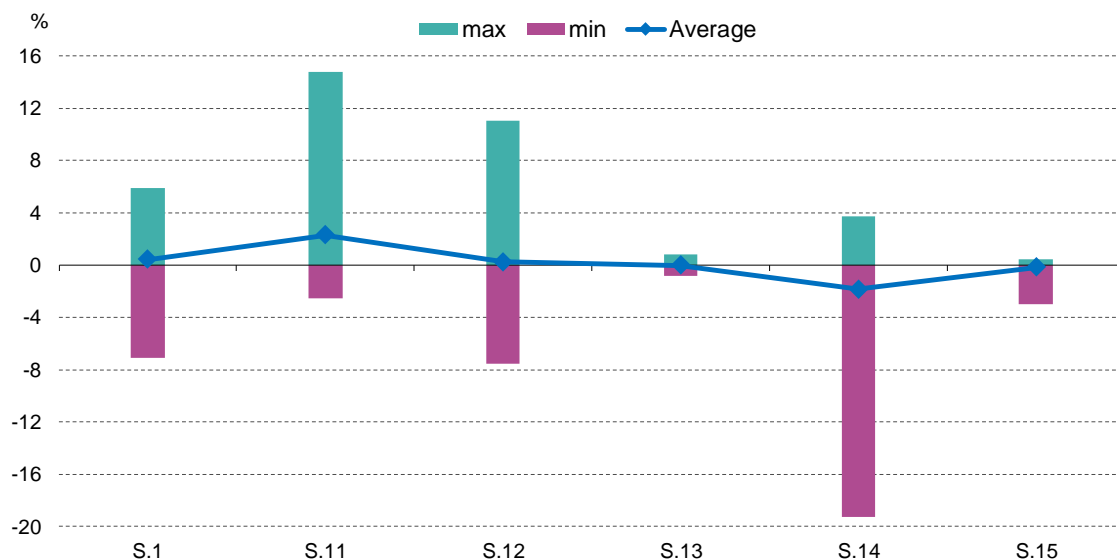
Figure 21: Absolute differences in net lending / net borrowing of non-financial account (B9) and financial account (B9F) as a percentage of GDP (average of EU countries)



Compared to other inconsistencies which may arise in national accounts data reporting, the differences shown in the chart are clearly significant in size. The absolute differences range from above 2 %, in the household (S.14) and non-financial corporation (S.11) sectors where data sources tend to be less complete or reliable, to below 0.2 % for the general government sector (S.13). Moreover, there is no indication (apart from in S.13) that the differences reduce over time as data for earlier years become finalised. Indeed, an examination of a much longer time series indicates that similarly large differences persist in many countries over the whole period.

Similarly, there are large variations in size of vertical discrepancies between countries, depending on the institutional sector. The bars in Figure 22 show the range of the differences among 27 EU Member States (26 for year 2017) for each sector, taking an average of countries' data for reference years 2013-2017 (thus reducing the impact of extreme values for any one year).

Figure 22: Differences in B9 / B9F, high-low range and average, as a percentage of GDP (EU countries, average of reference years 2013-2017)



One feature which is apparent is the wide range of differences for S.14 in particular, followed by S.11 and S.12, as well as the size of differences reaching almost 20 % of GDP in the case of S.14. Another feature is the fact that the discrepancy tends to be negative in the case of S.14, (meaning that net lending of the financial account is higher (or net borrowing lower) than the non-financial account, whereas the discrepancy tends to be positive in the case of S.11 and to a lesser extent S.12. This suggests a sectoral bias in the results of at least some countries.

The line in Figure 22 shows the average difference across EU Member States for years 2013-2017, ranging from zero to 2 % of GDP depending on the sector. This result may seem highly skewed, especially for S.14 and to a lesser extent S.11 and S.12, which imply higher average differences. The reason for the tendency towards zero is the fact the several countries eliminate the vertical discrepancy each year for some or all sectors, as shown in Table 14.

Table 14: Vertical balancing to zero (maximum discrepancy 0.1% of GDP)

| | S.1 | S.11 | S.12 | S.14 | S.15 |
|-----------------------|-----|------|------|------|------|
| CZ, DK, LU, SK | ✓ | ✓ | ✓ | ✓ | ✓ |
| ES | ✓ | | ✓ | | |
| BE, CY, NO | ✓ | | | | |
| NL | | | ✓ | | |
| DE*, AT, PT | | | | ✓ | ✓ |

*S.1M (S.14 + S.15 combined) is balanced to zero

Note: S.13 is not shown.

EU Member States mentioned in Table 14 eliminate the discrepancy for the sectors concerned. This involves adjusting one or more transactions, in either domain, to ensure that net lending / net borrowing matches in the financial and non-financial accounts. The differences are allocated to data considered of lesser quality, typically accounts receivable/payable, or unlisted shares, but it could be other transactions. However, such adjustments may have little statistical justification, so there is a risk of reducing the quality of the affected data. Moreover, the adjustments make it more difficult to reconcile the accounts with data sources.

Nonetheless it is clearly good practice to reduce vertical discrepancies as much as possible without resorting to arbitrary decisions or techniques. The check of coherence between non-

financial sector accounts and financial accounts in the national quality reports, through a comparison of net borrowing /net lending, showed a wide variability in terms of results by country and institutional sector. The absolute values of vertical discrepancies as a percentage of GDP, averaged over the period 2013 to 2017 are presented in Table 15. The indicator was not available for Croatia, Iceland and Switzerland for the full period, nor for Poland for 2017.

Table 15: Average absolute vertical discrepancy over 2013-2017, by sector (as % of GDP)

| Institutional Sector | S.1 | S.11 | S.12 | S.13 | S.1M | S.14 | S.15 |
|----------------------|------|-------|-------|------|-------|-------|------|
| BE | 0 | 1.42 | 0.66 | 0.26 | 1.34 | 1.14 | 0.18 |
| BG | 4.90 | 8.40 | 3.82 | 0.16 | 7.38 | 7.24 | 0.44 |
| CZ | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DK | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DE | 2.72 | 2.74 | 0.06 | 0.06 | 0 | 0.04 | 0.04 |
| EE | 0.50 | 1.50 | 0.34 | 0.02 | 1.30 | 1.28 | 0.04 |
| IE | 2.44 | 2.78 | 1.22 | 0.20 | 1.38 | 1.48 | 0.12 |
| EL | 2.80 | 6.90 | 2.02 | 0.66 | 4.78 | 2.06 | 2.96 |
| ES | 0 | 0.38 | 0 | 0 | 0.38 | 0.32 | 0.10 |
| FR | 0.22 | 0.22 | 0.06 | 0.06 | 0.08 | 0.14 | 0.14 |
| IT | 0.90 | 0.66 | 0.88 | 0.10 | 0.46 | 0.44 | 0.02 |
| CY | 0 | 0.34 | 0.36 | 0.02 | 0.32 | 1.18 | 1.12 |
| LV | 4.00 | 3.94 | 1.70 | 0.78 | 7.74 | 7.94 | 0.34 |
| LT | 1.70 | 6.28 | 1.60 | 0.02 | 4.74 | 4.72 | 0.06 |
| LU | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HU | 1.74 | 2.66 | 0.40 | 0.06 | 1.24 | 1.30 | 0.10 |
| MT | 3.32 | 7.70 | 15.80 | 0.06 | 14.82 | 15.22 | 0.38 |
| NL | 0.30 | 0.38 | 0 | 0.06 | 0.34 | 0.36 | 0.14 |
| AT | 0.84 | 0.60 | 0.70 | 0.06 | 0 | 0 | 0 |
| PL | 2.10 | 8.35 | 0.55 | 0.08 | 6.05 | 5.48 | 0.58 |
| PT | 0.64 | 0.66 | 0.10 | 0 | 0 | 0 | 0 |
| RO | 0.42 | 11.64 | 2.60 | 0.08 | 14.14 | 14.00 | 0.14 |
| SI | 1.60 | 1.24 | 0.86 | 0.02 | 3.00 | 2.96 | 0.14 |
| SK | 0.06 | 0.04 | 0.08 | 0.04 | 0.04 | 0 | 0.04 |
| FI | 2.62 | 4.32 | 1.86 | 0.10 | 1.12 | 0.94 | 0.30 |
| SE | 3.22 | 2.08 | 1.68 | 0.10 | 2.48 | 2.38 | 0.08 |
| UK | 0.26 | 0.62 | 0.46 | 0.02 | 0.34 | 0.48 | 0.20 |
| Average | 1.38 | 2.81 | 1.40 | 0.11 | 2.72 | 2.63 | 0.28 |

The table presents the vertical discrepancies for all sectors, including S.1M which regroups households and non-profit institutions serving households. The average absolute discrepancies were largest in S.11 and S.14, where the average of EU Member States (excluding Croatia) was 2.81 % and 2.63 % of GDP, respectively. The average discrepancy in S.1M (2.72 %) was almost entirely due to discrepancies in S.14. The national practices of vertical balancing to zero can also be clearly seen, for the countries presented in Table 14. Average absolute discrepancies of between 2 % and 5 % of GDP are shown in pale mauve colour, while discrepancies above 5 % of GDP are shown in darker purple.

Apart from vertical balancing, on average over the 2013 to 2017 period, absolute vertical discrepancies were less than 0.3 % of GDP in all sectors only for France and Slovakia. Some Member States had high average absolute discrepancies in more than one sector. Bulgaria, Malta and Romania all had in excess of 5 % of GDP for both S.11 and S.14. Greece, Latvia, Lithuania and Poland also had high average discrepancies in more than one sector. By contrast, some Member States had averages in only one sector that surpassed the others and resulted in high average discrepancies for the total economy. In Germany, Hungary, Ireland and Finland, discrepancies in S.12 were noticeably higher than the other sectors. Generally, S.13 had the lowest average absolute discrepancy for amongst Member States, and the EU average was smallest for S.13 (0.11 %), followed by S.15 (0.28 %).

In many cases, higher averages for a Member State result from its vertical discrepancies in that sector for a specific reference year. Discrepancies equivalent to over 20% of GDP were recorded by Latvia (in S.14 for year 2014), by Malta (S.12 for 2014 and 2017, and S.14 for 2014 and 2016), and by Romania (S.14 for 2013). Discrepancies of between 12% and 20% of GDP were recorded by Bulgaria (S.11, 2016 and 2017), Latvia (S.1, 2014), Malta (S.11, 2017), and Romania (S.11, 2013 and 2016, and S.14 in 2016). The indicator was not available for Croatia, Iceland and Switzerland for years 2013-2017, nor for Poland for 2017.

Comments made by EU Member States in their national quality reporting tended to underline that vertical discrepancies were being monitored, and in some cases there was specific mention of work to reduce them. Bulgaria, Latvia and Slovenia mentioned that the forthcoming benchmark revision should lower the vertical discrepancies. Germany and Finland commented that, in their case, the comparison of net lending / borrowing was affected by different data vintages.

9.2 Coherence between quarterly and annual data

When both quarterly and annual data are submitted to Eurostat, it is important to ensure that the quarterly data are consistent with the annual data. Small differences may be tolerated, but not major ones.

Consistency between annual data and the sum of the data for the four individual quarters was analysed for certain key EU aggregates in the context of this quality reporting exercise. The analysis covered the differences between annual data and the sum of the four respective quarters of data over the period 2013 to 2017, for GDP (current prices, non-seasonally adjusted), total employment (in thousands of persons, non-seasonally adjusted), gross operating surplus, gross mixed income, and gross disposable income.

In the analysed period from 2013 to 2017, for **national accounts main aggregates**, only four EU Member States showed very small inconsistencies between annual and quarterly data for some years, possibly due to the different vintages of data (for GDP) or rounding (employment).

For **non-financial sector accounts**, the exercise is valid only for the 17 EU Member States that have complete reporting obligations at quarterly level, plus Norway, and the Member States that send these data on a voluntary basis, such as Estonia and Slovenia. Consistency between

quarterly and annual data in 2013-2017 was very good for 16 countries, with minor discrepancies observed for Poland (up to 2.2 % of GDP), Romania (up to 5.3 % of GDP) and Sweden (0.1 % GDP). For the United Kingdom, annual and quarterly data are consistent by the way of compilation.

9.3 Coherence between totals and sum of components

When data submitted to Eurostat can be broken down by activity (i.e. NACE Rev. 2 divisions), it is important to ensure that the figures add up, and are consistent in terms of expected additivity rules (except in cases where additivity does not apply like the case of chain-linked volumes).

The consistency checks performed in the context of the 2018 quality reporting exercise covered:

- gross domestic product in current prices, non-seasonally adjusted, total and sum of expenditure components (quarterly and annual data), Table 1;
- gross value added, current prices, total and NACE Rev. 2, level A*10 breakdowns (quarterly and annual data), Table 1;
- total employment in thousands of persons, non-seasonally adjusted, total and sum of employees and self-employed (quarterly and annual data), Table 1;
- total employment, in thousands of persons, total and sum of NACE Rev. 2, level A*10 breakdowns (annual data), Table 1.

In the analysed period from 2013 to 2017, for national accounts main aggregates and for the latest four quarters, the overall results of consistency checks between totals and sums of components were good, with only very minor differences due to rounding.

9.4 Coherence of identical variables across national accounts main aggregates tables

National accounts main aggregates data for some key variables are sent in various tables of the ESA 2010 Transmission Programme. This is the case for example for: GVA, compensation of employees, and employment which are sent in Tables 1 and 3; GDP is sent in Tables 1 and 8; gross fixed capital formation data is included in Tables 1, 3 and 22.

Theoretically, these data should be the same across tables. However, for practical reasons, they may differ for some tables and in some countries. While differences due to different vintages are usually limited, there are also cases where significant revisions are introduced, notably in the context of the EDP or GNI verification process. Until these revisions can be incorporated into the full set of national accounts, more substantial differences can be observed across tables.

In the context of this quality reporting exercise, the average and absolute maximum difference for the following variables were analysed:

- GDP in current prices for quarterly and annual data within Table 1 (GDP according to production, expenditure and income approach);
- gross value added in current prices for annual data between Tables 1 and 3;
- compensation of employees in current prices for annual data between Tables 1 and 3;

- gross fixed capital formation in current prices for annual data between Tables 1 and 3 and Tables 1 and 22;
- exports of goods and services in current prices for quarterly and annual data within Table 1 (taken from expenditure components of gross domestic product and from the detailed exports breakdown);
- imports of goods and services in current prices for quarterly and annual data within Table 1 (taken from expenditure components of gross domestic product and from the detailed imports breakdown);
- total employment, employees and self-employed for annual data in thousands of persons between Tables 1 and 3.

In the analysed period from 2013 to 2017, the internal coherence across national accounts main aggregates tables for both annual and quarterly frequencies was very good.

10

Overall quality assessment and recommendations

This chapter summarises the results of the quality assessment of the national and regional accounts data submitted by the EU Member States, Iceland, Norway and Switzerland in 2018, as well as Eurostat's own publications of European aggregates. It is the third such assessment since the introduction of the ESA 2010 in September 2014. The scope is limited due to ongoing adjustments in the process of adapting national statistical systems to the new requirements of the ESA 2010 by 2020.

As in 2016 and 2017, the data sent in 2018 were broadly in line with quality standards of the ESS and the ESA 2010 Regulation. Many EU Member States have been able to comply with the new data requirements and methodology, while the process of adapting national data compilation systems will continue until 2020. There has been improvements in both data completeness and punctuality since the first quality report on data submissions in 2016. Based on the quality criteria used in the assessment, the overall results are presented below.

10.1.1 Conclusions

RELEVANCE

National and regional accounts data are highly relevant to users as demonstrated by the latest user satisfaction survey of Eurostat conducted in 2019, according to ESA 2010 domains included in the survey: 'Economy and Finance' theme and grouped as 'National accounts' data (including GDP, main aggregates, sector accounts, input-output tables and regional accounts), 'Financial accounts and monetary indicators' and 'Government finance statistics'

In 2018, both quarterly and annual national accounts mandatory data had high completeness. Since the last Eurostat report, generally for most countries both the completeness rates increased, and the number of incomplete tables decreased.

The EU-28 average completeness rates for tables for national account main aggregates (NAMA), government finance statistics (GFS), non-financial sector accounts (NFSA) and annual financial accounts (AFA) were between 93.4 % and 100 %; for supply, use and input-output tables (SUIOT) and regional accounts (RA) tables, they were between 94.5 % and 100 %.

The EU-28 average completeness rates for quarterly data ranged from a low of 95.7 % for NFSA to a high of 100 % for GFS. For annual data, the EU-28 average completeness rate over all domains reached 97.8 % (arithmetic average over all tables), an improvement from 97.1 % in 2017. The rate ranged from a low of 93.4 % for balance sheets for non-financial assets (Table 26) to a high of 100 % in the annual main aggregates Table 5 as well as for and regional accounts Tables 12 and 13.

For quarterly tables, almost all of the EU Member States (27 out of 28) submitted all, or nearly all, of the required data (completeness rate above 95 %). Twelve Member States achieved a full completeness rate for all quarterly tables. For annual tables, 23 Member States submitted all, or

nearly all, mandatory data (completeness rate above 95 %). The majority of EU Member States submitted incomplete data in five or less annual tables in 2018.

Eurostat finds it important to acknowledge the effort made by all countries to submit additional data on a voluntary basis for the benefit of users.

The availability of data has improved in the three years of the Eurostat quality report, with the percentage of complete tables increasing from 74 % to 81 % to 86 %, and the percentage of almost complete data falling from 21 % to 16 % to 12 %. There was also a reduction in the share of data delivered with significant shortcomings, or not delivered at all down from 1.7 % in 2016, to 1.4 % in 2017 and 0.9 % in 2018. Overall, data availability has increased for the EU-28 as a whole, as well as for the majority of individual EU Member States and EFTA countries. This trend seems stable.

ACCURACY

The analysis of revision rates for GDP and employment flash estimates for European aggregates showed that the accuracy of estimates in the analysed period was high, as was the accuracy of releases of aggregate data from quarterly sector accounts.

Under the Implementing Act, the detailed analysis of revision rates for data submitted by Member States has been incorporated into the quality reporting from this edition of the report in 2019. The full analysis of the revision rate indicators for quarterly and annual data has also been included in Annex 4.

In 2018, nine EU Member States performed either major routine or benchmark revisions of their national accounts data. These revisions aimed to improve the quality of data and were mainly related to the further implementation of statistical standards, GNI Reservations or resulting from revisions of related statistics e.g. balance of payments or structural business statistics.

Most EU Member States as well as the two EFTA countries make information on their national revision policies available online. Eurostat will reassess the adherence to the harmonised European revision policy when the results of the coming CMFB stocktaking exercise become available, and provide the assessments in the quality reporting in 2020.

The content of available information on national revisions varies substantially among the countries for which the information is publicly available. Nearly all countries publish information on the national revision policy for quarterly national accounts. On the contrary, information on revisions for financial accounts, regional accounts and supply use input output tables is still missing on most national websites.

TIMELINESS AND PUNCTUALITY

Overall, the punctuality of transmission of quarterly national accounts was high in 2018 with most countries submitting all mandatory quarterly accounts on time or with a short delay on only one table.

Fifteen EU Member States submitted all mandatory quarterly accounts at or before the legal deadline. Eight other EU Member States submitted all but one of their quarterly tables on time, with a delay on the late table of less than one week past the legal deadline. For the seventeen ESA 2010 tables transmitted annually, ten Member States, plus Norway, submitted all required annual national and regional accounts tables on time (four more than in 2017). Six Member States submitted more than three tables after the legal deadline, and both Iceland and Switzerland had 13 missing or delayed tables out of 17.

Thanks to the punctuality of data submitted by EU Member States, the Eurostat's flash estimates and news releases of the European aggregates underlying the PEEIs remained timely.

ACCESSIBILITY AND CLARITY

All EU Member States and EFTA countries publish online documentation on national accounts methodology and compilation methods. However, the content of the available information varies substantially across countries and could be enriched where appropriate. A comprehensive set of documentation is accessible online for just over half of EU Member States. Progress was marked in 2018 with four more Member States publishing EDP inventories and one more Member State publishing voluntary ASA inventories. Switzerland published their GNI inventory on the CIRCA-BC public website.

COHERENCE

The analysis of coherence in the context of this quality report is limited as only the internal coherence of certain main aggregates tables was subject to detailed analysis. The coherence between non-financial sector accounts and financial accounts for net lending and net borrowing has been assessed in this report. The absolute difference range from above 2 %, in the household (S.14) and non-financial corporation (S.11) sectors where data sources tend to be less complete or reliable, to below 0.2 % for the general government sector (S.13). The remaining eight coherence indicators will be employed in the assessments carried out in 2021.

Overall internal coherence within (Table 1) and between Tables (1 and 3, 1 and 22) was very high for nearly all countries in 2018. Very minor discrepancies were noted for a small number of countries, which mainly caused by vintage issues or rounding practices.

Based on the quality assessment, Eurostat makes the following **general recommendations** to countries, encouraging them to strive to:

- continue to adapt national statistical systems to achieve full implementation of ESA 2010;
- ensure full data completeness of mandatory data in order to comply with the ESA 2010 Regulation;
- respect the transmission deadlines set out in the ESA 2010 Regulation and address the overall delayed delivery of annual data;
- implement the improvement actions on the ESA 2010 methodology which have been identified in the context of GNI for own resource purposes (as of May 2019);
- make specific information on implemented major revisions by ESA 2010 table or domain available to users on national websites;
- transmit reference metadata in accordance with the Single Integrated Metadata Structure (SIMS) v. 2.0, as well as explanatory metadata on major events, major revisions, and series breaks.

In addition, based on national quality reports and analysis of submitted data, Eurostat provided country-specific recommendations bilaterally. These are summarised in Table 16.

Table 16: Country-specific recommendations

| Recommendation | Countries* |
|---|--|
| Improve compliance in terms of the completeness of certain tables | BG, EE, EL, ES, FR, HR, HU, IE, LT, LU, MT, RO, PL, SK, FI, SE, UK IS, NO |
| Improve compliance in terms of the punctuality of certain | BG, EL, HR, IE, LU, MT, PL |

| | |
|--|---|
| tables | IS, CH |
| Address systematic difficulties in delivering NFSA data to Eurostat | BG, HR, MT IS |
| Develop and publish information on the national revision policy | ES, HR, IE, LU, MT, RO CH |
| Foster efforts towards alignment of the national revision policy to the harmonised European revision policy endorsed by the CMFB | CZ, DK, EL, FR, HR, IE, LT, LU, HU, MT, NL, PL, RO, FI, SE, UK |
| Widen the scope of the methodological documentation available online | BG, CZ, EL, HR, CY, LV, LU, MT, SK CH, NO |
| While acknowledging the progress made, ensure methodological adherence and coherence of ESA Table 27 with other GFS and EDP tables to allow a validation and publication of data by Eurostat, in particular progress on resolving remaining differences with EDP Table 3 | EL |
| Ensure further the consistency of annual and quarterly financial accounts | BG, CZ, DK, IE, LT, LV, SK |
| Reduce vertical discrepancies between financial and non-financial sector accounts | BG, DE, IE, EL, HR, LV, LT, MT, PL, RO, FI, SE IS |
| Ensure further the consistency of annual and quarterly non-financial sector accounts | EL, HR, PL, RO |
| Address coherence and alignment issues annual and quarterly NFSA, NAMA and GFS data. | BG, EL, MT, PL, RO IS, NO |
| Improve the data transmission to implement accurately the recommendations of the ESA 2010 Validation Handbook regarding data flags | BE, BG, EL, ES, HR, HU, IE, CY, LV, LT, LU, MT, PL, RO, SE IS, NO |
| Ensure additional effort to finalise publication of the more detailed country metadata file for the domains of national and regional accounts | BE, CZ, DK, EE, IE, IT, HR, LV, LT, HU, MT, FI, SE |
| Work on general level country metadata for ESA 2010 to achieve a level of completeness so that the country metadata file could be published | DE, EL, ES, FR, CY, LU, NL, PL, PT, RO, AT, UK IS, CH, NO |
| Transmit explanatory metadata such as on major events, major revisions, series breaks, methodological deviations, negative stock values, and data not for publication, along with the data on annual financial accounts | AT, BE, CZ, DE, DK, IE, EL, EE, HR, CY, HU, IT, LT, MT, PL, PT, RO, FI, SE, UK IS, NO, CH |
| Pursue the development/update of the voluntary ASA inventory | BE, CZ, DE, DK, IE, EE, EL, ES, FR, HR, IT, CY, LV, LU, HU, MT, RO, UK |
| Pursue the development/update of the voluntary QNA inventory | BG, IE, EE, ES, FR, IT, CY, LV, LU, HU, MT, PT, RO, SI, SK, SE, UK |

* Countries in bold denote those with major gaps to be addressed.

Annexes

Annex 1: ESA 2010 Transmission Programme

Table 17: Transmission programme of data — Overview of the tables

| Table No | Subject of the tables | Frequency | Deadline t + months (days where specified) | Period covered |
|----------|--|--------------|---|----------------|
| T1Q | Main aggregates | quarterly | 2 | 1995Q1 onwards |
| T1A | Main aggregates | annual | 2/9 | 1995 onwards |
| T2 | Main aggregates of general government | annual | 3/9 | 1995 onwards |
| T3 | Tables by industry | annual | 9/21 | 1995 onwards |
| T5 | Household final consumption expenditure by purpose | annual | 9 | 1995 onwards |
| T6 | Financial accounts by sector (transactions) | annual | 9 | 1995 onwards |
| T7 | Balance sheets for financial assets and liabilities | annual | 9 | 1995 onwards |
| T8 | Non-financial accounts by sector | annual | 9 | 1995 onwards |
| T801 | Non-financial accounts by sector | quarterly | 85 days ^{16,17} | 1999Q1 onwards |
| T9 | Detailed tax and social contribution receipts by type of tax and social contribution and receiving subsector including the list of taxes and social contributions according to national classification | annual | 9 | 1995 onwards |
| T10 | Tables by industry and by region, NUTS level 2 | annual | 12/24 | 2000 onwards |
| T11 | General government expenditure by function | annual | 12 | 1995 onwards |
| T12 | Tables by industry and by region, NUTS level 3 | annual | 24 | 2000 onwards |
| T13 | Household accounts by region, NUTS level 2 | annual | 24 | 2000 onwards |
| T15 | Supply table at basic prices incl. transformation into purchasers' prices | annual | 36 | 2010 onwards |
| T16 | Use table at purchasers' prices | annual | 36 | 2010 onwards |
| T17 | Symmetric input-output table at basic prices | five-yearly | 36 | 2010 onwards |
| T20 | Cross classification of fixed assets by industry and by asset | annual | 24 | 2000 onwards |
| T22 | Cross classification of gross fixed capital formation by industry and by asset | annual | 24 | 1995 onwards |
| T26 | Balance sheets for non-financial assets | annual | 24 | 1995 onwards |
| T27 | Financial accounts of general government | quarterly | 85 days ¹⁶ | 1999Q1 onwards |
| T28 | Government debt (Maastricht debt) for general government | quarterly | 3 | 2000Q1 onwards |
| T29 | Accrued-to-date pension entitlements in social insurance | three-yearly | 24 | 2012 onwards |

¹⁶ The deadline of 85 days is applicable to Member States whose currency is the euro. For Member States whose currency is not the euro, the data transmission deadline is 3 months. If a Member State transmits the complete data set within 85 days, data does not need to be transmitted at 3 months.

¹⁷ For Member States whose gross domestic product at current prices is less than 1 % of the corresponding Union total GDP, only data for selected items is compulsory.

Annex 2: Completeness rates per ESA 2010 domain and table

Figure 23: Table 1Q - Main aggregates - quarterly
(period covered: 1995Q1–2018Q3, data reported in 2018)



Figure 24: Table 801 - Non-financial accounts by sector - quarterly
(period covered: 1999Q1–2018Q3, data reported in 2018)

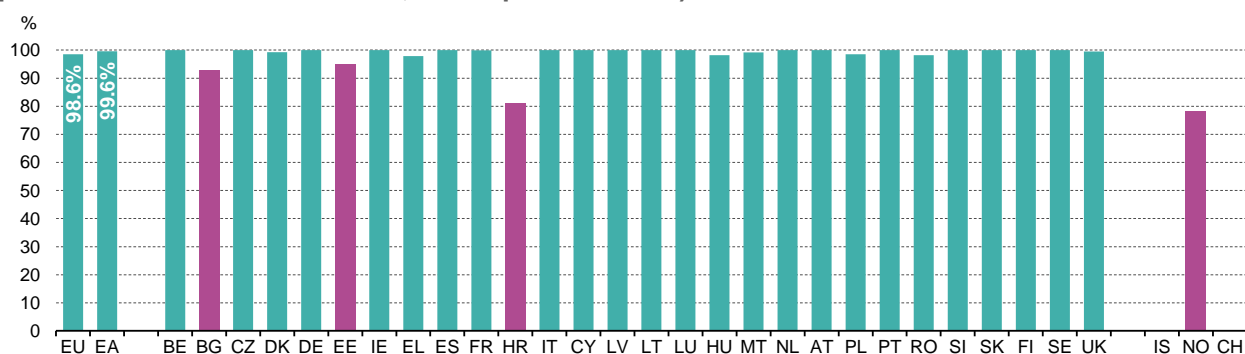


Figure 25: Table 27 - Financial accounts of general government - quarterly
(period covered: 1999Q1–2018Q3, data reported in 2018)

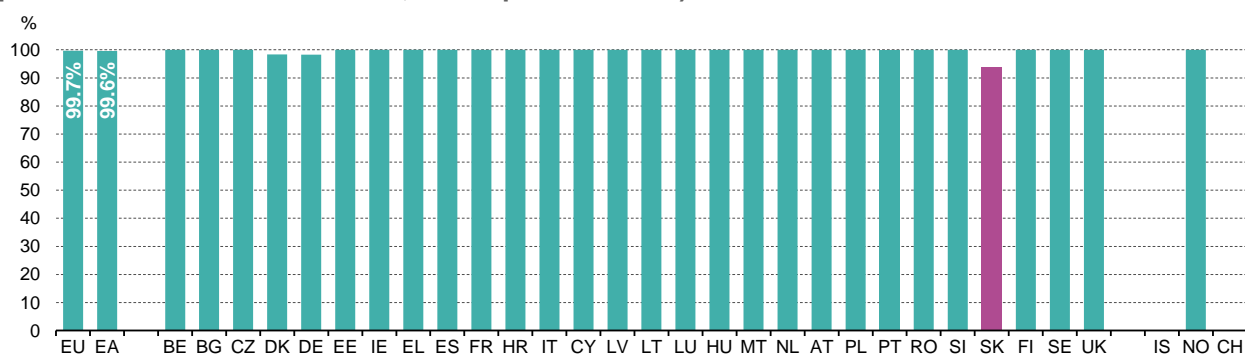


Figure 26: Table 28 - Government debt (Maastricht debt) for general government - quarterly
(period covered: 2000Q1–2018Q3, data reported in 2018)

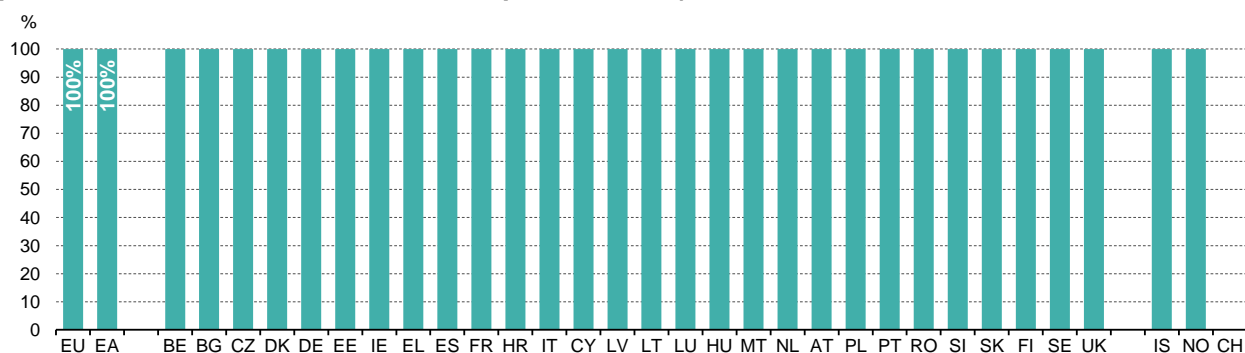


Figure 27: Table 1A - Main aggregates - annual
(period covered: 1995–2017, data reported in 2018)

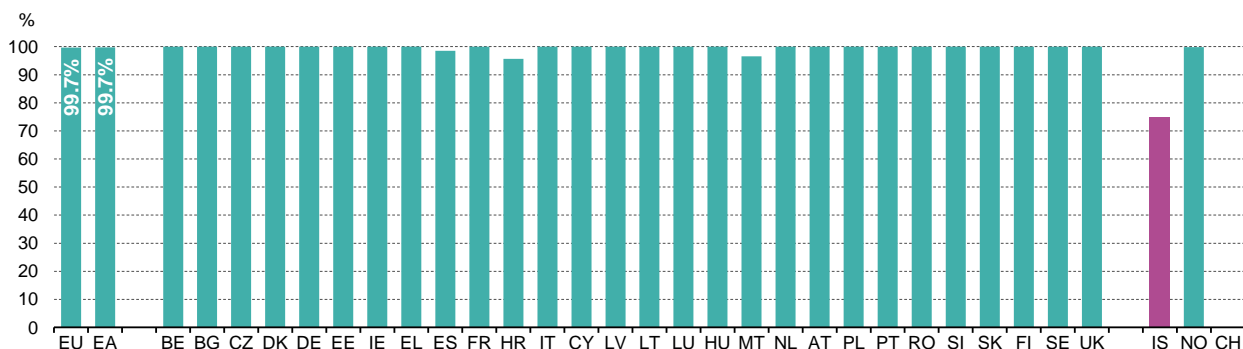


Figure 28: Table 3 - Tables by industry - annual
(period covered: 1995–2017, data reported in 2018)



Figure 29: Table 5 - Household final consumption expenditure by purpose - annual
(period covered: 1995–2017, data reported in 2018)

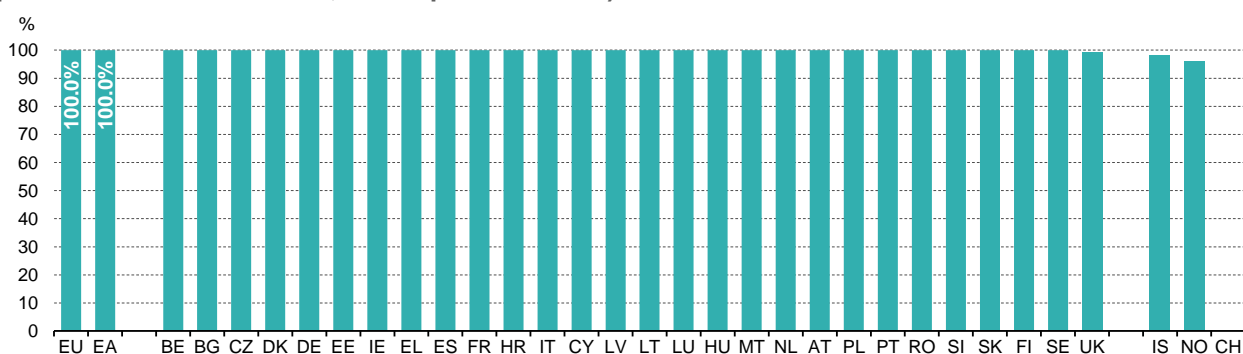


Figure 30: Table 20 - Cross classification of fixed assets by industry and by asset - annual
(period covered: 2000–2016, data reported in 2018)



Figure 31: Table 22 - Cross classification of gross fixed capital formation by industry and by asset – annual (period covered: 1995–2016, data reported in 2018)

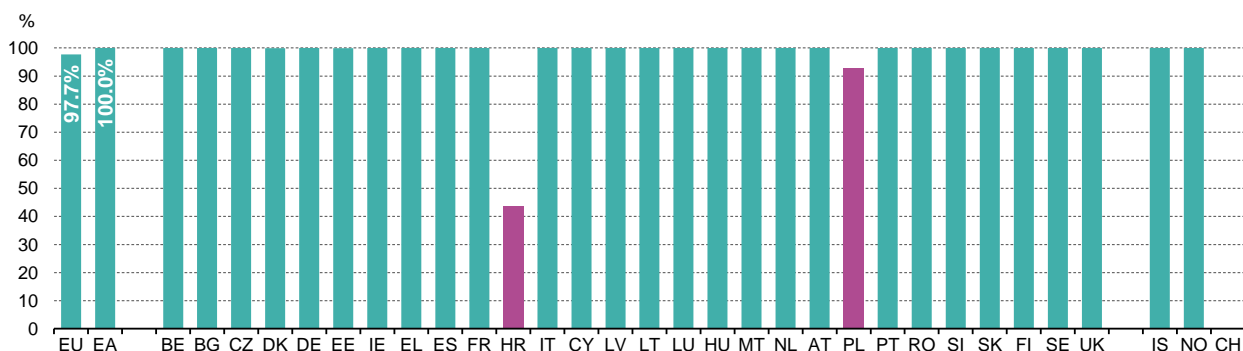


Figure 32: Table 26 - Balance sheets for non-financial assets - annual (period covered: 1995–2016, data reported in 2018)

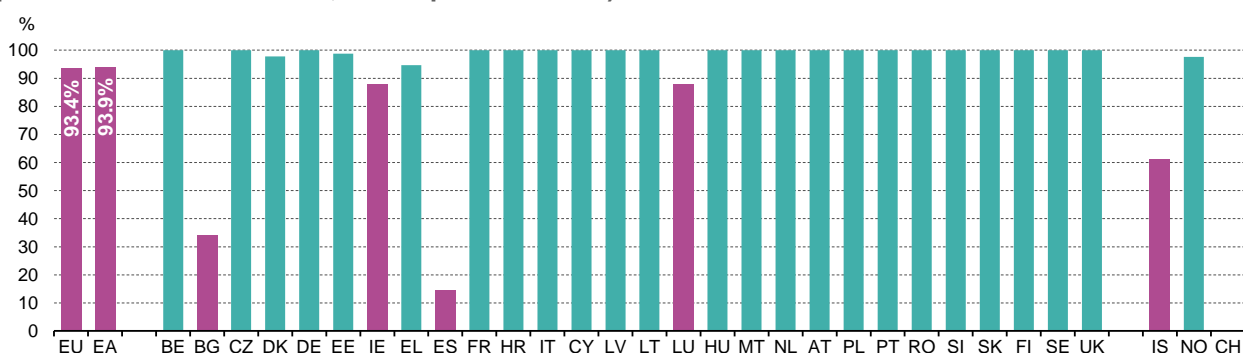


Figure 33: Table 2 - Main aggregates of general government - annual (period covered: 1995–2017, data reported in 2018)

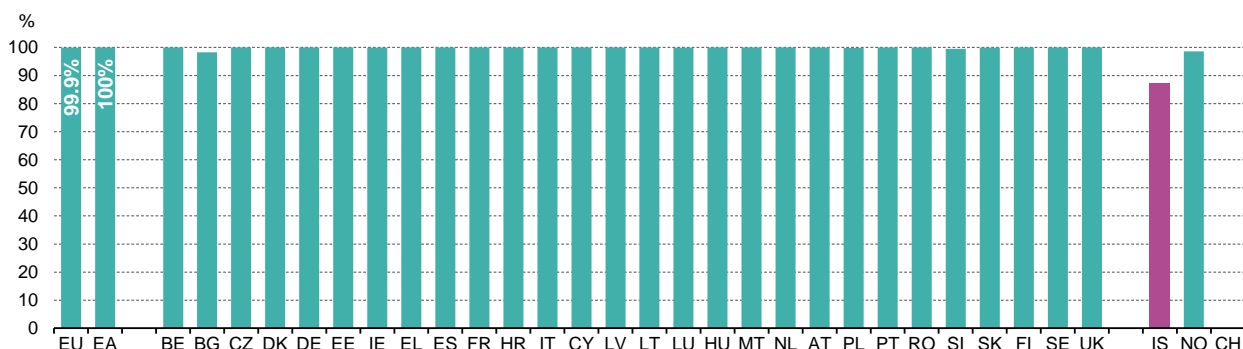
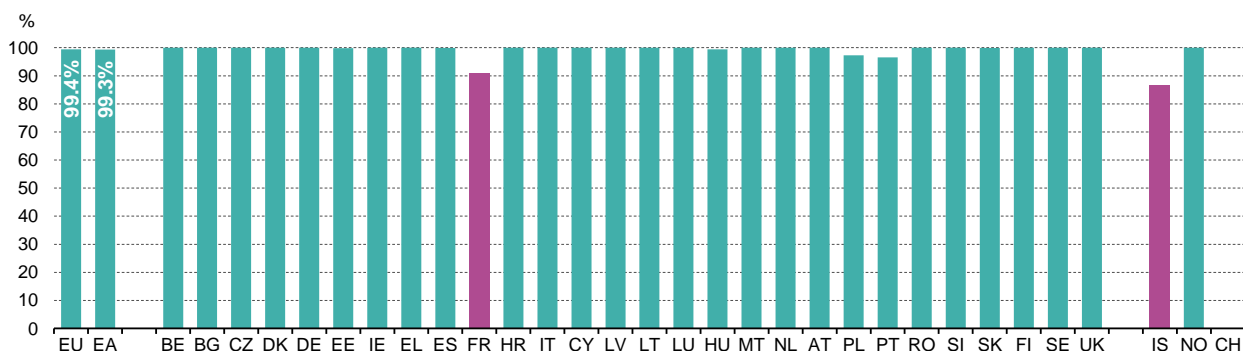


Figure 34: Table 9¹⁸ - Detailed tax and social contribution receipts by type of tax and social contribution and receiving subsector including the list of taxes and social contributions according to national classification – annual (period covered: 1995–2017, data reported in 2018)



¹⁸ The transmission of National Tax Lists is not separately reported. National Tax Lists were generally sent – as required – at the same time as the ESA table 9. Switzerland did not provide a National Tax List.

Figure 35: Table 11 - General government expenditure by function - annual
(period covered: 1995–2017, data reported in 2018)



Figure 36: Table 8 - Non-financial accounts by sector - annual
(period covered: 1995–2017, data reported in 2018)



Figure 37: Table 6 - Financial accounts by sector (transactions) - annual
(period covered: 1995–2017, data reported in 2018)

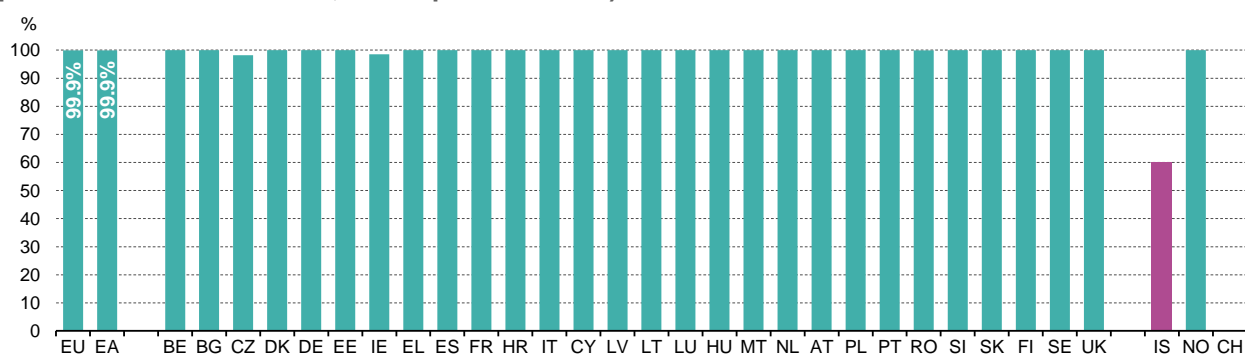


Figure 38: Table 7 - Balance sheets for financial assets and liabilities - annual
(period covered: 1995–2017, data reported in 2018)

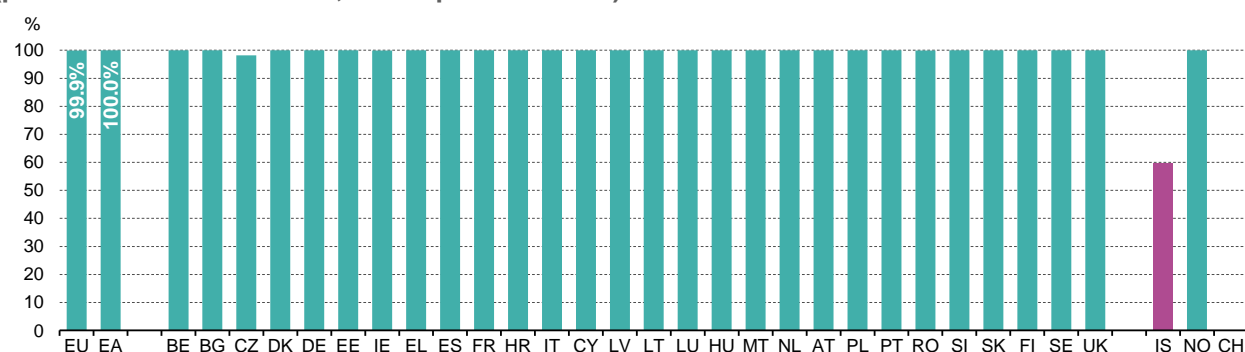


Figure 39: Table 10.1 (t+12) - Tables by industry and by region (NUTS level 2) - annual
(period covered: 2000–2017, data reported in 2018)

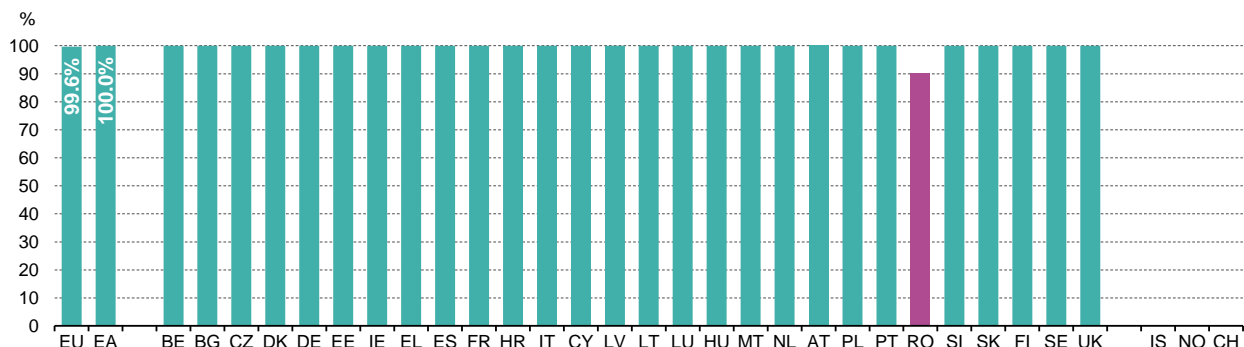


Figure 40: Table 10.2 - Tables by industry and by region (NUTS level 2) - annual
(period covered: 2000–2016, data reported in 2018)

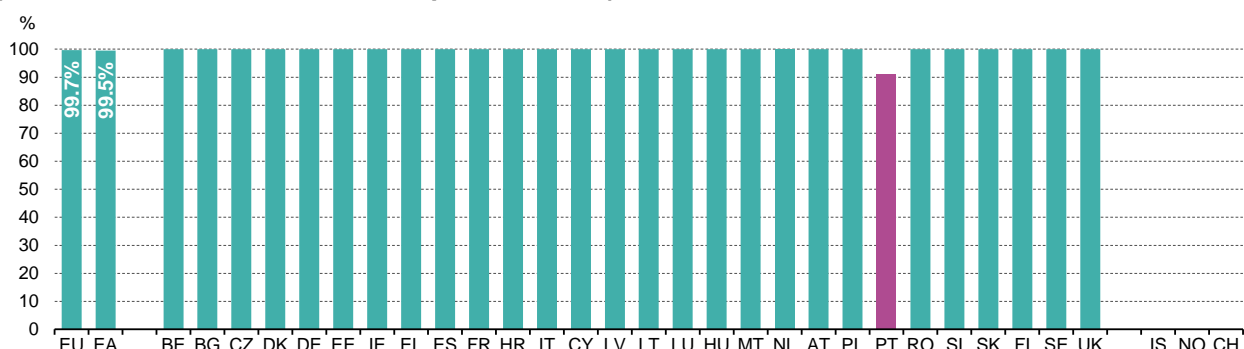


Figure 41: Table 12 - Tables by industry and by region (NUTS level 3) - annual
(period covered: 2000–2016, data reported in 2018)

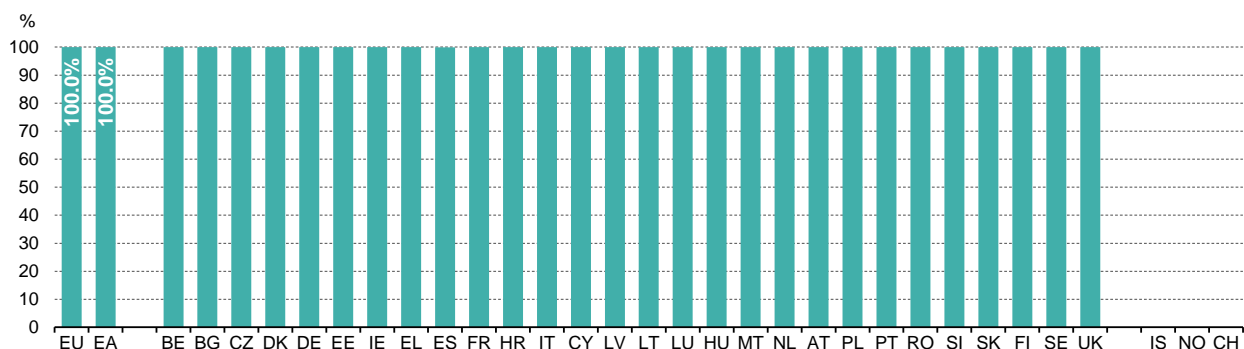


Figure 42: Table 13 - Household accounts by region (NUTS level2) - annual
(period covered: 2000–2016, data reported in 2018)

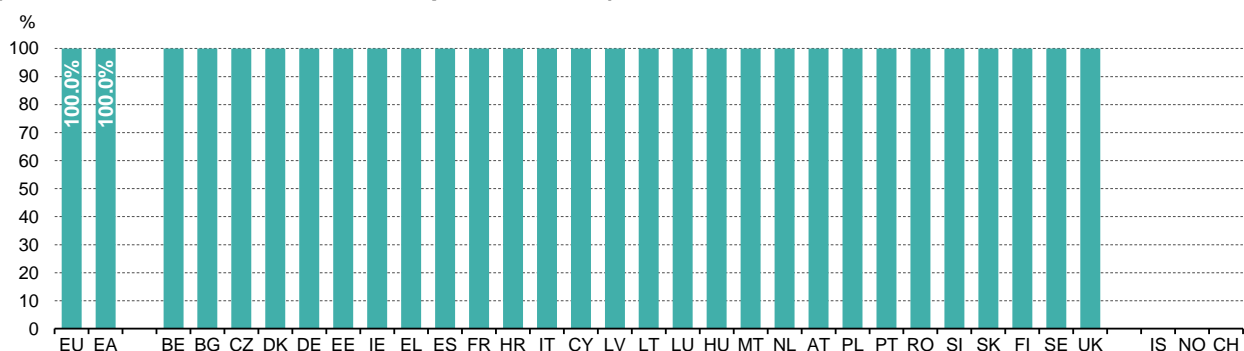


Figure 43: Table 15 - Supply table at basic prices incl. transformation into purchasers' prices - annual (period covered: 2010–2015, data reported in 2018)

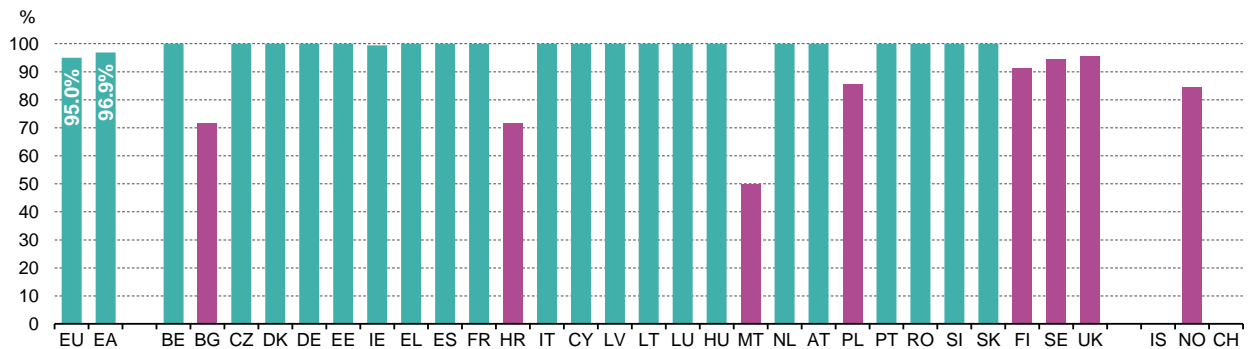


Figure 44: Table 16 - Use table at purchasers' prices – annual & five-yearly (period covered: 2010–2015, data reported in 2018)

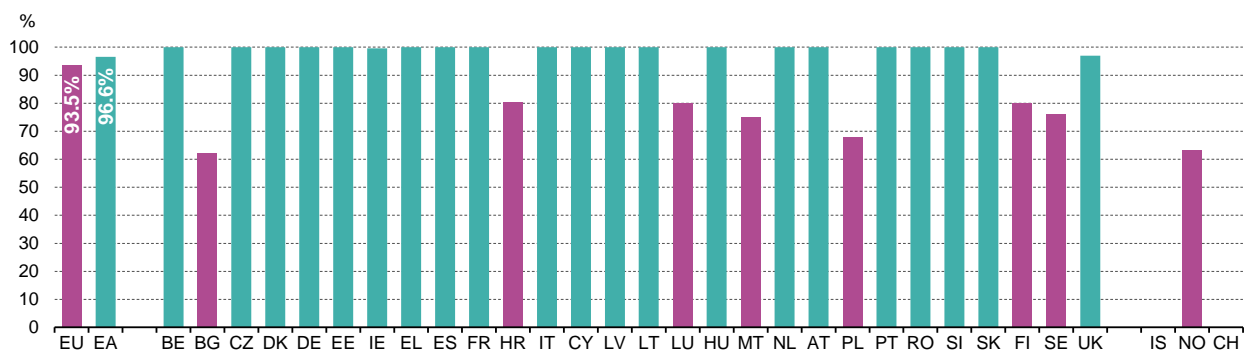


Figure 45: Table 17 - Symmetric input-output table at basic prices - five yearly (period covered: 2010–2015, data reported in 2018)



Annex 3: Punctuality indicators per ESA 2010 domain and table

Figure 46: Punctuality of national accounts quarterly tables reported in 2018

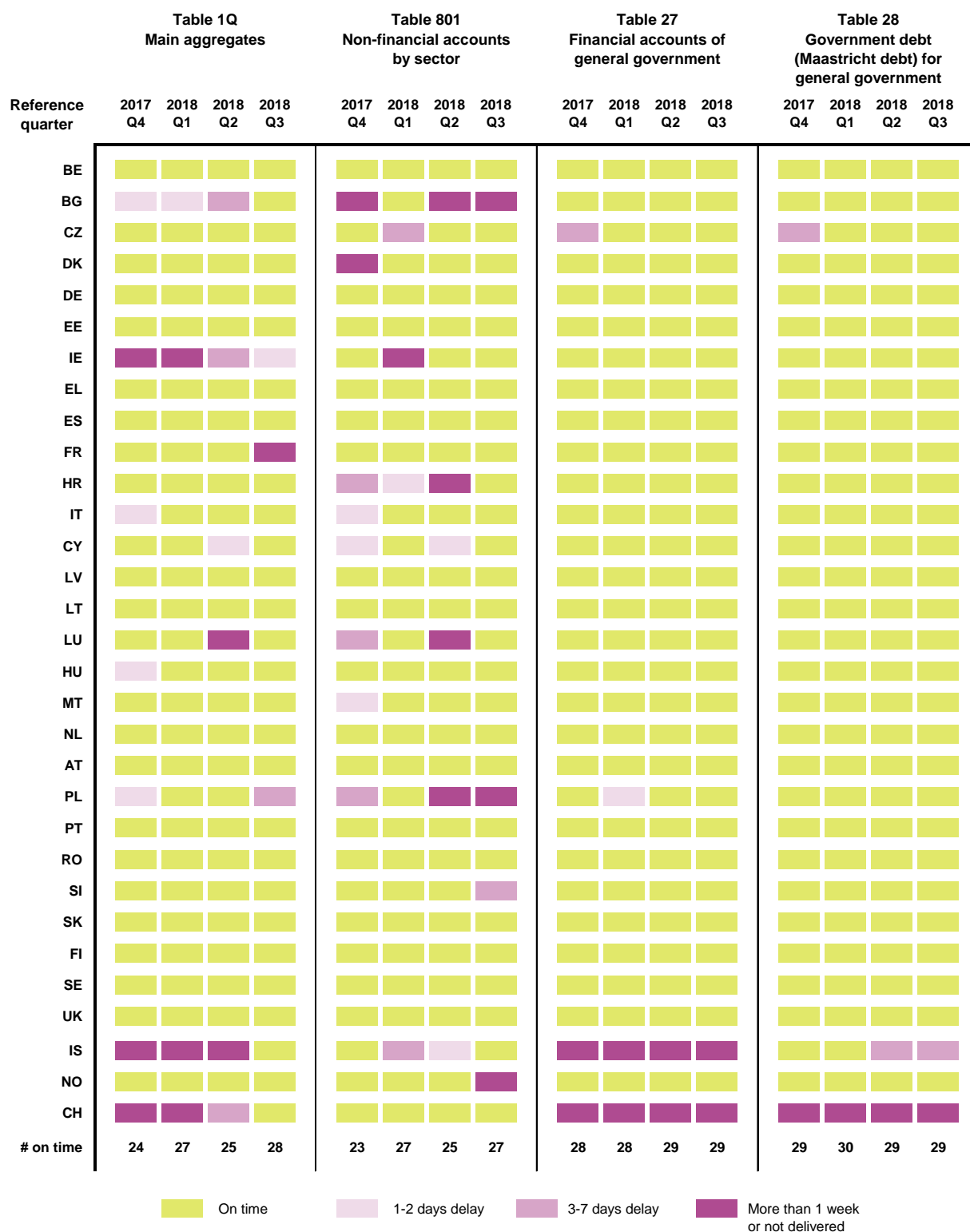


Figure 47: Punctuality of annual tables for national accounts main aggregates and government financial statistics reported in 2018

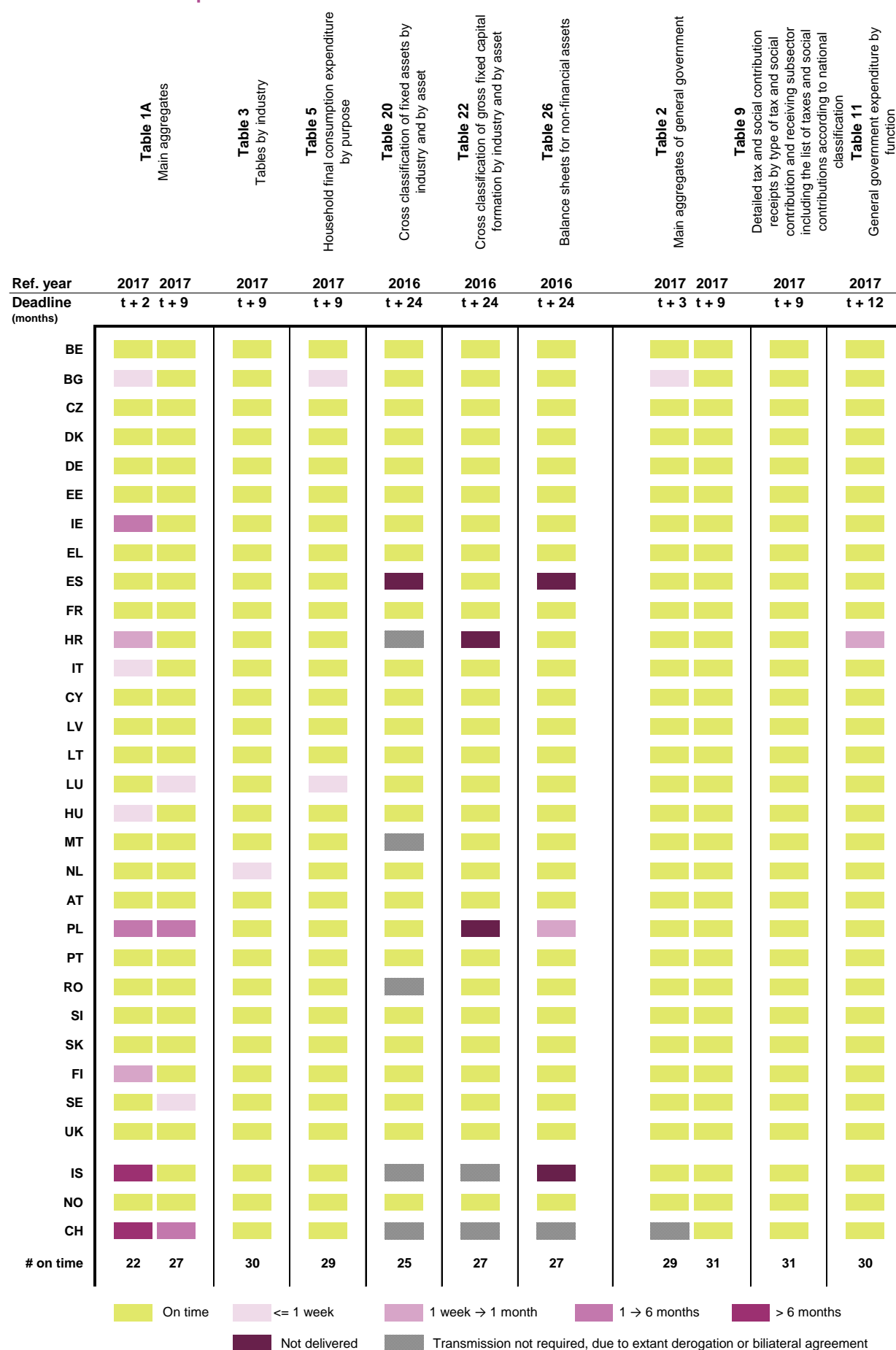


Figure 48: Punctuality of annual tables for sector accounts, supply, use and input-output tables, regional accounts and pension entitlements reported in 2018



Annex 4: Analysis of revisions of selected national accounts data series

The new revision rate indicator in ESA 2010 quality reporting

Since revisions are important to progressively improve the accuracy and reliability of national accounts, this paper presents an analysis of the revision indicators which have been introduced for selected series in the ESA 2010 quality reports in 2019, as foreseen in the implementing regulation for quality reporting¹⁹. According to the regulation, the revision rates may consider both the revisions between the latest and the first transmission and the average revision in subsequent transmissions since the first transmission. For quarterly data, the reporting of both rates is mandatory; for annual data, only the average revision rate is mandatory, however in this analysis the latest minus first revision rate is also considered for the annual national accounts main aggregates series. The definitions of the revision rate indicators used for the analysis is provided at the end of this annex.

The aim of the analysis is to create some transparency on the observed size of revisions, which are seen as one measure quality of the estimates. However, it is worth stressing, that frequent revisions should not be perceived as negative *per se*, since they normally reflect the introduction of improved information in the estimates. By contrast, very small revision rates may be cause for concern, if they reflect situations where new information which could improve estimates is being systematically overlooked. The observed pattern across countries should be compared with each country's revision policy, including their alignment with the European harmonised revision policy (HERP).

Analysis of revisions of quarterly data

Stability of key quarterly national accounts main aggregates, GDP and employment

The first part of the analysis presents revision indicators for selected quarterly main aggregates for EU Member States as well as for the European Aggregates (EU28 and euro area 19) and for EFTA countries (if available). For quarterly data on main aggregates, the analysis focused on the quarter-on-quarter (QoQ) growth rates of selected series, namely, the revisions of seasonally adjusted gross domestic product (GDP) volume growth and total employment (EMP) growth. According to the implementing regulation, the revision rates of quarterly data must be reported for both the revisions between the latest and the first transmission and the average revision in subsequent transmissions since the first transmission. The reference period is the available quarters of the latest three years, which for this analysis was from the third quarter of 2015 to the second quarter of 2018, covering revisions of both GDP and EMP quarter-on-quarter growth rates per quarter.

For these quarterly main aggregates series, the revision rate indicator takes into account the first regular transmissions according to ESA 2010 Transmission Programme which occur at around T+2 months after the reference quarter. The stability is analysed with the help of two indicators, the average of the mean absolute revision rate over the period, and the average of the absolute values of the last revised value minus the initial value (latest minus first, or LMF), both of which are calculated using the quarter-on-quarter growth rate for each quarter.

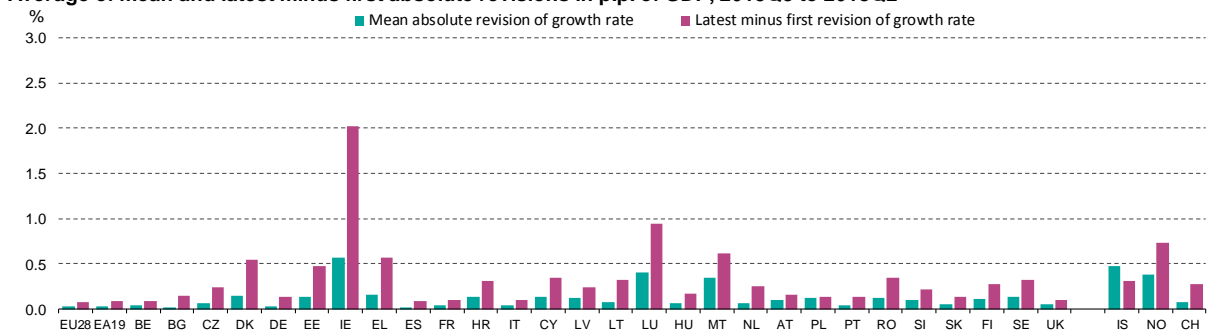
¹⁹ [Commission Implementing Regulation \(EU\) 2016/2304 of 19 December 2016 on the modalities, structure, periodicity and assessment indicators of the quality reports on data transmitted pursuant to Regulation \(EU\) No 549/2013 of the European Parliament and of the Council](#)

GDP GROWTH RATE REVISIONS AS SHOWN BY AVERAGES OF MEAN ABSOLUTE REVISIONS AND LATEST MINUS FIRST REVISIONS

As a starting point to compare revisions across countries, Figure 49 shows the absolute revisions of quarter-on-quarter growth rates of GDP in percentage points, with two revision rates combined in the chart: the averages observed for all quarters in the reference period of: (1) the mean absolute revisions, and (2) the difference between the latest minus the first (LMF) growth rate in absolute terms. Since these indicators are averages of revision rates over a 12-quarter period, high values could either indicate substantive regular revisions over the entire period, or generally small revisions punctuated by occasionally very large revisions of the growth rate for a few specific quarters.

Figure 49. Averages of absolute revisions of GDP quarter-on-quarter growth rates

Average of mean and latest minus first absolute revisions in p.p. of GDP, 2015Q3 to 2018Q2



From the average absolute revisions for each country, it can be noted that a group of three EU Member States (Ireland, Luxembourg, Malta) and two EFTA countries (Iceland, Norway) showed higher averages than the other countries. For this group, the average of the mean absolute revisions in percentage points of GDP was between 0.3 and 0.5. There was also a group of about a dozen countries with, on average, low mean absolute revision rates and amongst them, the largest EU economies.

The same group of three EU countries, Ireland, Luxembourg and Malta, as well as Iceland, showed higher average revisions also when considering the LMF estimate of growth rates in absolute terms. While the very large average for Ireland can mainly be explained by globalisation-related accounting effects on revisions in some quarters, impacts of similar magnitude were not yet observed for other countries.

Figure 50. Latest minus first growth rate differences of GDP quarter-on-quarter growth rates

Minimum, maximum and average latest minus first revisions in p.p. of GDP, 2015Q3 to 2018Q2

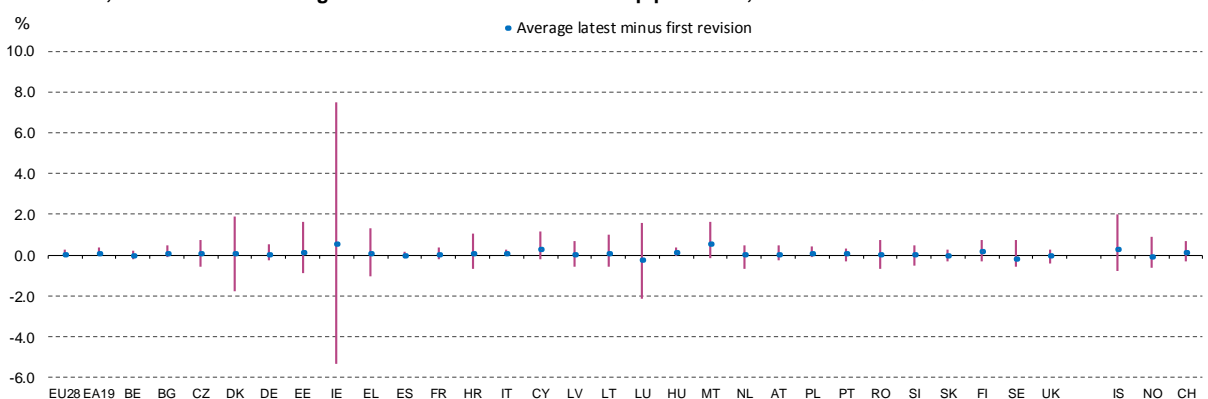


Figure 50 shows the minimum, maximum and average of LMF revisions of the GDP quarter-on-quarter growth rate estimates for the period from 2015Q3 to 2018Q2. The average of the LMF revisions shows that for the majority of countries, the direction of revisions was not strongly biased (i.e. the averages of these revision rates are close to zero). By contrast, the range of

maximum to minimum revisions varied across countries. Once again, we observe a group of countries for which the range between the maximum and minimum was more than 2 percentage points, including EU Member States Denmark, Estonia, Ireland, Luxembourg and the EFTA country Iceland. Ireland stood out in terms of both upward and downward revisions. This group is followed by Greece, Croatia, Lithuania and Malta. For about a dozen countries, as well as the European aggregates, the average of revisions as well as the range between the maximum and minimum revision was small. This latter group includes the countries with the largest economies in terms of GDP.

From the results shown in Figures 49 and 50, and the observed differences in the size of revisions for the various grouping of countries, it is interesting to consider how economic size and the relative openness of a country is related to the average size of revisions. That is the focus of the next section.

ANALYSIS OF GDP GROWTH RATE REVISIONS IN RELATION TO ECONOMIC SIZE AND TRADE OPENNESS

To compare the average revision of GDP quarter-on-quarter growth rates to the relative size of the economies, Figure 51 shows the average of mean absolute revisions over the period 2015Q3 to 2018Q2 for each country plotted against its economic size as expressed in million euros of GDP in 2016.

From the figure, the EU's largest economies showed the lowest revisions: Germany, the United Kingdom, France, Italy and Spain with highest levels of GDP above 1 trillion EUR, on average, revised their GDP growth rate data only less than 0.05%. The majority of the countries with GDP between 10 and 100 billion EUR, revised their data on average by less than 0.2%. However, a relatively high averages were not only noted for economies like Malta, Luxembourg, and Iceland but also for Norway and Ireland, where mean absolute revisions of GDP QoQ growth rates were highest for the year 2016. Compared to the other European countries, Malta, Iceland and Luxembourg can be considered small economies with GDP between 10 billion EUR and 100 billion EUR.

To compare the average revision of GDP quarter-on-quarter growth rates to the trade openness of the economies, Figure 52 contrasts each country's average of mean absolute revisions over the period 2015Q3 to 2018Q2 to an openness indicator for the year 2016 composed of the sum of exports and imports as a percentage of GDP.

The figure shows that trade openness was clearly a factor for Ireland, Luxembourg and Malta with both an observed trade openness rate higher than the other countries (above 200 % of GDP) in tandem with relatively high revisions. By contrast, this was not the case for Norway and Iceland, where observed trade openness indicators were amongst the lowest. The majority of the countries had trade openness between 50 to 200 % of GDP and averages for the mean absolute revision rates of GDP QoQ growth below 0.2 percentage points.

Figure 51. Mean absolute revision rates in comparison to size of economy of the country, 2016

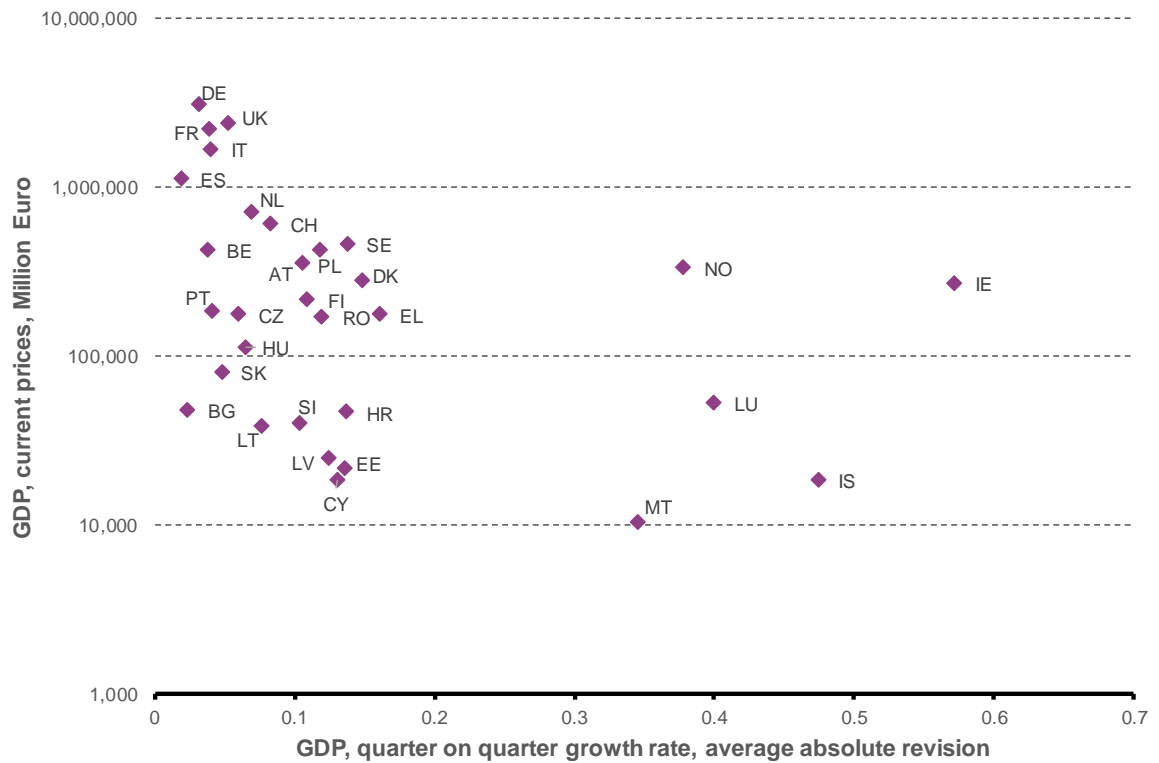
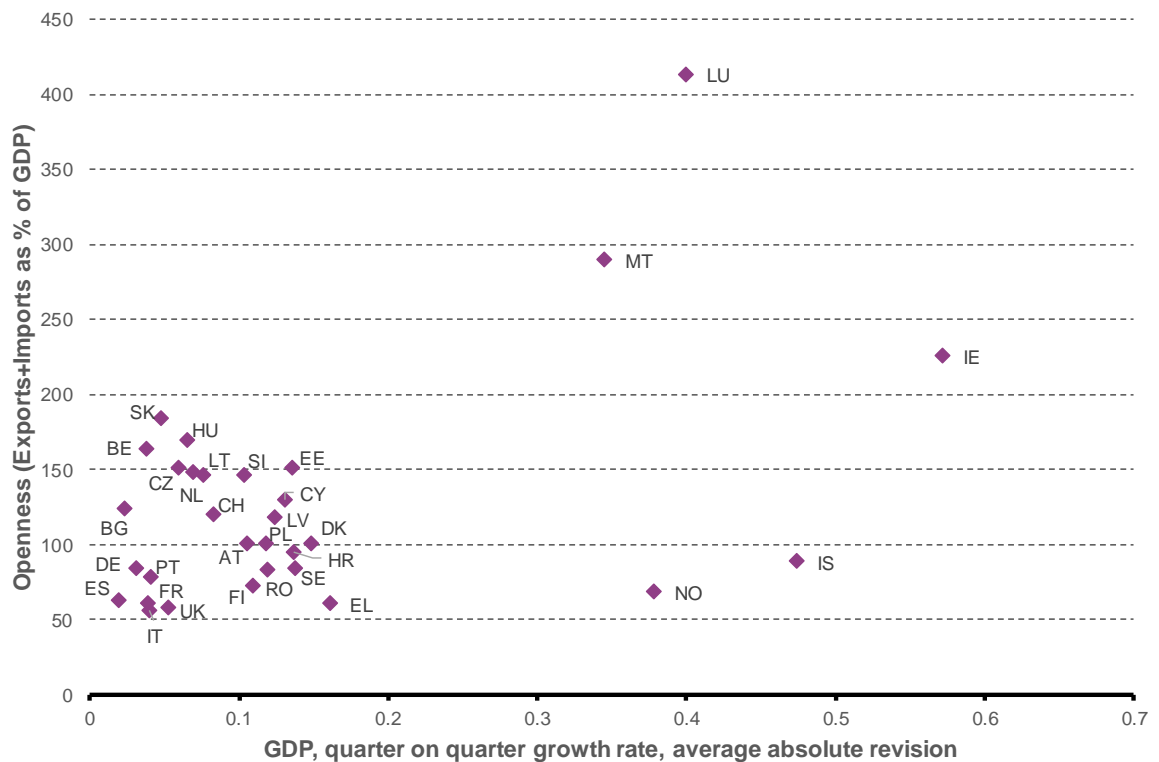


Figure 52. Mean absolute revision rates in comparison to trade openness of country, 2016

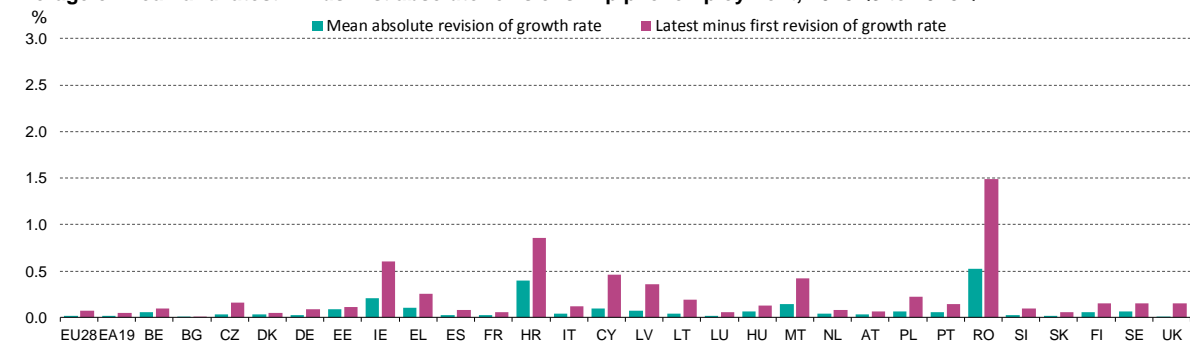


EMPLOYMENT GROWTH RATE REVISIONS AS SHOWN BY AVERAGE ABSOLUTE REVISION AND LATEST MINUS FIRST REVISION

The next section presents the analysis of revisions of employment growth rate estimates for the quarters 2015Q3 to 2018Q2. The transmissions used represented countries' first regular estimates based on seasonally-adjusted figures. For Cyprus and Ireland these estimates were only available from 2016Q1 and for Romania from 2016Q4 onwards.

Figure 53. Averages of absolute revisions of employment quarter-on-quarter growth rates

Average of mean and latest minus first absolute revisions in p.p. of employment, 2015Q3 to 2018Q2



From the combined averages for the mean and LMF absolute revisions for each country shown in Figure 53, the highest averages of revisions were observed for Romania, Croatia and Ireland. This group of Member States was followed by a group of three, Cyprus, Malta and Latvia with high averages for LMF absolute revisions. On the other extreme, Bulgaria had not revised its employment figures at all following the first transmission and about 10 other countries have small averages over the period for the revision rate indicators in absolute terms.

Figure 54. Latest minus first growth rate differences of employment quarter-on-quarter growth rates

Minimum, maximum and average latest minus first revisions in p.p. of employment, 2015Q3 to 2018Q2

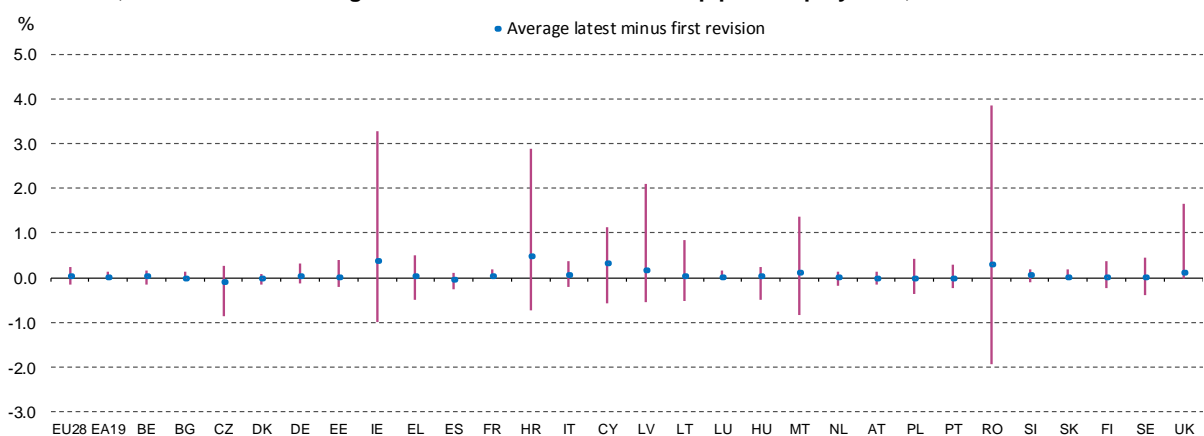
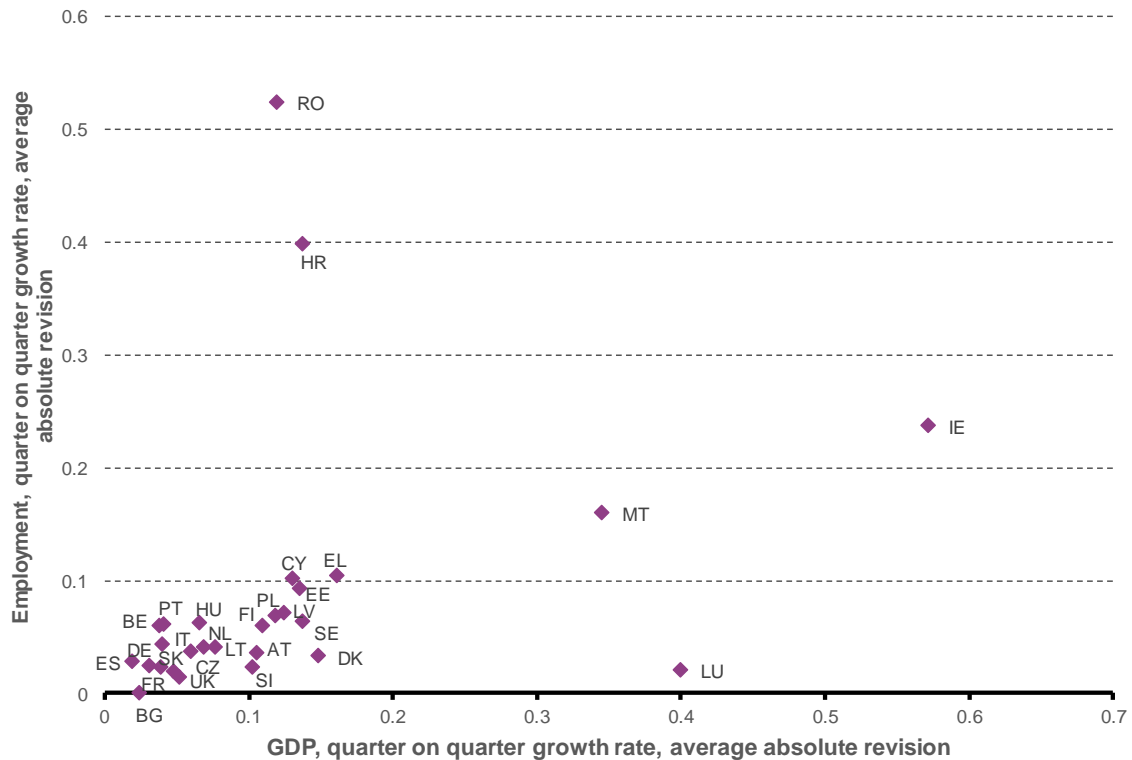


Figure 54 shows the minimum, maximum and average of LMF revisions of the employment QoQ growth rate estimates for the period from 2015Q3 to 2018Q2. The average of the LMF revisions shows that for Ireland, Croatia, Cyprus and Romania, some upward (positive) bias can be observed. However, for most other countries, average revisions were close to zero. Romania, Croatia and Ireland also stand out in terms of both upward and downward revisions when looking at the range of maximum to minimum revisions across countries, followed by Latvia, Malta, and Cyprus.

ANALYSIS OF EMPLOYMENT GROWTH RATE REVISIONS IN RELATION TO GDP GROWTH RATE REVISIONS

Figure 55. Employment growth rate revisions in comparison to GDP growth rate revisions, average of mean absolute revision rates 2015Q3 to 2018Q2

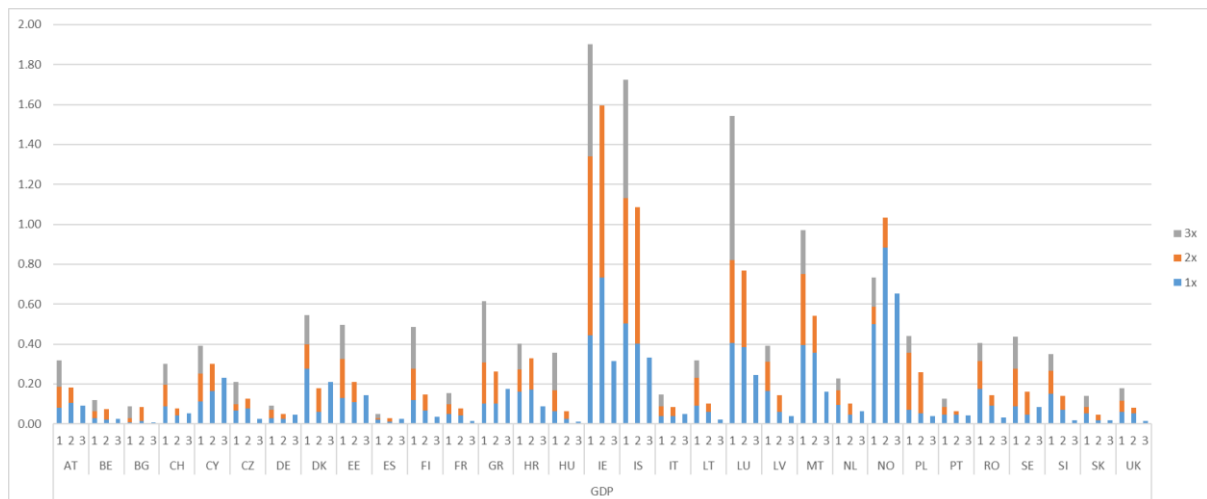


It is also interesting to compare the revisions of employment to those of GDP, as shown in Figure 55. Taking the averages of the mean absolute QoQ growth rate revisions for both, over the period 2015Q3 to 2018Q2, it can be noted that the overall range of averages across countries was similar for both GDP and employment, reaching 0.6 percentage points. While no single country stands out with the highest overall average of revisions for both series, a group five countries does separate from the others: Romania followed by Croatia highest for employment; Ireland followed by Luxembourg highest for GDP; followed by Malta with high averages for both. By contrast, half of EU Member States had averages over the period for revisions of both employment and GDP of 0.1 % or less. The majority of EU Member States revised employment growth rates by 0.1 % or less, and GDP growth rates by 0.2 % or less.

Evolution of GDP growth rate revisions at various horizons

A further interesting aspect to consider is the comparison of the size of revisions over time. Figure 56 shows the distribution of revisions of quarterly GDP series over time, during the 12 periods under consideration. The chart shows how the average revision rate is composed of the sum of smaller averages of quarters.

Figure 56. Evolution of the growth rate revisions: one to three selected periods later



There are three bars for each country corresponding to three distinct reference periods of four quarters (not calendar years). Each of those period averages is broken down into its components by considering just the revisions in certain groups of the quarter (labelled 1x, 2x and 3x). The segment in blue represents the three quarters of revisions after the first transmission of the reference quarter. The orange segment represents the following four quarters of revisions, and the grey segment represents the last four quarter (only for the longest period of 12 quarters).

Only for some countries were the first revisions after the first reference period (blue) the largest portion of the average revision rate, and were the revisions already smaller over the following two periods. For many countries, the second (orange) and/or third (grey) periods made up larger shares of the average. In particular, the graph shows that Finland, Greece, Hungary, Ireland, Iceland, Lithuania, Luxembourg, Poland, Sweden all had higher upward revisions for later intervals. For the period under consideration, this shows that quarterly estimates may be revised later in relation to improved annual estimates through major routine revisions and benchmarking process.

General observations on national revision practices of quarterly data

Despite some common features, country-specific factors and explanations are actually key to understanding and interpreting revisions. Notably, a country's revision policy usually plays an important role in explaining revision patterns. In the context of information transmitted with the ESA 2010 quality reports and metadata, countries should not only specify when and how new information is incorporated but also include information on the alignment with the European harmonised revision policy (HERP).

With respect to bigger revisions, countries provided some specific information to Eurostat in the context of the national quality reports. Countries have communicated when they have carried benchmark revisions. Cyprus and Denmark carried out a benchmark revision in 2016. Austria performed a benchmark revision in 2017. The Netherlands and France carried out a benchmark revision in 2018.

Other countries, while not performing a benchmark revision, carried out major routine revisions during the period (Bulgaria, Latvia and Switzerland). The United Kingdom revises their data each year.

In part, both benchmark and major routine revisions can explain large contributions to the average absolute revision rates over the whole period. This is especially relevant for the countries for which the largest average revisions in the GDP growth rate has been observed.

While Ireland performs regular revisions of national accounts data every year (no distinction

between routine and benchmark revisions) the large observed quarterly revisions for Ireland can mainly be explained by globalisation-related accounting effects.

Luxembourg has revised national accounts, which had an impact to GDP, in order to avoid a break in statistical series after the reclassification of a statistical unit from the institutional sector of non-financial corporations (S11) to the institutional sector of General Government (S13). Malta has revised their National accounts and balance of payments data with the data collection on Arts, entertainment and recreation activities, which had an effect on GDP as well for the quarters of 2015. Iceland performed a major revision in the year of 2016, which affected 2015Q3 to 2016Q2 quarters, due to revised methods and better source data used in the deflation of actual and imputed rentals for housing in household final consumption expenditure. In the case of Norway, there were no additional major revisions for the indicated period, only regular ones.

Analysis of revisions of annual data

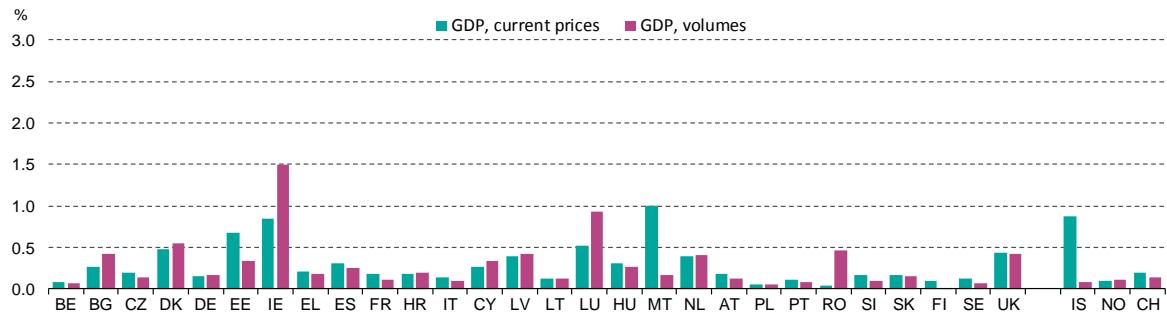
Stability of key annual national accounts main aggregates GDP, GVA and employment

This part of the analysis looks at the stability (or its opposite - the volatility) of key annual national accounts main aggregates, namely gross domestic product (GDP) in current prices and in volumes, gross value added (GVA) in current prices as well as total employment (EMP) and employees in thousands of persons. While only the average revision rates are mandatory according to the implementing regulation, this analysis of the key annual national accounts main aggregates data also considers the latest minus first revision rates, which have been computed and presented in the 2019 national quality reports. The two revision rate indicators used for the analysis are the relative mean absolute revision rate (RMAR) in terms of later estimates (indicator RI5), and the ratio of the last revised value to the initial value (latest minus first (LMF) indicator RI1). The definitions of these indicators are provided in Annex 1. This analysis presents the indicators for reference years 2014 and 2015 across all EU Member States and EFTA countries. These reference years have been selected for the purpose of the revision analysis of annual aggregates because data for these years have been compiled fully under the ESA 2010 framework and due to the near complete availability of data across for all countries.

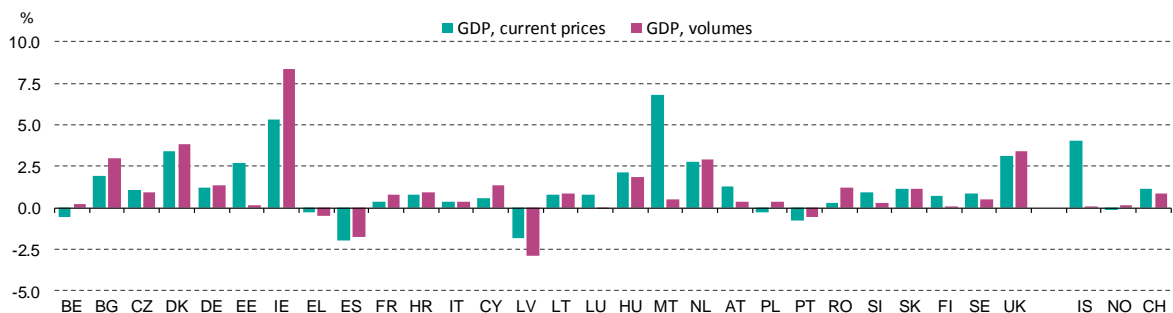
ANNUAL GDP REVISIONS AS SHOWN BY RELATIVE MEAN ABSOLUTE REVISION AND LATEST MINUS FIRST REVISION

Figure 57. GDP in current prices and in volumes, 2014

Relative mean absolute revision rate, 2014



Latest minus first revision rate, 2014

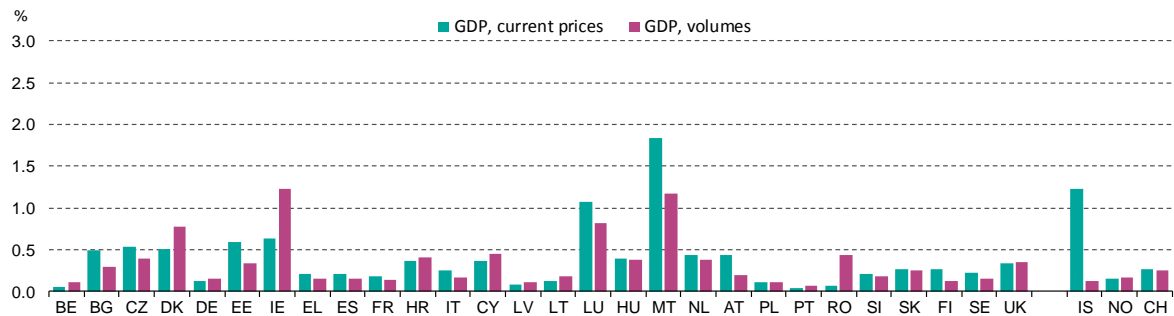


The RMAR and the LMF revision rates for GDP in current prices and in volumes for the year 2014 are shown in Figure 57. A group of six countries (Denmark, Estonia, Ireland, Luxembourg, Malta and Iceland) had higher revision rates than the other countries, having RMAR rates of GDP in current prices roughly between 0.5 % and 1.0 %. Extraordinary, globalisation-caused issues can explain the high revision rate for Denmark. For the LMF revision rate indicator, two of these five countries, Ireland and Malta, also showed exceptionally high revision rates of 5.6 % and 7.8 %, respectively. Negative LMF revision rates were observed for Belgium, Greece, Poland, Portugal, as well as for Spain and Latvia (for which revisions were the result of an ongoing work on GNI reservations). For these latter two countries, the largest negative revision rates were observed (-2.0 % and -1.8 % respectively, based on GDP at current prices).

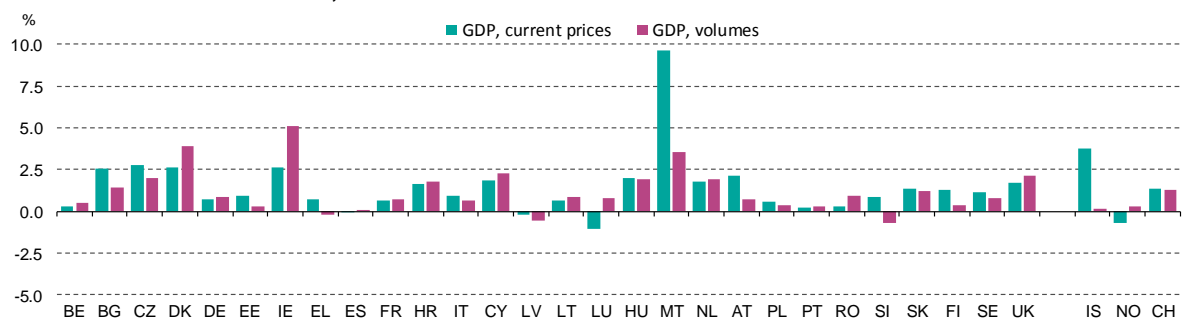
The chart also shows a number of countries for which the both RMAR rate and the LMF revision rates were small, indicating that the GDP series for these countries in 2014 had not been revised substantively over the course of the subsequent three years. Very small revision rates are also somewhat surprising, given that the reference year 2014 was at the beginning of reporting under ESA 2010, and countries may have still been adapting their national accounting systems.

Figure 58. GDP in current prices and in volumes, 2015

Relative mean absolute revision rate, 2015



Latest minus first revision rate, 2015



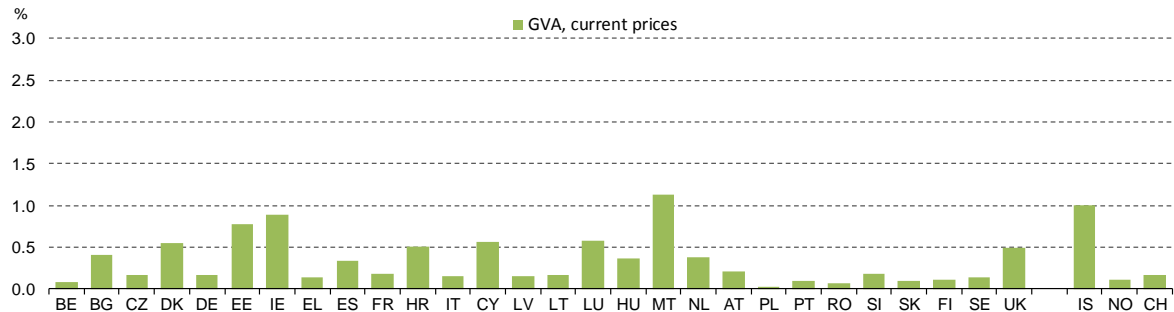
For the year 2015 (Figure 58), the pattern of revision rates are similar to 2014, with the same group of five countries (Estonia, Ireland, Luxembourg, Malta and Iceland) having the highest RMAR rates. For the latter three, the RMAR rate exceeded 1.0 %. In addition, four more countries in 2015, Bulgaria, Czechia and Denmark, had RMAR rates reaching 0.5 % or above for GDP at current prices. For the LMF revision rate, six of these countries (Bulgaria, Czechia, Denmark, Ireland, Malta and Iceland) had rates at or exceeding 2.5 %. However, for Luxembourg, the LMF revision rate was negative with -1.0 %. For Czechia, significant revisions of annual 2015 GDP data were observed between the first and second round of annual data compilation, where final annual input data instead of quarterly estimates were used, which shows the lower reliability inherent in the grossing up of the quarterly surveys.

Several countries had comparatively low RMAR and LMF revision rates for annual GDP series in both 2014 and 2015, among them Belgium, Greece, Italy, Lithuania, Poland, Portugal and Iceland.

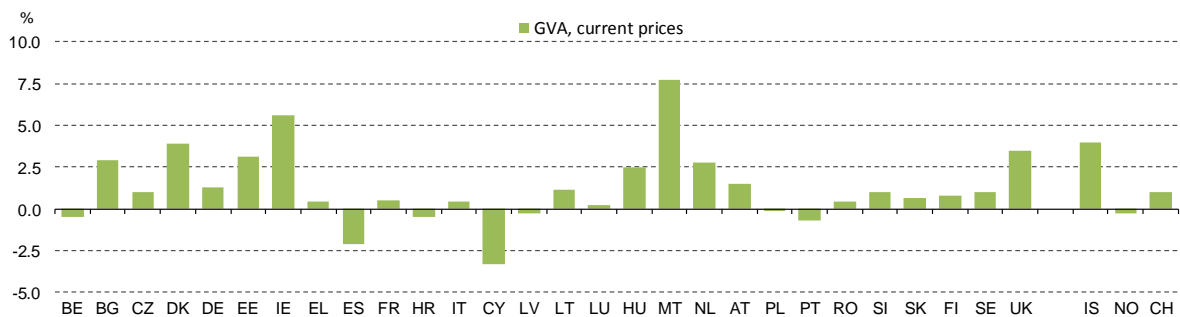
ANNUAL GVA REVISIONS AS SHOWN BY AVERAGE ABSOLUTE REVISION AND LATEST MINUS FIRST REVISION

Figure 59. Gross Value Added in current prices, 2014

Relative mean absolute revision rate, 2014



Latest minus first revision rate, 2014



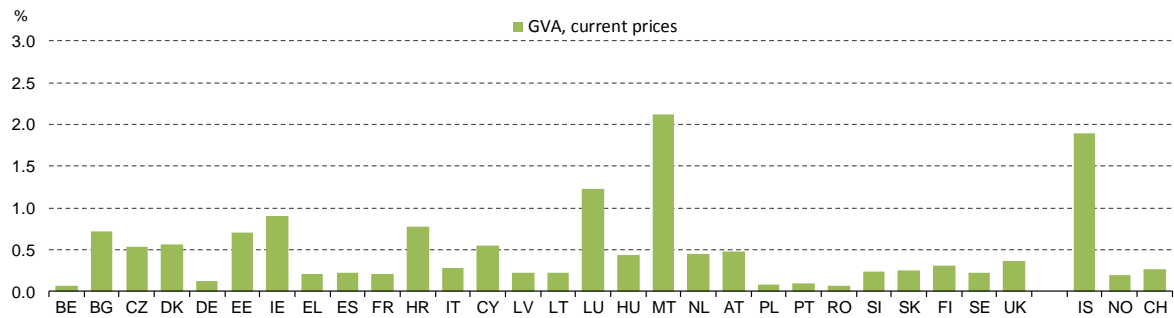
The RMAR rates and the LMF revision rates for GVA at current prices for the reference year 2014 are shown by country in Figure 59. As for GDP indicator, revisions of 0.5 % or more were observed for eight countries: Denmark, Estonia, Ireland, Cyprus, Luxembourg, Malta, the United Kingdom and Norway. For the LMF revision indicator Denmark, Ireland, Malta, the United Kingdom and Iceland had large upward revisions, while Spain and Cyprus showed large negative revision rates.

Figure 60 shows the revision rates for GVA at current prices for the year 2015. Once again, for RMAR the highest revision rates were observed for Malta and Iceland, followed by Luxembourg, Ireland and then Bulgaria, Estonia and Croatia. For the latest minus first revision indicator Malta, Ireland, Iceland and Bulgaria have higher upward revisions, while Cyprus, Luxembourg and Latvia show negative latest minus first revision rates for the year 2015. The LMF revision rate for Malta reached 11.2 %, in for GVA in 2015, far surpassing the rates in other countries. One source of these high rates was that national accounts and balance of payments data were revised with the data collection on arts, entertainment and recreation activities for reference years 2014 and 2015.

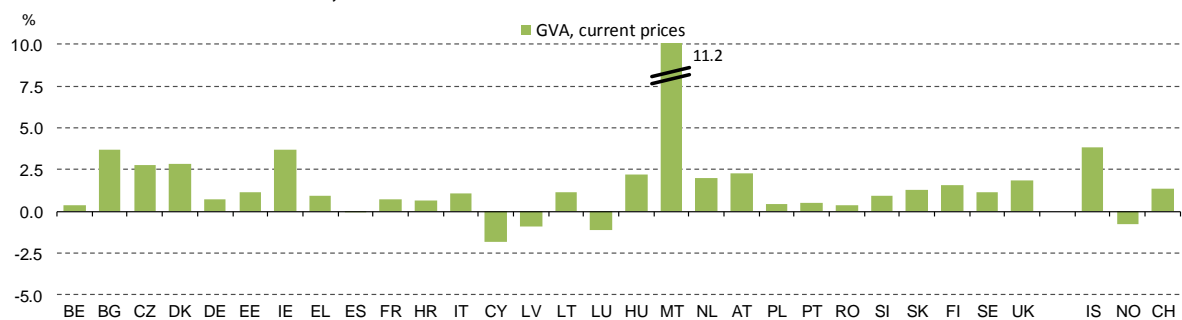
As with the charts for GDP, these charts show a number of countries which had comparatively low RMAR and LMF revision rates for annual GVA series in both 2014 and 2015. In particular, this group includes Belgium, Poland, Portugal and Romania.

Figure 60. Gross Value Added in current prices, 2015

Relative mean absolute revision rate, 2015



Latest minus first revision rate, 2015

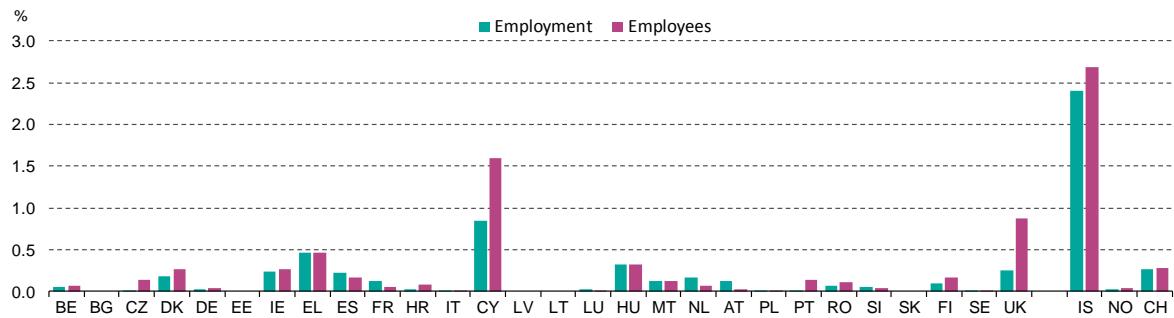


ANNUAL EMPLOYMENT REVISIONS AS SHOWN BY AVERAGE ABSOLUTE REVISION AND LATEST MINUS FIRST REVISION

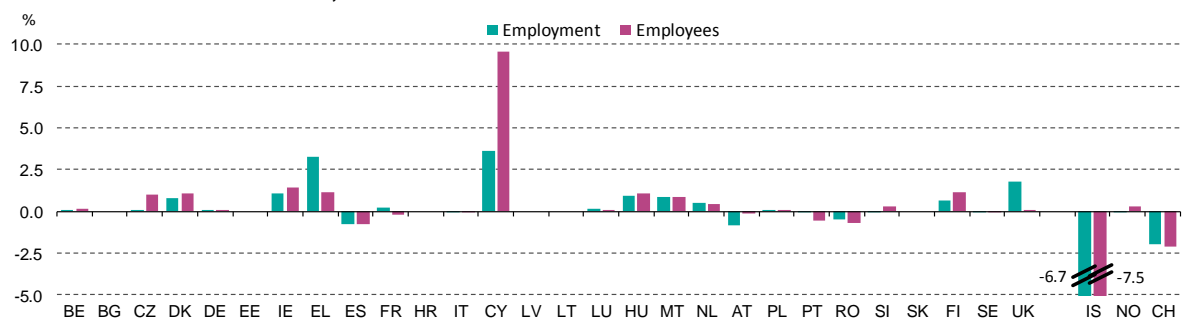
The RMAR rates and the LMF revision rates for annual employment data are presented in Figure 61 (year 2014) and Figure 62 (year 2015). It is apparent that the countries with the highest revision rates for employment and employees were different from those with the highest rates for GDP and GVA revisions. There were a number of countries with very small RMAR rates for both total employment and employees in both reference years 2014 and 2015. This group included Bulgaria, Germany, Estonia, Italy, Latvia, Lithuania, Poland, Slovakia, Sweden and Norway. Generally, these same countries also had very small LMF revision rates in both years, indicating that for these countries, the employment series were only revised slightly, if at all.

Figure 61. Employment and employees in thousands of persons, 2014

Relative mean absolute revision rate, 2014



Latest minus first revision rate, 2014

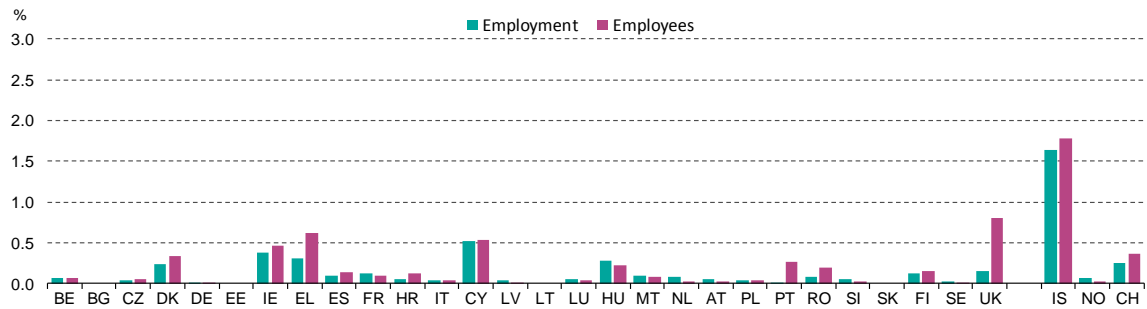


By contrast, a small number of countries stood out with higher revisions than the others. The highest RMAR rates for employees for both years 2014 and 2015 were observed for Cyprus, the United Kingdom and Greece. For total employment in 2014, the highest rates were also observed for Iceland, Cyprus and Greece, followed by Hungary. For the year of 2015, these same countries also have the highest RMAR rates, with Ireland joining the group. The revision rates for Iceland are much higher than the other countries by a wide margin, in both 2014 and 2015.

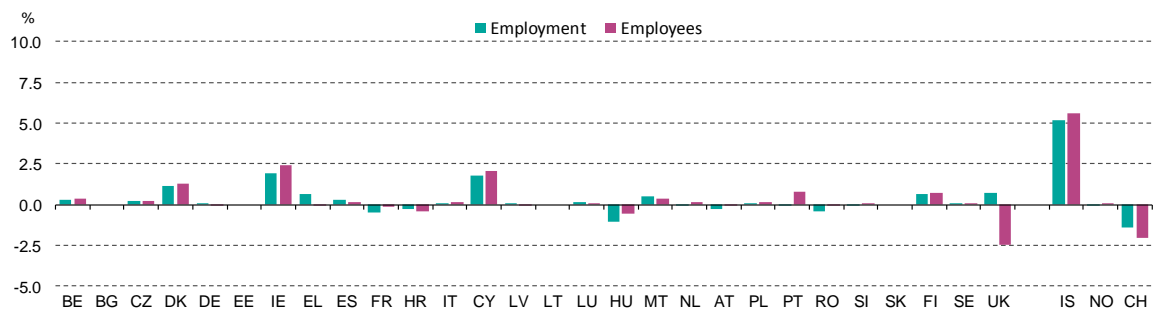
For LMF revision rates, the highest (positive) revision in 2014 for both total employment and employees was observed for Cyprus, reaching almost +10 % for employees. The highest negative revision was observed for Iceland. With high RMAR rates, Greece and the United Kingdom also had larger (positive) LMF revisions in the year 2014. However, the United Kingdom had a LMF revision rate of close to zero, while its RMAR was amongst the highest. For the year 2015, the highest LMF revision rates were observed for Denmark, Ireland, Cyprus and Iceland, all of which had upward revisions of both total employment and employees. The upward revisions in Iceland reached 5.0 %, more than double the others. In contrast, the United Kingdom had the largest negative LMF revision rate, for employees.

Figure 62. Employment and employees in thousands of persons, 2015

Relative mean absolute revision rate, 2015



Latest minus first revision rate, 2015



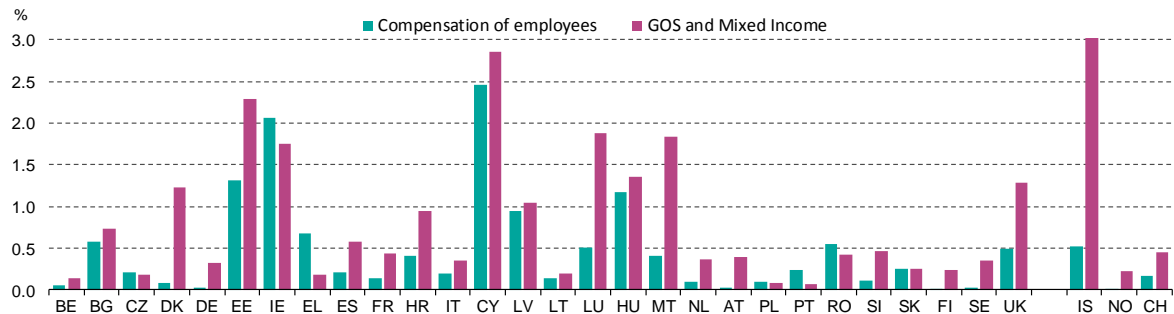
Drivers of GDP revisions: Analysis by selected components of GDP using income and expenditure approaches

The next set of charts shows the decomposition of the revisions in GDP, by considering the revisions in the annual main aggregates series for income components, and the series for expenditure components, respectively. The former includes both compensation of employees, and gross operating surplus (GOS) plus mixed income. The latter includes private and government fixed consumption expenditure, gross fixed capital formation, exports and imports. Once again, the decomposition charts consider the two indicators, the RMAR rate (RI5) and the LMF ratio (RI1). As in the analysis of stability, the charts compare the indicators for reference years 2014 and 2015 across all EU Member States.

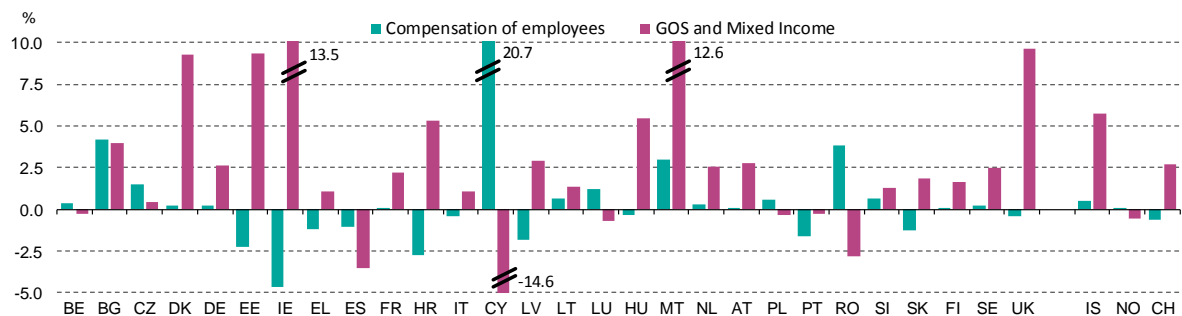
COMPARISON OF THE RELATIVE MEAN ABSOLUTE REVISION RATE AND LATEST MINUS FIRST REVISION RATE FOR THE INCOME APPROACH DECOMPOSITION OF GDP

Figure 63. GDP revision rate decomposition by income, 2014

Relative mean absolute revision rate, 2014



Latest minus first revision rate, 2014



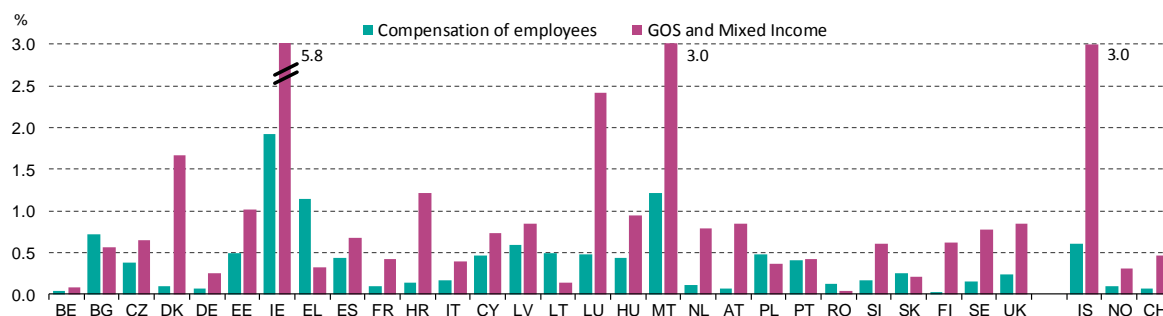
The RMAR and LMF revision rates of income components of GDP for the reference year 2014 are shown in Figure 63. Recalling from Figure 57, the countries with the largest GDP revisions in 2014 were Malta, Iceland and Ireland, followed by Denmark, Estonia, Luxembourg and the United Kingdom. For all of these countries except Ireland, the revisions to the GOS and mixed income component of GDP were much larger than those to the compensation of employees. This would indicate that it was the revisions to the former component which weighed heavily in the GDP revisions. However, this can also be said for the countries with the very smallest revisions.

Looking at the LMF revision rates of the countries with the largest GDP revisions, Denmark, Estonia, Malta, the United Kingdom and Iceland all had strong positive revisions in GOS and mixed income (in the case of Malta, reaching 12.6 %).

The RMAR rates for Ireland show that on average, revisions to compensation of employees exceeded those to GOS and mixed income; however when looking at the LMF revision rates, this was reversed with a strong positive revision to GOS and mixed income (+13.5 %) and a negative revision to compensation of employees. While Cyprus was not among the countries with the largest revisions to GDP in 2014, it had, along with Iceland, the largest RMAR rates, as well as the being the country with the largest LMF revisions to compensation of employees (positive) and GOS and mixed income (negative). For Cyprus, the high revision rates can be explained by the revisions due to the employment reconciliation conducted in 2015.

Figure 64. GDP revision rate decomposition by income, 2015

Relative mean absolute revision rate, 2015



Latest minus first revision rate, 2015

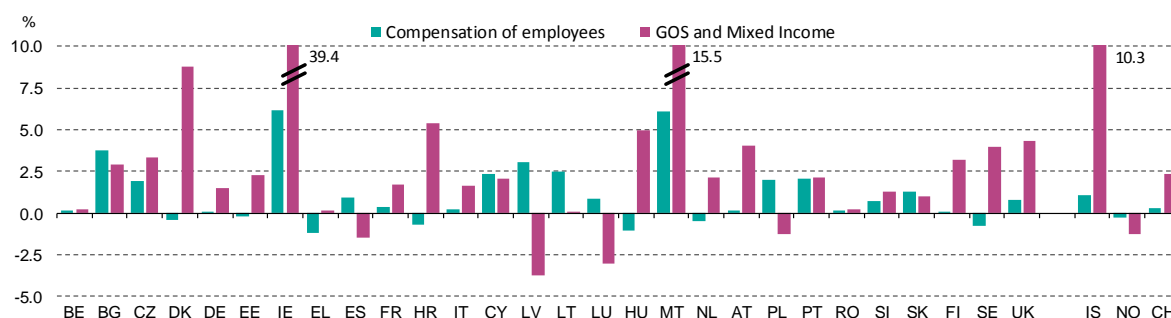


Figure 64 presents the RMAR and LMF revision rates of income components of GDP by country for the reference year 2015. From Figure 58, the countries with the largest GDP revisions in 2015 were Malta and then Iceland and Luxembourg, followed by a group of countries with rates around 0.5 %, which included Bulgaria, Czechia, Denmark, Estonia and Ireland. Looking at the income components of GDP for these countries, Denmark, Ireland, Luxembourg, Malta and Iceland all had high revision rates for GOS and mixed income. For Denmark, Luxembourg and Iceland these rates far surpassed those of compensation of employees. This suggests that revisions to this component was the main driver of revisions to GDP. The RMAR rate for GOS and mixed income for Ireland reached 5.8 %, and those of Malta and Iceland were 3.0 %. Ireland and Malta, along with Greece also had high revisions to compensation of employees.

Figure 64 also shows the LMF revision rates of income components of GDP. For the GDP income component of GOS and mixed income, the LMF revision rate for Ireland reached 39.4 %, once again showing the substantive impact globalization-related changes, followed by Malta at 15.5 % and Iceland at 10.3 %. The highest positive LMF revisions for compensation of employees also occurred in Ireland and Malta, followed by Bulgaria and Latvia. High LMF revisions to GOS and mixed income were also observed in Denmark, Croatia, Austria, Sweden and the United Kingdom, while the largest negative revisions occurred in Latvia and Luxembourg.

Overall, looking at both of these income components, compensation of employees was generally the more stable component. GOS and mixed income in 2015 remained the component with markedly larger revisions for about a dozen countries. By contrast, for Greece and Lithuania, it was the contrary.

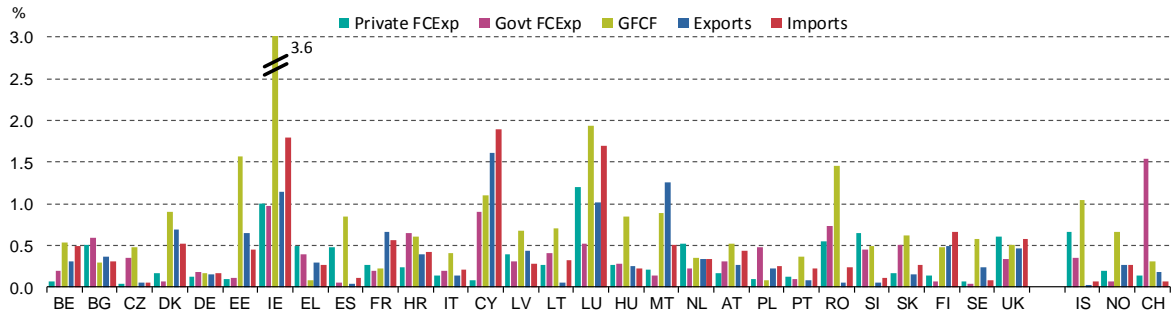
COMPARISON OF THE RELATIVE MEAN ABSOLUTE REVISION RATE AND LATEST MINUS FIRST REVISION RATE FOR THE EXPENDITURE APPROACH DECOMPOSITION OF GDP

The relative mean absolute revisions of expenditure components of GDP by country for the year 2014 are shown in Figure 65 (year 2014) and Figure 66 (year 2015). The annual ESA 2010 quality reporting breaks down revisions of GDP into expenditure components by: private (household and NPISH) final consumption expenditure (PFCE); government final consumption

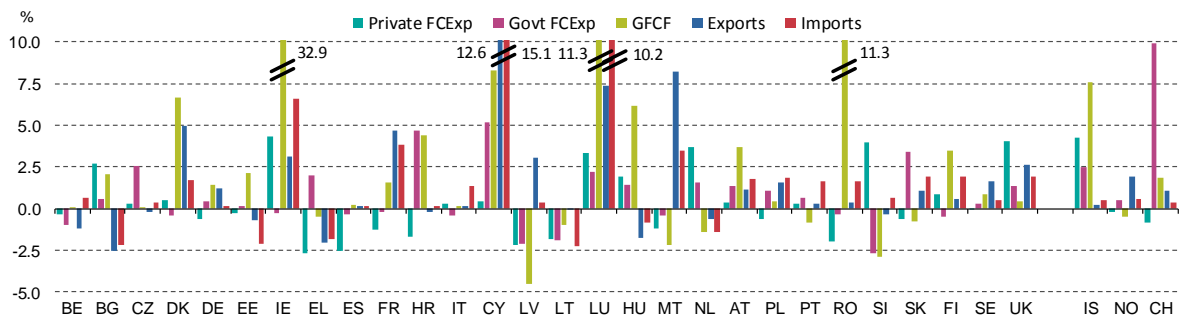
expenditure (GFCE); gross fixed capital formation (GFCF); exports and imports.

Figure 65. GDP revision rate decomposition by expenditure, 2014

Relative mean absolute revision rate, 2014



Latest minus first revision rate, 2014

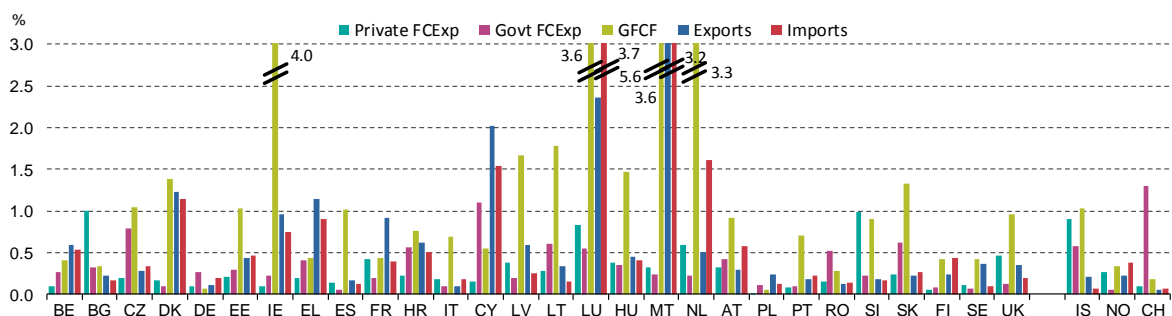


Looking at GDP components by expenditure for 2014 (Figure 65), for many countries the reporting of the two consumption series was generally more stable, while the highest RMAR rates were for the last three columns showing GFCF, exports and imports. Estimates for these series are typically quite volatile, so higher revisions are to be expected. Four countries had GFCF revisions and/or export/import revisions which exceeded 10 %.

For GFCF, the highest revision rates were for Estonia, Ireland, Luxembourg, Romania and Iceland. It is clear that the large positive LMF revisions to GFCF for Ireland (+32.9 %) contributed to the large RMAR rate (+3.6 %), and moreover these rates indicate that the investment revisions due to global accounting changes led to a significant portion of the revision in GDP. The revisions to exports and imports which were also large for Ireland. Similarly, Luxembourg had high positive revisions to GFCF and exports. Revisions rates for exports were highest for Cyprus, Malta, Ireland and Luxembourg, while for imports, the highest revision rates were noted for the same group of countries, less Malta. One country, Switzerland, showed very large upward revisions imports, far exceeding revisions in the other expenditure components.

Figure 66. GDP revision rate decomposition by expenditure, 2015

Relative mean absolute revision rate, 2015



Latest minus first revision rate, 2015

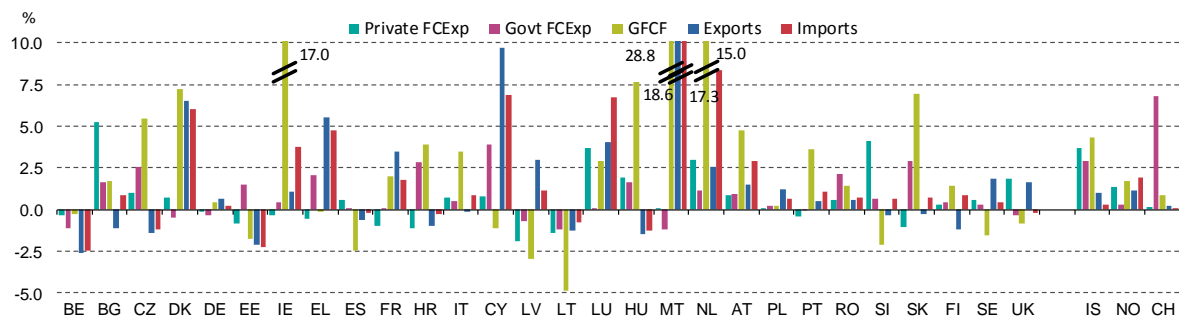


Figure 66 presents the RMAR and LMF revision rates of expenditure components of GDP for the reference year 2015. Again, gross fixed capital formation (GFCF), exports and imports have highest RMAR and LMF revision rates. For GFCF the highest RMAR rates are for Ireland, Luxembourg, Malta and the Netherlands, with the average revision rate reaching between 3.0 % and 4.0 % for these countries. Malta had the highest positive LMF revision rate at 28.8 %. The revisions rates for exports and imports in Ireland were much smaller than in 2014. Revision rates for exports are highest for Malta, Luxembourg, Denmark and Greece, while for imports the highest revision rates are noted for Cyprus, Luxembourg, Malta, the Netherlands and Switzerland. As in 2014, revisions to imports in Switzerland were much larger than revision to other expenditure components

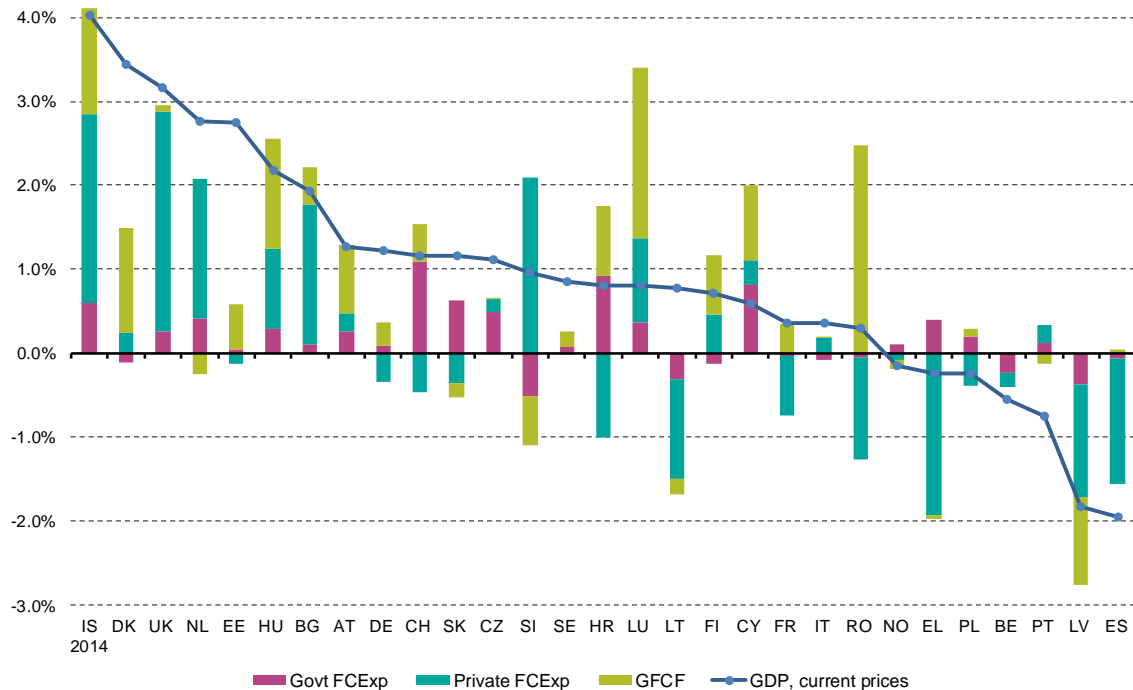
Looking into GDP components by expenditure, gross fixed capital formation (GFCF), exports and imports have highest latest minus first revision rates as well as for relative mean absolute revision rates for the year 2015 as well. For GFCF the highest rates are Malta (due to investment in aviation industry, which also is visible for the imports indicator), peaking at 28.8 % and Ireland with the Netherlands also show higher pattern. Bigger negative latest minus first revision rates for GFCF are noted for Lithuania, Latvia and Spain. Revisions rates for exports having positive pattern are highest for Malta, peaking at 18.6 % as well as Cyprus, Denmark and Ireland, while negative pattern is most pronounced for Belgium and Estonia. On the other hand, imports have positive revision pattern for the same group of countries in addition to the Netherlands. Negative revision pattern is observed for the same countries as for exports – Belgium and Estonia.

The impact for Malta revision of exports is visible due to revisions National accounts and balance of payments data with the data collection on arts, entertainment and recreation activities for reference years 2014 and 2015.

CONTRIBUTION OF THE EXPENDITURE APPROACH COMPONENTS OF GDP TO THE REVISION RATE OF GDP

Figure 67 demonstrates how the LMF revisions of GDP each country for reference year 2014 were driven by the revisions of selected individual expenditure components. The solid blue line and dots show revisions in GDP in current prices, as shown in Figure 57. The countries are ordered in descending order of revisions, and to improve readability, four countries with the largest revisions, Malta and Ireland, have been excluded. The bars show the contributions to the revisions from each of the LMF revision rates of private and government final consumption expenditure, and gross fixed capital formation (other expenditure components, such as exports and imports are not shown).

Figure 67. Contributions to GDP revisions by expenditure components, 2014



The largest contribution to the LMF revision in GDP for about half the countries is from private (households and NPISH) final consumption expenditure, with substantial upward revisions observed in Iceland, the United Kingdom, the Netherlands, Bulgaria and Slovenia. Large downward revisions in this component were observed in Lithuania, Romania, Greece, Latvia and Spain. The chart shows that the former group lies mostly at the left of the chart and the latter group, mostly to the right, confirming the effect of revisions in this component on GDP.

Recalling from Figure 65 that the revision rates indicators of the GFCF component were also largest for many countries. For Denmark, Hungary, Austria, Luxembourg and Romania there were large upward revisions in GFCF. This contributions chart provides a complementary perspective. It shows that for many countries, revisions in the GFCF component were only part, perhaps counterbalancing, in the overall contributions to revisions in GDP. For most countries, except for Switzerland, Croatia and Cyprus, revisions to government final consumption expenditure contributed only a small part in GDP revisions.

Evolution of revisions of annual national accounts main aggregates data

The next set of charts looks at the evolution of revisions of selected annual aggregates from national accounts main aggregates, measured by the evolution of the relative mean absolute revision indicator (RI5) rates, according to the time horizon considered.

GDP AND GVA DATA FOR 2014 REFERENCE YEAR: COMPARISON OF THE REVISION RATE WITH VARIOUS HORIZONS: ONE TO FOUR YEARS LATER

In a first perspective, the revision indicators for the reference year 2014 are compared according to the horizon of revisions included in the rate's calculation. Typically, at one year later, the indicator includes only one revision, in last transmission of 2015. At two years later, the potential revisions in the first and last transmission of 2016 are added; at three years later revisions in 2017 are added; and, finally four years later adds any revisions in the first and last transmissions

of 2018. It is this last revision rate that is reported in the table for reference year 2014 in the ESA 2010 quality report for data submissions in 2018.

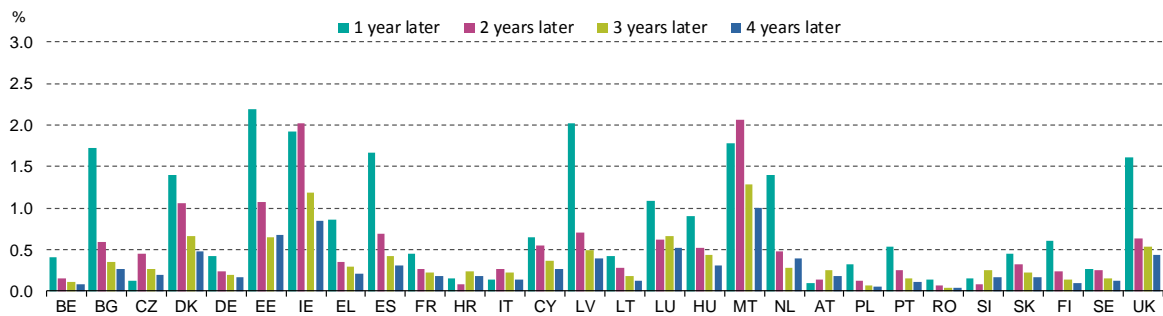
Figure 68 compares the indicators for all EU Member States, for series from annual main aggregates for GDP in volumes, GDP in current prices and GVA in current prices. The charts show, that for many countries the revisions for the reference year 2014 were the largest in percentage terms 1 year later (blue bar), and as the horizon increases to two years and later, the revision rate decreases. This would indicate that the largest revision is the change between the first and second estimate in the first year after the reference year. It should be noted that as the horizon increases, the denominator in the revision rate indicator RI5 is accumulating the values of the GDP or GVA levels, so there is a tendency for the indicator values to diminish.

For about half of the countries (Belgium, Bulgaria, Germany, Estonia, Greece, Spain, France, Latvia, Luxembourg, Hungary, the Netherlands, Poland, Portugal, Finland, the United Kingdom) the revision rate decreases substantially as the horizon increase beyond the first year. In the case of Bulgaria, Spain, Latvia the Netherlands, and the United Kingdom, the rate drops from above to below 1.0 % for all three series.

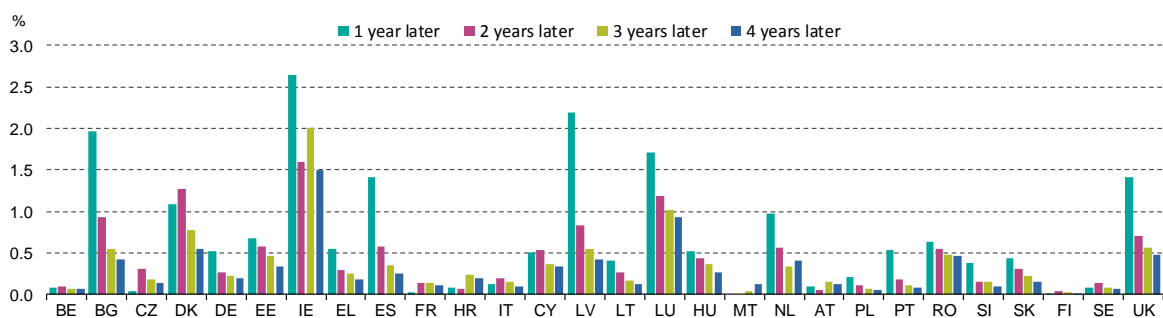
By contrast, for some countries the revision rates do not substantially decrease with the horizon. In some cases, the revision rates increase as subsequent years' revisions are included in the indicator. This is most evident in the chart when the revisions are large, for Denmark, Ireland, Cyprus and Malta. However, this pattern can also be seen for countries with lower revision rates such as, amongst others, Croatia, Italy, Austria and Slovenia. What is clear from the chart is how the profile of revisions across countries changes as the horizon increases. While the countries with the highest revisions at the one year horizon typically remain highest after the subsequent revisions four years later, for some, the relative position changes (Spain, Latvia).

Figure 68. GDP in current prices and in volumes, and Gross Value Added in current prices, 2014

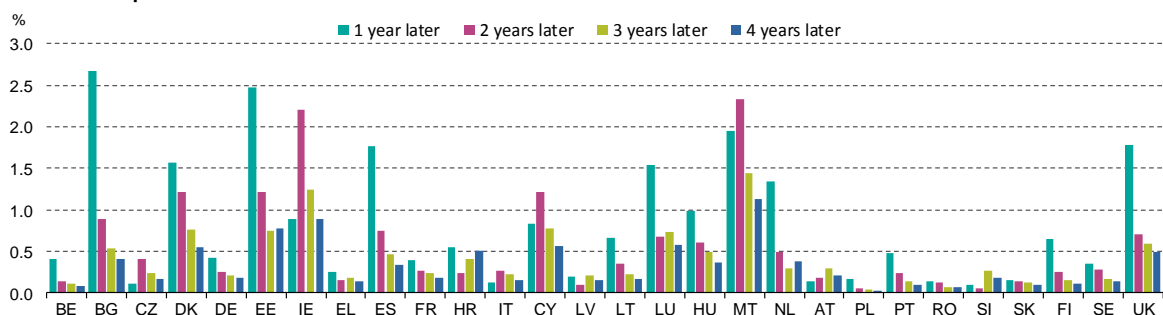
GDP in current prices



GDP in volumes



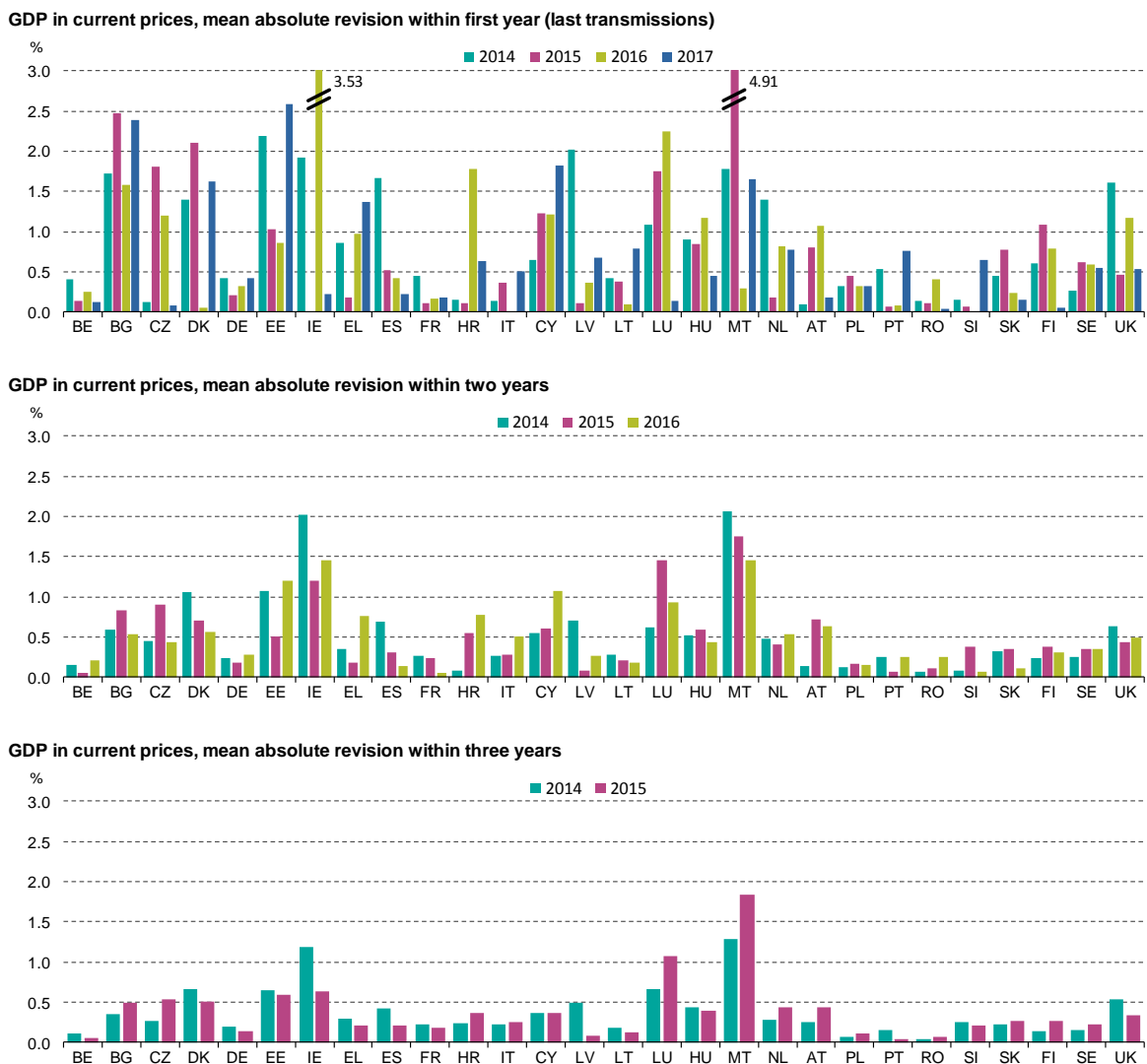
GVA in current prices



MEAN ABSOLUTE REVISIONS FOR GDP DATA WITHIN ONE, TWO AND THREE YEARS OF FIRST TRANSMISSION: COMPARISON OF THE REVISION RATE FOR REFERENCE YEARS 2014 TO 2017

An alternative perspective compares the relative mean absolute revision rate calculated for each reference year at various horizons. In this case, the mean rate includes all the revisions in the first and last transmissions for each horizon. It starts with the last transmission of the first year, then all revisions within two years, and then all revisions within three years. This set of charts looks at the how the EU Member States differ in terms of timing and magnitude of revisions. For example, in the first chart we can see which Member States regularly revise GDP by more than 1 % between the first and last transmissions of the first reporting year. The charts compare the indicators for all EU Member States, for series from annual main aggregates for GDP in volumes and GDP in current prices.

Figure 69. Revisions of GDP in current prices: one, two and three year horizons



It is insightful to compare revisions rates across reference years using the same horizon. As noted above, the relative mean absolute revision rate calculated using RI5 will typically diminish with longer horizons, due to the accumulation of transmission values in the denominator. This is clear from Figure 69: in the charts from top to bottom, the revision rates generally decrease as the horizon increases.

Figure 69 shows that the countries which revise most their data on GDP at current prices for any reference year typically have the highest revision rates in all three of the charts (within first year, two years and three years). In the first chart of revisions within the first year, the patterns are heterogeneous. Some countries have large revisions for all reference years (Bulgaria, Estonia, Cyprus, Luxembourg) and other countries have very large revisions for some reference years and negligible revisions for other years (Czechia, Ireland, Latvia, Malta).

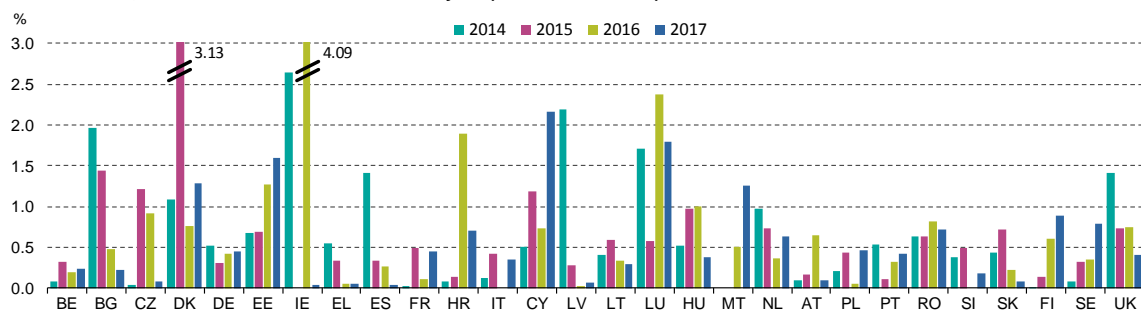
The second panel of the chart shows that Ireland and Malta had large revisions within the first two years of submissions of data for all three reference years 2014, 2015, 2016, and for these two countries, the revisions on 2014 data were, relatively, the largest. For reference year 2014, high revisions were also noted for Estonia and Denmark; for 2015 they were also noted for Luxembourg; and for 2016 they were also noted for Estonia and Cyprus. There is no particular reference year which, across all EU Member States, was revised the most. For nine countries (Denmark, Ireland, Spain, France, Latvia, Lithuania, Malta, Portugal, the United Kingdom), the revisions to 2014 data were largest; for 10 countries (Bulgaria, Czechia, Luxembourg, Hungary, Austria, Poland, Slovenia, Slovakia, Finland, Sweden), the revisions to 2015 data were largest;

and for nine countries (Belgium, Germany, Estonia, Greece, Croatia, Italy, Cyprus, the Netherlands and Romania) the revisions to 2016 were the largest.

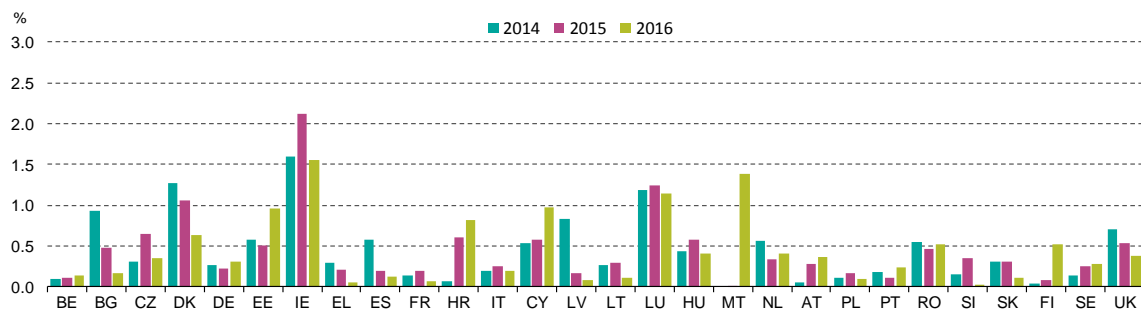
The third panel of the chart shows that within three years, the mean absolute revision rates had diminished to below 0.5 % for most countries. Only three countries had rates above 1.0 %: Ireland for year 2014 data, Luxembourg for year 2015 data and Malta for both years' data. For most countries, revisions in the third year were small relative to earlier periods' revisions. For a few countries (Hungary, Malta, the Netherlands, Slovenia), the third year reversed the order of year 2014 relative to year 2015. While this could reflect major revisions in submissions during third year, it mostly resulted from the impact of large revisions in the first and second years being diminished (or averaged-out) with the addition of a third year of submissions in the revision rate indicator.

Figure 70. Revisions of GDP in volumes: one, two and three year horizons

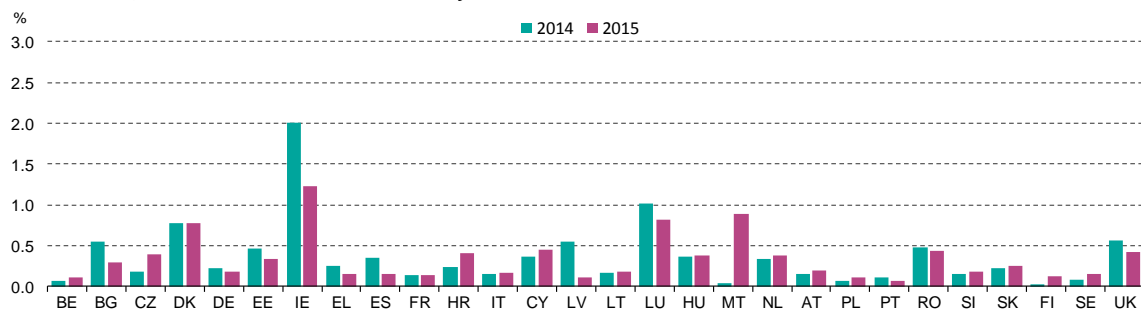
GDP in volumes, mean absolute revision within first year (last transmissions)



GDP in volumes, mean absolute revision within two years



GDP in volumes, mean absolute revision within three years



Similar analysis on the evolution of revision rates over one- to three-year horizons can be performed for GDP in volumes, as shown in the three panels of Figure 70. Once again, as shown in the first panel, many countries were heterogeneous in the pattern of revisions in the first year, revising by much for some reference years and by very little for others. Major revisions were noted within the first year for Denmark for 2015 data and Ireland for 2016 data. Substantial revisions within the first year were also observed in submissions from Bulgaria, Croatia, Cyprus, Latvia and Luxembourg. As shown in the second panel, within two years, Denmark, Ireland, Luxembourg and Malta had large revisions to their data on GDP in volumes. For Malta, delays in submission of data also affected the frequency of revisions. Bulgaria and Latvia also had large

revisions to 2014 data, while Croatia and Cyprus had large revisions of 2016 data.

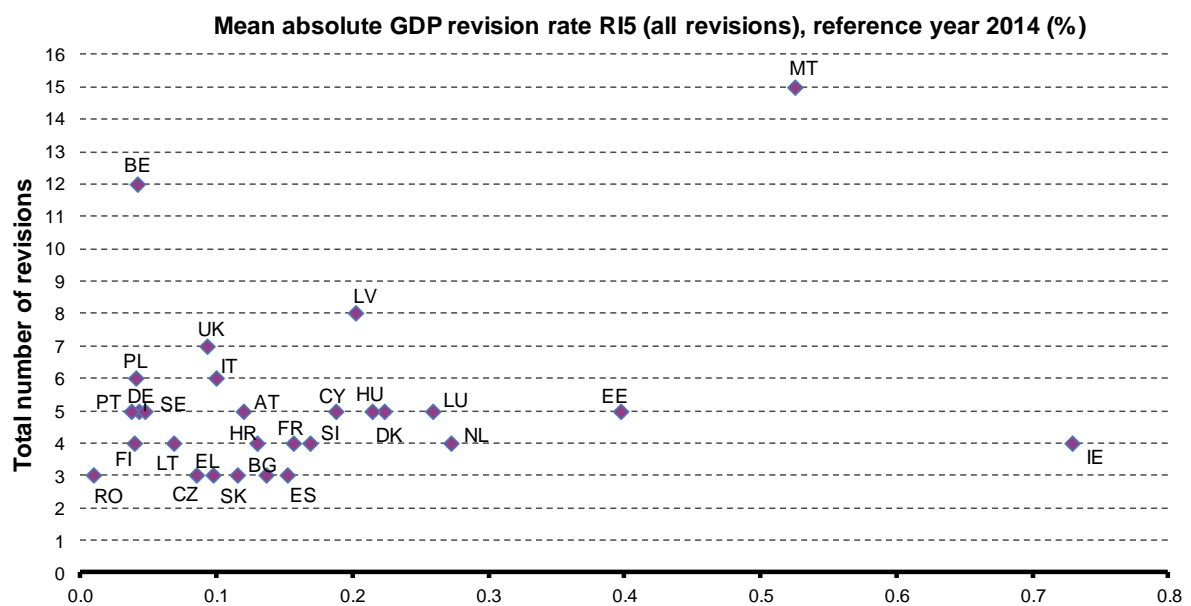
The third panel shows that Denmark, Ireland, Luxembourg and Malta continued to have the largest revisions to their 2014 and 2015 data. Once again, the changing profile for some countries indicates the diminishing impact of large revisions occurring previously (e.g. in submissions in 2016 for Ireland). In the longer horizon revision rate indicator, the effects of substantial one-off revisions to some reference years is averaged-out over time. High values of the indicator at the longer horizon typically reflect more than one large revision which occurred during the period.

NAMA annual GDP revision rates, frequency and magnitude

REVISION PRACTICE OF EU MEMBER STATES BASED ON THE FREQUENCY OF REVISIONS AND THE SIZE OF THE GDP RELATIVE MEAN ABSOLUTE REVISION, 2014

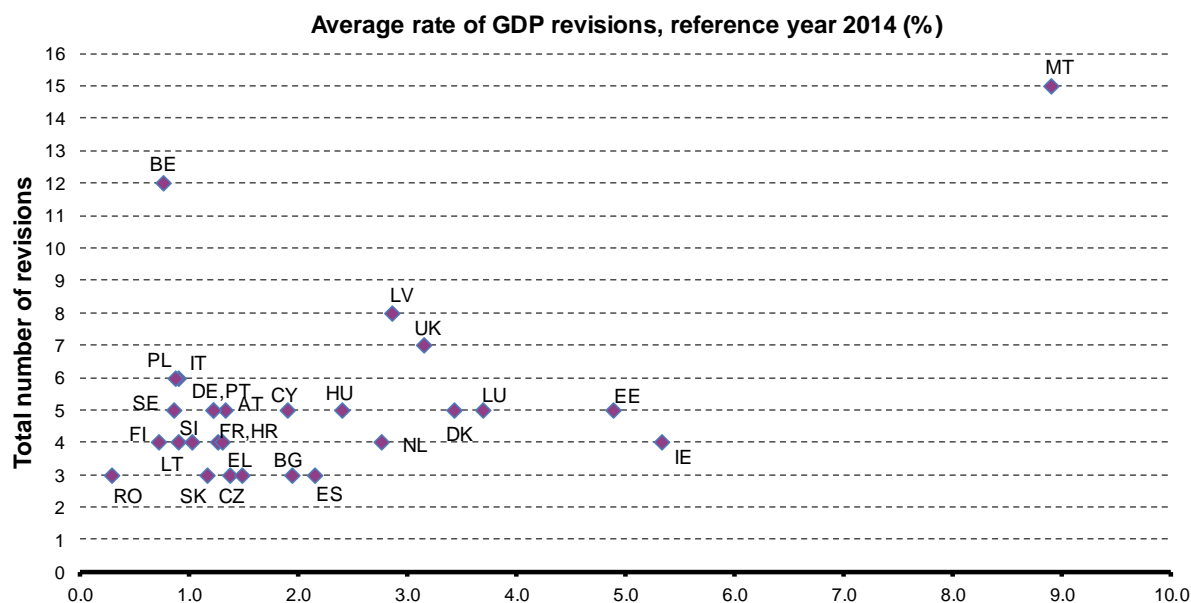
Figure 71 shows the RMAR rates of all the revisions for the reference year 2014. The chart shows that Malta and Belgium had the highest total number of revisions, much above the group of other countries, which was led by Latvia. During the year of 2014, Malta revised GDP 15 times. On average, EU Member States submitted five revisions for the reference year 2014.

Figure 71. Revisions of GDP in current prices: mean absolute revision rate of all revisions of reference year 2014 data



The chart shows that Malta also had one of the highest RMAR rates for GDP, at +0.52 %. By contrast, while Ireland had the highest RMAR rate for 2014 GDP data at 0.73 %, it only made four revisions to the data. On average EU Member States revised GDP by 0.17 %, as measured by the RMAR rate. The chart shows the countries which break away from the main cluster revised their 2014 GDP data more on average, either due to many revisions or a higher RMAR rate. While the Member States with largest economies are part of the cluster, most of those breaking away have smaller economies.

Figure 72. Revisions of GDP in current prices: average revision rate of all revisions of reference year 2014 data, calculated with a multiplicative index of revision rates



The chart in Figure 72 plots the EU Member States by total number of revisions against an alternative indicator of the average revision rate for GDP in reference year 2014. It uses a multiplicative index of revision rates. In this chart, Malta stands out both in number and average size of revisions. Using this approach, the average revision rate of the United Kingdom rises substantially, while that of Ireland is diminished. The relative position of Belgium, Latvia and Estonia does not change appreciably. The chart still shows a cluster of Member States which revised by less than 2.0 % on average, through six or less revisions.

General observations on national revision practices of annual main aggregates data

The analysis of revision rates of annual data for reference years 2014 and 2015 yields the observation that, similar to the quarterly data analysis, a small number of countries had higher rates, on average, than the others: Ireland, Luxembourg, Malta and Iceland for GDP; Cyprus, the United Kingdom and Iceland for employment.

Recalling from the quarterly analysis, benchmark revisions have been communicated by several countries: Cyprus and Denmark carried out a benchmark revision in 2016; Austria performed a benchmark revision in 2017; and the Netherlands and France carried out a benchmark revision in 2018. Bulgaria, Latvia and Switzerland carried out major routine revisions during the period under analysis and Ireland and the United Kingdom revise their data each year. The results that are shown in many of the charts in this section reflect the country-specific impacts of these major changes.

For many countries, on average, the largest revisions of GDP data occurred in the first transmissions after the initial one. However, breaking down the revisions of GDP to common horizons for the various reference years showed that across all countries there was no specific reference year that was revised more than the others.

Insight can be gained into the sources of revisions for each country, by breaking down revision in GDP into the revisions of income or expenditure components, or by specific time horizons. It is key to relate these sources to country-specific revision information.

Malta showed substantial revisions to all years, but especially 2015, due to revisions in national accounts and balance of payments data with the data collection on arts, entertainment and

recreation activities. These revisions are reflected in revisions in the income component for GOS and mixed income, and in the expenditure components GFCF, exports and imports.

Similarly, major revisions by Luxembourg to national accounts data was reflected in the same income and expenditure components as for Malta. However, the adjustments to GDP in Luxembourg came with later revisions to 2014 data and also affected later reference years, from 2015 onward. The major revision to GDP in Iceland which occurred in 2016, impacted several reference years and led to revisions in private final consumption expenditure and GFCF. The revisions were almost all in the GOS and mixed income component.

Ireland performs regular revisions of national accounts data every year with no distinction between routine and benchmark revisions. The analysis shows that the revisions due to globalisation-related accounting effects resulted in especially large revisions to GFCF, and in particular revisions to GDP data for 2014 and 2016. The greatest impact was on GDP volumes for 2014, where Ireland had the highest revision rates of all countries.

This section has covered a wide range of perspectives on revisions to GDP and employment series, by breaking down revision in GDP into the revisions of income or expenditure components, or by specific time horizons; by contrasting average revisions against their the number of revisions; and by looking at contributions to GDP revisions by expenditure components. The charts provide a means to compare individual countries in a consistent way. A more in-depth interpretation of the results requires information on the country-specific policy, factors and explanations, such as the timing and extent of major revisions. Five countries (Croatia, Ireland, Luxembourg, Malta and Switzerland) have unfortunately not yet documented and published their revision policies for national accounts. This underlines the need for detailed information on revision policies and major revisions transmitted with the ESA 2010 quality reports and in metadata, which is central to gaining a better understanding of revision policy and practice.

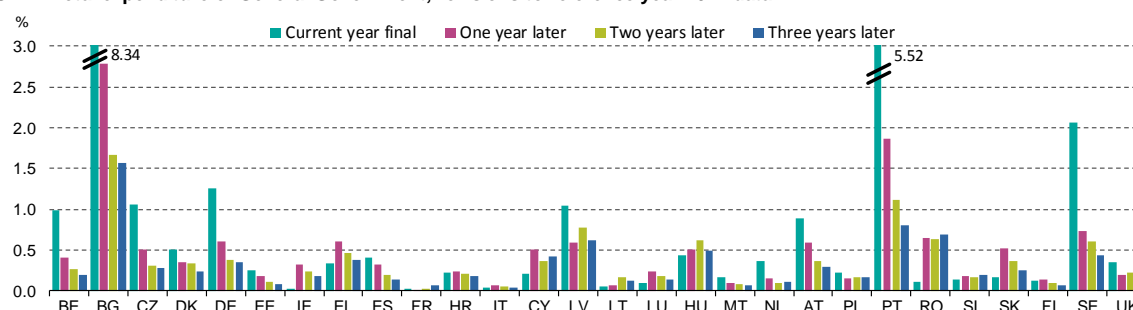
Revisions of key annual government finance statistics

EVOLUTION OF THE REVISION RATE FOR OTE AND OTR REFERENCE YEAR 2014 WITH VARIOUS HORIZONS: ONE TO THREE YEARS LATER

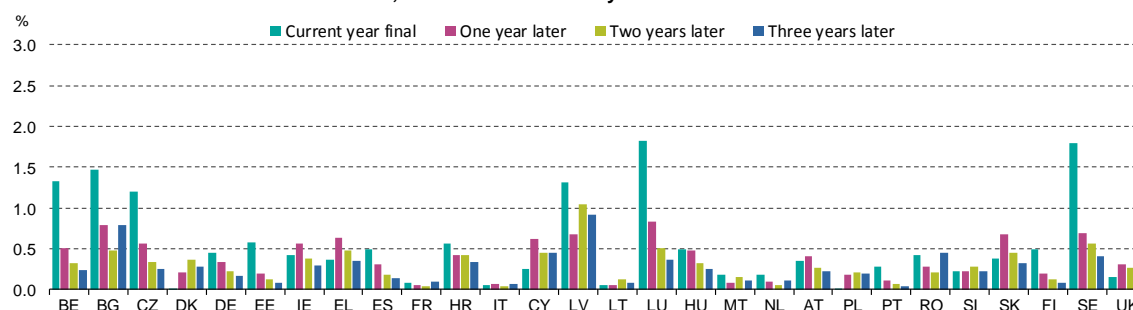
The evolution of revisions of selected annual aggregates from government finance statistics is shown in Figure 73, measured by how the relative mean absolute revision indicator (RI5) rates evolve, according to the time horizon considered. The revision indicators for the reference year 2014 are compared according to the horizon of revisions included in the rate's calculation. The current year final indicator includes only one revision, in final transmission of 2014. At one year later, the potential revisions in the first and last transmission of 2015 are added; at two years later revisions in 2016 are added; and, finally three years later adds any revisions in the first and last transmissions of 2017. It is this last revision rate that is reported in the table for reference year 2014 in the ESA 2010 quality report for data submissions.

Figure 73. Revisions of GFS series for OTE and OTR: one, two and three year horizons

OTE - Total expenditure of General Government, revisions to reference year 2014 data



OTR - Total revenue of General Government, revisions to reference year 2014 data



The charts show, as for the main aggregate variables, that for many countries the revisions for the reference year 2014 were the largest in percentage terms one year later (blue bar), and as the horizon increases to two years and later, the revision rate decreases. This would indicate that the largest revision is the change between the first and second estimate in the first year after the reference year. It should be noted that as the horizon increases, the denominator in the revision rate indicator RI5 is accumulating the values of the OTE or OTR levels, so there is a tendency for the indicator values to diminish. However, for some countries the decrease is small (e.g. Croatia).

The largest revision rates were observed for Bulgaria and Portugal, with current year revisions above 3 %. Seven countries had current year revisions of 1 % or more for expenditure (Belgium, Bulgaria, Czechia, Germany, Latvia, Portugal and Sweden) and six had current year revisions of 1 % or more for revenue (Belgium, Bulgaria, Czechia, Latvia, Luxembourg and Sweden).

By contrast, for some countries the revision rates do not substantially decrease with the horizon. This is the case for Cyprus, Latvia, Hungary and Romania for expenditure, and for Cyprus, Latvia, Austria, Poland, Romania and Slovenia for revenue. It is once again evident in the chart how the profile of revisions across countries changes as the horizon increases. Romania is not among

countries with the highest revisions at the one-year horizon for expenditure, but becomes third at the three-year horizon reported in the national quality reports.

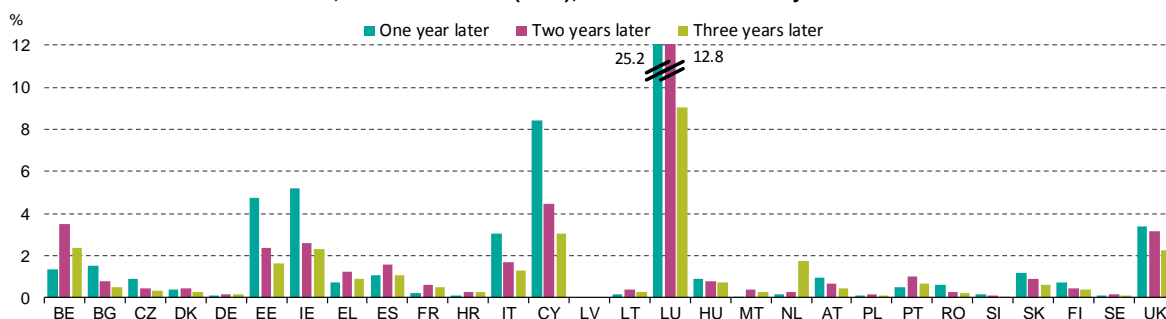
There is considerable heterogeneity in the both charts in the revision rates observed across EU Member States. A majority of countries have rates from the one-year horizon and longer which are below 0.5 %. Some countries have low revision rates for both series (France, Lithuania, the Netherlands, Poland, Finland).

Revisions of key annual financial accounts statistics

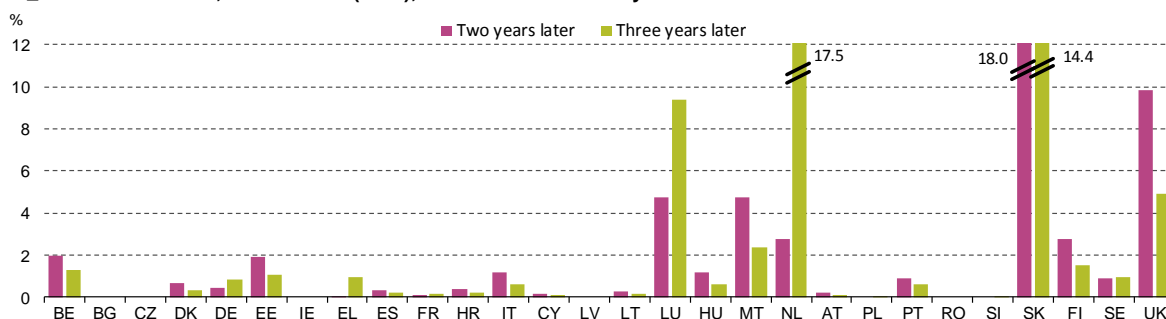
EVOLUTION OF THE REVISION RATE FOR TOTAL FINANCIAL SECTOR LIABILITIES AND CONSOLIDATED DEBT SERIES REFERENCE YEAR 2014 WITH VARIOUS HORIZONS: ONE TO THREE YEARS LATER

Figure 74. Revisions of financial accounts series for total financial sector liabilities and consolidated debt: one, two and three year horizons

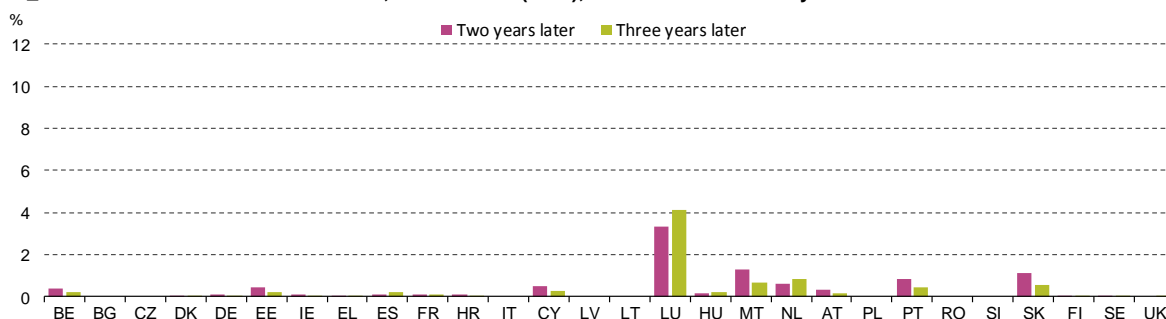
TFSL - Total financial sector liabilities, non-consolidated (T720), revisions to reference year 2014 data



PSD_S11 - Debt of NFCs, consolidated (T710), revisions to reference year 2014 data



PSD_S1M - Debt of households and NPISH, consolidated (T710), revisions to reference year 2014 data



The evolution of revisions by EU Member States of selected annual aggregates from financial accounts statistics is shown in Figure 74. The charts show the evolution in the RMAR indicator rates (RI5), according to the time horizon considered. In financial accounts, the annual data are

transmitted once per year and revision indicator is measured using first validated mandatory transmission of each year (see Annex 1).

For the total financial sector liabilities (TFSL) series for reference year 2014, data for four vintages from 2015 to 2018 were available. For the private sector debt (PSD) series in reference year 2014, data for only the three last vintages from 2016 to 2018 were available. The first year recorded for revisions to reference year 2014 for the PSD series is therefore two years later, in 2016.

For the TFSL series for reference year 2014, the familiar pattern of lower size of average revisions for longer horizons was generally evident, with a few exceptions (Belgium and the Netherlands, but also Greece, Spain, Portugal). Compared to the household or non-financial corporations sectors, revisions to financial balance sheet data for the financial corporations sector were relatively low, assisted by the fact that data sources for monetary financial institutions are generally timely and reliable. This is often not the case, however, with sources for other financial intermediaries and particularly captive institutions. Indeed, the high revision rates observed for Luxembourg were largely explained by improvements made to a survey on captive financial institutions. By contrast, the TFSL series for Latvia shows no revisions whatsoever between the four data vintages. Very low revision rates were also observed for Germany, Croatia, Malta, Poland, Slovenia and Sweden. These revision rates of 0.3 % or less indicate only very small adjustments to these TFSL series.

Particular caution is needed when interpreting the revision indicators for PSD in the second and third panels of the chart, as only the two- and three-years later revisions are available. Concerning the debt of non-financial corporations, the rate of revision after two years tends to be higher than the average rate after three years, as would normally be expected, with major exceptions for Luxembourg and the Netherlands. In the case of Luxembourg the revisions are mainly explained by improved grossing up and balancing procedures as well as updated sources, while the Netherlands benchmark revision of 2018 had a big impact on the size of the average revision. The high average revision rates for Slovakia were associated with balancing procedures and updated sources. In general, revisions to private sector debt of non-financial corporations are mostly related loan financing.

The other component of private sector debt, relating to households and NPISH sectors, generally shows very low rates of average revision for almost all countries. This is because data for the main form of debt, bank lending to households, comes in a timely manner from money and banking statistics. Luxembourg shows somewhat higher revision rates than other countries, partly explained by the use of a more detailed data source on loans of non-resident banks. Also, revision rates for Malta, the Netherlands, Portugal and Slovakia were between 0.3 % and 0.7 %.

For eight countries (Bulgaria, Czechia, Ireland, France, Latvia, Poland, Romania, Slovenia), the revision rates for both PSD series were negligible or zero, indicating that data for these series are treated as final and generally not revisited.

GENERAL OBSERVATIONS ON NATIONAL REVISION PRACTICES OF ANNUAL FINANCIAL ACCOUNTS DATA

The charts show that when sources become available or are updated, financial accountants generally prefer to revise the financial accounts as early as possible, and over as long a time series as possible. This may be the case, for example, with sources such as GFS, BoP/IIP, money and banking statistics, and securities statistics. By ensuring that the revisions extend over a long period, breaks between the stock (financial balance sheet) and flows are avoided for more recent years. As a result of this policy, compared to annual non-financial accounts, revisions tend to be more frequent and more years are affected.

Revisions resulting from updates of sources may not however cause large revisions. These might be the result of the introduction of a new source, a step improvement in an existing source, or a timing issue relating to the availability of a source. An example of the latter would be where comprehensive company accounts information does not become available until sometime after T+9 months, the deadline for delivery of annual financial accounts under the ESA 210

Transmission Programme. Other important causes of revisions include changes in estimation methods, balancing procedures, and reclassifications of institutional units. Methodological changes resulting from the introduction of ESA 2010 are recognised as a main cause of revisions in financial accounts, for example the recording of captive financial institutions.

From the results of the revision indicators for reference year 2014, large revisions to the TSFL series were only performed by a small number of EU Member States and these revisions mostly occurred by the first year after the original submission. Similarly, for the PSD series, large revisions were only carried out about five countries, and were mainly due improved balancing procedures, updated sources and benchmark revisions, which occurred throughout the four-year period since 2014. There were some countries that did not revise the PSD series at all, or slightly.

Conclusions

In general, quarterly economic statistics are more volatile and are subject to higher revisions than annual data. For both quarterly and annual data, a small number of four or five countries typically had higher revision rates than the others, however there was no common pattern. These four or five countries tended to be smaller economies, but there was no direct relationship between economic size and average revision rate of GDP series. Nor was it possible to infer that the frequency/number of revisions in GDP was related to the average revision size.

By breaking down revisions in GDP into the revisions of income or expenditure components, or by specific time horizons, it is possible to gain insight into the sources of revisions for each country. There was substantial heterogeneity with regard to which components were revised most and how long after the initial transmission the largest revisions took place. Moreover, for revisions to GDP across all countries, there was no specific reference year that was revised more than the others.

It follows that country-specific factors and explanations are key to understanding and interpreting revisions, and therefore, the information on major revisions transmitted with the ESA 2010 quality reports and in metadata is central to gaining a better understanding of revision practice. Similarly, up-to-date documentation on each country's revision policy also plays an important role in explaining revision patterns.

Nevertheless, some commonalities can be observed in the analysis. For many countries, on average, the largest revisions of GDP data occurred in the first transmissions after the initial one. Data are revised multiple times in the quarters/years following the initial transmission due to availability of new sources. The initial estimates are usually provided on a timely matter, but complete source data from surveys (annual economic surveys, business surveys) or other administrative sources become available later. For many larger economies, the availability of source data is more complete and punctual than in smaller economies, so in these countries, the earliest revisions are typically larger than later ones.

Revisions at later horizons can arise from several procedures, among them: completion of Supply and Use, Input-Output tables T+3 years after the reference year; the alignment between EDP statistics and coherence with government finance statistics; and adjustments for GNI reservations.

The analysis highlights the importance of the regular provision of the full set of revision indicators in the ESA 2010 quality reports, as foreseen in the implementing regulation for quality reporting. Only with time will a complete picture of revision patterns across EU Member States and EFTA countries be possible.

Overview of revision rate indicators used

In 2018, Eurostat conducted a pilot exercise studying revision rate indicators with several countries and presented the results to the National Accounts Working Group (NAWG) in May 2018. The indicators that were chosen by countries in the NAWG for the quality reporting drew from the pool of indicators proposed by different consortia that have worked on the quality aspects of revisions. These indicators describe quantitative aspects of the revision practice only, and additional information on the qualitative aspects of revisions is generally needed to complete the overall assessment. The revision rate indicators which shall be used in the ESA 2010 quality reporting were selected as an outcome of the pilot study exercise and the agreements reached in the follow-up discussions with the NAWG. The Commission Implementing Regulation on [ESA 2010 quality reporting](#) specifies the implementation of revision rate indicators as shown in Annex Table 1.

Annex 4 Table 1: Overview of the indicators implemented in the 2019 ESA 2010 quality reporting

| ESA 2010 domain | Number of transmissions | Practical selection of vintages | Indicator 1 | Indicator 2 |
|---|-------------------------------------|---|-------------|-------------|
| National accounts main aggregates — annual data | 2 per year ($t + 2$; $t + 9$) | First transmission of new year; last transmission in year | RI5 | RI1(*) |
| National accounts main aggregates — quarterly data | 1 per quarter | Closest to $t + 2$ | RI1 | RI5 |
| Main aggregates of general government — annual data | 2 per year ($t + 3$; $t + 9$) | First transmission of new year; last transmission in year | RI5 | RI1(*) |
| Financial accounts — annual data | 1 per year | First validated mandatory transmission of each year | RI5 | RI1(*) |
| Regional accounts — annual data | 1 per year | First validated mandatory transmission of each year | RI5 | RI1(*) |

(*) Optional implementation of the indicator.

Appendix Table 1 defines both the practical selection of the vintages and the number of transmissions to consider. The vintage of data used to calculate the revision rate indicators is the first transmission of validated data which is published at Eurostat's website. This will also ensure coherence with the punctuality indicator that is based on delivery date of validated data for each table of the ESA 2010 transmission programme for all transmissions due in the latest year.

For the revision indicators presented below, we consider that:

- R_0 represents the initial value;
- the Member State sends N revisions, with value R_0 being revised to R_k , where $1 \leq k \leq N$, during a specific period (e.g. production round or calendar year).

Revision Indicator 1 (RI₁), compares the latest revision R_N with the initial value R_0 . It provides an indication of how much the first estimate has changed over the entire reference period. This indicator is only mandatory for the revision rates of quarterly data; for annual data it is optional.

Revision Indicator 1 — Ratio of last revised value to initial value

$$RI_1 = \frac{R_1}{R_0} \times \dots \times \frac{R_k}{R_{k-1}} \times \dots \times \frac{R_N}{R_{N-1}} = \prod_1^N \frac{R_k}{R_{k-1}} = \frac{R_N}{R_0}$$

Revision Indicator 5 (RI_5), is the later estimate Relative Mean Absolute Revision (RMAR late) which is calculated as the mean absolute revision scaled in terms of the size of the later estimates rather than earlier estimates.

Revision Indicator 5 — Relative Mean Absolute Revision (RMAR_late) in terms of later estimates

$$RI_5 = \frac{\sum_{k=1}^N |R_k - R_{k-1}|}{\sum_{k=1}^N |R_k|}$$

One advantage of this indicator is that it does not take into account the algebraic signs that could cancel off in the sums. Therefore, it is useful as a measure of the robustness of first published estimates, as it can be interpreted as the expected proportion of the first published estimate that is likely to be revised over the revision interval being considered. However, this indicator does not provide information on the direction of revisions, since it only considers the *absolute* values of revisions.

In contrast, in an earlier-estimate Relative Mean Absolute Revision (RMAR early, which was *Revision Indicator 4* in the NAWG pilot exercise) the mean absolute revision is scaled in terms of the size of earlier estimates, rather than the later estimates. The Mean Absolute Percentage Error (MAPE, which was *Revision Indicator 3* in the Pilot exercise) averages the absolute value of the revision rates itself, which is calculated with the earlier estimate in the denominator. Where possible, we will prefer to use the RMAR late version of the indicator.

EXAMPLE CALCULATION OF RI5 RELATIVE MEAN ABSOLUTE REVISION RATE

As an example of how to calculate the annual average Relative Mean Absolute Revision rate (RMAR late) for GDP, consider the revisions to data for reference year 2014 transmitted to Eurostat from Ruritania, presented in Annex Table 2, where GDP is stated in thousands of national currency.

Annex 4 Table 2: Example calculation of RI5 indicator

| Transmission Date | 2014 GDP (B1GQ.V) | First and last transmission of each year | Absolute revision of 2014 data |
|-------------------|-------------------|--|--------------------------------|
| 03-03-2015 | 1915418 | 1915418 | |
| 14-04-2015 | 1919192 | | |
| 06-10-2015 | 1921498 | | |
| 23-11-2015 | 1942584 | 1942584 | 27166 |
| 29-02-2016 | 1942584 | 1942584 | 0 |
| 31-03-2016 | 1942584 | | |
| 01-07-2016 | 1942584 | | |
| 15-11-2016 | 1977255 | 1977255 | 34671 |
| 28-02-2017 | 1977255 | 1977255 | 0 |
| 31-03-2017 | 1977255 | | |
| 30-06-2017 | 1977255 | | |
| 07-11-2017 | 1981165 | 1981165 | 3910 |
| 28-02-2018 | 1981165 | 1981165 | 0 |
| 05-04-2018 | 1981165 | | |
| 29-06-2018 | 1981165 | | |
| 08-11-2018 | 1981165 | 1981165 | 0 |

The RI5 revision indicator takes the sum of the absolute revisions in the numerator, and the level of GDP for those periods in the denominator, then expressed as a percentage (i.e. multiplied by 100).

$$RI5 = \frac{27166 + 0 + 34671 + 0 + 3910 + 0 + 0}{1942584 + 1942584 + 1977255 + 1977255 + 1981165 + 1981165 + 1981165} * 100$$

List of figures

| | |
|---|----|
| Figure 1: User satisfaction survey - overall quality of 'National accounts', surveys since 2015 | 16 |
| Figure 2: User satisfaction survey - overall quality of 'Financial accounts and monetary indicators', surveys since 2015 | 16 |
| Figure 3: User satisfaction survey - overall quality of 'Government finance statistics', surveys since 2015 | 17 |
| Figure 4: Completeness rate of national accounts quarterly tables reported in 2018 | 20 |
| Figure 5: Completeness rate of national accounts annual tables reported in 2018 | 21 |
| Figure 6: Evolution of overall data availability from 2016 to 2018 | 25 |
| Figure 7: Evolution of data availability per country from 2016 to 2018, expressed as the number of the 22 tables under the ESA 2010 transmission programme delivered each year, in each of the four availability categories | 26 |
| Figure 8. Averages of absolute revisions of GDP quarter-on-quarter growth rates | 31 |
| Figure 9. Latest minus first growth rate differences of GDP quarter-on-quarter growth rates | 31 |
| Figure 10. Averages of absolute revisions of employment quarter-on-quarter growth rates | 32 |
| Figure 11. Latest minus first growth rate differences of employment quarter-on-quarter growth rates | 32 |
| Figure 12. GDP in current prices and in volumes, 2014 | 34 |
| Figure 13. GDP in current prices and in volumes, 2015 | 35 |
| Figure 14. Revisions of GDP in current prices: mean absolute revision rate of all revisions of reference year 2014 data | 36 |
| Figure 15. Revisions of GDP in current prices: average revision rate of all revisions of reference year 2014 data, calculated with a multiplicative index of revision rates | 36 |
| Figure 16: Punctuality of national accounts quarterly tables reported in 2018 | 46 |
| Figure 17: Punctuality of national accounts annual tables reported in 2018 (excl. 3-yearly pension tables and 5-yearly use and input-output tables) | 47 |
| Figure 18: Punctuality of first GDP flash estimate data transmissions for 2018Q4 | 51 |
| Figure 19: Release containing components of GDP and employment, transmission of data for 2018Q4 | 52 |
| Figure 20: Household and company accounts, transmission of 2018Q3 | 53 |
| Figure 21: Absolute differences in net lending / net borrowing of non-financial account (B9) and financial account (B9F) as a percentage of GDP (average of EU countries) | 68 |
| Figure 22: Differences in B9 / B9F, high-low range and average, as a percentage of GDP (EU countries, average of reference years 2013-2017) | 69 |
| Figure 23: Table 1Q - Main aggregates - quarterly | 80 |
| Figure 24: Table 801 - Non-financial accounts by sector - quarterly | 80 |
| Figure 25: Table 27 - Financial accounts of general government - quarterly | 80 |
| Figure 26: Table 28 - Government debt (Maastricht debt) for general government - quarterly | 80 |
| Figure 27: Table 1A - Main aggregates - annual | 81 |
| Figure 28: Table 3 - Tables by industry - annual | 81 |
| Figure 29: Table 5 - Household final consumption expenditure by purpose - annual | 81 |
| Figure 30: Table 20 - Cross classification of fixed assets by industry and by asset - annual | 81 |
| Figure 31: Table 22 - Cross classification of gross fixed capital formation by industry and by asset – annual (period covered: 1995–2016, data reported in 2018) | 82 |
| Figure 32: Table 26 - Balance sheets for non-financial assets - annual | 82 |
| Figure 33: Table 2 - Main aggregates of general government - annual | 82 |
| Figure 34: Table 9 - Detailed tax and social contribution receipts by type of tax and social contribution and receiving subsector including the list of taxes and | |

| | |
|---|-----|
| social contributions according to national classification – annual (period covered: 1995–2017, data reported in 2018) | 82 |
| Figure 35: Table 11 - General government expenditure by function - annual | 83 |
| Figure 36: Table 8 - Non-financial accounts by sector - annual..... | 83 |
| Figure 37: Table 6 - Financial accounts by sector (transactions) - annual | 83 |
| Figure 38: Table 7 - Balance sheets for financial assets and liabilities - annual | 83 |
| Figure 39: Table 10.1 (t+12) - Tables by industry and by region (NUTS level 2) - annual | 84 |
| Figure 40: Table 10.2 - Tables by industry and by region (NUTS level 2) - annual..... | 84 |
| Figure 41: Table 12 - Tables by industry and by region (NUTS level 3) - annual | 84 |
| Figure 42: Table 13 - Household accounts by region (NUTS level2) - annual | 84 |
| Figure 43: Table 15 - Supply table at basic prices incl. transformation into purchasers' prices - annual | 85 |
| Figure 44: Table 16 - Use table at purchasers' prices – annual & five-yearly | 85 |
| Figure 45: Table 17 - Symmetric input-output table at basic prices - five yearly | 85 |
| Figure 46: Punctuality of national accounts quarterly tables reported in 2018 | 86 |
| Figure 47: Punctuality of annual tables for national accounts main aggregates and government financial statistics reported in 2018 | 87 |
| Figure 48: Punctuality of annual tables for sector accounts, supply, use and input-output tables, regional accounts and pension entitlements reported in 2018 | 88 |
| Figure 49. Averages of absolute revisions of GDP quarter-on-quarter growth rates..... | 90 |
| Figure 50. Latest minus first growth rate differences of GDP quarter-on-quarter growth rates | 90 |
| Figure 51. Mean absolute revision rates in comparison to size of economy of the country, 2016 | 92 |
| Figure 52. Mean absolute revision rates in comparison to trade openness of country, 2016 | 92 |
| Figure 53. Averages of absolute revisions of employment quarter-on-quarter growth rates | 93 |
| Figure 54. Latest minus first growth rate differences of employment quarter-on-quarter growth rates | 93 |
| Figure 55. Employment growth rate revisions in comparison to GDP growth rate revisions, average of mean absolute revision rates 2015Q3 to 2018Q2..... | 94 |
| Figure 56. Evolution of the growth rate revisions: one to three selected periods later | 95 |
| Figure 57. GDP in current prices and in volumes, 2014 | 97 |
| Figure 58. GDP in current prices and in volumes, 2015 | 98 |
| Figure 59. Gross Value Added in current prices, 2014 | 99 |
| Figure 60. Gross Value Added in current prices, 2015 | 100 |
| Figure 61. Employment and employees in thousands of persons, 2014 | 101 |
| Figure 62. Employment and employees in thousands of persons, 2015 | 102 |
| Figure 63. GDP revision rate decomposition by income, 2014 | 103 |
| Figure 64. GDP revision rate decomposition by income, 2015 | 104 |
| Figure 65. GDP revision rate decomposition by expenditure, 2014..... | 105 |
| Figure 66. GDP revision rate decomposition by expenditure, 2015..... | 105 |
| Figure 67. Contributions to GDP revisions by expenditure components, 2014 | 107 |
| Figure 68. GDP in current prices and in volumes, and Gross Value Added in current prices, 2014 | 109 |
| Figure 69. Revisions of GDP in current prices: one, two and three year horizons | 110 |
| Figure 70. Revisions of GDP in volumes: one, two and three year horizons..... | 111 |
| Figure 71. Revisions of GDP in current prices: mean absolute revision rate of all revisions of reference year 2014 data | 112 |
| Figure 72. Revisions of GDP in current prices: average revision rate of all revisions of reference year 2014 data, calculated with a multiplicative index of revision rates | 113 |
| Figure 73. Revisions of GFS series for OTE and OTR: one, two and three year horizons | 115 |
| Figure 74. Revisions of financial accounts series for total financial sector liabilities and consolidated debt: one, two and three year horizons | 116 |

List of tables

| | |
|--|----|
| Table 1: Requests for additional voluntary variables in non-financial accounts addressed by Eurostat since 2018 | 18 |
| Table 2: Major routine or benchmark revisions carried out in 2018 | 29 |
| Table 3: Revisions of quarterly GDP for the EA-19 aggregates (quarter-on-quarter growth rates) based on data for reference quarters from 2015Q3 to 2018Q3 | 39 |
| Table 4: Revisions of quarterly GDP for the EA-19 aggregates (year-on-year growth rates) based on data for reference quarters from 2015Q3 to 2018Q3 | 39 |
| Table 5: Revisions of quarterly GDP for the EU-28 aggregates (quarter-on-quarter growth rates) based on data for reference quarters from 2015Q3 to 2018Q3 | 40 |
| Table 6: Revisions of quarterly GDP for the EU-28 aggregates (year-on-year growth rates) based on data for reference quarters from 2015Q3 to 2018Q3 | 40 |
| Table 7: Revisions of quarterly employment growth estimates for the EA-19 aggregates based on data for reference quarters from 2015Q3 to 2018Q3 | 41 |
| Table 8: Revisions of quarterly employment growth estimates for the EU-28 aggregates based on data for reference quarters from 2015Q3 to 2018Q3 | 41 |
| Table 9: Revisions of quarterly saving and investment rates of households and NPISH, for the EA-19 aggregates (seasonally-adjusted) based on data for reference quarters from 2015Q3 to 2018Q3 | 43 |
| Table 10: Revisions of quarterly investment rates and profit shares of non-financial corporations, for the EA-19 aggregates (seasonally-adjusted) based on data for reference quarters from 2015Q3 to 2018Q3 | 43 |
| Table 11: Revisions of quarterly saving and investment rates of households and NPISH, for the EU-28 aggregates (seasonally-adjusted) based on data for reference quarters from 2015Q3 to 2018Q3 | 44 |
| Table 12: Revisions of quarterly investment rates and profit shares of non-financial corporations, for the EU-28 aggregates (seasonally-adjusted) based on data for reference quarters from 2015Q3 to 2018Q3 | 44 |
| Table 13: Availability of mandatory and voluntary inventories on the Eurostat website and/or CIRCABC public website, as of 31 December 2018 | 57 |
| Table 14: Vertical balancing to zero (maximum discrepancy 0.1% of GDP) | 69 |
| Table 15: Average absolute vertical discrepancy over 2013-2017, by sector (as % of GDP) | 70 |
| Table 16: Country-specific recommendations | 76 |
| Table 17: Transmission programme of data — Overview of the tables | 78 |

List of acronyms

- ASA: annual non-financial sector accounts
- CIRCABC: a collaborative platform of the European Commission, which offers an easy distribution and management of documents
- CMFB: Committee on Monetary, Financial and Balance of Payments Statistics
- EA: Euro area
- ECFIN: Economic and Financial Affairs Directorate General of the European Commission
- ECB: European Central Bank
- EDP: Excessive deficit procedure
- EFTA: European Free Trade Association
- ESA 2010: European System of National and Regional Accounts 2010
- ESS: European Statistical System
- EU: European Union
- Eurobase: statistical data base of Eurostat
- FIGARO: Full International and Global Accounts for Research in Input-Output Analysis project
- GDP: Gross domestic product
- GFS: Government finance statistics
- GNI: Gross national income
- GVA: Gross value added
- HERP: Harmonised European Revision Policy
- IMF: International Monetary Fund
- MIP: Macroeconomic Imbalance Procedure
- NACE: Statistical Classification of Economic Activities in the European Community (FR: Nomenclature statistique des activités économiques dans la Communauté européenne)
- NAMA: national accounts main aggregates
- NPISH: Non-profit institutions serving households
- NSI: National Statistical Institute
- NUTS: Nomenclature of territorial units for statistics (FR: Nomenclature des Unités territoriales statistiques)
- PEEIs: Principal European Economic Indicators
- OECD: Organisation for Economic Cooperation and Development
- QFAGG: quarterly financial accounts for general government
- QNA: quarterly national accounts
- QSA: quarterly non-financial sector accounts

- S.1: total economy institutional sector
- S.11: non-financial corporations institutional sector
- S.12: financial corporations institutional sector
- S.13: general government institutional sector
- S.14: households institutional sector
- S.15: non-profit institutions serving households institutional sector
- S.1M: households and non-profit institutions serving households institutional sectors
- SDMX: Statistical metadata and data exchange standard
- SGP: Stability and Growth Pact
- SNA 2008: System of National Accounts 2008
- SUIOT: supply and use, input-output tables
- ULC: Unit labour cost

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Quality report on National and Regional Accounts

2018 DATA

This document presents Eurostat's assessment of the quality of the national and regional accounts transmitted in the year 2018 by the EU Member States, Iceland, Norway and Switzerland, and information on Eurostat's publications of European aggregates. The quality report contains the third assessment of results since the start of data transmission according to the European System of Accounts (ESA 2010) on 1 September 2014. In general, data sent in 2018 were in line with the ESS quality standards and the ESA 2010 Regulation, and Member States have shown improvements in complying with the new data requirements and methodology. The process of adapting national data compilation systems will continue until 2020.

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