



# **Evaluation of DG ECFIN Forecasting Services ECFIN- 108-2016/S12.738721**

Final Report

Written by ICF Consulting Services in  
association with DIW Berlin, NIESR and  
OFCE

December 2017





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## List of abbreviations and acronyms

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<b>ACOR</b>	Advisory Committee on the Union's Own Resources
<b>AGS</b>	Annual Growth Survey
<b>AMR</b>	Alert Mechanism Report
<b>AR</b>	Autoregressive model
<b>ARMA</b>	Autoregressive Moving Average
<b>BM</b>	Bridge Model
<b>BMPE</b>	Broad Macroeconomic Projection Exercise
<b>BVAR</b>	Bayesian Vector Autoregression
<b>CDO</b>	Country Desk Officers
<b>CGE</b>	Computable General Equilibrium
<b>CIS</b>	Commonwealth of Independent States
<b>COMPASS</b>	Central Organising Model for Projection Analysis and Scenario Simulation
<b>CPI</b>	Consumer Price Index
<b>DBP</b>	Draft Budgetary Plans
<b>DFM</b>	Dynamic Factor Model
<b>DSGE</b>	Dynamic Stochastic General Equilibrium Model
<b>EBA</b>	European Banking Authority
<b>EC</b>	European Commission
<b>ECB</b>	European Central Bank
<b>ECM</b>	Error Correction Model
<b>ES</b>	European Semester
<b>ESM</b>	European Stability Mechanism
<b>ESO</b>	European Semester Officer
<b>ESRB</b>	European Systemic Risk Board
<b>EU</b>	European Union
<b>EUROMIND</b>	Euro area monthly indicator of economic conditions
<b>FDMS</b>	Forecast Data Management System
<b>FM</b>	Factor model
<b>FRBA</b>	Federal Reserve Bank of Atlanta
<b>FRBNY</b>	Federal Reserve Bank of New York
<b>FSC</b>	Forecast Steering Committee
<b>FTF</b>	Forecast Task Force
<b>GDFM</b>	Generalized Dynamic Factor Model
<b>GDP</b>	Gross Domestic Product
<b>GIMF</b>	Global Integrated Monetary and Fiscal Model

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<b>GPM</b>	Global Projection Model
<b>GVAR</b>	Global VAR
<b>HICP</b>	Harmonized Index of Consumer Prices
<b>IEO</b>	International Environment Outlook
<b>IMF</b>	International Monetary Fund
<b>LIN</b>	Linear Model
<b>MAE</b>	Mean Absolute Error
<b>MCMC</b>	Monte Carlo Markov Chains
<b>MENA</b>	Middle East and North Africa Region
<b>MFVAR</b>	Mixed Frequency VAR
<b>MIDAS</b>	Mixed Data Sampling
<b>MLRG</b>	Medium- to Long-Run Growth
<b>MPC</b>	Monetary Policy Committee
<b>MPE</b>	Macroeconomic Projection Exercise
<b>MS</b>	Member States
<b>MSE</b>	Mean Square Error
<b>NAWM</b>	New Area Wide Model
<b>NE</b>	New Eurocoin
<b>NMCM</b>	New Multi-Country Model
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>OLS</b>	Ordinary Least Squares
<b>PCA</b>	Principal Component Analysis
<b>PLS</b>	Partial Least Squares
<b>PVAR</b>	Panel VAR
<b>RMSE</b>	Root Mean Squared Error
<b>SNA</b>	System of National Accounts
<b>SSM</b>	Semi Structural Models
<b>SVAR</b>	Structural Vector Autoregressive model
<b>VAR</b>	Vector Autoregressive model
<b>TCE</b>	Trade Consistency Exercise
<b>TVP</b>	Time-Varying Parameter Model
<b>UK</b>	United Kingdom
<b>UN</b>	United Nations
<b>US</b>	United States
<b>U-MIDAS</b>	Unrestricted Mixed Data Sampling
<b>VARMA</b>	Vector Autoregressive Moving Average



## **Abstract**

DG ECFIN's Economic Forecast is one of the major products of the DG feeding, inter alia, into fiscal surveillance in the context of European Semester cycle and the formulation of economic policies of prime importance. There are currently three macroeconomic forecasts produced per year: Winter Economic Forecast in February, Spring Economic Forecast in May and Autumn Economic Forecast in November. They cover a comprehensive set of macroeconomic variables for the EU, its individual Member States and the euro area, as well as for some of the world's major economies, and countries that are candidates for the EU membership. Variables are forecasted over the horizon of up to 2½ years, with an additional year being added in each autumn forecast. With a few exceptions, data is generally published on an annual basis. The production of the forecasts involves a major institutional effort with approximately 150 staff members engaged in each round. Results from the forecasts attract also a significant attention, from general public and mainstream media to professional researchers and economists in public administration, academia and financial industry. DG ECFIN's forecasts enjoy a considerable communication support provided by the European Commission's services. The independent evaluation examined the planning, implementation, operational risks, tools, outputs, communication and effects of DG ECFIN's forecasting activities.

## Executive Summary

This report presents the results of the evaluation of the DG ECFIN's Forecasting Services. The evaluation was commissioned by the Directorate-General for Economic and Financial Affairs (DG ECFIN). It was prepared by the ICF in association with German Institute of Economic Research (DIW), National Institute of Economic and Social Research in the UK and the French Economic Observatory.

### DG ECFIN's Economic Forecasts

The production of the Economic Forecasts is one of the major activities of the DG Economic and Financial Affairs (DG ECFIN) in the framework of its fiscal surveillance of the EU and the euro area as well as in the context of support of its economic dialogues with third countries, and its participation in international fora.

DG ECFIN currently produces three macroeconomic forecasts per year namely, Winter Economic Forecast (publication in early February), Spring Economic Forecast (publication in early May) and Autumn Economic Forecast (publication in early November). The frequency and the scope of those forecasts may, however, change in the foreseeable future.

DG ECFIN's Economic Forecasts cover a comprehensive set of macroeconomic variables for the EU, its individual Member States and the euro area, as well as for some of the world's other major economies and countries that are candidates for EU membership. Forecasts extend over a horizon of up to 2½ years, with an additional year being added in each autumn forecast. Data is generally published on an annual basis, with quarterly data being additionally published for real Gross Domestic Product (GDP) and Harmonised Index of Consumer Prices (HICP).

DG ECFIN's Forecasts are produced by country desk officers using expert judgement where the EU and euro area wide data are obtained by aggregation. Unit ECFIN A3 provides analysis at the level of the EU and euro area and ensures the economic and numerical consistency of the desks' forecasts. Forecasts are typically intensive exercises involving regularly around 150 staff in each round, including also limited number of experts from other DGs of the European Commission.

DG ECFIN Forecasts' results are published in the Commission's *Institutional Papers* series three times a year (February/May/November) in the form of the main forecast publication, and in sync with the requirements of the European Semester. The main forecast publication is a DG ECFIN's flagship product which is supported by a wide range of communication activities and receives the highest attention among all DG's publications both, internally and externally.

### Purpose of the evaluation

The objective of this study was to evaluate DG ECFIN's forecasting activities with a view to support organisational learning and to explore whether there is scope for improvement, particularly around the organisation and management of DG ECFIN's forecasting activities, its approach to forecasting and its communication of the forecast results.

The evaluation took into account the findings from the previous evaluation of DG ECFIN's forecasting activities carried out in 2007, and sought to draw on the

subsequent lessons from the Great Recession and sovereign debt crisis, as well as changes in users' needs and relevant innovations in the field of forecasting. Specifically, it examined the planning and implementation of the forecast production process, relevant operational risks, tools that have been used by DG ECFIN forecasters, main outputs and the communication activities surrounding DG ECFIN's forecast. While doing so, it also took into account, inter alia, practices followed by other organisations including ECB, IMF and OECD, as well as the leading private forecasting organisations.

## **Summary of conclusions and recommendations**

### **Content, scope and use of the forecast**

The evaluation concludes that the current content and scope of the DG ECFIN forecast is relevant. The current set of projected variables is adequate and there is very little appetite among stakeholders for additional ones. This is also true for DG ECFIN's surveillance process where the current set of variables is considered sufficient. In terms of more ample use of quarterly data (beyond GDP and HICP), there seems to be limited demand. One area where the current scope of analysis could be made more relevant is the analysis of financial flows. This should include the use of financial market variables in the nowcasting and forecasting models and the consistent projection of financial variables (e.g. loans to NFCs and households and house prices) in the forecasting process.

Considering the use of the forecast within the European Commission, it plays a fundamental role as a common reference point in the surveillance process, in particular in Spring and Autumn, and feeds into policy formulations of prime importance. The forecast is also used as an input for estimations carried by a number of organisations (e.g. EBA, ECB or OECD) while country-level analysis is typically widely sought by users outside the EU institutions. Although some minor issues were noted and could be addressed (e.g. insufficient discussion on risks, 'fixed' length of country notes that may constrain the content for larger Member States), the main publication is well received and the current balance between the presentation of the forecast figures and analysis is seen as adequate.

There is no consensus across consulted stakeholders whether there should be three fully-fledged forecasts per year or a '2+2' system with two fully-fledged and two interim forecasts. Both imply certain trade-offs. The shift to a new '2+2' system could free-up some capacity of country desk officers and would resemble to the systems used by other organizations (e.g. OECD).

### **Production process of the forecast**

The DG ECFIN's forecast production process is effective. Forecast procedures are adequate to ensure high forecast accuracy and (cross-country) consistency, and new information is integrated efficiently in the forecast. While the forecast procedures are not immune to typical operational risks (e.g. unexpected absence of team members due to sickness; IT-related risks), potential risks seem comparable to those in other multilateral institutions – like the ECB or the IMF – and do not seem to play an important role in practice; in particular, backup procedures appear to work well.

Yet, there is some room for improvement in the production process. For instance, the accuracy of the forecast should be evaluated more broadly and systematically, and consistency in terms of financial flows could be monitored. Clear rules regarding the documentation of critical infrastructure would support the forecast processes' resilience in the event of unforeseen disturbances.

The study team finds that DG ECFIN forecast processes support the independence of the staff when preparing the forecast. Some staff members mention potential obstacles to independence though, and one country desk officer reports to have experienced politically motivated pressure from within DG ECFIN. However, these do not hamper the independence of the forecast at an institutional level and reflect the top-down elements which are part of DG ECFIN's forecasting process. From a user perspective, both users in the Commission and more broadly stakeholders from non-EU organizations, expressed the firm impression that forecasts are prepared by the staff independently.

Reliance on modelling outputs in DG ECFIN's core forecasting activities is limited compared to other multilateral institutions, but also compared to a majority of professional forecasters in other institutions such as public and private research institutes and government agencies. The model infrastructure of DG ECFIN is under-developed and does not reflect the current state of the (practical forecasting) literature. Horizontal units should focus on developing a multi-country semi-structural model to improve the consistency of the forecast. Model development at the country desk level should focus on additions to the nowcasting infrastructure; mixed frequency approaches (potentially including financial market variables) are a promising option. Support and regular training for country desk officers regarding these methods should be provided while round-tables could further facilitate the exchange of knowledge, an aspect that is already clearly present in the institution. However, the dominant reason for the limited use of advancements in forecasting methods appear to be resource constraints.

The FDMS+ and the standard Excel forecast sheet, two primary tools, are widely used and perceived as useful. Generally though, it may be beneficial to reduce the complexity of those tools and improve their documentation.

The management of in-house knowledge could be improved. The frequency and scope of formal training could be widened; informal knowledge flows could be better organised and follow mandatory processes.

### **Communication activities related the forecast**

Overall, the study finds no rationale based on collected evidence to change the communication strategy towards the forecast. This concerns also the type of audiences that are being considered as a focus of communication activities.

The precise comparison of the level of the media coverage is challenging, also due to lack of sufficient data. Generally, the IMF forecast appears to attract greater media attention and coverage, while the coverage of DG ECFIN forecast seems higher than the one of OECD and ECB projections. Nonetheless, any benchmarking of media coverage (but also communication strategies/activities/outputs), needs to be done

with caution and take into account the inherent differences between DG ECFIN, IMF, OECD and ECB forecasts' products, their purposes and existing constraints.





## **1 Introduction**

### **1.1 This report**

This is the Final Report for an independent, external evaluation of Directorate of Economic and Financial Affairs (DG ECFIN) forecasting services. The evaluation study was undertaken by ICF on behalf of DG ECFIN. This section introduces the evaluation study by describing the objectives and scope of the evaluation before presenting the structure of this report.

### **1.2 Scope and the objectives of the evaluation**

The main objectives of this evaluation are:

- to support organisational learning; and
- to identify areas for improvement, particularly around the organisation and management of forecasting activities, approach to forecasting and communication of the forecast results.

The evaluation examines the planning, implementation, operational risks, tools, outputs, communication and effects of DG ECFIN's forecasting activities<sup>1</sup>. It considers these forecasting activities in the broader context of other activities of DG ECFIN and in the context of DG ECFIN being one provider of macroeconomic forecasts among many outside the European Commission.

In support of the above objectives, the Terms of Reference (ToR) provided evaluation questions for this study to address. These were encapsulated in 13 specific evaluation questions that fall under five evaluation criteria: relevance, effectiveness, efficiency, EU-added value and coherence.

### **1.3 Structure of this report**

The remainder of this Report is structured as follows:

- Section 2 provides an overview of the operational implementation of the DG ECFIN forecast exercise and its context;
- Section 3 elaborates on the methodological approach;
- Section 4 provides results of the assessment against each of the five evaluation criteria;
- Section 5 outlines conclusions; and,
- Section 6 presents the list of recommendations.

The main report is supported by the following annexes:

- Annex 1: Evaluation Framework;
- Annex 2: Completed work, caveats and limitations;
- Annex 3: List of completed interviews;
- Annex 4: On-line questionnaires;

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<sup>1</sup> Surveillance processes (e.g. fiscal and macroeconomic imbalances) are outside the scope of this evaluation.

- Annex 5: On-line survey of professional forecasters and subscribers to DG ECFIN's publications;
- Annex 6: Results of analysis – literature review;
- Annex 7: Comparative benchmark analysis;
- Annex 8: Overview of ECB, ECFIN, IMF and OECD forecasts related to communication activities and outputs;
- Annex 9: References;
- Annex 10: European Semester – examples of forecasts as inputs into the process

## 2 Overview of DG ECFIN's forecasting services

The preparation of macroeconomic European Economic Forecasts is a core task of DG ECFIN. It provides an important basis for the EU's fiscal and overall macroeconomic surveillance in the context of the European Semester (ES), the Macroeconomic Imbalance Procedure, and the Stability and Growth Pact. Section 2.1 discusses the processes and tools underpinning the production of the forecasts as well as the key forecasting outputs, communication and dissemination activities undertaken. Section 2.2 describes the overall EU framework for macroeconomic surveillance and how ECFIN forecasts feed into this framework.

### 2.1 Overview of ECFIN's forecasting outputs and processes

DG ECFIN's Economic Forecasts cover a comprehensive set of macroeconomic variables for the EU, its individual Member States and the euro area, as well as for some of the world's other major economies and countries that are candidates for EU membership. Forecasts extend over a horizon of up to 2½ years, with an additional year being added in each autumn forecast.

DG ECFIN's forecasts are published in the Commission's *Institutional Papers* series three times a year (February/May/November) in sync with the requirements of the ES. The published document starts with an overview of around five pages and contains two main parts. Part 1 of around 50 pages describes the outlook for the euro area and the EU. This part of the document is split into nine sections: broad description of the forecast, external environment, financial markets, GDP and its components, the labour market, inflation, public finances, macroeconomic policies in the euro area, and finally a risks section. Part 2 provides the analysis of the economic situation and outlook for each of the 28 EU Member States, candidate countries and other non-EU countries covered in the forecasting exercise (see below), with two pages being allocated per country. Several thematic boxes highlighting issues relevant for the current forecast are provided between Part 1 and Part 2. Although there is no fixed number of boxes, the forecast documents include around three to four thematic boxes, followed by a box providing technical elements (among those: cut-off date for taking new information into account exchange and interest rates, commodity prices, budgetary data and forecasts, calendar effects on GDP growth and output gaps). The document includes an extensive statistical annex and boxes with background or in-depth information.

In the forecast report, data is generally published on an annual basis, with quarterly data being additionally published for real Gross Domestic Product (GDP) and Harmonised Index of Consumer Prices (HICP). The following variables are covered in the published version of the forecasts:<sup>2, 3</sup>

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<sup>2</sup> Except otherwise stated in the list, the variables are shown as percentage change from corresponding period (year or quarter)

- **EU-28 (by country) + USA, Japan, Russia, Norway, Switzerland, Iceland, candidate countries:**
  - GDP (incl. quarterly) and components in real terms
  - GDP per capita
  - Public investment, % of GDP
  - Potential GDP; and Output Gap % of potential GDP<sup>4</sup>
  - Deflators of GDP, private consumption, exports of goods and imports of goods
  - HICP (incl. quarterly)
  - Population, employment and unemployment rate (% of labour force)
  - Nominal and real compensation of employees per capita
  - Labour productivity, real and nominal unit labour costs
  - Nominal bilateral exchange rates (against ECU/euro) for non-euro area countries; nominal and real effective exchange rates relative to rest of a group of 37 industrialised countries
  - General government revenues and expenditures, % of GDP, of which: interest expenditures, % of GDP, general government net lending/borrowing, % of GDP
  - General government primary fiscal balance, cyclically adjusted balance, cyclically adjusted primary balance, and structural balance (two latter only for EU Member States, euro area and EU aggregate)
  - General government public gross debt, % of GDP (only EU Member States, euro area and EU aggregate)
  - Gross national saving and gross saving of private sector, households, general government, % of GDP
  - Net lending/borrowing of the economy, merchandise trade; current account balance, % of GDP
  - Export shares in EU trade, import share in EU trade (EU Member States, euro area and EU aggregate)
- **Other non-EU countries and regions: Canada, Japan, Korea, Australia, New Zealand, CIS, MENA, Emerging and developing Asia, China, India, Indonesia, Latin America, Brazil, Mexico, Sub-Saharan Africa, World:**
  - GDP
  - Exports and imports of goods and services
  - Trade and current account balance (only published for regional aggregates — Commonwealth of Independent States (CIS), Middle East and North Africa Region (MENA), Emerging and Developing Asia, Latin America, Sub-Saharan Africa — and China)

<sup>3</sup> For internal purposes, the forecasting team projects some 180 variables per country (EU-28); only a fraction of these variables is made public, however. See subsection 0.

<sup>4</sup> According to section 2.2 of the tender specifications, the methodology of estimating potential GDP and output gaps is not within the scope of this evaluation.

- **Commodity prices:**

- Food
- Basic materials, of which: agricultural non-food, wood and pulp, minerals and metal
- Fuel products, of which: crude petroleum (Brent)

### **2.1.1 Production process**

The production of DG ECFIN's Spring and Autumn forecasts follows the process illustrated below in Figure 1. While the Spring and Autumn forecasts involve three iterations, only two iterations take place for the Winter forecast.

As a starting point, Unit A3 (Economic situation, forecasts, business and consumer surveys) within DG ECFIN establishes the forecast calendar.

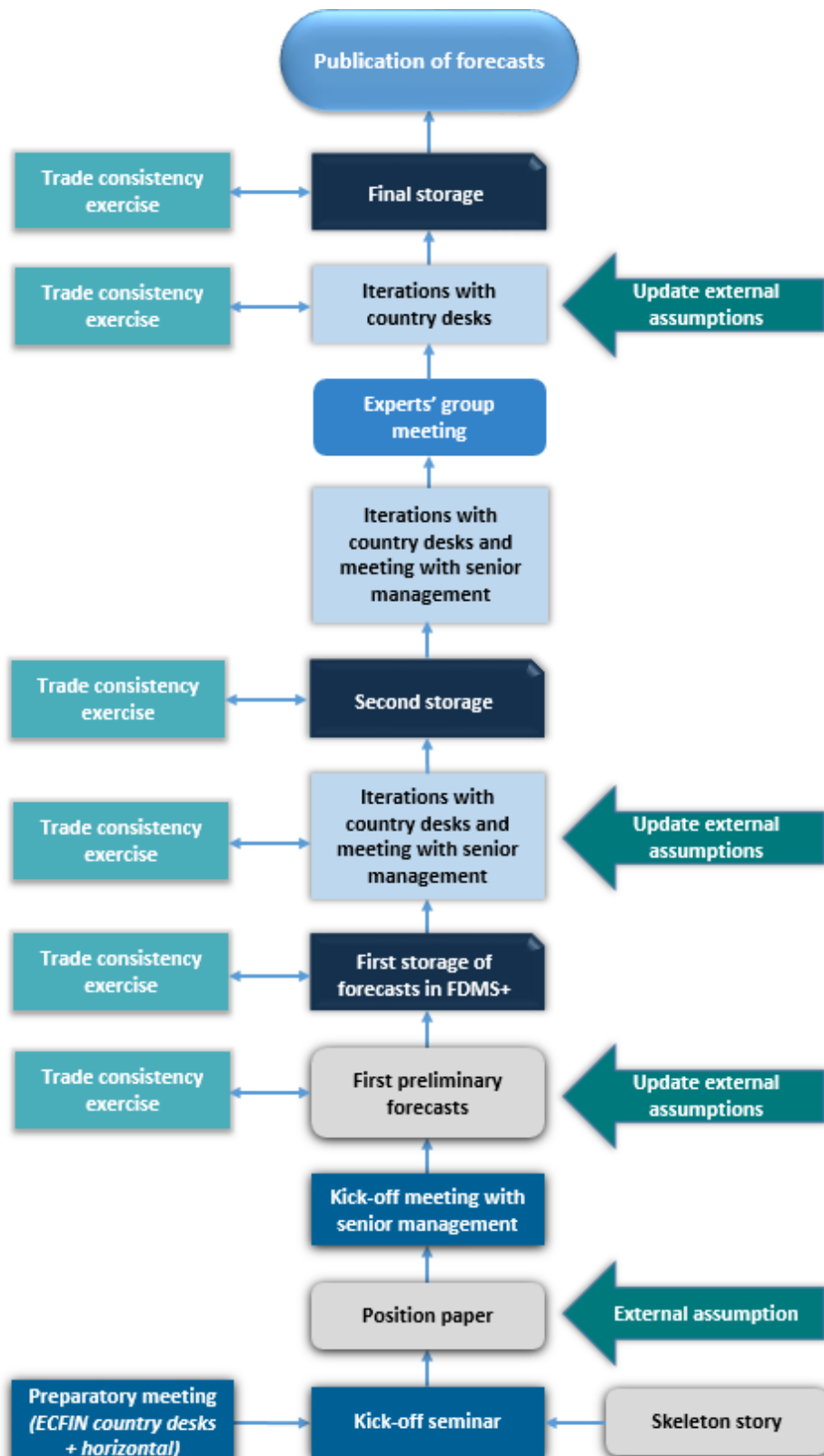
The next step is for the team of the horizontal forecast unit A3 to draft a skeleton story, a summary of the outlook for the EU and the euro area of approximately five pages. The writing is informed by informal meetings with DG ECFIN country desks<sup>5</sup> of the large Member States as well as the DG ECFIN unit dealing with the global economy and the one dealing with monetary policy and exchange rates. Unit E1 of Directorate-General Financial Stability, Financial Services and Capital Markets Union (DG FISMA) is also invited to share latest developments on the financial markets and in the banking sector. This skeleton story is then submitted to DG ECFIN's senior management team, where it is discussed and, after the discussion, adapted to reflect the views of senior management.

The skeleton story is circulated to all forecast participants, together with other background information and the first set of external assumptions e.g. economic developments in the rest of the world, raw commodity prices, interest rates and exchange rates which are projected by the international team of Directorate D and Unit C3 of DG ECFIN respectively. With respect to interest rates and raw commodity prices, technical assumptions based on market views are used. Nominal exchange rates are assumed to remain unchanged.

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<sup>5</sup> Before each forecasting round, ECFIN country desk officers typically carry out one to two missions in the Member States. During these missions, contacts are made with: central banks, ministries, research institutes)

Figure 1 DG ECFIN forecast: production process<sup>6</sup>



<sup>6</sup> The diagram visualizes the typical production process for the spring and autumn forecast. In the winter forecast, only two storages and no experts group meeting take place.

The (possibly refined) skeleton story and the external assumptions are then combined with information from DG ECFIN's horizontal units (e.g. on financial markets, monetary policy and public finances) and some background material (latest sentiment indicators, procedural information on the forecast process) in a position paper. A kick-off meeting is arranged involving the country desks, experts from horizontal units, and DG ECFIN's senior management to discuss – on the basis of the position paper – the outlook for the euro area and the larger Member States systematically; other Member States' desks can intervene if there are major developments.

This meeting provides the basis for the first preparation of preliminary quantitative forecasts for the Member States. Forecasts are – at this and later stages – subject to various consistency checks, with the most important one being the trade consistency exercise (TCE) to ensure that trade flows projected for different countries fit together.<sup>7</sup> In case of inconsistencies, multiple iterations follow which are expected to lead to a consistent outcome. Projections are then stored in the forecast data management system (FDMS+).

Further iterations and a presentation to DG ECFIN's Director General follow, which lead to a further refinement of the quantitative projections. This culminates in the second storage on FDMS+, followed by a forecast meeting. The main issues related to the economic outlook are discussed at a meeting with Member States' experts in the Autumn and Spring rounds which usually takes place after the second storage. This meeting allows desks to have bilateral discussions with their national counterparts, followed by possible re-adjustments. A final storage constitutes the basis for the publication of the forecast document. The text elements of the forecast documents are drafted in parallel to the preparation of the numbers, with thematic boxes typically being available at a comparably early stage.

### **2.1.2 Tools and methodology**

The forecasts are produced by country desk officers using individual country models, econometric tools and expert judgement. Forecasts are collected – together with historical data – and aggregated in FDMS+. The country desks' central tool is a standardised forecast Excel sheet covering some 180 variables in monthly, quarterly or annual terms; this was initially developed for Belgium, but may have since then evolved depending on the country. The standard Excel sheet serves as a tool for consistency checking in the framework of the System of National Accounts (SNA) and automatically creates the "transfer matrix", which is uploaded to FDMS+ by statistical assistants and/or desk officers; FDMS+ output files such as horizontal and country tables as well as the Statistical Annex are then stored in a SharePoint environment to be easily accessible for forecast participants.

The technique used to prepare the forecast is explained by DG ECFIN as an iterative analytical process, based on combining detailed knowledge of the current state of the business cycle with "stylised facts". Occasionally, simple econometric bridge models based on coincident and leading indicators (including, but not limited to DG ECFIN's Business and Consumer Surveys) are used for nowcasts and very short-term projections, in particular of GDP demand-side components and labour market developments. Beyond the very short-term, forecasts are typically based on expert judgement and a reversion to potential GDP by the end of a five-year horizon, taking into account changes in external assumptions and the policy environment; for some countries, simple macroeconomic models exist to ensure within-country quantitative

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<sup>7</sup> In the TCE, (i) the volume of (separately) exports of goods and services forecast for a given country by its country desk is compared with the weighted forecast volume of imports from the trading partners, and (ii) import prices for that country are compared with the weighted forecast export prices for its trading partners.

consistency. The forecast of public finances takes into account the macroeconomic and labour market outlook, demographic trends as well as discretionary changes based on the national government's official budget; typically, substantial expert judgement is involved. For the forecast of inflation, a standard Excel file is available and broadly used, taking into account assumptions on commodity prices and raw materials.

No single model is employed to prepare the quantitative projections; instead, consistency is ensured by a number of cross-country and cross-variable checks. Large-scale models – including dynamic stochastic general equilibrium (DSGE) and non-structural models – are used for scenario analyses.

An important feature of the forecasting exercise performed by DG ECFIN is the “no policy change” assumption. As an example: Fiscal expenditures are expected to grow in line with past trends, unless there is a change in legislation. On the revenue side, the assumption is essentially the same, unless a change in the rules is already fully legislated or a plan sufficiently certain. For other policy areas, a similar approach is employed.<sup>8</sup> Generally speaking, DG ECFIN forecasts thus are not conditioned on legislation that is not already in place or is associated with more than only a very limited degree of uncertainty. In the forecasting exercise, DG ECFIN's approach instead is to account for those and – at the same time – all other risks and uncertainties in a fan chart.

### **2.1.3 Sources of information**

All country desk officers use the AMECO database<sup>9</sup>, Eurostat and European Central Bank (ECB) data and the respective national statistical office. In addition, country-specific sources – including ministries, national central banks, research institutes – provide important data. In addition, consensus forecasts, International Monetary Fund (IMF) and Organisation for Economic Co-operation and Development (OECD) data is also used as a benchmark. Currently, units also have access to a wide set of worldwide data via Global Insight. Having access to a data provider is especially useful for the economists working on countries outside the EU, although data availability varies depending on countries for example, more data are available for the US than for China).

### **2.1.4 Overview of communication and dissemination activities undertaken and stakeholders involved**

#### **2.1.4.1 Communication and dissemination activities**

In general, the number of communication activities around the forecast is considerable and has been further extended during the last 2-3 years. They differ by nature and scope and include, *inter alia*, the following activities:

- Events:
  - Winter/ Spring/ Autumn Economic Forecast Press Conferences:

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<sup>8</sup> See for a detailed description of the no-policy change assumption European Commission (2016), Report on Public Finances in EMU 2016, European Economy Institutional Paper 045, December 2016, section II.1.

<sup>9</sup> AMECO is both a resource and an essential output of the forecasting activity of DG ECFIN. This annual macro-economic database contains data for the EU-28, the euro area, the EU Member States, the candidate countries and other OECD countries (United States, Japan, Canada, Switzerland, Norway, Iceland, Mexico, Korea, Australia and New Zealand). It covers the period from 1960 to the horizon of the latest available forecast and provides DG ECFIN and other Commission Services with a valuable set of consistent data. It provides a common basis for the analytical work of DG ECFIN and for the simulation models and exercises. It is made available to the public via the website of DG ECFIN.

- Technical briefing with journalists following the Press Conference.
- Press release document.
- Thematic seminars organised for journalists where discussion on DG ECFIN forecast is a standalone point of the agenda.
- Dissemination tools:
  - DG ECFIN webpage designated specifically to the forecast, with an email sent to subscribers to DG ECFIN's newsletter to inform about the forecast publication.
  - E-news with 'top story'10 devoted to the forecast close to the publication date.
  - Main economic forecast publication.
  - Video podcasts with headline results and narrative.
  - Infographics as part of the 'Graph of the Week' display.
  - Social media e.g. tweets/ posts via selected Twitter and Facebook accounts.
- Activities related to monitoring of the 'consumption' of forecasts:
  - Media coverage of the forecasts (some relatively basic analysis of the press coverage undertaken within DG ECFIN has been complemented recently by more systematic and in-depth assessment provided by an external contractor.
  - Some basic information on engagement and reach via social media collected internally has been complemented recently by systematic and in-depth social media analysis (Twitter and Facebook) provided by the external contractor.
  - Web statistics related to number of views/ downloads<sup>11</sup> of the forecast publication are collected (no disaggregation on EC/ non EC users though);

#### 2.1.4.2 Stakeholders involved in the communication activities

The following stakeholders within the European Commission are directly involved in the planning and actual delivery of communication activities in support of DG ECFIN's economic forecasts:

- DG ECFIN, and in particular Units A3 and A4, bear responsibility for the preparation of the main forecast publication, drafting of the press release and 'defensive lines', and for the contribution to the PowerPoint presentation and underlying commentary used by the Commissioner during DG ECFIN's press conference. Units A3 and A4 prepare also social media content and Forecast video.
- A member of the Cabinet who get involved in several stages of the preparation of the main forecast publication, largely with editorial contributions. A member of the Cabinet also contributes, *inter alia*, to the press release document and the PowerPoint presentation used by the Commissioner.

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<sup>10</sup> See example available at: [http://ec.europa.eu/newsroom/ecfin/newsletter-specific-archive-issue.cfm?newsletter\\_service\\_id=199&newsletter\\_issue\\_id=3563&page=1&fullDate=Sun%2005%20Nov%202017&lang=default](http://ec.europa.eu/newsroom/ecfin/newsletter-specific-archive-issue.cfm?newsletter_service_id=199&newsletter_issue_id=3563&page=1&fullDate=Sun%2005%20Nov%202017&lang=default)

<sup>11</sup> Monitoring of the number of downloads of podcasts took place in the past but has been discontinued



- The spokesperson service in DG Communication is involved in refining the press release document, the final PowerPoint presentation as well as moderation of the press conference. It acts as a key contact point with the media representatives. Some staff from other sections of DG Communication are also involved in the preparation of the video podcasts and infographics.

## 2.2 EU framework for macroeconomic surveillance

The ES was introduced in 2010, and it “provides a framework for the coordination of economic policies between the countries of the European Union”<sup>12</sup> with macroeconomic surveillance being an integral part of this process.

Four primary goals of the ES, which in turn effectively determine the macroeconomic indicators that are most essential, are:

- ensuring sound public finances;
- prevention of excessive macroeconomic imbalances in the EU;
- support of structural reforms; and,
- fostering of investment

The ES cycle involves, albeit to varying degrees, five main stakeholders, namely the European Commission, Council of the EU, EU Member States and the European Parliament.

In broad terms, the ES cycle is composed of five general phases spread along the calendar year from November to October of the subsequent year, namely:

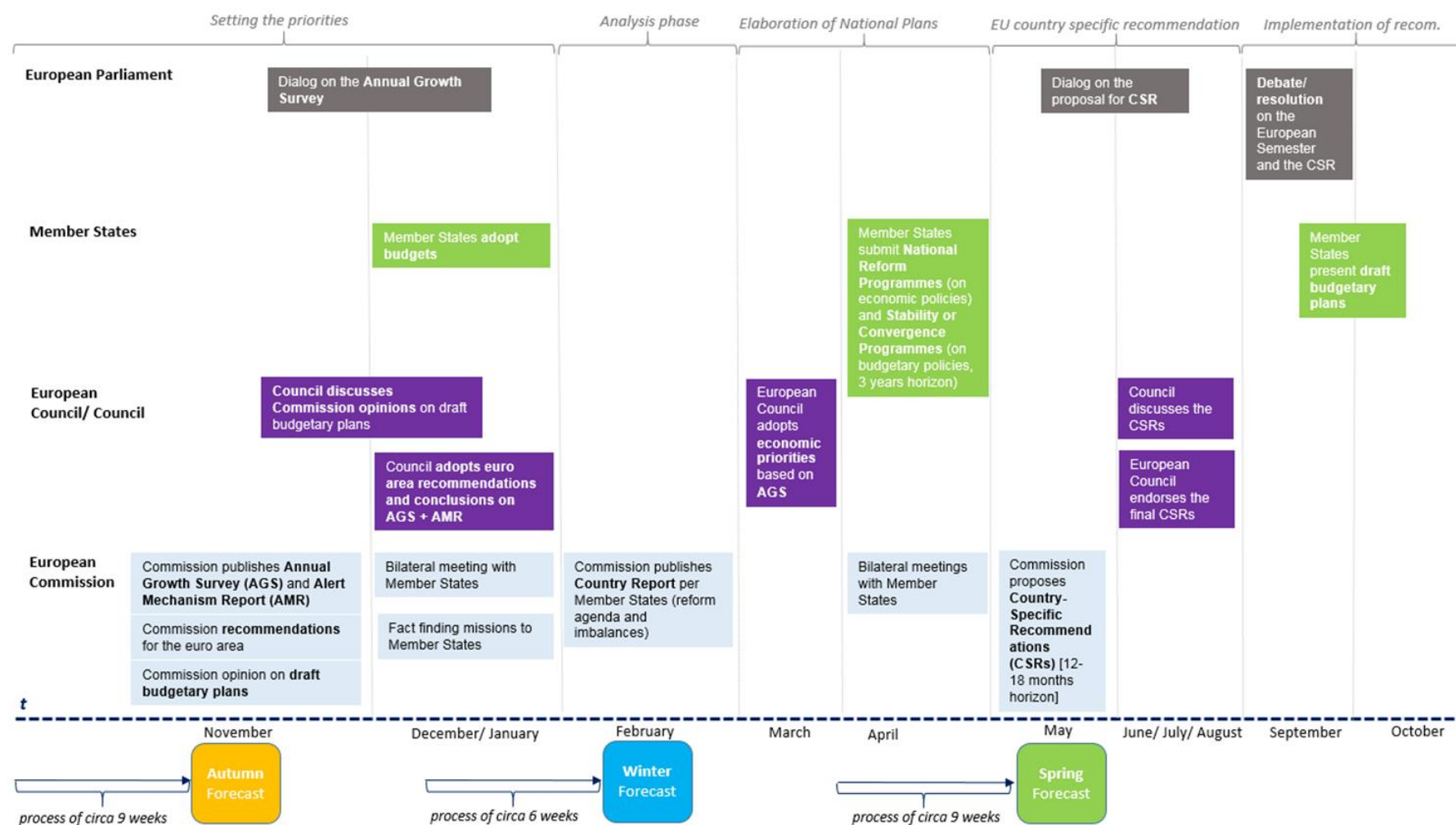
- priorities setting;
- analysis;
- elaboration of national plans;
- formulation of EU country-specific recommendations; and
- implementation of recommendations.

Figure 2 outlines the ES timeline as well as the timing of the three forecasts. It should be read in conjunction with the description of each phase that follows in order to note where, how and to what degree DG ECFIN forecasts play a role in the ES.

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<sup>12</sup> European Commission, 2017. The European Semester. Available at: [https://ec.europa.eu/info/strategy/european-semester/framework/european-semester-why-and-how\\_en](https://ec.europa.eu/info/strategy/european-semester/framework/european-semester-why-and-how_en)

Figure 2 European Semester cycle and DG ECFIN forecasts – timeline



### 2.2.1 Phase 1: Priorities setting

The ES cycle kicks off in autumn when the European Commission sets-out general economic priorities for the EU Member States for the following year (year N+1). The cycle is launched with the publication of *Annual Growth Survey (AGS)* in November, Year N, which sets these priorities in three interrelated areas – investment, structural reforms and fiscal policies – for a period that is not explicitly determined but is typically short-term (between one year and one-and-a-half years), although effective implementation of policies in several areas requires a longer perspective. This in turn explains the significant degree of continuity between subsequent annual AGS reports. Although to a fairly limited degree, the DG ECFIN autumn forecast feeds into the analysis underpinning the AGS reports and is usually explicitly cited (see Annex A10.1).

The AGS is accompanied by several additional documents:

- *Council Recommendation on the economic policy of the euro area*. The recommendations contained in this document focus on issues that are critical for the proper functioning of the euro area and suggest concrete measures that national governments can implement. The accompanying Staff Working Document (“Report on the euro area”) provides an analysis of the current macroeconomic situation and outlook for the euro area. Fiscal stance is given high prominence in these documents and the DG ECFIN autumn forecast is, *inter alia*, used for this analysis.
- *Alert Mechanism Report (AMR)*. AMR uses a scoreboard of 14 specific indicators<sup>13</sup> along with a set of 25 auxiliary indicators to screen Member States for potential economic imbalances that need a policy action. The Autumn forecast is more extensively referred to in AMR reports than AGS (see Annex A10.2) and the ‘weight of argument’ appears greater in the AGS report than for the AMR report given that it is used to back-up the claim about urgency to address imbalances at the EU level but also by specific Member States.
- *Assessment of the draft budgetary plans* of the euro area Member States for the following year. This is in particular to gauge the degree to which plans comply with the requirements of the Stability and Growth Pact.

### 2.2.2 Phase 2: Analysis

The analysis phase kicks off in February (year N+1). Here, the Commission publishes the *Country Reports (CRs)* which examine the economic situation and key policies in each Member State. CRs also provide an explicit assessment of progress in implementation of the previous years’ CSRs and serve as the basis for discussion with Member States of their national policy choices ahead of their National Programmes in April (see Phase 3), and lead to the formulation in late spring of the Commission's Country-Specific Recommendations (see Phase 4)<sup>14</sup>. Winter forecast results underpin extensively (considerable number of references – see Annex A10.3) the macroeconomic analysis and outlook presented in the CRs.

In addition, screening of the EU Member States against the AMR indicators that took place under the previous phase results in the list of Member States that in turn

<sup>13</sup> For the full list of scoreboard indicators see for instance Annex to AMR 2016. Also, note important aspect in the context of forecast as ‘...scoreboard values are not read mechanistically, but subject to an economic reading that enables country-specific issues and contextual considerations to be taken into account’

<sup>14</sup> European Commission, 2016. European Semester 2016. Available at: [http://ec.europa.eu/news/2016/02/20160226\\_en.htm](http://ec.europa.eu/news/2016/02/20160226_en.htm)

become a subject of more *In-Depth Review*<sup>15</sup> (outcome published as part of CRs in February of year N+1) to assess how macroeconomic imbalances in the Member States are accumulating or winding down. Publication of *In-Depth Reviews* is also preceded by the discussion at the European Parliament and within the Council and the Eurogroup. For those, CRs analyse whether imbalances and excessive imbalances exist and may feed into the excessive deficit procedure if it such is triggered.

### 2.2.3 Phase 3: Elaboration of National Plans

In April, the *National Reform Programmes* are presented by all Member States. Those reports appear to rely mostly on national forecast data. In addition, these reports typically cover a forecast horizon of longer than two years (see Annex A10.4).

In addition, Eurozone Member States present also their *Stability Programmes* while non-Eurozone Member States present the *Convergence Programmes*. Both focus on budgetary policies and contain, *inter alia*, three-year budget plans. More specifically, countries report on the policies they are implementing and intend to adopt to boost jobs and growth, prevent or correct macroeconomic imbalances, and on their concrete plans to ensure compliance with the outstanding EU's country-specific – and, where applicable, Eurozone – recommendations and fiscal rules<sup>16</sup>.

The degree to which the DG ECFIN winter forecast is used as a reference in *Stability/Convergence Reports* may vary between Member States and can also depend on the extent to which general macroeconomic conditions and outlook changed between February (publication of the DG ECFIN forecast) and March/ April. The review of *Stability/Convergence Reports* for Ireland, UK and Poland shows that DG ECFIN's Winter Forecast is cited, albeit typically less frequently than other sources of forecasted data, especially national ones (see Annex A10.5 for more details).

### 2.2.4 Phase 4: EU Country Specific Recommendations

Following the submission of *National Reform Programmes* and *Stability/Convergence Programmes*, the Commission moves on to their assessment which comprises also bilateral meetings with Member States. The assessment of *Stability/Convergence Programmes* relies substantially on DG ECFIN's spring forecast. Often, national forecasts are explicitly compared against the DG ECFIN forecast.

The policy challenges identified in the CRs and the assessment of *National Reform Programmes* and *Stability/Convergence Programmes* lead to the publication of *Country Specific Recommendations (CSRs)*<sup>17</sup>. DG ECFIN forecasts are crucial in the assessment of compliance with Stability and Growth Pact requirements and hence play a role in the formulation of CSRs, most prominently the ones related to the fiscal policy. Once published, the CSRs are discussed at the Council level and then endorsed by the European Council, typically in June (year N+1).

Examples of how the forecast feeds into the EU Country Specific Recommendations are provided in Annex A10.6.

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<sup>15</sup> Assessment whether imbalances or excessive imbalances exist in the country given factors such as: external accounts, savings and investment balances, effective exchange rates, export market shares, cost and non-cost competitiveness, productivity, private and public debt, housing prices, credit flows, financial system and unemployment.

<sup>16</sup> European Commission, 2017. The EU's economic governance. Available at: [https://ec.europa.eu/info/files/fact-sheet-eus-economic-governance-explained\\_en](https://ec.europa.eu/info/files/fact-sheet-eus-economic-governance-explained_en)

<sup>17</sup> Note that as a result of changes introduced in the process in 2015, number of country specific recommendations has been reduced and they also became more focused.

### 2.2.5 Phase 5: Implementation of recommendations

In the last phase that begins after summer holidays, the CSRs are debated in the European Parliament.

Here, the budgetary monitoring for Eurozone Member States also intensifies and they must submit to the Commission *Draft Budgetary Plans* (DBPs)<sup>18</sup> for the following year by the 15<sup>th</sup> of October. The Commission then assesses the DBPs against the requirements of the Stability and Growth Pact and the relevant CSRs and then issues an Opinion on each of them in November which is expected to feed into the process of finalising the national budgets. Eurozone Finance and/or Economy Ministers then discuss the Commission's assessment of the DBPs in the ECOFIN Council<sup>19</sup>.

## 3 Methodological approach

The design of the evaluation framework used for this study was guided by five evaluation criteria: *relevance, effectiveness, efficiency, EU added value and coherence*. To address each criterion and the corresponding evaluation question(s), the evaluation framework outlined sources of evidence and judgment criteria upon which the evaluation was based (Table 1 illustrates an example for evaluation question 1).

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<sup>18</sup> Exemption for Member States being under macroeconomic adjustment programmes

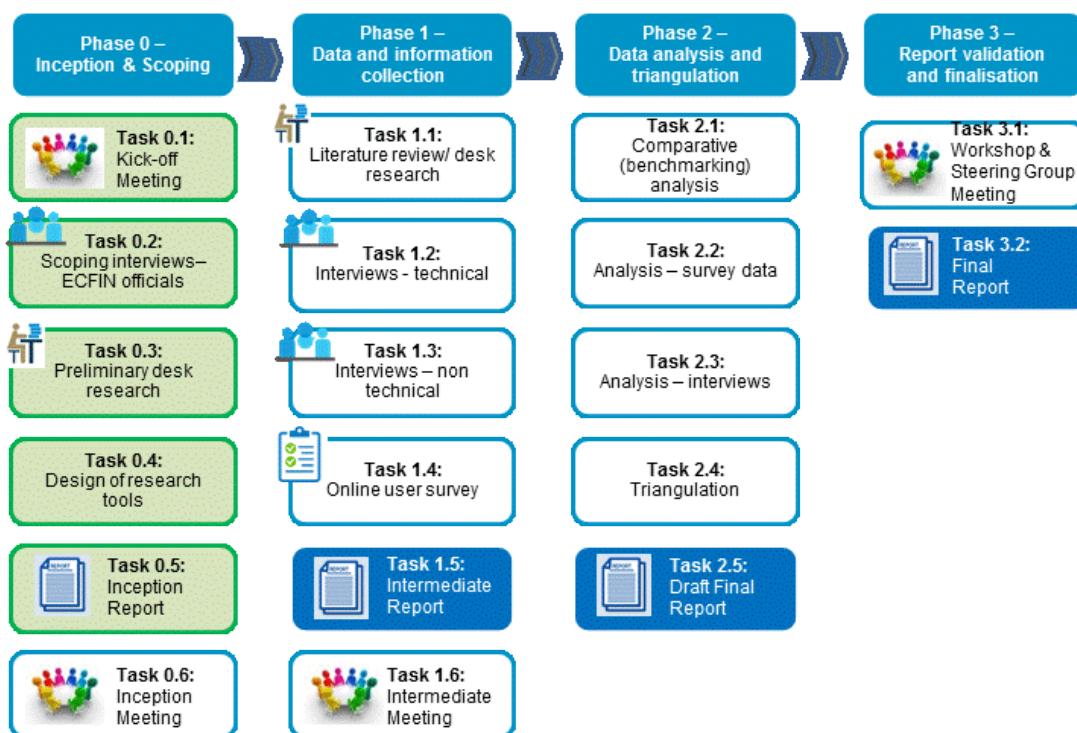
<sup>19</sup> European Commission, 2017. The EU's economic governance. Available at: [https://ec.europa.eu/info/files/fact-sheet-eus-economic-governance-explained\\_en](https://ec.europa.eu/info/files/fact-sheet-eus-economic-governance-explained_en)

Table 1 Sample from the evaluation framework – evaluation question 1

Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
<b>Relevance: Are the content and scope of the forecast suited for its objective to underpin enhanced economic surveillance?</b>			
<p>EQ1. In light of the uses of the forecast and of other forecasters' practice, does the balance between presentation of the forecast figures and analysis in the main forecast document appear adequate?</p>	<ul style="list-style-type: none"> <li>The vast majority of user groups are satisfied with the balance between forecast figures and analysis in the main forecast publication</li> <li>The balance between forecast figures and analysis in DG ECFIN publications is comparable to the balance stroke in the publications of other international forecasting institutions (e.g. ECB, IMF, OECD)</li> </ul>	<ul style="list-style-type: none"> <li>User feedback on usability of DG ECFIN's forecast document (specifically: balance between forecast figures and analysis) compared to other institutions;</li> <li>Comparative analysis – and in particular balance between forecast figures and analysis in DG ECFIN forecast publications compared to publications of other international forecasting institutions' (e.g. ECB, IMF, OECD);</li> <li>Suggestions for improvement offered by users;</li> <li>Prioritisation and feasibility of those suggestions.</li> </ul>	<ul style="list-style-type: none"> <li>Online survey of professional forecasters;</li> <li>Online survey of subscribers to DG ECFIN publications;</li> <li>Interviews with technical and non-technical users;</li> <li>Interviews with other multilateral forecasting institutions;</li> <li>Desk research including careful analysis of main publications produced by other international forecasting institutions (e.g. ECB, IMF and OECD);</li> <li>Literature review;</li> <li>Views expressed during the final workshop.</li> </ul>

The full evaluation framework is presented in Annex 1 while Figure 3 below outlines the step-by step methodology of which specific elements are detailed in Section 3.1.

Figure 3 Step by step methodology



### 3.1 Outline of approach

The evaluation was based on a combination of research and analytical methods including:

- Desk research covering, *inter alia*, internal documentation provided by DG ECFIN, previous evaluations of DG ECFIN forecast services, a sample of DG ECFIN forecast publications, and a sample of publications related to the ES Cycle;
- 15 scoping interviews with selected DG ECFIN officials, including a core management team overseeing the production of the forecast, that were conducted during the initial phase of the study;
- Interview programme encapsulating 22 ‘technical’ and 17 ‘non-technical’ semi-structured interviews with selected stakeholders;
- Two types of online surveys:
  - a survey of subscribers to DG ECFIN publications; and
  - a survey of professional forecasters involving respondents from national public administrations (e.g. central banks, treasuries, fiscal councils) as well as private sector organisations (e.g. private banks and consultancies).
- Direct observation of the EC press conference for the Spring 2017 Forecast that took place in May 2017;
- Comparative benchmark analysis focusing on the approaches to forecasting followed by selected multilateral institutions (ECB, IMF and OECD);
- Review of now-casting and forecasting literature;
- Analysis, synthesis and triangulation involving two stages:

- finalisation of analyses made under various tasks including:
  - analysis and reporting of results of both on-line surveys;
  - analysis and reporting of results from 'technical' and 'non-technical' interviews;
  - analysis and reporting of results from the literature review and comparative benchmarking analysis.
- preparation of the report where synthesis and triangulation of multiple sources of information and multiple types of methods took place to report findings in a structured manner under each evaluation question.
- A final workshop involving mostly representatives from DG ECFIN where key findings and conclusions from the study were discussed and validated.

A description of the specific type of work behind each step is presented in Annex 2. Section 3.2 presents briefly main caveats and limitations of the study with more detailed discussion in Annex 2.

### **3.2 Limitations of the study**

Overall, the collective impact of the limitations stemming from the availability/ quality of the data on the final findings and conclusions from the study was not significant. The only exception to this were results from the survey of subscribers to DG ECFIN publications. A very low response rate (4 per cent) suggests that some response bias may have existed. In addition, due to missing information about the key characteristics of the sample, possibly relatively heterogeneous, it was not feasible to control for aspects such as experience in forecasting or familiarity with DG ECFIN products.

Although the following limitations did not have a material impact on the study, they are relevant considerations when interpreting the findings and conclusions from the study:

- In limited cases, interviewees were only vaguely familiar with certain aspects related to the DG ECFIN forecast (e.g. structure and content of the main publication);
- In limited cases, some private professional forecasters could not comment in detail on their proprietary models used due to confidentiality reasons;
- The assessment of the DG ECFIN press conference on the Spring 2017 Forecast did not take into account the views of media representatives who typically attend those press conference and therefore missed an additional source of evidence.

Annex 2 presents a more detailed list of study limitations.



## 4 Results

This section provides results for each evaluation question corresponding to the five evaluation criteria. These results are based on the research and analytical tasks described in Section 3 of this report. Results should be interpreted in the context of the specific caveats and limitations outlined in Annex 2.

### 4.1 Results of analysis – relevance

The following section focuses on eight specific questions that fall under the evaluation criteria of relevance outlined in the evaluation framework (Annex 1 ).

**Question 1: In light of the uses of the forecast and of other forecasters' practice, does the balance between presentation of the forecast figures and analysis in the forecast document appear adequate?**

The analysis of evidence in response to this question has focused on four issues:

- user feedback on the usability of DG ECFIN's forecast publication (specifically, the balance between forecast figures and analysis);
- the balance between forecast figures and analysis in DG ECFIN's forecast publication compared to other international forecasting institutions' (ECB, IMF, OECD) reports;
- suggestions for improvement offered by users; and
- prioritisation and feasibility of the suggestions for improvement.

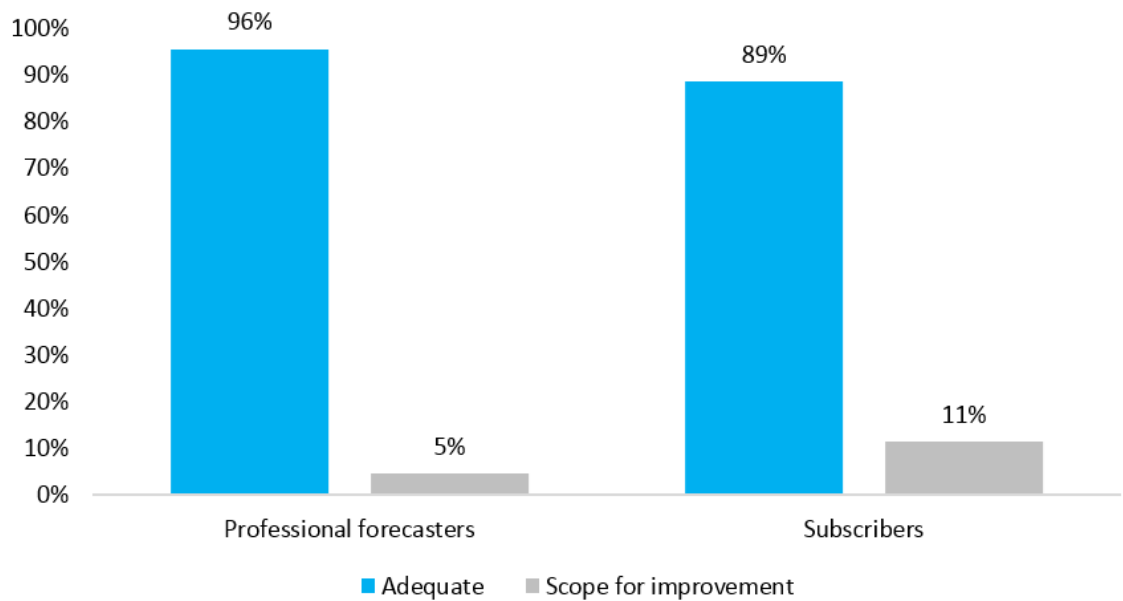
Evidence from the following sources was analysed to answer this question:

- interviews;
- survey of professional forecasters and survey of subscribers;
- review of ECB, IMF and OECD main forecast publications; and
- final workshop

The overwhelming majority of the evidence analysed suggests that the balance between the presentation of the forecast figures and analysis in the main forecast publication is adequate.

When asked about the current balance in the main forecast publication, 96 per cent of professional forecasters and 89 per cent of subscribers to DG ECFIN's publication were of the view that it is adequate (see Figure 4). Despite this, some suggestions for potential changes and improvements were made, and these are presented in Box 1. A common theme underlying these suggested improvements is the increased granularity of the analysis and longer country chapters. There was also one interviewee in the European Commission who had strong view on the length of country chapters.

Figure 4 Is the balance between the presentation of the forecast figures and analysis adequate?



N=67 for professional forecasters, N=236 for subscribers

Note: Figures may not sum up due to rounding

*Box 1 Examples of suggestions for improvements to the balance between forecast results and analysis in DG ECFIN's forecast publication*

#### Professional forecasters

- *A two-page description for a Member State is fairly limited. I would expect more detail and reasoning.*
- *It would be useful to have broader coverage of monetary policy and political risks.*
- *Financial market development (analysis) and outlook (forecast and risk assessment) is insufficient.*

#### Subscribers to DG ECFIN's publications

- *A two-page description for each country is quite short.*
- *More analysis of underlying forces as opposed to a dry description of what has happened.*
- *Forecast revision analysis.*

#### Member of the European Commission

- *'Having strict limitation on the length of the analysis for each Member State (max 2 pages) is at odds with the forecasting process where naturally and understandably more weight is given to larger economies. Having therefor very similar length for Slovakia on the one hand and the UK or Germany on the other does not account for it and is self-constraining'.*

NB: Note that for instance OECD uses variable length for a country notes (between 3-5 pages depending on the country).

Comments related to the perceived need for more extensive country-level analysis (presented in Box 1) did not reflect the very high levels of satisfaction amongst professional forecasters with the country coverage presented currently in the main forecast (with 95 per cent of respondents from this cohort perceiving the country coverage as satisfactory).

Furthermore, when asked about the degree to which key aspects (namely, inflation, labour market, current account, GDP and its components, financial markets, external environment, risk and public finances) are covered in the main publication, the perceptions of both groups was very similar. At least 80 per cent or more of respondents stated that these key aspects are covered *sufficiently well* or *very well*. The only exception was the coverage of *risk* where 23 per cent of subscribers to DG ECFIN's publications suggested that the coverage of country risk is insufficiently/very insufficiently covered (Figure 5 and Figure 6).

Figure 5 The degree of detail to which the following themes are covered by the main forecast publication - professional forecasters

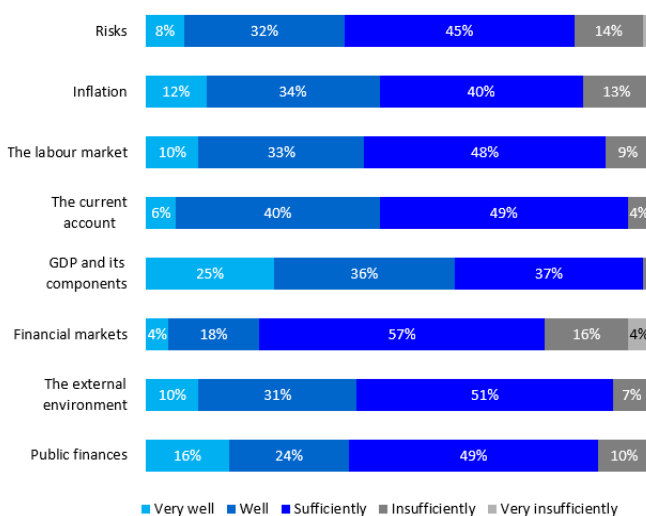
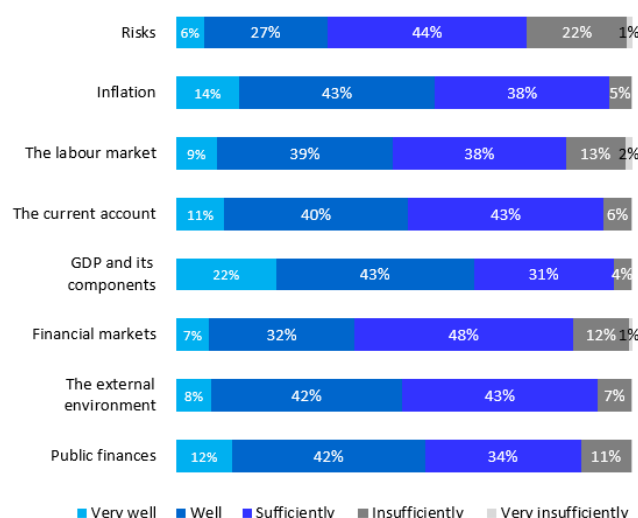


Figure 6 The degree of detail to which the following themes are covered by the main forecast publication - subscribers



N=67 for professional forecasters, N=238 for subscribers

Note: respondents were asked to comment on the whole publication without making distinction between countries chapters and horizontal chapter

Interviewees did not touch upon the coverage of *risk*, with one exception. The representative of the Economic and Financial Committee expressed his view that the forecast publication may contain relatively less material on *risk* because the European Commission tends to take a cautious approach to reporting on such matters, reflecting to some extent the political sensitivity associated with these issues.

More generally, and in line with the survey responses, virtually all interviewees were content with the balance between the presentation of the figures and the analysis. They were particularly appreciative of the succinct and informative 'overview' section and breakdown on Part 1: EA and EU outlook and Part 2: Accurately balanced prospects by individual economy with a sufficient level of detail in terms of Member State level analysis. One interviewee highlighted the added value of boxes on specific issues. Those few isolated suggestions for change related to the shortening of Part 1: EA and EU outlook.

The representatives of the IMF, ECB, OECD and UN did not perceive the current balance as inappropriate. However, some hinted that it would be somehow useful to have more content and analysis on the international developments outside the EU (e.g. US, China) and on the spill-overs between the EU and the rest of the world.

In terms of the length of the country section specifically, interviews with country desk officers specifically indicate that the length of around two pages is suitable. Seven of eleven interviewees indicated that they are happy with the current practice. From their perspective, it provides enough space to explain the most relevant aspects of each

country's economy. Three participants suggested the country section could vary in length and detail depending on the prevailing economic situation during the forecast period. One country desk officer stated that one page would be optimal for small countries because it would lead to a more concise story.

Given currently available results from both surveys and conducted interviews, there is no case for major changes in the balance between forecast results and analysis.

**Question 2a: Is the set of variables adequate considering the uses of the forecast, in particular to provide an input to Treaty-based surveillance and policy advice?**

The analysis of evidence in response to this question has focused on four issues:

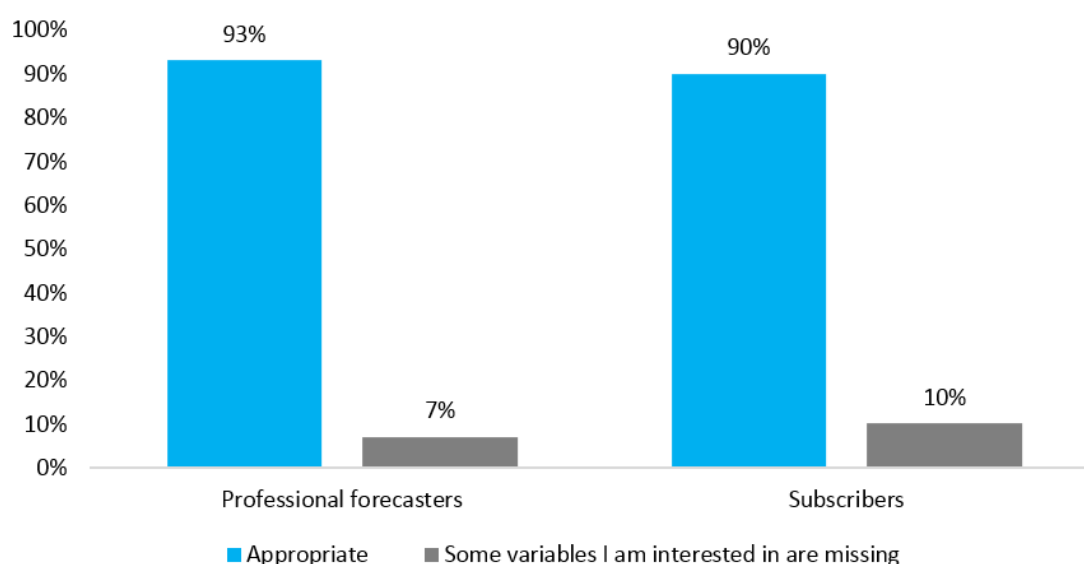
- how well does the forecast feed into Treaty-based surveillance and the Commission's policy advice;
- comparison in terms of the variables used by DG ECFIN and other international forecasting institutions;
- suggestions for improvement offered by users; and
- prioritisation and feasibility of the suggestions for improvement.

Evidence from the following sources was analysed to answer this question:

- interviews;
- survey of professional forecasters; and
- survey of subscribers.

Stakeholders consulted for this evaluation study largely agreed that the current set of variables in the forecast is appropriate. The overwhelming majority of professional forecasters and subscribers to DG ECFIN publications viewed the current set of variables provided by DG ECFIN's forecast as appropriate (see Figure 7).

*Figure 7 Is the current set of variables appropriate?*



N=65 for professional forecasters, N=228 for subscribers

Some interviewees suggested adding selected variables to the existing set, although these suggestions were generally specific to the stakeholder's circumstances and were

not reflective of a common view. Examples of suggestions from the limited number of respondents who proposed/supported additional variables are presented in 0.

*Box 2 Examples of suggestions for the addition of new variables to DG ECFIN's forecast document*

#### Professional forecasters

- 'Average monthly gross salary rate'.
- 'Fuller assessment of financial market conditions'.
- 'More information on consumer price index and its components'.

#### Subscribers to DG ECFIN's publications

- 'Disaggregation of private investment, exports and imports'.

None of the stakeholders directly involved in the surveillance process – neither management from A3/A4 Unit, nor Members of the Cabinet and interviewed European Semester Officer – saw a need to add new variables to enhance the surveillance process.

Two specific suggestions for additional variables were put forward by the interviewee from the Economic and Financial Committee, namely a variable capturing house prices, which is critical from a stability point of view, and a variable capturing disaggregated employment data.

Table 5 in Annex 6 provides the comparison of the coverage in terms of forecasted variables between DG ECFIN and ECB/IMF/OECD/UN.

### **Question 2b: Is the analysis of financial flows adequate? Could its use in the forecast process be improved and if so, how?**

The analysis of evidence in response to this question has focused on two issues:

- descriptive overview of how financial flows are analysed and taken into account in the forecast process; and
- desk research on possible improvements regarding the use of financial flows in the forecast process.

Evidence from the following sources was used to answer this question:

- interviews;
- literature review; and
- comparative benchmark analysis.

Interviews with country desk officers indicated that, to consider financial flows in the forecast after the financial crisis, the horizontal units provide an Excel sheet which consists of a broad range of financial data (credit demand and supply, financial market spreads, borrowing and lending conditions etc.)

At this stage, the use of financial variables in the forecast process is limited. Interviewed country desk officers from *large countries* (5 of 11 country desk officers) indicated that they principally have a very broad set of financial indicators. Three of six country desk officers from the remaining *small countries* (6 of 11) suggested financial data availability for their country is a problem.

Two of 11 country desk officers reported using financial variables directly in the forecast. Both use credit growth because it has significant effects on the GDP growth of their country.

Three country desk officers indicated use of financial variables indirectly, e.g. for storytelling or to evaluate country-specific risks.

The remaining six country desk officers do not use financial variables at all. This could be promoted by the following reasons:

- First, the financial Excel file is considered too complex and not user-friendly. Seven of 11 interviewees consider the financial Excel file to be complicated because it covers too many variables and there are no linkages to macro variables. However, more recently, the horizontal unit has started to build a new file seeking to reduce the complexity of the current file. This new file will be tested in a pilot project, together with the country desk officers.
- Second, four country desk officers indicated difficulties in extrapolating the macroeconomic implications from financial data for their country.
- Third, two country desk officers pointed out that the financial data provider has changed frequently in recent years. Therefore, country desks that use financial data in the past have had to re-link the files to the “real economy” standard Excel file each time.

All in all, the take-up of financial flows by country desks was low, with a lack of clarity and a difficulty with using the data being reported by most officers. Intransparent and unexplained changes of the data between versions provided was also identified as a weakness, again reducing the data’s usefulness to the forecasting process.

Comparisons with other multilateral institutions (in particular ECB, IMF, OECD and, less so, the UN) indicate room for improvement for DG ECFIN. The ECB and the IMF use and forecast financial flows and other financial market variables (e.g. lending rates, credit supply constraints, loans to NFCs and households, flow of funds) in their projection exercise, but linkages between financial markets and real economic activity appear not to be systematically exploited so far. In that sense, financial markets are more an “off-model” type of exercise. All benchmarking institutions report to be currently in the process (ECB, IMF, OECD) or to intend to further develop (UN) their forecasting infrastructure in that direction.

This is well-justified given that the literature review (0) indicates that the use of financial market aspects in the forecasting context can lead to qualitative and quantitative improvements. While the relevance of financial markets for macroeconomic developments is likely to depend heavily on the institutional characteristics of the country in question, most studies find that shocks originating in financial markets can explain a significant share of volatility in macroeconomic variables and should therefore be considered in business cycle analyses. This appears to be particularly the case in the context of nowcasts and very short forecast horizons, where the timely availability of high-frequency information contained in financial market data is of primary importance. Consequently, a set of non-structural regression-based forecasting tools has been developed and augmented with financial variables such as private credit growth or asset prices as explanatory variables. Such models need to consolidate information stemming from a vast amount of financial data available to forecasters and/or combine financial and macroeconomic data often available at different frequencies to the forecaster. Financial variables such as the yield curve or stock market returns increase the accuracy of recession forecasts based on probit models (Nyberg, 2010; Erdogan et al. 2015; Fornari and Lemke, 2010), and different sets of financial and housing market data have been proposed in forecast models using Bayesian model averaging techniques (Faust et al., 2013; Berge 2015). Mixed-frequency approaches such as Mixed Data Sampling (MIDAS) regressions featuring high-frequency financial data in forecasting models as leading indicators for lower-frequency macroeconomic variables often outperform forecasting models relying on macroeconomic indicators alone (Ghysels and Wright, 2009; Monteforte and Moretti, 2013; Andreou et al., 2013; Kuzin et al., 2011; Ferrara et al., 2014). Furthermore, increasing the set of financial indicators in factor models capable of including a large set of variables, and relying on information on both the domestic and

international financial markets, has been shown to increase the nowcast and/or short-term forecast accuracy in most cases (Breitung and Schumacher 2008; Angelini et al., 2011).

Furthermore, (semi-) structural macroeconomic models regularly employed in forecasting exercises have been enriched with an explicit representation of the banking system and frictions in financial markets in recent years. Taking financial intermediation explicitly into account often improved the forecasting performance of these models (Christiano et al., 2011; Del Negro et al., 2013; Del Negro and Schorfheide, 2013; Cardani et al., 2015). However, some studies find that including financial sectors and variables explicitly in DSGE models improves the quality of forecasts only in periods of financial distress (Kolasa and Rubaszek, 2015), or that improvement is only marginal (Pagan and Robinson, 2014).

Based on all sources of evidence, we find that financial market variables are not considered in the projection as extensively as might be useful, judged by experiences in other forecasting institutions and findings from the literature. Partly, this could be related to data availability problems; however, financial market aspects are also only reflected to a limited degree in horizontal tools such as the forecast Excel files or model suites.

### **Question 2c: What are the pros and cons of more ample use of quarterly data in the forecast publication?**

Five issues have been taken into consideration to assess this question namely:

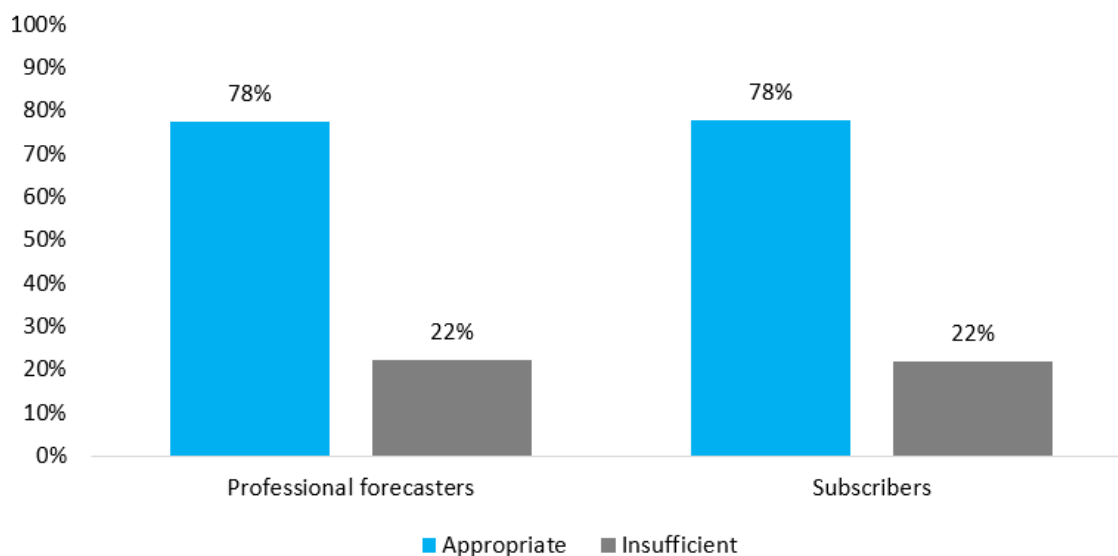
- user feedback on the desired periodicity (quarterly/ annual) of forecast indicators;
- user feedback on the value of an increased use of quarterly data in the forecast publication;
- comparative analysis of periodicity used by ECFIN and other international forecasting institutions;
- desk research and stakeholder feedback on the pros and cons of more ample use of quarterly data in the forecast publication; and,
- problem of large quarterly data revision.

Following sources of the evidences were used to answer this question:

- interviews;
- survey of professional forecasters, and;
- survey of subscribers.

Identical proportion of professional forecasters and subscribers to DG ECFIN's publications (78 per cent) indicated that it is appropriate that most of the variables forecasted by DG ECFIN (except GDP and HICP) are available on an annual basis (see Figure 8). The most common type of views of prevailing among around one fifth of respondents from each group who had different opinion is presented in Box 3.

Figure 8 Is it appropriate that the most of the variables forecasted by DG ECFIN (except GDP and HICP) are available on the annual basis?



N=55 for professional forecasters, N=214 for subscribers

*Box 3 Examples of arguments for more ample use of quarterly data*

Professional forecasters

- 'To determine where in cycle we are in, you need it'
- 'I would like to see more quarterly figures to get a better grip on the business cycle situation'
- 'Quarterly forecast of inflation subcomponents and assumptions on Brent price and food prices'

Subscribers to DG ECFIN's publications

- 'Employment and unemployment level'

Among 'non-technical' interviews, there was no single stakeholder asking for more variables on the quarterly basis.

The ECB and the UN indicated that they are happy with the current format of the data published in the ECFIN report. The UN mention that having quarterly data could provide greater analysis on the impacts of prospective labour market policies expected or currently being undertaken by Member States. The interviewed forecasters of the IMF report not to use the forecast of the European Commission; (s)he assumes that the country desk officers in charge of projecting the EU and its Member States take note of the ECFIN forecast, however.

**Question 3a: Currently, three fully-fledged forecasts are produced per year. Does this forecast frequency appear adequate in view of resource requirements and policy needs?**

The analysis of evidence in response to this question has focused on six issues:

- a descriptive overview of how the forecasts are used for policy-making purposes by: the Commission services, the Council, the European Systemic Risk Board (ESRB), ECB and the European Banking Authority (EBA);
- policy-makers' satisfaction with the current frequency;
- policy-makers' demand for increased frequency;



- the time and resources involved in producing forecasts;
- the potential benefits of increased frequency as cited by policy-makers and experts; and
- changes in results between Autumn and Winter / Winter and Spring: large enough to maintain the winter forecast?

Evidence from the following sources was analysed to answer this question:

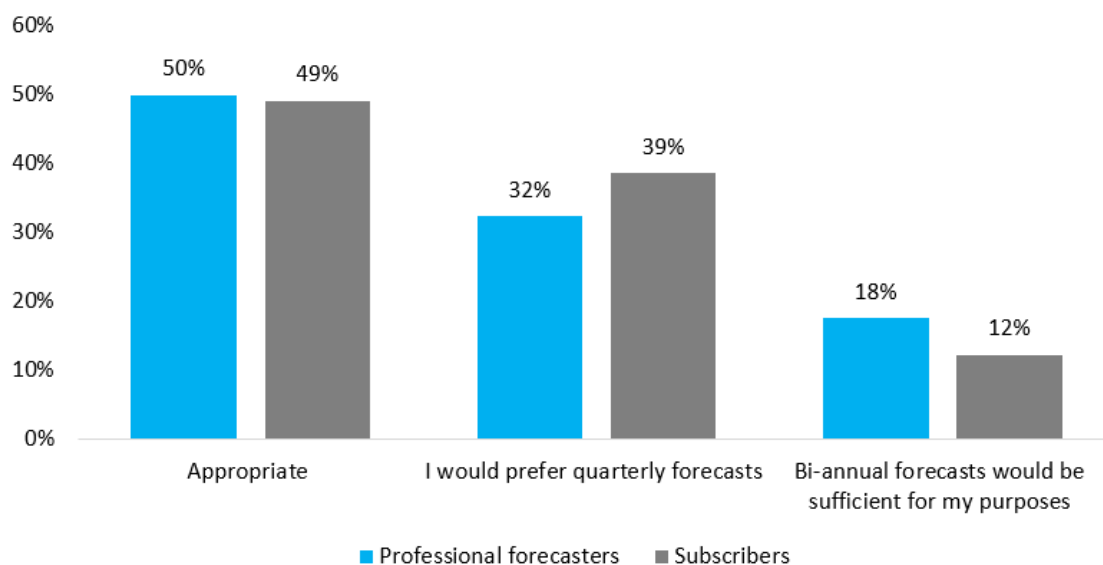
- interviews;
- survey of professional forecasters; and
- survey of subscribers.

Note: This section assesses largely the system with three fully-fledged forecasts (Winter, Spring and Autumn) produced per year. Yet, in the course of the evaluation, a new system was discussed which implied replacing the Winter forecast with an interim forecast and adding a new interim forecast in Summer (mid-July). As a result, two interim forecasts (in Winter and Summer) and two fully-fledged forecasts (in Spring and Autumn) would replace the existing system with three fully-fledged forecasts. The interim forecast would cover annual and quarterly GDP and inflation for t and t+1 for EU Member States and euro area as well as EU aggregates. Very similar system was already practiced in the past (in the period between 2006-2011) and resembles closely the one existing in ECB and OECD.

Late interviews attempted to gauge the views on this new potential arrangement, the findings from which are presented in the last part of the answer to Question 3a.

Professional forecasters and subscribers to DG ECFIN’s publication were asked for their views on the current frequency of forecast (three per year). Responses differed between the two groups, but only slightly, with around half of respondents from both groups agreeing that the current frequency is appropriate while around one-third or so suggested more frequent quarterly forecasts. Conversely, fewer respondents in each population pointed out that bi-annual forecasts would be sufficient (Figure 9).

Figure 9 Is the current number of releases of forecast appropriate?



N=68 for professional forecasters, N=254 for subscribers

The perspectives of country desk officers, stakeholders who are clearly interested in the number of forecasts given that they need to deliver them, are rather mixed:

- Seven of 11 country desk officers were not convinced of the value added of the Winter forecast. Three of them argued that it takes time away from other commitments and generates stress, since the Winter forecast sometimes overlaps with important other projects. Four country desk officers indicated that data do not differ significantly from the Autumn forecast and, at the same time, it is too close to the Spring forecast.
- Four of 11 country desk officers stated that three forecasts per year are appropriate. While three of those four argued that the Winter forecast is necessary but stressful, one country desk officer would like to have a fourth short forecast update in Summer.
- Two country desk officers suggested returning to the pre-crisis calendar with two fully-fledged forecasts and a short update in Winter (the latter only including large countries).
- Two country desk officers from small countries recommended having a fully-fledged Winter special for the smaller countries only in the case where that country is hit by a shock (with possible spill-overs to the EU as a whole).
- Two country desk officers suggested that both the Spring and the Autumn forecasts could be conducted over a more compressed time period to avoid data obsolescence over the forecast period. This reduces the necessity of a fully-fledged Winter forecast.

The only pattern to emerge from responses was the relative scepticism of country desk officers about the fully-fledged character of the Winter forecast.

Forecasters at the ECB and UN indicated with respect to the ECFIN forecast that the current number of forecasts (three) is not intuitive (due to the quarterly publication of national accounts, e.g. the main underlying data) and that, therefore, forecast publication dates are hard to remember. From this perspective, a forecast publication in every quarter or twice per year seems easier to communicate. From a resource and cost-effectiveness perspective, OECD representatives saw much sense in limiting fully-fledged forecasts in their case to two. The average time required by OECD to produce fully-fledged and interim forecasts differ substantially at six-to-seven weeks and three-to-four weeks respectively. More importantly, the interim forecast was said to consume circa 10 per cent of the resources that are normally required for the fully-fledged forecast.

### **Views on potential new forecast system of '2+2'**

Interviewed policy-makers from Cabinet did not express strong views on this issue. Two of four policy-makers had more specific ideas and those seemed to acknowledge that scaling-down the fully-fledged Winter Forecast could be beneficial. They were somewhat sympathetic to a new system of '2+2', yet also pointing to certain trade-offs of each possible arrangement (see Box 4).

#### *Box 4 Cabinet's more specific views on '2+2' system*

First representative of the Cabinet was rather agnostic about the choice between the current system with three fully-fledged forecasts and a potential system of '2+2'. He pointed to the benefit of having an intermediate forecast in mid-July, in particular in the context of the assessment of budgetary plans when the Spring Forecast excludes some of the latest data while the Autumn Forecast is produced late. Yet, he also expressed the view that once the intermediate Summer Forecast is in place, there may be considerable appetite to transform it into a fully-fledged forecast, with

operational implications for DG ECFIN staff.

The second representative of the Cabinet who had more specific views indicated that the Winter Forecast is not essential in terms of inputs to next steps in the surveillance process (e.g. Country Report is more of a broad assessment) and would free-up a lot of time in February. Yet, Winter figures are sometimes used to send letters with specific recommendations to certain Member States, that possibility could have been off the table as a result of a shift to a new system.

The study team addressed also the issue of the potential new '2+2' forecast system in the last round of interviews conducted with professional forecasters (6, among which 5 replied on this issue).

Two of those interviewees found that ECFIN's current publication schedule is satisfactory. Both indicated that the current frequency fits with the EU's surveillance procedures. One of them highlighted that the resource requirements for a '2+2' forecast do not meet a corresponding need and added that two forecasts may be sufficient with respect to the fiscal policy surveillance measures.

Three interviewees said they would prefer quarterly forecasts. Out of those three interviewees, one explained that it would make sense to switch to a quarterly frequency, as this would bring the forecast release in line with quarterly national accounts. One of them explained that four fully-fledged forecasts would be appreciated, though '2+2' system would meet limited interest. In view of this interviewee the forecasts are especially useful because of in-depth analysis at the country level, something which would not be provided in interim forecasts. One interviewee also mentioned that it is always good to have a forecast accounting for the most recent economic developments (also in the case of potential crises), but that no forecast frequency can ensure a rapid response to such events.

The study team finds that there is no single preference among the interviewees on keeping with the current system of 3 fully-fledged forecasts or moving to a 2+2 forecast system, and that there are well founded arguments for both systems.

**Questions 3b/4a. Is the forecast actually being used for surveillance and beyond (3b), and does it fulfil its role as reference in the surveillance processes (4a)?**

The analysis of evidence in response to this question has focused on how forecasts are used by the European Commission, other EU institutions, international organisations (OECD, IMF, UN), the academic community, civil society, the media, sector organisations and private forecasters, as well as its use in various surveillance procedures.

Evidence from the following sources was analysed to answer this question:

- interviews;
- survey of professional forecasters;
- survey of subscribers; and
- descriptive overview of how forecasts are used in the various surveillance procedures.

The forecast, in particular the Spring and Autumn editions, are absolutely crucial in the context of the surveillance process. This was emphasised by all those stakeholders who are directly involved in the fiscal surveillance process including interviewed representatives of the Cabinet as well as the European Semester Officers, and was also explicitly acknowledged by those interviewed stakeholders who are not personally involved but follow the surveillance process as such e.g. Economic and Financial

Committee. Annex 10 provides a detailed overview of how forecast results are used as a reference in the surveillance process.

The Spring forecast published in May feeds, *inter alia*, into deficit procedure and forms the basis for vital conclusions such as whether an excessive deficit procedure should be open given performance of a Member State. It also feeds into country-specific recommendations drafted by the European Commission. The Autumn forecast in turn is essential in the context of the revision of the draft budgetary plans provided by Member States in October. Winter forecast has relatively fewer consequences for the fiscal framework (may be published after EC *Country Reports*) and has been perceived as less essential, though still 'good to have'.

The Cabinet stressed that the whole construction of the fiscal surveillance process hinges on the fact that there is a commonly accepted neutral reference point that constitutes the alternative to national forecasts – this is vital in the context of previous examples of national projections being distorted. One interviewee from the European Commission pointed out that the hypothetical reliance on the forecast of other international organisations could effectively mean transmitting an important fiscal policy tool to such institution.

Interviewees in ECB and UN, when asked for their perspectives as users of the ECFIN forecast, report that ECFIN forecasts are used as a basis for comparing numbers and as an input into their own projection exercises (stories, risk assessment). Interviewees also conveyed the impression that the ECFIN forecast's influence on policy decisions might be lower than the IMF's influence, and more or less comparable to the OECD forecast's influence (apart from the influence on Member States that exists by design (e.g. due to fiscal surveillance and the excessive deficit procedure being based on ECFIN's forecast). This might be related to the broader media coverage the IMF forecast typically receives (see EQ5).

Table 2 reflects the responses from interviewed stakeholders regarding the main uses of the forecast beyond the surveillance process.

*Table 2 Main usage of forecast by selected organisations*

Organisation	Main usage
Cabinet	Input into a plethora of activities surrounding the fiscal surveillance process including, <i>inter alia</i> , inputs into EC Country Reports, EC Country Specific Recommendations, a reference point while reviewing Draft Budgetary Plans (see Section 2.2).  Key reference point in general communication regarding the situation in a Member State.
DG AGRI	Forecast variables (mainly GDP, CPI and GDP deflator) inform baseline assumptions for the short-term outlook <sup>20</sup> (N+2) in the agricultural market and, to a lesser extent, the long-term outlook <sup>21</sup> (N+10) produced by DG AGRI.
DG BUDGET <sup>22</sup>	Own resources related forecast (for all MS) in line with

<sup>20</sup> [https://ec.europa.eu/agriculture/markets-and-prices/short-term-outlook\\_en](https://ec.europa.eu/agriculture/markets-and-prices/short-term-outlook_en)

<sup>21</sup> [https://ec.europa.eu/agriculture/markets-and-prices/medium-term-outlook\\_en](https://ec.europa.eu/agriculture/markets-and-prices/medium-term-outlook_en)

<sup>22</sup> This use relates to the tasks performed by Directorate B specifically. Other sections of DG BUDGET may have other needs.

Organisation	Main usage
	ACOR (Advisory Committee on the Union's Own Resources) procedure, where once a year (in May) the updated own resources forecast for T and T+1 forecasts are agreed. For that exercise ECFIN Spring and Winter forecasts are used as an input.
DG FISMA	Important contextual information e.g. while discussing specific issues at Member State level
DG REGIO	Analysis of trends in GDP and employment, including DG REGIO Cohesion Reports whose publication (every 3 years) is required by the Treaty.  Analysis of public finance in the context of investment capacities of national and regional governments.
European Banking Authority	Forecast used to construct the baseline and alternative scenarios in the context of stress tests exercises.
European Stability Mechanism	Monitoring of a country repayment capacities as a part of early warning system being in place in ESM. To assess the solvency related aspects, the ESM draws on the Debt Sustainability Analysis prepared by the EC and this in turns is draws on, inter alia, ECFIN's projections.  Inputs into ESM Annual Reports.
European Systemic Risk Board	GDP, unemployment, general government deficit and general government debt as key variables used in the <i>ESRB risk dashboard</i> <sup>23</sup> - the dashboard is perceived to be the most important area informed by the forecast.  Input into ESRB publications e.g. recent report on <i>Macro prudential issues arising from low interest rates and structural changes in the EU financial system</i> <sup>24</sup> and ESRB <i>Ageing Report</i> ;  Input into stress tests exercises.
Economic and Financial Committee	Forecasts are backbone of its policy tools such as Stability and Growth Pack and the whole process around draft budgetary
European Semester Officer for Spain	Input in communication with relevant stakeholders in Spain.
EU Delegation in the US	Input to speeches and presentations.

<sup>23</sup> ESRB, 2017. Risk Dashboard. Available at:  
<https://www.esrb.europa.eu/pub/rd/html/index.en.html>

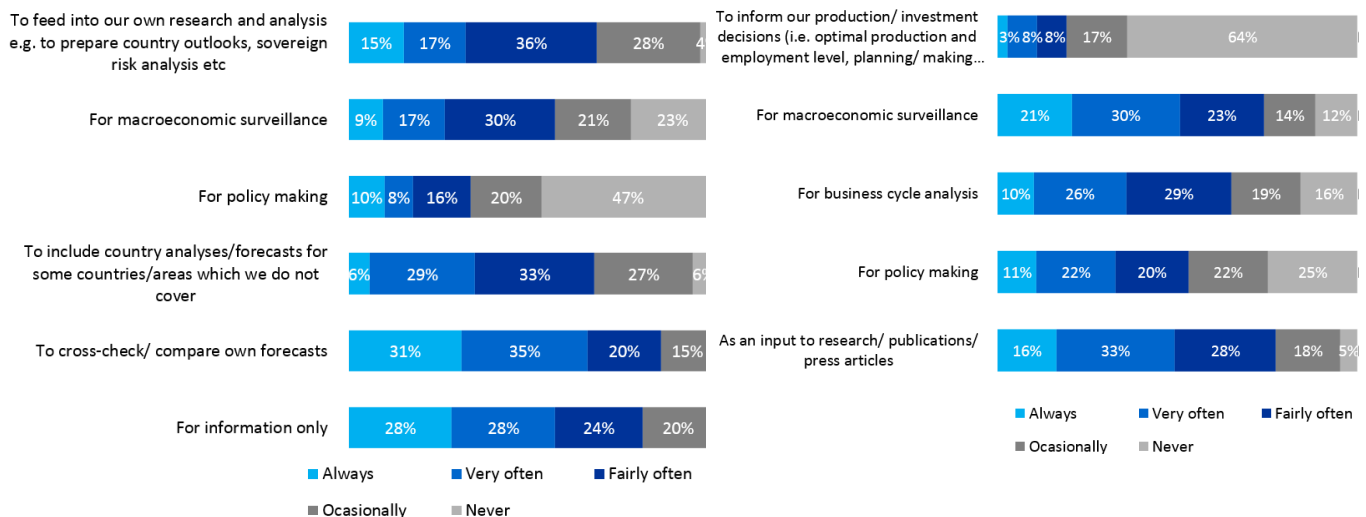
<sup>24</sup> ESRB, 2016. Macro prudential issues arising from low interest rates and structural changes in the EU financial system. Available at:  
[https://www.esrb.europa.eu/pub/pdf/reports/161128\\_low\\_interest\\_rate\\_report.en.pdf](https://www.esrb.europa.eu/pub/pdf/reports/161128_low_interest_rate_report.en.pdf)

Organisation	Main usage
	Forecast result (often in PowerPoint format) is distributed to representatives of the EU Member States in the US, and other international organisations, in particular the IMF and WB.
ECB	For comparison and as an input for own projection. Forecast comparison note is prepared in response to ECFIN forecast.
IMF	No particular interest in DG ECFIN's forecast. Country desks might at time take ECFIN forecast as an input into their own projection.
OECD	Input into own forecast activities; particular interest for the euro area forecast and, on the country desk level, country projections and fiscal policy developments.
UN	Consumed as background information and used in UN's own forecast process.
Private forecasters	To cross-check and compare own forecasts; To feed into own research and analysis, e.g. to underpin own policy recommendations

The responses obtained from the survey of professional forecasters and subscribers to DG ECFIN's publications give some further indication about the most common usage of the forecasts' results (Figure 10 and Figure 11).

Figure 10 For what purposes do you use DG ECFIN Economic Forecast - professional forecasters

Figure 11 For what purposes do you use DG ECFIN Economic Forecast - subscribers



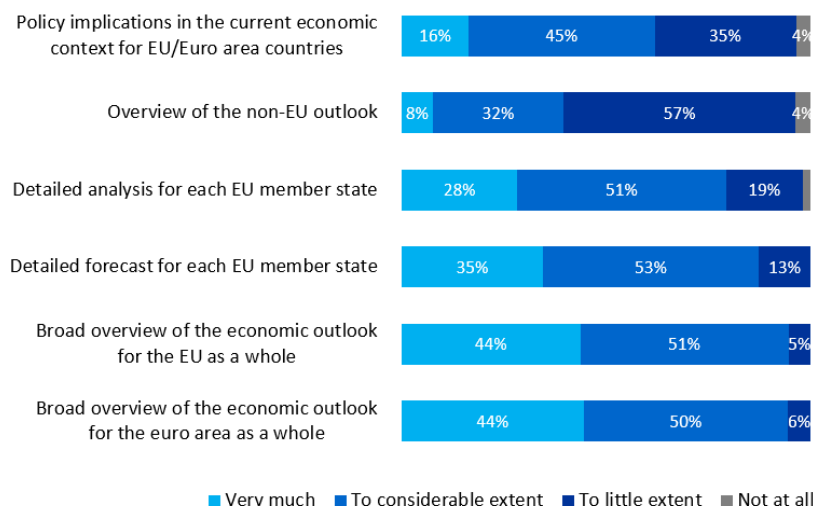
N=53 for professional forecasters, N=185 for subscribers

The most common use of the DG ECFIN economic forecast by professional forecasters is to cross-check and compare with their own forecasts. Other reasons included for general information and to inform their own research and analysis. Only 34 per cent of professionals stated that they rely on the DG ECFIN economic forecasts to formulate public policies, albeit this may reflect the composition of the sample with a substantial number of forecasters employed in private organisations. When it comes to subscribers to DG ECFIN's publications, using the forecast as an input to

research/publications/press articles and for macroeconomic surveillance are the two major reasons given by survey respondents.

When asked about the specificity of the DG ECFIN forecast, professional forecasters pinpointed most frequently to broad overview of the euro area and the EU respectively.

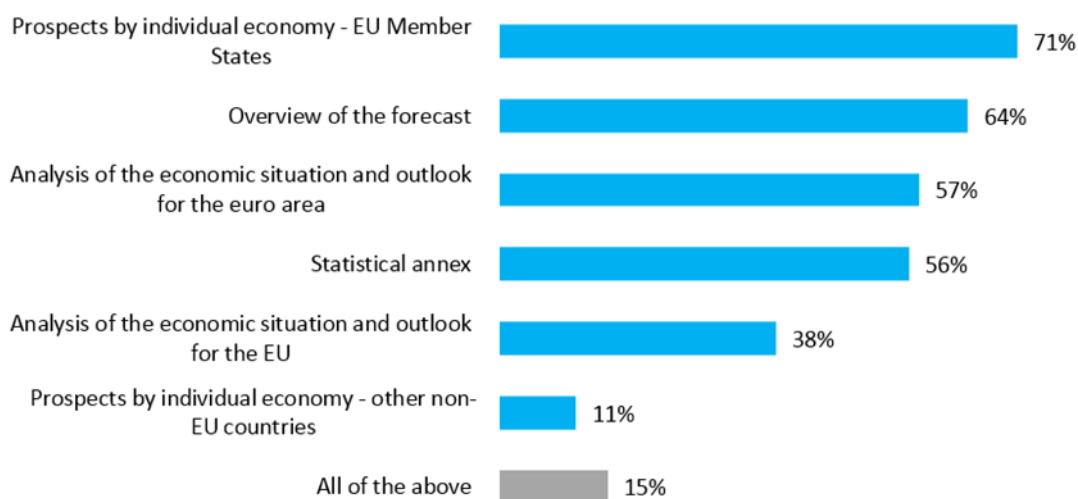
Figure 12 What is the specificity of the DG ECFIN forecasts from your point of view?



N=55 for professional forecasters

Furthermore, subscribers to DG ECFIN’s publications were also asked which part(s) of the DG ECFIN economic forecast they typically use. The country-level chapter covering the prospects of a Member State economy was the most commonly sought part of the publication (See Figure 13).

Figure 13 Which of the following content of the ECFIN forecasts publication do you typically use?



N=148 for subscribers

**Question 5: What are the strengths and weaknesses of the current external communication strategy of the Commission forecasts as compared with other international organisations namely, a) What is the media coverage of the Commission forecasts as compared to that of other international organisations, b) How could the communication strategy be further improved, c) What other target populations/locations, if any, should the Communication strategy of the Commission forecasts focus on and why?**

The analysis of evidence in response to this question has focused on three issues:

- comparative analysis of data on media coverage and existing systems to understand current use of the forecasts;
- analysis of current and potential target populations/locations (audiences and channels) for the forecasts and expert assessment of the associated relative benefits; and
- user perceptions and feedback on the reputation of the relevant forecasting products/processes.

Evidence from the following sources was analysed to answer this question:

- desk research;
- interviews and written feedback involving ECB, IMF and OECD;
- survey of professional forecasters; and
- survey of other subscribers.

Prior to addressing this question, a detailed overview of the main communications activities/arrangements surrounding ECFIN, IMF, OECD and ECB forecasts is provided in Annex 1 . Following this overview, the evaluation team makes the subsequent observations regarding similarities/ differences between IMF/OECD/ECB and DG ECFIN approaches/ activities and products that are summarised in Box 5.

*Box 5 Comparison of approaches/ activities and products*

**External impact:** In the case of ECFIN, IMF and OECD, forecasts are perceived by consulted stakeholders from those institutions as a flagship product and one of the most important products to achieve wide external impact. They go far beyond the technical document presenting projections. In this respect, the ECB document differs fundamentally as the Bank sees it primarily as an internal document which consequently has implications for the format (basic) and communication activities (comparatively limited);

**Technical content:** The OECD – and to a greater extent, the IMF – main forecast publication(s) contain more ‘technical’ content than the DG ECFIN main forecast publication and appear to target an audience with greater economics acumen. For instance, the IMF publication contains technical language that is less accessible to a general audience, provides extensive references to literature (including academic literature) that underpins the content in each chapter and often relies on detailed explanations of approaches to estimates including mathematical notations – a feature occurring only to a very limited extent within the ECFIN publication. Each chart in the OECD publication is referenced with the direct access path to the underlying data in Excel available online – an indication of the further use of the content by users for analytical purposes;

**Promotion via PowerPoint presentations:** The OECD has been shifting away from the main publication to a summary PowerPoint presentation as a key output used to



promote its forecast analysis. DG ECFIN also provides the PowerPoint presentation with summary results<sup>25</sup>. In turn, neither IMF nor ECB provide similar presentations;

**Constraints of press conference:** The IMF and OECD press conferences are less constrained than DG ECFIN press conferences – that is, in principle, the IMF and OECD press conferences involve no specific questions during the Q&A session that cannot be addressed *by convention*. ECB does not organise a specific press conference on its forecast publication;

**Technical content of the conference:** the IMF and OECD press conferences provide a more detailed (and technical) overview on the outlook which is also a function of the fact that they are chaired by technical staff from both organisations;

**Use of social media:** As traditional media has been receding, the IMF has placed a growing emphasis on communication through other channels, including social media. OECD has also intensified the use of social media (e.g. it uses LinkedIn to promote its outlook). A similar trend has been observed with respect to DG ECFIN's forecast. The ECB's comparative reliance on social media in this respect is very limited (e.g. it uses only Twitter);

**Media coverage:** Given the global scale of the IMF, media attention appears to exceed the level observed for the DG ECFIN forecasts (e.g. more than 7,000 journalists are accredited to the IMF press conference centre who receive results under embargo), though capturing precise difference is difficult. On the contrary, the ECB places less emphasis on maximising media coverage (e.g. only irregular briefings and no differentiation of the effort to attract the most prominent ones);

**Website positioning:** the prominent character of the DG ECFIN forecasts as the flagship product of the DG is reflected in its web positioning e.g. announcement on the EC and DG ECFIN homepages is on the day of the publication available, and one click from the main DG ECFIN home page to reach the content ('related links' on the home page -> 'economic performance and forecasts'. Access to IMF WEO through the website is very straightforward (one click: 'Data' on the home page -> 'World Economic Outlook');

**Media coverage:** Until recently, the IMF undertook more advanced forms of analysis of the consumption of its main product, including media coverage. The IMF's *Impact Report*<sup>26</sup> provides a detailed qualitative and quantitative overview of the media coverage of each forecast release. Since 2017, DG ECFIN has had access to in-depth monthly social media and press analysis reports. These reports have already been used in practice to refine its communication actions. The analysis of the consumption of the OECD's forecast is not as granular compared to DG ECFIN's forecast. The ECB's analysis is very limited;

**Analysis of users:** DG ECFIN, OECD, ECB and the IMF currently do not have a system that provides disaggregated information on internal *versus* external consumption. This is due to technical constraints that cannot currently be overcome.

An evaluation of DG ECFIN's communication strategy and activities conducted in 2015 concluded that *'...as DG ECFIN flagship publication, Economic Forecast, is attracting by far the most viewers. The importance of Forecast is particularly clear if one considers all 2014 publications: the three forecasts (Winter, Spring, Autumn) issued in 2014*

<sup>25</sup> European Commission, 2017. Economic Forecast – related documents. Available at: [https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/spring-2017-economic-forecast\\_en#economic-forecast-documents](https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/spring-2017-economic-forecast_en#economic-forecast-documents)

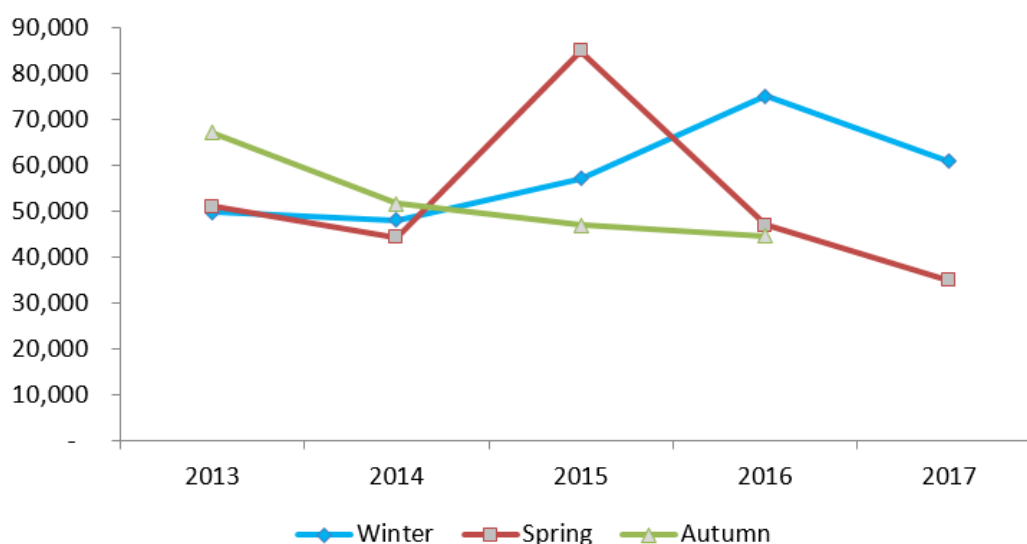
<sup>26</sup> Internal document that IMF refused to share for confidentiality reasons

were the three most viewed publications and represented 41% of total page views of all publications during that year (120,639)<sup>27</sup>.

Recent available statistics confirm the high level of interest in the forecasts. The number of viewings of each main DG ECFIN forecast publication available on the DG ECFIN's website varied between around 30,000 and 71,000 (between 2013 and 2016 – Figure 14). The bulk of those viewings typically took place on the day of the forecast publication. According to the information provided by the IMF, annual consumption of its main publication (pdf downloads from its website) oscillated around 80,000 in 2016 while the main publication of OECD Economic Outlook (from Issue 2 2015 and Issue 1 2016) had circa 21,000 views over a 12-month period on average.

DG ECFIN's social media activities have also attracted attention with examples of some infographics<sup>28</sup> promoted via Twitter receiving over 40,000 impressions. In general, DG ECFIN's forecast is one of the most common subjects of tweets that mentioned/related to ECFIN<sup>29</sup>. Also, the tone of most tweets was neutral. Activity and impact via Facebook remain low<sup>30</sup>.

Figure 14 Viewings of the main forecast publication



Source: DG ECFIN internal statistics

Note: The chart provides the cumulative number of viewings from the date of the publication till 2017. Hence, no exact comparability between forecasts from the same season and different years, i.e. Winter 2014 vs Winter 2016, as the former will include views from longer time interval. In addition, the chart does not disaggregate for internal (users from the EC) *versus* external users.

<sup>27</sup> ICF, 2015. Evaluation of DG ECFIN communication strategy and activities in the view of evolving role of the DG. Available at: [http://ec.europa.eu/dgs/economy\\_finance/evaluation/pdf/ecfin\\_communication\\_strategy\\_en.pdf](http://ec.europa.eu/dgs/economy_finance/evaluation/pdf/ecfin_communication_strategy_en.pdf)

<sup>28</sup> Winter Forecast 2016 [<https://twitter.com/ecfin/status/695185248422871041>] and Spring 2016 Forecast [<https://twitter.com/ecfin/status/727424773769314304>]

<sup>29</sup> For instance, the twitter analysis performed by an external contractor revealed that 32 per cent of all DG ECFIN related tweets in February 2017 concerned DG ECFIN forecast specifically.

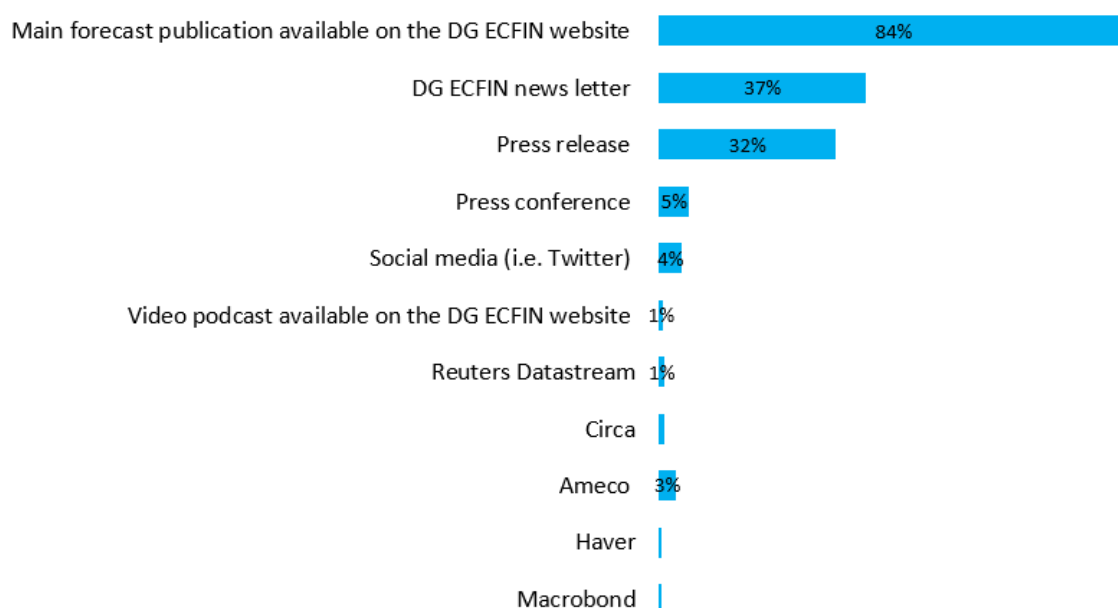
<sup>30</sup> Based on the DG ECFIN internal monitoring data and social media analyses performed by the external contractor in 2017.

Until recently, DG ECFIN was unable to quantify traditional media coverage in a systematic way and it did not analyse the content qualitatively. At the time of this evaluation, however, an external contractor has been engaged to assess the feasibility of monitoring media coverage of the forecasts and conducting in-depth analysis including qualitative aspects. In addition, analysis of the compilation of wires and press reviews from the day of the publication conducted regularly by the European Commission shows that forecasts are covered in all Member States and by most major media outlets including leading press agencies (e.g. AFP, Reuters) and prominent daily newspapers. In terms of press conferences, DG ECFIN’s press conference on the economic forecast has traditionally been a very popular event among media representatives, especially those who are based in Brussels (see 0).

Overall, the portfolio of tools and the number of communication activities surrounding the forecasts are now considerable (see Section 2.1.4) and have been further extended during the last 2-3 years. A similar trend has been observed in the IMF, especially in terms of the use of social media.

The responses provided by subscribers to DG ECFIN’s forecast (Figure 15) may give an indication about the most common way of accessing the forecast results, albeit this may not necessarily reflect the behaviour of media representatives due to insufficient information about the sample composition (Annex 5 ). Nonetheless, based on received responses, the forecasts’ results are most commonly accessed through the main forecast publication available on DG ECFIN’s website. The newsletter and press release are also used relatively commonly. There was a relatively low share of subscribers who use social media and video podcasts.

Figure 15 Which of the following sources do you use to access information related to ECFIN forecasts?



N=204 [for subscribers]

Note: more than one response as possible

The evidence on the media coverage (and related aspects) of the DG ECFIN forecast (and forecasts of peer institutions) gathered by the study team through the interviews and desk research are summarised in Annex 1 .

In general, it is challenging to pin down in a precise way the difference in media coverage between ECFIN and IMF (and other peer organizations) but judging by the overall media interest, the amount of media coverage of the IMF forecast seems to

exceed that associated with the DG ECFIN forecast. There is currently more than seven thousand IMF accredited media representatives. They receive the main publication 24 hours before the press conference<sup>31</sup> (compared to 1 hour before the release of the DG ECFIN forecast). OECD in turn attempts to maximise its media coverage by organising a separate briefing session for selected and most prominent media outlets prior to the official publication.

Unlike the OECD, the European Commission and IMF emphasise the role of the press conferences as part of their communication strategy. Box 6 summarises some emerging observations made by the study team while attending the European Commission Spring Forecast press conference that took place on 11 May 2017.

*Box 6 Observations from the Spring 2017 Economic Forecast press conference*

The news conference launching the Spring 2017 Economic Forecast took place on 11 May at the Press Centre, Berlaymont Building. The conference was hosted by Spokesperson Annika Breidhardt, who introduced the Commissioner for Economic and Financial Affairs, Taxation and Customs, Pierre Moscovici.



Commissioner Moscovici spoke for 30 minutes, in English and French equally, describing the findings contained in the Spring Forecast under the title "Steady Growth Ahead". He was assisted visually by clear and succinct slides in English. While the Commissioner's presentation was pitched at a relatively high-level, he did provide some further context for the headline figures

The main presentation was followed by a Q&A session lasting around 30 minutes where the Commissioner answered questions from journalists.

Nine questions were asked by journalists and answered by Commissioner Moscovici. The questions tended to be country-specific rather than general to the forecast as a whole. In order, they were focused on: Greece, France, Poland, Italy, Spain, Portugal, Croatia, France and Greece and included also the upcoming excessive deficit procedure. Generally, the greatest interest was in the fiscal indicators. By default, questions related to country recommendations are not responded to during the news conference. Overall, the depth of answers/elaborations on more technical aspects was visibly lower than that observed during IMF press conferences, with the main presentation provided by Mr Obstfeld, Director of Research at the IMF.

At the conclusion of the news conference session, the journalists attending were invited by Ms Breidhardt to put any technical questions outside the hall to a team from DG ECFIN who identified themselves by the Member State for which they are responsible. This is referred to as a "Technical Briefing" and lasts approximately 30 minutes. A number of country experts received few or no questions, while those representing the forecasts for Italy and Spain attracted a number of journalists.

The Spokesperson remained highly visible and engaged after the news conference was over, circulating among the journalists to ensure that their questions had been answered.

The conference was attended by more than 100 journalists and, according to

<sup>31</sup> Note that the analytical chapter is issued ahead of the WEO

journalists spoken to at the event by the study team, is somewhat of a “must go” for the Brussels-accredited media corps. In general, Brussels-based media representatives formed the majority of attendees. These media representatives benefit from advanced sight of the results (under embargo).

The set-up and logistics for the press conference are well established. There seemed to be little that could be improved on the physical and technical side. In addition to those present, the press conference was available as a live broadcast on the Commission’s streaming service and a non-live video version of Commissioner presentation made available by the Commission’s Audio Visual Services<sup>32</sup>.

More generally, however, the level of media coverage should not be used as a proxy measure of the success of communication activities related to forecasts.

First, a comparison between the DG ECFIN forecast and other forecasts does not constitute a like-for-like comparison. Unlike the DG ECFIN forecast, the IMF forecast has a global scope and, hence, a much wider audience. The IMF main forecast publication is also more technical (e.g. references, detailed explanations of estimates including mathematical notations, a more detailed statistical annex) and appears to target audiences with a greater understanding of economics.

Second, the unique selling point of the DG ECFIN forecast is that it is linked with the fiscal surveillance procedure and this naturally makes it very relevant (and attractive) news for the media. At the same time, communication activities are constrained by the fact that some results are potentially very sensitive given the deficit procedure. For instance, as noted by a member of the Cabinet: *‘the forecasted level of structural balance for country A as such may be seen as far less relevant for a media representative compared to whether the corrective actions may or may not be taken towards this country’*. Communication activities in DG ECFIN are effectively more constrained by this fact than those of other international institutions due to the political sensitivity of the results.

### ***How could the communication strategy be further improved?***

The 2015 DG ECFIN Communication Strategy currently defines the overall approach to communication. Although DG ECFIN forecasts are explicitly mentioned in a number of places within the document, no specific guidance on communication activities tailored to the forecasts, per se, is provided. Likewise, there is no explicit communication strategy for ECB macroeconomic projects and the OECD economic outlook specifically. Unlike DG ECFIN, ECB and OECD, specific details related to the promotion of IMF forecasts are formally documented in the internal publication.

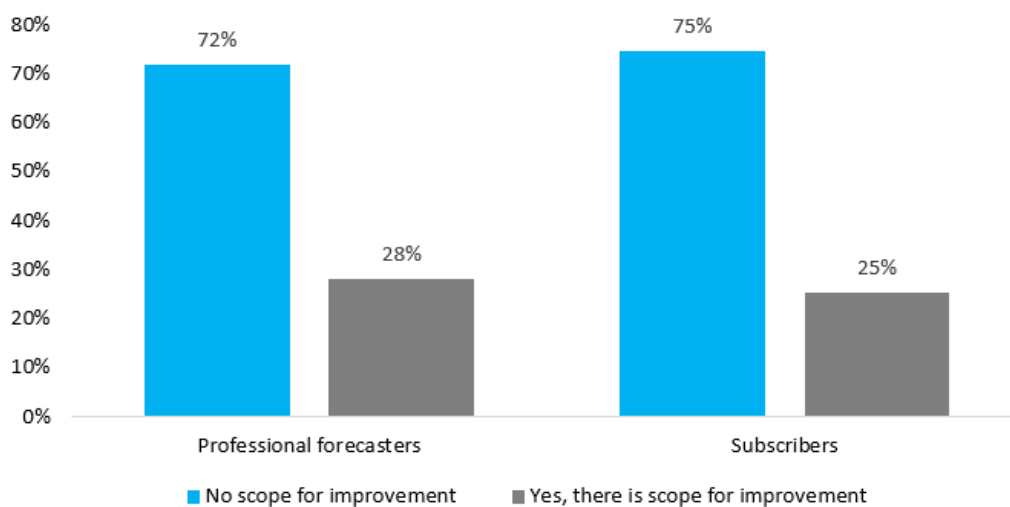
Overall, the evidence (primary and secondary) gathered as described below do not indicate areas in which major improvements (in terms of the strategy and actual processes/ outputs) would be required.

When asked whether there is room for DG ECFIN to improve the way it disseminates the forecasts, survey responses were relatively positive, with 72 per cent and 75 per cent of respondents from professional forecasters and subscribers to DG ECFIN’s publications respectively not seeing any scope for improvement (Figure 16). The main areas for improvement (as raised by the remaining 28 per cent and 25 per cent of professional forecasters and subscribers respectively) are presented in Box 6.

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<sup>32</sup> European Commission, 2017. Spring 2017 Economic Forecast. Available at: <http://ec.europa.eu/avservices/video/player.cfm?ref=I137681>

Figure 16 In general, do you think there is room for DG ECFIN to improve the way it disseminates the forecasts?



N=53 for professional forecasters, N=229 for subscribers

*Box 7 Main points in regards to potential improvements in the dissemination of the DG ECFIN forecast*

Professional forecasters

- 'Provision of tables in Excel format\*';
- 'More intense use of social media'
- 'LinkedIn distribution list'

Subscribers to DG ECFIN's publications

- 'Data in downloadable format - Excel';
- 'Stating the next release date on the website'
- 'Improving accessibility through website – it is difficult to find'

\*Note that the annual data in Excel format can be downloaded from AMECO.

All fifteen 'non-technical' users consulted were broadly satisfied with the current way communicating about the forecast and main outputs. For instance, those most involved, like the Cabinet members, described the coordination of the drafting of the press release, format of technical briefing sessions and the management of the Q&A session by the spokesperson as good. The suggested improvements included:

- The revisions to the forecasts (in the form of net differences between the current and previous forecast) should be outlined in a more prominent way. The format used by the IMF is seen as a potential model for DG ECFIN in this regard [two representatives of Cabinet, ESRB, and one European Semester Officer (ESO)].
- Improvement of charts including their layout being judged by one interviewee as outdated and the font assessed as too small. In addition, another interviewee stated that the charts should be simplified, e.g. referring more frequently to selected countries given their economic weight, instead of all 27 Member States (six interviewees commented explicitly on charts).

- The leaking of the forecast results prior to the official publication were mentioned as a persistent problem (three interviewees).
- A preference for the main presentation on the forecast results being given by technical staff rather than Commissioner Moscovici to allow more technical content and interpretation (one interviewee).

However, although not related to the forecast as such but rather to the approach to monitoring its consumption, the current scope to gauge the existing level of usage of the forecast (and to a lesser extent satisfaction) is limited. This is due to the fact that the monitoring tools used by DG ECFIN do not allow disaggregation for internal users (essentially EU staff users) *versus* external users. For instance, it is currently<sup>33</sup> not possible to establish what proportion of around 35,000 views of the Autumn 2016 forecast publication from the DG ECFIN website are from outside the DG/non-EU organisations. To some extent, this affects the ability to define the existing audience and consequently the ability to decide what (if any) changes in the strategy or specific communications activities/ outputs could usefully be made. Yet, neither the IMF, OECD nor the ECB have a system that allows the estimation and monitoring of internal *versus* external consumption. This is due to technical constraints<sup>34</sup> and therefore at this stage, the absence of such disaggregation is beyond DG ECFIN's (and that of other peer institutions') competence.

More generally, in terms of communication activities related to the forecasts, for a number of interviewees (one representative of the Cabinet, ESRB, Economic and Financial Committee, ESO in Spain) the IMF is perceived as setting the gold standard in terms of aspects related to the presentation of the forecast results. Its main publication is typically seen as very engaging with absorbing language and the frequent use of illustrative examples to which a reader can relate. The IMF is seen as stronger in presenting a narrative. Yet, the results from the survey of professional forecasters and subscribers do not corroborate with the findings from the interviews as DG ECFIN seems to outperform marginally the IMF (and other peer institutions) in terms of the quality of the presentation of the forecast results (Figure 17).

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<sup>33</sup> Study was informed though that new analytical system (Piwik) that would allow the disaggregation is being considered and may be in operation in early 2018.

<sup>34</sup> In general, the existing IT solutions do not allow such capability

Figure 17 Benchmarking of DG ECFIN forecast against peers' forecasts with 1: being the lowest rank



Source: surveys of professional forecasters and subscribers, N=53 for professional forecasters, N=186 for subscribers to DG ECFIN's publication



### What other target populations/locations, if any, should the communication strategy of the Commission forecasts focus on and why?

The 2015 DG ECFIN Communication Strategy indicates explicitly the key audiences for the DG namely, policy-makers, media, economic opinion formers including academia and think tanks, trade unions, financial institutions, businesses and civil society/NGOs. The Communication Strategy does not specify the general public as a audience even though *'...DG ECFIN has an obligation and strong interest to inform and educate citizens about its activities and their rationale...However, as a general rule, DG ECFIN strategy relies on its key audiences to act as multipliers and amplifiers of its communication in order to reach the general public, rather than placing a heavy emphasis on trying to reach citizens directly'*<sup>35</sup>. There is a lot of similarity with the OECD and IMF's approach in this respect whose main priorities are to influence policy-makers, with media (and market participants and analysis in case of ECB) being seen as instrumental in this respect.

It was confirmed through the interviews with DG ECFIN that reaching the general public is not seen as essential. These interviewees noted that other key audiences identified in the strategy (e.g. media representatives) – on which communication activities shall be concentrated – are seen as effective multipliers. Having said that, the number of communication activities around the forecast, including those that also target a general audience, is now considerable and has been extended further during the last 2-3 years. Likewise, the IMF and the OECD does not see the general public as a key audiences group even though they have specific activities and products (e.g. IMF infographics promoted via Twitter and posts on the OECD Facebook page) which target a general audience explicitly.

In interviews conducted for this evaluation, DG ECFIN emphasised on a few occasions that it is the *'credibility of the forecast and not publicity'* that is most sought and communication activities are designed and conducted with this perspective in mind. While evidently both do not have to be mutually exclusive, this view demonstrates how actual priorities are accentuated and which communication activities may and may not be suitable given this orientation.

DG ECFIN has been organising regular seminars for key audiences where forecasts have been the main or at least a major topic covered during the session (Table 3). Journalists were the most frequent attendees at those seminars.

*Table 3 Examples of seminars with DG ECFIN forecast being the primary or at least main topic of the agenda*

Type of attendees	Number of participants		Number of seminars	
	2015	2016	2015	2016
Financial institutions	17	20	1	1
Think Tanks	17	17	1	1
National Parliament	17	20	1	1
Academia	14	:	1	:
Trade Union		22	:	1
SMEs		23		1
Journalists	85	43	5	2
<b>Total</b>	<b>150</b>	<b>145</b>	<b>9</b>	<b>7</b>

Source: DG ECFIN internal data

<sup>35</sup> European Commission, 2015. DG ECFIN Communication Strategy 2015-2019.

None of the stakeholders interviewed for this evaluation suggested that other target audiences/locations that are not currently targeted with communication activities should be considered.

Overall, evidence gathered suggests that the populations targeted currently by DG ECFIN through its communication strategy are appropriate and there is no need for extension.

## 4.2 Results of analysis – effectiveness

The following section focuses on six specific questions (including sub-questions) that fall under the evaluation criteria of effectiveness outlined in the evaluation framework (Annex 1).

### **Question 6a: Are the current forecast procedures adequate to ensure high accuracy of the forecasts?**

The analysis of evidence in response to this question has focused on two issues:

- the accuracy of DG ECFIN's forecasts for selected countries; and
- the forecast procedures' influence on the accuracy of the forecast.

Evidence from the following sources was analysed to answer this question:

- interviews (DG ECFIN country desk officers and DG ECFIN management);
- comparative benchmark analysis; and
- literature review.

Judged by the findings in the literature, the size of the EC projection errors are very similar to the errors in the projections made by other international organisations such as the IMF and OECD<sup>36</sup>. A recent study shows<sup>37</sup> that ECFIN's forecasts are largely unbiased, but year-ahead forecasts for GDP growth were slightly over optimistic, thereby confirming the findings of earlier analyses. ECFIN's forecasts come out as being more accurate than the Consensus forecast and comparable to those of other international institutions (OECD, IMF, ECB), when judged by the size of mean absolute error (MAE). However, in the post-crisis period (2008-2014), the accuracy of the Consensus forecast for the respective current year appears to have improved and is similar to those of the European Commission and the other institutions. For the year ahead, ECFIN's forecasts come out as more accurate than the IMF's and the Consensus forecast but less accurate than the OECD's. However, in the case of the IMF, this may reflect the different timings of the forecasts, whereby DG ECFIN gains informational advantage as more current national accounts data is available and can be included in the forecast. Generally, the assumptions that institutions make to underpin their forecasts, clearly play a role in forecasting performance across institutions and may render comparisons misleading to a certain degree. In addition, as indicated by one DG ECFIN country desk officer interviewed for this study, it might be beneficial to wait at least 2 years to assess the accuracy of a forecast, as there are often significant revisions in actual outcomes due to new information collected by the statistical office.

The IMF and OECD have also published a comparative analysis on their forecast accuracy against the other institutions (IMF, 2014; OECD, 2012). The OECD (2012) finds that the size and profile of the projection errors made by the international organisations, the IMF, the European Commission as well as consensus forecasts are

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<sup>36</sup> European Commission (2012), The accuracy of the European Commission's forecasts re-examined.

<sup>37</sup> Fioramanti et al (2016), European Commission's Forecasts Accuracy Revisited: Statistical Properties and Possible Causes of Forecast Errors, European Economy

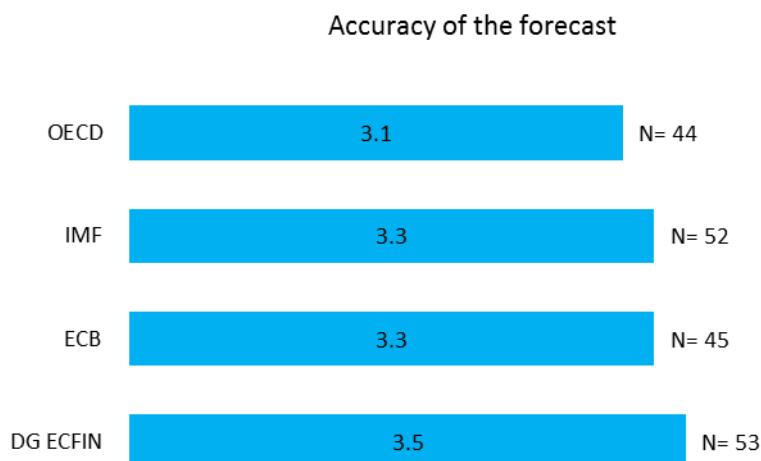
very similar. All institutions overestimated growth rates in 2009 and were surprised by the size of the initial rebound in 2010 and the subsequent weakness of the recovery. Nevertheless, no set of projections clearly outperformed the others during this period.

Directly from Fioramanti et al (2016), "Overall, the European Commission's forecasts continue to display a reasonable track record, similar to that of the other international institutions. Their accuracy deteriorated in the crisis and post-crisis period (2008-14) compared to the pre-crisis period (2000-07) mainly due to the anomalously large forecast error in the recession year 2009 (this difficulty applied to all forecasters, both institutional and private). For the more recent years (2012-2014), however, the accuracy of the European Commission's forecasts has improved again or remained similar for the key variables."

All in all, there is no evidence that DG ECFIN's forecast accuracy is hampered by the current forecast procedures. The forecasting errors of DG ECFIN are of the same magnitude as those in the benchmark institutions (ECB, IMF, OECD) and are unbiased at the aggregate euro area level and at the Member State level for the current year forecasts.

There is widespread recognition of the comparatively good accuracy of the ECFIN forecasts among key stakeholders; compared to other multinational institutions, DG ECFIN's forecast is perceived as more accurate (0).

*Figure 18 If you compare DG ECFIN's forecast with other institutions, how would you rank these (average out of five)?*



N=53 for professional forecasters.

All benchmark institutions indicate that the accuracy of their forecasts is reviewed on an ad-hoc basis, but not in a systematic fashion. The ECB reports to be in the process of building-up a forecast error database, which is intended to provide a foundation for a systematic and regular evaluation of forecast errors.

This lack of a systematic evaluation, which is also evident at DG ECFIN, will hamper the easy identification of changes to forecast accuracy which are directly a function of changes in the forecast process as opposed to externalities. There is, therefore, room for a more systematic evaluation of forecast errors at DG ECFIN, which might support the identification of the influence of changes in the processes on forecast accuracy.

**Question 6b: Are the current forecast procedures adequate to incorporate new information efficiently into the forecasts?**

The analysis of evidence in response to this question has focused on the forecast procedures' influence on the efficiency of incorporating new information into the forecast

Evidence from the following sources was analysed to answer this question:

- interviews;
- comparative benchmark analysis; and,
- literature review

In interviews with country desk officers, six of eleven participants declared that new information can be incorporated efficiently into the forecast because the system is sufficiently flexible, primarily because it allows for additional storages if necessary. Four country desk officers did not reply to this question. One country desk officer indicated that the forecast procedure lasts too long and suggested conducting two storages including TCEs, which would compress the schedule.

On the possibility of reducing the number of storages to two for the Autumn and Spring forecast with the exception of the country desk officer who suggested in the first place to reduce the number of the storage to two, 8 country desk officers consider that three storages at least are needed while 2 country desk officers did not reply.

Problems can occur at the end of a forecast round. Two country desk officers report that they can be put under time pressure because of incorporating new information due to significant historical revisions to national accounts data. Both indicate that when such events occur on the day of a storage, the time constraint makes it difficult to adjust the forecast appropriately to fully reflect the most up to date information.

Eurostat follows a standardised release calendar for a number of key variables. Flash estimates for euro area inflation are currently published on the last working day of the reference month, and the unemployment statistic is released on the last working day of the month following the reference month. Since 2016, Eurostat publishes a first ("preliminary flash") estimate for the euro area and EU GDP growth 30 days after the reference quarter ("t+30").<sup>38</sup> A second ("flash") estimate, including figures at a Member State level, is released 45 days after the quarter ("t+45"). This can be a challenge for DG ECFIN's forecasting exercise. For example, in Spring 2017, DG-ECFIN's forecast cut-off date was 25 April. Hence, the HICP flash estimate for April (released on 28 April), unemployment for March (27 April) and the preliminary flash GDP estimate for the first quarter (3 May) were released after the cut-off date.

DG ECFIN's forecasting procedure allows for eight working days between the cut-off date and the forecast release. In the trade-off between promptness and accuracy (i.e. between reducing the delay between the cut-off date and avoiding last minute errors when incorporating the latest information), an eight-day finalisation period is slightly shorter than the practices at the ECB and the IMF, which typically allow for at least 10 working days. Postponing DG ECFIN's cut-off date to allow for taking into account the Eurostat releases therefore does not seem feasible without changing the publication date of the projection. If it would not conflict with the requirements of the surveillance process, such a general change of the publication calendar appears advisable. In any case, the development of GDP leading indicators within DG ECFIN is useful to produce a first official GDP estimate as a guide in advance of the official forecasts.

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<sup>38</sup> See Eurostat (2016), Euro area and European Union GDP flash estimates at 30 days, Eurostat Statistical Working Paper, <http://ec.europa.eu/eurostat/documents/3888793/7242202/KS-TC-16-003-EN-N.pdf>.

### **Question 6c: Are the current forecast procedures adequate to ensure cross-country consistency of the forecast (numerical and economic)?**

The analysis of evidence in response to this question has focused on two issues:

- desk research on cross-country consistency of the forecast and;
- discussion with DG ECFIN Forecast officials regarding the forecast procedures' influence on the consistency of the forecast.

Following sources of the evidences were used to answer this question:

- interviews
- comparative benchmark analysis
- literature review

The question is addressing cross-country consistency derived from: 1) intra-country consistency 2) cross-country consistency. This is because the former is a pre-requisite for a cross-country consistency (for instance, imports depend on domestic demand and exports depend on foreign demand and relative price competitiveness). The numerical and then the economic dimensions of the cross-country consistency frame the discussion. Thereby, numerical consistency refers to a quantitative consistency – e.g. a consistency between the bilateral imports and exports of trading partners –, while economic consistency refers to a consistent narrative of the forecast – e.g. consistency regarding the impact of external developments (such as energy price fluctuations) on different economies.

#### **Numerical consistency**

Regarding intra-country numerical consistency, interviews indicate that all interviewed country desk officers run internal consistency checks using country desk specific versions of the standard excel sheet tool. Consistency checks are also implemented through FDMS+ validation rules, and required adjustments are communicated between the forecast co-ordination team and the country desks. Ten country desk officers indicate that there is no centralized model structure used for the production of forecasts. Therefore, all of them use a self-made sheet or program in order to match specific variables, e.g. tax and spending multipliers. They iterate over those variables until they match the national accounts. This is in line with the forecasting approach of the benchmark institutions (IMF, OECD).

Regarding cross-country consistency, there is a cross-trade consistency check, done via the trade consistency exercise (TCE) to address whether trade forecasts made at the country desk level are mutually consistent.<sup>39</sup> For that purpose, country desk officers store their exports and imports in volume terms and the corresponding prices.

They then compare how their forecasts for real exports stand in comparison with the respective economy's export market growth (e.g. world demand with imports being weighted according to the geographical structure of bilateral exports). If necessary, exports are then adjusted to grow in line with export market growth, taking into account changes of competitiveness; thereby, competitiveness is measured by relative export prices. Significant deviations not justified by developments in competitiveness or other evident factors are flagged by Unit A3 and discussed bilaterally with country desk officers. For import prices, Unit A3 compares import price growth projected by country desk officers to the weighted forecast of export prices' growth of trading partners. Import price growth as forecast by country desk officers and the weighted average of export prices should not be too different and should narrow over time.

<sup>39</sup> See Casaux S (2013); 'The trade consistency exercise in the context of ECFIN economic forecast', Ref Ares(2013)82782.

Interviewed country desk officers consider the trade consistency exercise (TCE) as useful. Ten of eleven interviewees indicate that the TCE is useful and that they consider the TCE results of each iteration round for their forecast. One country desk officer expressed doubts, however, about how the trade matrix is being used and understood, and would appreciate documentation on the trade matrix (for instance to have information on the trade weights used).

Interviewees in multilateral institutions (ECB, IMF, OECD) indicate that similar trade consistency exercises are in place, alternatively, the model underpinning the UN's forecasts ensures global trade consistency through a trade matrix.<sup>40</sup> Beyond that, numerical consistency (e.g. for financial flows) is typically not systematically assessed by multilateral benchmark institutions.

### **Economic consistency**

Consistency in terms of story and narrative relies, as in all benchmark institutions, on forecast meetings at different stages of the forecast preparation phase.

At country desk officers' level, intra-country economic consistency is at first taken into account through the forecasting process based on excel files and additional modelling tools that may be developed (such as leading indicators). Several interviewees also explain that informal discussion between country desk officers who work on countries with strong trade links helps to improve on cross-country economic consistency. Furthermore, feedback from horizontal units, such as the forecasting unit, based both on the TCE and on the skeleton story are designed to ensure economic consistency across countries. While cross checks are in place to ensure intra-country consistency, based on national accounts, country desk officers indicated a wide degree of latitude in how they performed these cross-country consistency checks.

Generally, the use of structural models could improve intra-country consistency of the macroeconomic forecast beyond (e.g. national accounts) identities, e.g. extending to interlinkages between public debt, the current account and financial variables. Using models might also improve the cross-country consistency beyond trade linkages, if similar models are employed by different country desks. For example, the influence of common shocks on countries could be analysed in country-specific models and heterogeneous reactions of the economies could be traced back to country characteristics (see also EQ 9b).

### **Question 6d: Are the current forecast procedures adequate to what major operational risks are related to the current forecast processes?**

The analysis of evidence in response to this question has focused on two issues:

- desk research, and
- discussion with DG ECFIN Forecast officials to identify operational risks related to the forecast process.

Following sources of the evidences were used to answer this question:

- interviews (DG ECFIN CDOs and DG ECFIN management)
- comparative benchmark analysis
- literature review

Eight out of eleven interviewed country desk officers consider the operational risks to be low. The main reasons are:

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<sup>40</sup> Hubrich and Karlsson (2010) explain the trade consistency procedure of the ECB in detail.

- Seven days between the last storage and the final publications is enough time to double-check at least the most relevant numbers.
- Country desk officers have automatic checks, and horizontal units check the aggregate forecast with the sum of country desk officers' forecasts.
- The forecast process is well documented and all back-ups are identified.

According to country desk officers, minor risks include

- That a new team member has not learned the data transfer process (two country desk officers mentioned it as a risk)
- IT problems, e.g. collapse of FDMS or network error (one country desk officer mentioned this)

In general, insisting on centralised data storage and improving the documentation of processes and infrastructure (see also EQ 11) simplifies processes in case backup measures need to be taken. There is evidence (mainly insights from interviews with DG ECFIN country desk officers) that backup procedures work sufficiently well.

All multilateral benchmark institutions report to be confronted with operational risks due to unexpected absence of team members. In all institutions, leeway to create redundancies to ensure that processes still work in this situation is very limited and there are no codified plans to mitigate those risks. Furthermore, IT-related risks such as network failures are mentioned.

The ECB reports premature leakage of the forecast data as an important operational risk. As a countermeasure, an embargo period is defined before the official publication, during which only approx. 100 staff members are allowed to access particularly sensitive data.

As a general comment, several of DG ECFIN staff (e.g. from Cabinet) who were interviewed and who have been involved in the production process since several years stated that although forecast production is typically an intense process and more resources and time would be welcome, a lot of in-house knowledge has been accumulated and the working method has been functioning reasonable well.

**Question 7. To what extent do the current forecast processes in DG ECFIN ensure that forecasts are produced by staff independently, particularly with regard to variables that are relevant for fiscal surveillance purposes (e.g. in the framework of the Stability and Growth Pact)? In case the independence is found to be incomplete, how could it be improved?**

The analysis of evidence in response to this question has focused on four issues:

- examination of organisational structure and workflows;
- interviews with DG ECFIN Forecast officials to explore potential pressures from Member States or hierarchy;
- user perceptions regarding independence and quality.

The following sources of the evidences were used to answer this question:

- interviews

Overall, there is an abundance of evidence from the interviews conducted with the European Commission officials suggesting that the forecast is produced independently by staff.

### **Interviews with country desk officers**

The forecast process combines country desk officers' analysis with analysis by horizontal units and guidance from senior management in an interactive way. When

asked whether they feel ownership of their forecast (both macro and fiscal), one out of eleven country desk officers reported not feeling as the owner of her/his forecast at some occasions, and mentioned that she/he experienced political pressure from within DG ECFIN, while ten country desk officers state that they feel full ownership of their forecast. More details on the country desk officers' insights that might suggest some potential compromising of the independence under certain conditions are presented in Box 8.

*Box 8 Country desk officers' insights on individual and collective independence*

Four country desk officers mentioned that a forecast that is not in line with the Commission's conviction is likely to be challenged from higher up in the hierarchy within DG ECFIN, and/or it is likely to be subjected to critical questions in forecast meetings; a political motivation of such interferences was explicitly mentioned by two country desk officers. Two country desk officers indicated that this setup can, in principle, lead country desk officers to take positions in their forecast, possibly in anticipatory obedience, which might deviate from their personal position. One country desk officer further mentioned that there may be reasons for a country desk officer to err on the optimistic side, considering that a more conservative projection could lead to negative effects on "his/her" country (e.g. due to the direct implications of the forecast for the leeway of fiscal policy under the corrective arm of the SGP). All four country desk officers who mentioned that influence from the hierarchy can have an influence on the forecast, underline that, if one has a consistent story and a plausible projection, these influences will not be decisive in the end. Despite having been explicitly asked, none of the country desk officers explicitly mentions direct pressure from the Cabinet of Commissioners as a threat to the independence of the forecast.

Overall, from our full set of interviews with country desk officers, it emerges that the forecast production process is independent. Generally speaking, country desk officers feel they have the ownership of their forecasts. Obviously, top-down elements (guidance by horizontal units, discussions with senior management) can lead to country desk officers feeling less than full ownership of the forecast. However, these top-down elements – including constructive and balanced questioning – are clearly an important part of DG ECFIN's forecast production process, and they are necessary to ensure the efficient use of information as well as consistency across countries. In such form they do not constitute a threat to the independence of the forecast on the institutional level. These top-down elements stemming from inside DG ECFIN, however, need to be distinguished from an exertion of influence on the forecast for political reasons, which would be clearly undermining staff's independence when preparing the forecast.

### **Interviews with the Cabinet**

From Cabinet's perspective, one of the rationale for its involvement in the production process pointed by the Cabinet members relates to the willingness to proofread some arguments formulated by country desk officers, e.g. those that refer to 'political risks'. It was mentioned that there were cases in the past where political risks were interpreted as a problem with implicit judgment on the democratic process. Cabinet indicated that its involvement is basically 'a listening' exercise. Overall, all interviewed members from the Cabinet were convinced of full independence and integrity of the production process.

### **Other stakeholders**

Some interviewees (e.g. Economic and Financial Committee) pointed to a very similar level of accuracy of ECFIN's forecast compared to IMF and OECD (see also EQ6a), which, in their view, was also somehow an evidence of absence of political



interference.<sup>41</sup> Where some political pressure could be exercised, one interviewee argued, was the further interpretation of some results outlined for instance in the main publication. Yet again, independence of underlying forecast results has not been doubted by any of the interviewed stakeholders from outside of the EU institutions.

All in all, the study team finds that DG ECFIN forecast processes are supportive for the independence of the staff when preparing the forecast; this is indicated by the interviews with country desk officers. The issues outlined in 4.2.1, although they should not be underestimated, appear to be perceived very infrequently and do not hamper the independence of the forecast on the institutional level. From a user perspective, both users in the Commission and more broadly, stakeholders from non-EU organizations, expressed the firm impression that forecasts are prepared by the staff independently.

### 4.3 Results of analysis – efficiency

The following section focuses on nine specific questions (including sub-questions) that fall under the evaluation criteria of efficiency outlined in the evaluation framework (Annex 1).

**Question 8: In what way do approaches to forecasting among other professional forecasters (in particular other international organisations, but also research institutes and the private sector) differ from that implemented by DG ECFIN?**

**Question 8a: What lessons have other forecasters drawn since the Great Recession to improve their forecasts?**

The analysis of evidence in response to this question has focused on two issues:

- comparative analysis between ECFIN’s approach to forecasting and approaches of other professional forecasters to identify improvements to forecast approaches since the Great recession;
- desk research/ literature review and interviews with professional forecasters to identify improvements to forecast approaches since the Great Recession.

Following sources of the evidences were used to answer this question:

- comparative benchmark analysis;
- interviews;
- literature review;
- survey of professional forecasters.

#### ***First lesson: Closer look at financial market developments***

A large majority of the respondents to the survey among professional forecasters indicates that they put a higher weight on financial market developments after the Great Recession. This includes the usage of financial stress indicators and early warning systems for financial crises as well as the stronger consideration of uncertainty and risk perception as a driver of economic developments. Furthermore, in some institutions, structural models have been developed or refined to reflect financial market aspects, for example an explicit banking sector and its interactions with the real economy and, in particular, housing markets (ESRI). In addition, professional

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<sup>41</sup> While forecast accuracy, in the view of the study team, is not a reliable indicator for forecast independence, the absence of bias in DG ECFIN’s projections (Fioramanti et al., 2016) is consistent with the overall finding of DG ECFIN’s forecast being independent.

forecasters highlight that they pay more attention to global and European imbalances than before the crisis.

Similarly, most of the multilateral benchmark institutions report to take financial market considerations into account more prominently than before the crisis. The ECB reports to have introduced some financial market considerations (e.g. lending rates for NFCs and households, loans to NFCs and households, house prices) and is using an indicator for credit supply constraints judgementally in the projection of e.g. consumption or investment. Furthermore, the impact of non-standard monetary policy measures on GDP and inflation has been analysed extensively, this is likely to be a result of their policy remit. In addition, the ECB forecasts flow of funds in the projection exercise, though not fully integrated, but rather as an "off-model" type of exercise. In our interviews, the OECD emphasizes the importance and informational content of risk premia and the relevance of (international) spillovers on financial markets as an important driver of economic fluctuations. They report to have developed new models to allow for a quantitative assessment of these influences. In addition, both the OECD and the IMF have developed Financial Conditions Indices (Davis et al., 2016; Matheson, 2011) and report to have them incorporated (IMF) or intend to incorporate (OECD) those in the forecast.

The stronger consideration of financial market aspects in the forecasting context is backed by the findings from the literature review (see Annex A6.3, see also answer to EQ2b for an overview).

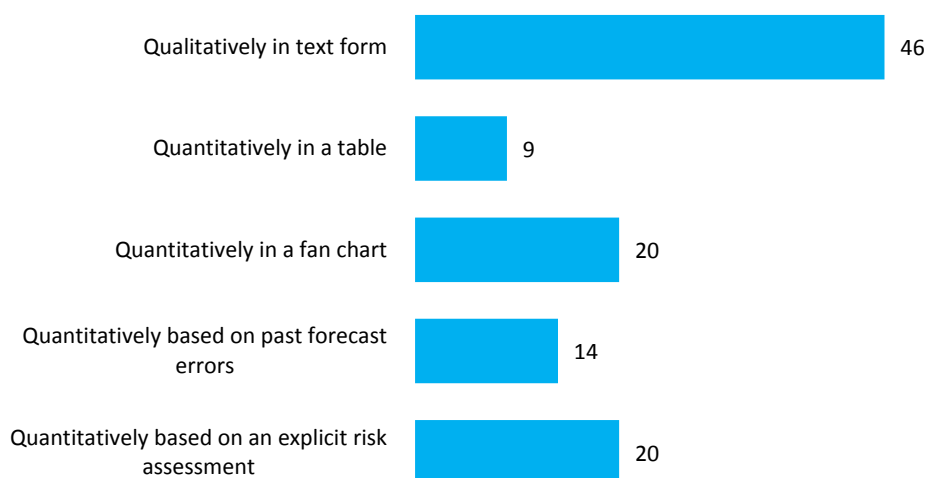
As the evidence presented in response to EQ2b indicates, the use of financial variables in DG ECFIN's forecasting process is limited. While DG ECFIN has employed methods for the early detection of macroeconomic risks (see e.g. Berti et al., 2012), financial stress indicators are not used systematically in the forecasting context at a country desk level. In addition, regarding the forecasting infrastructure, six out of eleven country desk officers indicate that financial variables are not accounted for explicitly in their models. From the group that uses financial variables, two country desk officers report that they try to implement credit data in the model, but it does not improve the predicting power. Eight out of eleven country desk officers take into account credit growth in their projection, typically through judgement in the forecast. The three country desk officers who do not use credit variables complain about complexity of the data file and missing values for their country.

### ***Second lesson: Emphasize risks and uncertainties around the baseline***

Furthermore, forecasters indicate that, since the crisis, the risk assessment features more prominently in forecast publications and scenario analyses are used more often to look into the uncertainties surrounding the central forecast.

When asked the question '*how are risks and uncertainties around the baseline addressed/communicated in the forecast?*', roughly half of the professional forecasters stated that it is done qualitatively in the form of commentary in the text (Figure 19). Still one fifth of the professional forecasters reports to present a fan chart to communicate the risks surrounding the baseline projection. There is no clear preference among professional forecasters regarding the approach to quantify the risk: Some forecasters base their assessment on historical forecast errors and some prepare an explicit quantitative risk assessment.

Figure 19 How are risks and uncertainties around the baseline addressed/communicated in the forecast



N=60 for professional forecasters.

Note: Multiple answers were allowed.

The risks and uncertainties surrounding the baseline forecast are also strongly emphasized by the multilateral benchmark institutions. All devote a significant part of their forecast publication to the discussion of risks and uncertainties around the baseline. The ECB calculates and publishes a fan chart for euro area GDP and HICP inflation based on historical forecast errors (ECB, 2009), while the IMF employs an econometric method to calculate a (forward looking) fan chart for global GDP growth based on several economic indicators (e.g. financial conditions, oil prices, inflation) typically associated with risks to the outlook (IMF, 2009). The OECD, while not providing a numerical risk distribution, emphasizes risks by using scenario analyses to illustrate alternative outcomes and their global implications (Lewis and Pain, 2014). For internal purposes, the ECB reports to have a method in use to quantify the distribution of risks around the central projection based on a survey among senior management: Managers are asked for their opinion on the most important risk events and the growth consequences in case those risks materialize; based on probabilities attached to those risk events, a distribution of risks and an associated distribution of growth outcomes can then be derived, which is used to calculate critical values and a fan chart for euro area growth.

DG ECFIN’s assessment and presentation of risks in the forecast publication is broadly comparable to the benchmark institutions’ approach. Risks are discussed extensively in Part I of the forecast document in a qualitative and quantitative manner. The qualitative discussion of risks is usefully structured and looks both at risks to the external environment and at risks to the outlook for the EU and the euro area; in addition, simulation-based scenario analyses are presented in boxes to quantify the impact of different policy assumptions. The overall quantitative risk assessment with respect to euro area GDP growth is presented in a fan chart based on simulations with DG ECFIN’s QUEST model; the link between the qualitative and the quantitative risk assessment is intransparent; in particular, the weighting and quantification of the qualitatively discussed risks remains unclear. In our interviews, one country desk officer indicated that the connection between the qualitative risks and the fan chart is at times rather loose. A documentation of DG ECFIN’s approach to the quantification of risks is not available to the public.

As regards the qualitative presentation of risks on the country level, the country reports in Part II of the forecast publication are heterogeneous. For instance, while some country chapters have dedicated risk sections and some other chapters at least mention risks to the growth outlook in the running text, others do not make a reference to the uncertainties of the outlook at all. This heterogeneity is mainly due to the desire to focus on country-specific risks in Part II of the forecast publication, while general risks are discussed in Part I of the document. This can, however, lead to suboptimal outcomes. For example, the UK country chapter did not include any reference to the risks to the outlook in the Autumn 2016 report – the first report published after the Brexit referendum, in a situation characterized by extreme uncertainty about the economic implications of the decision to leave the European Union. While those risks were discussed extensively in Part I – mainly based on an analysis published in July 2016 (see European Commission, 2016b) – implications for the UK economy are not explicitly outlined in the country chapter.

### **Other lessons: Closer look at fiscal policy, labour markets, and energy prices**

In our survey, professional forecasters highlight also several other lessons from the crisis. Multiple forecasters mention that there is evidence that fiscal multipliers are higher in downswings than in upswings, and in particular in times, when the monetary policy rate is close to the zero lower bound.<sup>42</sup> On this topic, extensive work has also been done in multilateral benchmark institutions (see e.g. Baum et al., 2012), and the discussion has also been picked up in the forecasting context (e.g. IMF, 2012; OECD, 2010). DG ECFIN has contributed to this debate and taken the findings into account in the forecasting context (European Commission, 2012).

Other aspects mentioned by the professional forecasters include the higher importance of commodity markets and, namely, energy price swings for the business cycle after the financial crisis. This is also a topic mentioned by the forecast representative of one of the benchmark institutions (UN) to be high on the research agenda. Furthermore, one ECB forecast team member highlights the importance of labour markets for forecasting; a particular topic in this context includes the assessment of labour supply, where important structural influences – such as demographic developments and uncertainties surrounding the estimation of the NAIRU – deserve a close monitoring and need to be taken into account in the forecasting context.

In addition, there are some indications that the crisis has influenced forecasting processes: The ECB reports that, since the crisis, bottom-up approaches for the projection of the euro area have gained in importance, because it is easier to take into account (country-specific) developments not reflected in the aggregated model. On the other hand, the OECD mentions as one of the emerging changes after the crisis that the greater centralization that comes with a top-down approach of the forecast process at an early stage helps to ensure that projections for individual countries are based on a common general storyline (Lewis and Pain, 2015). DG ECFIN already follows a “bottom-up” approach to forecasting, which is in line with current views at other institutions on how best to approach forecasting.

### **Question 8b. What recent innovations in forecasting methods are being taken up and why?**

The analysis of evidence in response to this question has focused on two issues:

- comparative analysis between ECFIN’s approach to forecasting and approaches of other professional forecasters;
- desk research/ literature review and interviews with professional forecasters.

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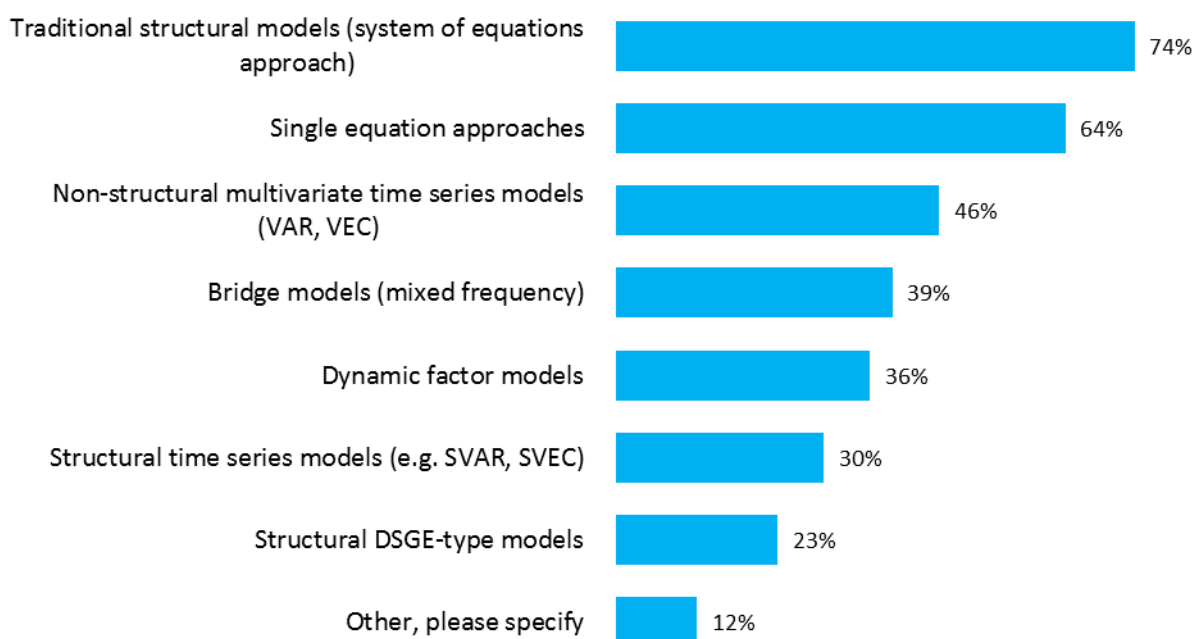
<sup>42</sup> See also <http://voxeu.org/search/node/fiscal%20multiplier> for contributions to the debate.

Following sources of the evidences were used to answer this question:

- survey of professional forecasters;
- interviews;
- literature review.

Professional forecasters who replied to our survey prefer traditional structural models (Figure 20). Those are used in 74 per cent of all institutions. Modern structural models (SVARS and DSGE) are used less often (30 per cent and 36 per cent, respectively). The group of non-structural models is led by single-equation approaches (64 per cent). Dynamic factor models, bridge models and non-structural time series models (VARs, VECMs) are applied by 46 per cent of the respondents.

*Figure 20 In the forecasting activities of your institution, what kind of quantitative forecasting tools are used on a regular basis?*

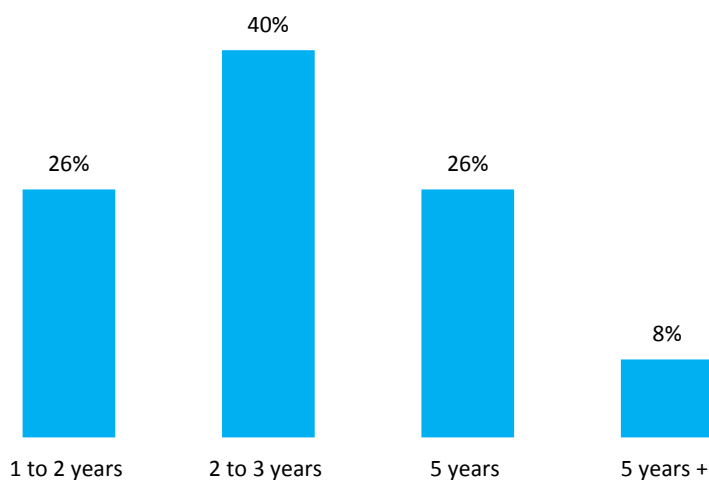


N=61 for professional forecasters.

Note: multiple answers were allowed.

Most professional forecasters use a model portfolio in order to forecast over a three-year period (Figure 21). Only a minor part of 2 per cent forecasts a shorter period (two years), 30 per cent also include the medium- and long-term projection (five and more years).

Figure 21 Time horizon of the forecasts produced by your institution



N=62 for professional forecasters

As regards recent developments, 68 per cent of those who responded have developed new models in recent years. Developers do not prefer one specific model-type; the results of the survey indicate a relatively high importance placed on nowcasting models and models for very short-term forecasts. In addition, non-structural time series based approaches such as BVARs are mentioned frequently. Finally, (semi) structural models as well as DSGE models have been fairly high up on the agenda.

### **Nowcasting models**

The results of our survey among professional forecasters indicate a relatively high importance placed on nowcasting models and models for very short-term forecasts; forecasters explicitly mention bridge models (BMs), mixed frequency MIDAS models and dynamic factor models as new additions to their model portfolio (see Annex A6.1 for an overview of the different nowcasting techniques currently discussed in the literature).

Modelling activities thereby reflect one of the lessons from the crisis that is highlighted by many participants in our survey: Professional forecasters put a higher weight on nowcasting techniques, because those approaches – being based on higher frequency data such as financial market data or sentiment indicators – allow an early identification of changes in the economic environment. The renewed interest in this type of models thus reflects a widespread dissatisfaction with the recognition of the real economic impact of the global financial crisis in its early stages. In addition, advances in computational power make it possible to incorporate large datasets such as those that emerge from high frequency data on financial markets or data sourced from the internet (“Big Data”).

The literature has made substantial progress in this direction and various techniques have been developed that use large datasets and data of different frequencies for the early estimation of economic developments (see Annex A6.1 for an extensive treatment). The bridge model has a long tradition in policy institutions, particularly central banks. It aims to derive information for low-frequency (e.g. quarterly) indicators such as GDP or its subcomponents from higher frequency (e.g. monthly) predictors such as industrial production (see e.g. Baffigi et al., 2004, for an example for euro area GDP). In the context of bridge models, the mixed frequency problem is resolved by temporally aggregating the predictors to the lower frequency. However, due to differences in data release dates, not all data points may be available for

aggregation. To handle this “ragged edge”, BMs use auxiliary models to “bridge” this gap, such as ARMA or VAR models.

While still commonly popular, the standard bridging approach is relatively outdated in the modern nowcasting literature. As a single equation variety, the Mixed Data Sampling (MIDAS) approach proposed by Ghysels et al. (2005, 2006) in the context of financial applications, and extended in a macroeconomic context by Clements and Galvao (2008), has become an important alternative to deal with the mixed frequency problem. In the MIDAS model class, the higher-frequency variables are included at their original frequency in the regression and they are projected onto the lower-frequency variable as separate variables for each time period across the lower frequency. MIDAS models are often used when data with very high frequency (daily or even higher frequency, e.g. from financial markets) is employed to derive early estimates for economic developments at the current margin; in this environment, MIDAS models are found to be comparably parsimonious and robust (Annex A6.3).

A popular approach to summarize an exceptionally large number of variables in a manageable number of indicators (“factors”) are dynamic factor models (Stock and Watson, 1989). Thereby, the factors are typically used as coincident indicators (Mariano and Murasawa, 2003), but the endogenous dynamics of the model also allow for comparably reliable short-term projections of economic developments (Stock and Watson, 1998). Recent additions to the literature also allow for the use of dynamic factor models in a mixed frequency environment (e.g. Banbura and Rünstler, 2011; Viefers et al., 2013) and thereby allow for the analysis of a large number of variables available in different periodicities. This setup has become increasingly popular among professional forecasters in recent years.

At DG ECFIN, interviews with country desk officers indicate that bridge and factor models are frequently used. Seven out of eleven country desks use the bridge model framework provided by Unit A3.2, although two of the interviewees indicate that the predictive accuracy of the model is limited and they use the model with caution. The wide-spread use of bridge models mirrors a similarly broad use of this type of model documented in the internal ECFIN note “Country desks contribution to the recommendation 3, 4, 5 and 7 of the 2011 audit report on forecast” prepared in December 2012. However, only the Czech Republic country desk reports the use of a factor model in the 2012 note, while four of eleven country desk officers report to use a factor model in our recent interviews. This indicates that factor models have gained importance in ECFIN’s forecasting toolbox over recent years. In addition, unit A3 has developed a set of traditional bridge models and a factor-based bridge model relying on the EU Business and Consumer Survey (BCS) indicators, as documented in the internal note “Forecasting euro-area GDP growth – current models revisited” prepared in April 2015.

Taken together, this indicates an increasing willingness of country desks to employ model-based nowcasting techniques. However, interviews still evidence a fairly widespread scepticism of ECFIN forecasters regarding use of these models and a lack of time to develop new models. This might also be the reason why the more recently developed nowcasting techniques such as MIDAS models or mixed frequency factor models, possibly including financial market indicators, are not reported to be used by country desk officers. Compared to the current state of the literature and the increasing popularity of these approaches among professional forecasters, DG ECFIN’s forecasting infrastructure could benefit from strengthened investment in this direction.

### ***Non-structural (time series) models***

In the context of non-structural, time series based models, VAR models have been the workhorse instrument in the forecasting context for at least 30 years. As evidenced by our survey among professional forecasters, VAR models or their structural version

(SVAR) are still actively developed by forecasters in economic research institutes and political institutions.

VARs were introduced by Sims (1980) as an alternative approach to estimating the relationships between macroeconomic variables without imposing *a priori* restrictions, which characterized the large-scale models of that era (see Annex A6.2). A useful feature of VAR models is that it is relatively simple to extend these models in order to investigate or predict alternative features of the data.

Our survey of professional forecasters indicates that they have a particularly strong preference for Bayesian Vector Autoregression (BVAR) models among recently developed models. While this type of model overcomes the curse of dimensionality typically faced when estimating standard VAR models, BVAR models require the choice of the parameters of the prior distribution of the coefficients, thereby giving the forecaster some discretionary leeway and potential influence on the simulation results of the model. The academic literature has largely converged on a suitable set of parameterisations which perform reasonably well in forecasting exercises, for example see Canova (2007), however these can be improved by estimating these parameters, Giannone et al. (2015).

At DG ECFIN, our interviews with country desk officers indicate a limited use of VAR models and their variants for the core forecasting activities. Only one of eleven interviewed country desk officers (Latvia) mentions a VAR model in regular use. This finding is in accordance with the model infrastructure that was documented in the internal ECFIN note "Country desks contribution to the recommendation 3, 4, 5 and 7 of the 2011 audit report on forecast" prepared in December 2012. The note indicates that, at the time, only the country desks for Italy and Bulgaria were using (S)VAR models in the forecast. Recent additions to the ECFIN toolbox include, however, BVARs used to assess investment dynamics (European Commission, 2015, Box IV.1), the link between financial and macroeconomic developments in the euro area (European Commission, 2016a, Chapter II) and the impact of uncertainty on the economy (European Commission, 2017, Box I.1). In addition, a VAR model to estimate the exchange rate pass-through rates into prices in euro area countries (European Commission, 2014, Box II.2.1) and a GVAR model to assess confidence spillovers between euro area countries (European Commission, 2016a, Chapter III) have been recently employed.<sup>43</sup> While these models appear not to have been used in the core forecasting exercise, the expertise for developing non-structural (time series) models is present in DG ECFIN. Judging by the findings of our survey of professional forecasters, DG ECFIN should aim to use this expertise to strengthen the model toolbox of country desk officers.

### **Structural and semi-structural models**

Overall, VARs have been shown to provide a flexible and reasonably accurate forecasting tool. However, their flexibility is at the same time a limitation: because forecasts are based on historical relationships rather than theory, they may be difficult to explain intuitively. For policy-making institutions, pure accuracy may not be the overriding aim of forecasting and they may also wish to provide a narrative around the forecast. In this situation, (semi-) structural models of the economy come into play.

In terms of (semi-) structural models of the economy, there are two broad groups, semi structural models (SSM) and dynamic stochastic general equilibrium models (DSGE):

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<sup>43</sup> GVAR models, while popular in international institutions, are not mentioned by the respondents in our survey of professional forecasters as one of the model classes recently used.



- SSM models remain a relatively popular choice of modelling format, albeit largely outside of the academic environment. SSMs are commonly large scale models which provide a significant number of linkages throughout an economy. The equations are often modelled in error correction form to ensure a return to equilibrium.
- DSGEs: Especially in the recent past, many central banks have adopted DSGE models for forecasting while some central banks only retain these for scenario analysis.

Our survey of professional forecasters indicates that both types of models are still being developed by forecasting institutions. Forecasters indicate a slight preference for DSGE models over SSM models when asked about recently developed new models. This might reflect the fact that SSM models are well established in the forecasting context, while DSGE models have only recently become a widely used instrument. In addition, smaller scale (often times single equation) models to project selected macroeconomic variables in a theory-consistent manner are used frequently in the forecasting context. A particularly popular approach is based on Phillips Curves (e.g. ECB, 2014), linking price developments to the output gap. Behavioural equations, e.g. modelling imports as a function of selected domestic demand components, are other prominent examples.

As regards the performance of DSGE models in forecasting, the scientific literature is inconclusive:<sup>44</sup>

- Wieland et al (2016) find that professional forecasters on average are more accurate than DSGE model forecasts for US GDP growth and inflation up to one year.<sup>45</sup> This is due to the informational advantage of expert forecasts who can use high frequency data such as daily financial data and business news. The advantage diminishes with increasing forecast horizon. After five quarters, the forecast accuracy, measured by the Root Mean Squared Error, is almost the same. Comparing different types of DSGE models, Wieland et al (2016) further show that including an explicit role for financial markets in the model (in the form of a financial accelerator mechanism) can improve forecast performance during a financial crisis, but weaken performance for the recovery period;
- The clear advantage of forecasting with DSGE models is that building empirical models on sound theoretical foundations leads to an internally consistent interpretation of the current state and future trajectories of the economy and enables a sound analysis of policy scenarios. However, this comes at the cost that theory-implied cross-coefficient restrictions might lead to a deterioration in forecast performance and at the cost of comparably high resource requirements to construct and maintain those models. While a decade ago these costs clearly outweighed the benefits, the scale might have tipped in favour of DSGE models in recent years due to rapid developments in this area.<sup>46</sup>

<sup>44</sup> See also Blanchard (2016) for a brief discussion.

<sup>45</sup> Professional forecasters in the comparison are identified with the Survey of Professional Forecasters (SPF), a quarterly survey conducted by the Federal Reserve Bank of Philadelphia. On average, 30 to 50 participants contribute projections to the SPF.

<sup>46</sup> Important features include the following: First, Christiano, Eichenbaum and Evans (2005) and Smets and Wouters (2003, 2007) enhanced the models with exogenous and endogenous propagation mechanism that better capture the autocovariance patterns in the data. Second, DSGE models can be easily modified by incorporating external information, i. e. real-time information or long-run trends. Real-time information improves the accuracy of short-term forecasts, trends can be used to anchor specific variables, e.g. the inflation rate.

At DG ECFIN, interviews with country desks indicate a limited use of SSM or DSGE models. Only one of eleven country desk officers (France) mentions an SSM to be used for the forecast. Interviewed country desk officers do not use DSGE models and no structural models appear to have been developed in recent years. Two of eleven country desks report to use behavioural equations in the forecasting exercise. Compared with the responses to our survey of professional forecasters, recent additions to the structural modelling toolbox on the country desk level are scarce; recent developments in the literature are not taken into account.

For policy analysis, the QUEST model is available at DG ECFIN. This structural DSGE type model in the New-Keynesian tradition exists in different versions, both in estimated and calibrated form, and both as multi-country and closed economy versions. In the forecasting context, the model is used, inter alia, for the assessment of the impact of risks on macroeconomic developments (see e.g. European Commission, 2017, Box I.2). Recently, DG ECFIN has developed – together with the European Commission’s Joint Research Center – an estimated multi-region structural model (see also EQ 9b). This Global Multi-Country Model (GM) has lately been employed, in the forecasting context, to identify the drivers of growth through shock decompositions (see European Commission, 2017, Box I.3).

### **Other aspects of model-based forecasting**

- **Introduction of judgement:** Box 8 summarizes the findings from the open question of ‘*how do you approach the introduction of judgement into your forecasts?*’ which was asked in the survey for professional forecasters.

#### *Box 9 How do you approach the introduction of judgement into your forecasts?*

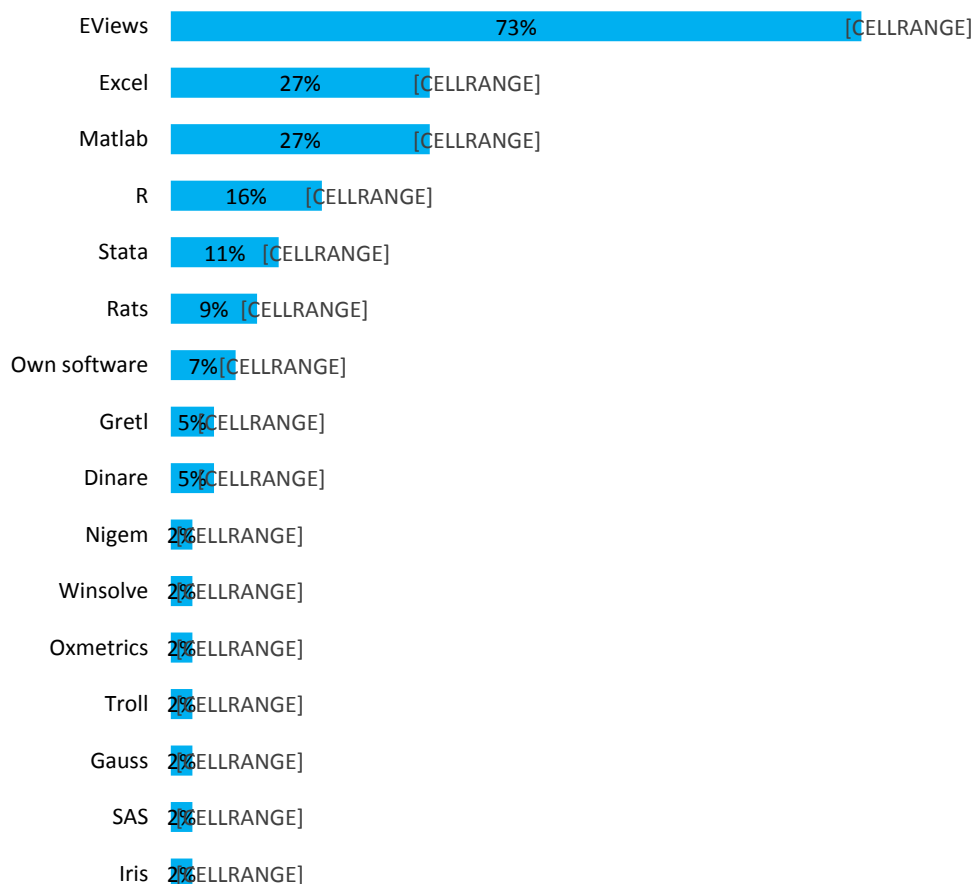
Professional forecasters indicate that judgement remains an important input into the production of their forecasts. The motivation for the incorporation of the judgement ranges from correcting for data deficiencies in volatile countries to a way to reconcile the outputs from alternative models, or to correct missing transmission mechanisms or for structural breaks which have not been captured within their models. The majority of respondents from the survey of professional forecasters overlay expert judgement on top of the outputs from a model based forecast, feed the judgement as add-factors through models into the forecast or apply judgement through the choice of priors in Bayesian models.

Information on judgement is gathered through meetings with stakeholders and sector level experts, while higher frequency hard indicators, e.g. output in production industries, and soft indicators such as consumer confidence indicators are used to cross check and adjust model outputs.

One professional forecaster stressed the importance of providing transparency around the incorporation of judgement and how the forecast would change in case of different judgement. Another forecaster reports that add-factors should be stored over time to allow for the analysis of changes in add-factors between projection rounds – thereby forcing forecasters to justify their judgement.

- **Software / languages:** EViews is by far the most frequently used software among professional forecasters who responded to the survey (Figure 22). 73 per cent of them rely on this software. MS Excel, Matlab, R and Stata are also in broad use.

Figure 22 What software/language are the models you use coded in?



N=44 for professional forecasters

All in all, reliance on modelling output in DG ECFIN’s core forecasting activities is limited. Judged by the findings of our survey of professional forecasters, model development and the use of models in the forecasting context is an important dimension of forecasters’ work. In contrast, DG ECFIN country desk officers did not substantially develop their model infrastructure over recent years and innovations in the forecasting literature did not find their way into country desk officers’ toolboxes.

While the expertise obviously exists on the institutional level, there is a pronounced lack of cohesion across country desks in regards to their experience and ability to address inclusion of recent innovations in forecasting methods into their own methodology. The standard round of deadlines and capacity constraints placed on the country desks also prevents a more proactive approach to changing current methodologies.

**Question 8c: Is the set and design of external assumptions efficient?**

The analysis of evidence in response to this question has focused on four issues:

- a description of the current set of external assumptions used by ECFIN, such as prices for oil and other raw materials, exchange rates, interest rates and other variables;
- the process through which external assumptions are defined at ECFIN;
- the set of external assumptions used by professional forecasters in their forecasting tools and how these are defined; and

Evidence from the following sources was analysed to answer this question:

- interviews;
- comparative benchmark analysis;
- literature review.

DG ECFIN's forecast is based on a set of external (technical) assumptions, derived from technically defined update rules or market expectations. Thereby, averages over a ten days reference period are used to even out day-to-day volatility. A cut-off date is predefined in the forecast calendar, after which no further changes to technical assumptions are imposed on the forecasts.

- Exchange rates: Fixed nominal exchange rates based on an average over ten days..
- Long and short-term interest rates: Market based assumption (implicit forward swap rates and on futures contracts, respectively).
- Oil prices: Market based assumption (Brent futures contracts).
- Other commodity price assumptions (including, inter alia, food prices and agricultural prices; see European Commission, 2017, Table 62, for details) are reported to be based on market expectations as far as possible.

In addition, foreign demand is an external assumption from the point of view of (EU) country desks and derived from a broad based projection of global economic developments.

The interviews with country desk officers suggest that team members consider the set and design of assumptions mostly useful. Suggestions for improvement by individual country desk officers include

- the foreign demand should also be provided on a quarterly basis instead of an annual basis, because the whole estimation is based on a quarterly frequency;
- the last update of assumptions in the forecast round should leave appropriate time before the final storage;
- the set of assumptions could be broader, i.e. include other commodities than oil, and sectoral external prices (e.g. manufacturing, agriculture) could be provided;
- one country desk officer suggests to use the multi-country version of the QUEST model to crosscheck the effects of external assumptions on a country when there are large changes.

Similar to DG ECFIN, in most multilateral benchmark institutions, technical assumptions are set for exchange rates, long and short-term interest rates, oil and other commodity prices; the ECB additionally sets stock prices, bank lending rates and credit supply conditions as exogenously given. Procedures are fairly similar across benchmark institutions and comparable to DG ECFIN's approaches; in particular, the fixed exchange rate assumption and market-based assumptions for commodity prices and interest rates are widely used. The UN does not employ rules- or market-based technical assumptions, but sets ad-hoc paths for selected exogenous variables. The OECD does not employ technical assumptions for commodity prices, but includes those as endogenous variables in the forecast.

As regards the presentation of the assumptions in their respective forecast publication, practices at the benchmark institutions differ widely. The IMF's World Economic Outlook has a section on assumptions which precedes the whole forecast document and is easy to find; the OECD and the UN present the assumptions in an annex chapter. The ECB has a box on assumptions comparable to the box in DG ECFIN's

European Economic Forecast, but presents a helpful table with the main technical assumptions.

The literature on approaches for a useful design of external assumptions yields the following important findings:

- Broadly, nominal and real oil prices can be forecast by four main approaches (Alquist et al., 2013). First, the conventional benchmark model for predicting the oil price is a random walk without drift; this no-change forecast is often used in predicting the real oil price, because it has a lower trend growth. Second, market-based approaches are employed, i.e. the  $t$ -period forecast for the oil price is given by the price of an oil futures contract with maturity  $t$ . Third, structural VAR models in different variations (in levels, with trend, estimated with Bayesian methods) use demand and supply information in order to predict developments of the Brent oil price; this brings the advantage of better model consistency and additional “story-telling” features. Fourth, DSGE models such as Nakov and Nuno (2014), have been constructed to reflect important oil market features. Manescu and Van Robays (2014) compare all these different methods and find considerable instability in the performance of all models evaluated. They employ a model-averaging approach based on the combination of all four types of models that predicts Brent oil prices more accurately than the futures and the random walk up to 11 quarters ahead and generates a forecast with a remarkably robust performance. Additionally, the model average reduces the forecast bias and predicts the direction of the oil price more accurately.
- Nominal and real exchange rates are principally forecast by either random walk or future prices. Ca’ Zorzi, Kolasa and Rubaszek (2016) analyse if an open economy DSGE model and VAR models are able to predict as good as these benchmark models. Their main message is that the ability of DSGE models to forecast real exchange rates, highlighted for the euro area by Adolfson et al. (2007b) and Christoffel et al. (2011), should not be overplayed as other models perform equally well. Advantages of the DSGE approach in comparison to empirical approaches are that it provides a fully consistent story, it accounts for feedback effects between exchange rates and the current account and that it provides precise estimates of how exchange rates react to different shocks. However, it comes at the cost of high resource requirements and it is prone to large estimation errors.

In general, DG ECFIN’s approach regarding the set and design of external assumptions is comparable to practices found in multilateral benchmark institutions and is in line with recent findings in the literature regarding the efficient design of external assumption for forecasting purposes. As regards communication of the assumptions, the presentation in the report could be more accessible and based on both verbal and tabular descriptions, taking other multilateral institutions’ forecast publications as examples.

**Question 9: Quantitative forecasting tools in DG ECFIN exist at the level of horizontal units as well as geographical desks. They comprise different tools for now-casting and short-term (e.g. quarter-ahead) forecasting as well as tools for forecasting near-to medium term developments**

**Question 9a: What portfolio of forecasting tools exists in other international organisations (in particular OECD, IMF, ECB)?**

The analysis of evidence in response to this question has focused on four issues:

- a survey of tools/methods employed in other international organisations based on interviews with these institutions’ forecast officials;

- a survey of tools/methods employed in other international organisations based on the description of those organisations' tools in the literature.

Evidence from the following sources will be analysed to answer this question:

- interviews;
- comparative benchmark analysis; and,
- literature review.

Reliance on macroeconomic models and quantitative tools in the **core forecasting activities** is heterogeneous between benchmark institutions. This is indicated by our interviews with forecast coordinators and team members at the benchmark institutions.

The ECB reports its whole forecast process to be entirely model based, i.e. all projections are generated through structural macroeconomic models (with judgement being applied through add-factors) and macroeconomic models are used for the bottom-up aggregation of country-specific forecasts. The main forecasting model used at the ECB is the "New multi-country model" (NMCM), covering the five largest euro area countries (Big 5) and one aggregate country to cover the rest of the euro area (Dieppe et al., 2011). In practice, country desk officers of the "Big 5" countries work with the respective part of the model, setting add-factors for their country, which they feed – through a FAME database system – in the main model. The projection of smaller euro area countries is reported to be in a transition phase: In the past, an Excel based infrastructure – mainly ensuring national accounts identities – was used. Recently, new "smaller country models" based on a unified platform have been developed for all countries (starting with a prototype for Belgium). Both the multi-country model and the smaller country models are calibrated and/or estimated and are best described as semi-structural models (see Annex A6.2), based on a tight theoretical structure (albeit not necessarily fully microfounded). Handling of the NMCM is characterized as complex – e.g. in terms of structural adjustment or re-estimation – , mainly due to an explicit formulation of agents' expectations formation based on full or bounded rationality. Currently, researchers at the ECB redevelop the NMCM in the spirit of the FRB/US model (Brayton et al., 2014), i.e. based on an eclectic approach (as opposed to the strictly structural approach of a DSGE model) with a structural core (e.g. optimizing behaviour of households and firms) and non-structural elements (e.g. deviating from model consistent expectations and instead using VAR expectations).

The IMF reports to have a parallel structure, i.e. all countries are projected following a bottom-up approach, based on heterogeneous infrastructures on the country desk level. At the same time, the Economic Modelling Division (EMD) uses the Global Projections Model (GPM) to produce an initial set of "top-down" forecasts for countries and groups, thereby ensuring cross-country consistency and producing aggregate numbers. In an iterative process, country desk officers and the EMD closely interact to converge to a consistent projection (see Genberg, Martinez and Salemi, 2014, for details of the process). The Global Projection Model is estimated based on Bayesian techniques and incorporates both real and financial cross-country linkages in a multi-country framework (Carabenciov et al., 2013). Thereby, the IMF takes into account that DSGE models are far from being integrated in global macro model at this stage and, thus, aims for an intermediate position between a DSGE model and a purely time series model. That is, equations are partly inspired by micro-founded DSGE models, but the model is not fully developed from micro-foundations.

The OECD reports to use a global macroeconometric model (NiGEM) as a starting point for the projection. The broader use of top-down elements and centralization during the early stages of the forecast round has been communicated as one of the lessons from the crisis, trying to ensure that global economic developments and cross-country spillovers are reflected consistently in the projections for individual economies (Lewis

and Pain, 2015). NiGEM, provided by the National Institute for Economic and Social Research (NIESR), is in use at the OECD as the main forecasting tools since around 2010; previously, a succession of global models has been constructed and maintained 'in-house' (see Turner, 2016, for details). NiGEM separately distinguishes most OECD countries and the largest non-OECD countries, with other countries modelled in terms of regional blocks. It is based around a 'New-Keynesian' framework, with the long-run properties of equations imposed consistent with theory, but with dynamic adjustment estimated using historical data, so striking a balance between theory and data (NIESR, 2016). As Turner (2016) argues, the "rental' and use in the forecasting round of a model from outside the OECD has the advantage of avoiding the heavy development and maintenance costs associated with a large scale global model." On the other hand, the "disadvantages of using an 'outside model' is that when model properties are queried (as, is inevitable with any large-scale macro model) those responsible for running the model are less willing and able to defend it, as it is 'not their baby'. Moreover, modifying the model in response to such criticism is difficult, whereas if the model was maintained 'in-house' then critical feedback could more easily be channelled into amending and improving the model."

The UN reports to strongly rely on the "UN world economic forecasting model" (WEFM), which models the world economy as a collection of international country models linked together through international trade and other international economic relations (Altshuler et al., 2016). The WEFM evolved from the original Project LINK programme, which started in the 1960s, and linked together individual country macro-models from up to 80 different countries in order to compute a joint global forecast. The WEFM maintains the bottom-up modelling approach and a version of the international linkage mechanism of the original LINK system. The world economy is modelled as a collection of individual country models linked together through international trade and other international economic relations. Compared to the Project LINK, the WEFM introduces a theoretical harmonization of the individual country models. The country models are characterized by a long run neo-classical supply side and a short run Keynesian demand side. Key behavioural equations are specified in a co-integration/error-correction framework, and are specified ad-hoc, i.e. without being derived (albeit possibly inspired) by explicit microfoundations.

As regards modelling tools on the country desk level, structural models in use in multilateral institutions (with the exception of the UN, where no quantitative models except the WEFM is used) include both traditional (ad-hoc) macro-econometric models and DSGE models (interviewees indicating a slight preference for non-DSGE models in the forecasting process), Philips curve approaches, behavioural and bridge equations for nowcasting. Non-structural models in use are mainly BVARs; dynamic factor models have been considered less useful by the interviewee in one of the benchmark institutions. See also the answer to EQ8b for examples of quantitative forecasting tools used by professional forecasters, which are also widely used by country desks in the multilateral benchmark institutions.

All in all, at the IMF, OECD and the UN, the forecast on the country level appears to be less influenced by models than reported by the ECB. In all institutions, economic regions (e.g. Euro area, World) are typically projected bottom up and compared in parallel, as a cross check, based on a structural model for the aggregate.

In addition to models being employed to derive the forecast baseline, all multilateral benchmark institutions use structural models for **scenario analysis and policy simulations** as well historical decompositions. Furthermore, global models are used in order to evaluate the macroeconomic effects of changes since the last projections in external variables, i.e. oil and commodity prices, exchange rates, fiscal policy, interest rates and other key conditioning variables. The effects of new elements and revisions are typically evaluated based on model simulations.

- Besides the models described above, the toolboxes include both traditional (ad-hoc) macro-econometric models and DSGE models for scenario analysis and policy simulations. In detail, the ECB highlights the New Area Wide Model (NAWM) as an important tool for policy simulations (see Christoffel et al., 2008). The NAWM is a micro-founded open-economy DSGE model of the euro area and is centred around the intertemporal decisions of households and firms that aim to maximise their expected life-time utility and the expected stream of profits respectively. In order to ensure that some Keynesian features prevail in the short run, the NAWM includes a number of nominal and real frictions that have been identified as empirically important, such as sticky prices and wages, habit persistence in private consumption and adjustment costs in private investment. Moreover, the NAWM incorporates frictions relevant in an open economy setting, including local currency pricing (giving rise to imperfect exchange rate pass-through in the short run) and the costs of adjusting trade flows. At the IMF, a prominent model besides the GPM is the Global Integrated Monetary and Fiscal Model (GIMF), a multi-country DSGE model used for policy and risk analysis (Kumhof et al., 2010). The model features a variety of non-Ricardian elements, which makes it particularly useful to analyse fiscal policy questions. In addition, macro-financial linkages based on a financial accelerator mechanism – giving a role to firms’ net worth and bankruptcies – and a banking sector that intermediates funds between households and the non-financial sector are modelled explicitly

**Question 9b: How do these forecasting tools compare to the DG ECFIN’s forecasting tools in terms of strengths and weaknesses?**

The analysis of evidence in response to this question has focused on four issues:

- a comparative assessment of other organisations’ forecasting tools in terms of strengths and weaknesses vis-a-vis ECFIN’s tools; and,

Evidence from the following sources will be analysed to answer this question:

- interviews;
- comparative benchmark analysis; and,
- literature review.

In general, reliance on macroeconomic models appears to be less pronounced in DG ECFIN’s forecast processes than in most benchmark institutions. In particular, as opposed to all multilateral benchmark institutions, DG ECFIN does not use a multi-country model in its **core forecasting activities**.

On the country desk level, the use of quantitative forecasting tools at DG ECFIN is broadly comparable to the IMF and the OECD, but falls behind the tools employed by ECB country desks. Judged by our interviews with country desk officers, only one desk uses a traditional structural macro-econometric model (SSM). Other structural models (SVAR and DSGE) are not in use on the country desk level (see also answer to EQ8b). Three country desk officers have additional AR models for prices, one country desk officer has single behavioural equations and non-structural vector error correction models for internal fiscal-macro consistency checks. Three out of eleven country desks do not use models at all because of data limitations, which can include missing or delayed data releases and poor quality of initial national accounts data which are subject to large revisions. Consequently, the poor quality of model-based now- and forecasts implies they base their forecast entirely on judgement. All country desk officers report that there are within-desk differences regarding the model approach. Macroeconomic officers usually work model-based, while fiscal officers use the balance-sheet approach.



Seven country desk officers apply more than one model-based approach, but do not use model averaging. For those country desk officers, the model-based results are one source of information used to get a final accurate expert judgement. The other ingredients are discussions with other national authorities, consistency checks and other experts' forecasts. It is similar for the IMF and OECD.

For **policy analysis**, the QUEST model is available at DG ECFIN. This structural DSGE type model in the New-Keynesian tradition exists in different versions, both in estimated and calibrated form, and both as multi-country and closed economy versions. The model features nominal and real frictions, as well as financial frictions in the form of liquidity constrained households. The model incorporates active monetary and fiscal policy rules (for government consumption, investment, transfers and wage taxes) and can be used to analyse the effectiveness of stabilisation policies. Publicly available documentation of the currently used version of the QUEST model is scarce; recent ECFIN papers based on the QUEST model (e.g. Vogel, 2015, or Breuss et al., 2015) as well as the early documentation of the model (Ratto et al., 2008) seem to indicate that the QUEST model builds on a more stylized representation of the economy than the ECB's NAWM or the IMF's GIMF. However, results of the model simulations in response to various fiscal policy measures are broadly comparable to other models used by multilateral institutions (Coenen et al., 2010).

In general, resource constraints appear to be the dominant reason for DG ECFIN forecasters' limited reliance on macroeconomic models. While expertise is available, at least at an institutional level, forecasters have limited time between forecasting rounds to adapt new tools to their specific country's characteristics.

In addition, using macroeconomic models does not necessarily reduce resource requirements when preparing the actual forecast at a country level. Adapting purely data-driven methods (such as the nowcasting techniques discussed in EQ 8b) is mostly a question of the availability of data of a sufficient quality. Beyond the one-off cost related to the search for reliable data in an easily accessible form, costs of adapting such nowcasting models – given a flexible infrastructure – to the respective economies should be limited. If results are found to be helpful, the use of such models in the actual forecasting exercise should be straightforward and resource requirements limited.

The case is different for structural models to be used in the forecasting exercise. A thorough analysis of the economic situation as well as the quantification of the influence of policy shocks and the external environment are, as for a purely judgemental forecast, the most demanding parts of work for a model-based forecast. Since forecasters are forced to explicitly quantify such influences – because they need to be fed into the model – such an approach can improve on transparency and it can increase the necessity of forecasters to deeply analyse the drivers of economic developments. Furthermore, models can facilitate intra-country consistency, since models reflect historic patterns that characterise the developments of different macroeconomic variables. Most likely, however, using models will not reduce the resource requirements of preparing a forecast baseline on the country level.

On the global/aggregate level, the balance of costs and benefits of using models is likely to be tilted more towards the benefits, since many aspects currently being dealt with in other forms – e.g. in the trade consistency exercise (EQ 6c) or for the derivation of aggregated numbers – can be integrated in a global macroeconomic model. Therefore, a model-based forecast on the global level can speed-up and simplify these tasks. On the other hand, the resource requirements of developing such a model with the required degree of detail, and reliably and efficiently integrating this model into the forecasting process, are likely to be very high.

Currently, DG ECFIN together with the European Commission's Joint Research Center is developing a new Global Multi-country Model (GM), constructed as a suitable

framework for international spillover analysis and short-medium term forecasts.<sup>47</sup> This DSGE model is aimed to be used by DG ECFIN's country desks as a supporting tool in the forecasting process and a complement to desks' econometric models.<sup>48</sup> At this stage, the model focuses on three economic regions – euro area, US and rest of the world – and is used by country desks for the largest member states (DE, FR, IT, ES). Using this model more broadly could be a way to fill an obvious gap between DG ECFIN's forecasting toolbox and other institutions' infrastructure: The lack of a structural multi-country macroeconometric model to ensure consistency of the projection across countries. In addition, such a model can also facilitate the consistency regarding global trade and financial flows (see also EQ6c) and allow for a greater consideration of financial markets in the forecasting process (see also EQ2b, EQ8a). The resource requirements for the development and maintenance of such a large-scale quantitative multi-country model should be expected to be significant, however. In addition, the success of such an – ambitious – endeavour will depend on the accessibility of the model's user interfaces, the support of country desk officers in handling the model, and on the integration of the model infrastructure in the forecasting process.

**Question 10a: Is there scope for a more systematic and/or efficient use of the FDMS+'s features and possibilities?**

The analysis of evidence in response to this question has focused on two issues:

- survey of FDMS+ use;
- review of FDMS+ documentation; and
- the identification of possible efficiency gains and the scope for more systematic use.

Evidence from the interviews with country desk officers was analysed to answer this question.

FDMS+ is used systematically by the seven country desk officers. Six of eleven country desk officers interviewed indicated that the FDMS+ system is neither user-friendly nor easy to handle, especially for beginners. Three country desk officers report that it is difficult to understand how the database system works. One country desk officer mentioned that it may be challenging to identify who is responsible for updating and extending the data set. However, three of the six of the country desk officers who were not convinced at first by the friendliness and easyness to handle FDMS+ mention that once they became more experienced they found it helpful.

Among the country desk officers who experienced difficulties with using FDMS+ when they took their position, four of them indicated that they could however rely on the very good support from their statistical assistants; three country desk officers explained that they could rely on the support from other country desk officers. One country desk officer referred to the helpful role of the horizontal unit.

Two country desk officers said that it would be useful to have more training sessions to FDMS+. From the responses of the 11 interviewees, it appears that there is indeed no training session organised in systematic way, especially for newcomers. Consequently, the opportunity for newly arrived country desk officers to benefit from training is a matter of chance. The FDMS+ online training appears not to be a full replacement from the perspective of country desk officers. None of them mentions this option as an alternative for newcomers.

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<sup>47</sup> See European Commission (2017), Box I.3, for an early application of the GM in the forecasting context

<sup>48</sup> The assessment is based on an internal presentation prepared by ECFIN-B3 and JRC-B1 made available to evaluation team.

Three of eleven country desk officers interviewed indicate that the primary advantage of the FDMS+ is that data management is organised centrally and that the exchange of data between desks is now automated.

Additional documentation and systematic training for newly arrived country desk officers would be considered as very helpful by interviewees. The support of statistical assistants is of course very valuable, but relying on the support from other country desk officer, on an ad-hoc basis, is certainly not optimal in terms of use of resources.

There is a general agreement that the centralisation of the data provided by FDMS+ is both useful and desirable. The problems identified with the current incarnation of FDMS+ are interlinked in that the lack of a user-friendly interface prevents the inclusion of the FDMS+ process into the forecast in a systematic way across country desks.

**Question 10b. Is the standard Excel file used by desk officers to organise and input forecast data an efficient tool in terms of e.g. organisation, user-friendliness and knowledge transfer?**

The analysis of evidence in response to this question has focused on three issues:

- an analysis of the Excel file;
- the identification of scope for increased efficiency in terms of organisation, user-friendliness and knowledge transfer; and,
- user feedback on the Excel file.

Evidence from the country desk officers interviews was analysed to answer this question.

All eleven country desk officers use the standard Excel file to organise and input data. Eight country desk officers report that the standard Excel file is user-friendly and easy to work with. Six country desk officers extend the file with their own sheets and modified tables. However, from the interviews, it emerges that it takes time to get familiar with the excel file, and consequently the excel file is viewed as more 'user-friendly' for experienced users than for less experienced one.

Several difficulties and/or suggestions for improvement were raised by individual desk officers:

- the first and foremost problem with the forecast file is that it is too complicated, e.g. it is not clear how the calculations are made and it is very difficult to trace the linkages;
- the sheet is excessively complicated with too many (180) variables; a shorter table with key variables would be more helpful;
- documentation is incomplete;
- the heterogeneity (between country desks) and complexity of the standard excel sheet means that pre-existing bugs or inconsistencies are difficult to identify and correct;
- the file could be improved by connecting fiscal variables with the fiscal tools and financial variables with the financial tools.

These examples suggest that there is some room for improvement, especially in the user-friendliness of the standard excel file. Current efforts to simplify the reference forecast sheet are therefore welcome.

**Question 11. Is the knowledge about forecasting managed efficiently? Is the set of forecasting skills and competences required from a country-desk officer clearly defined? Is the formal (training) and informal transfer of knowledge adequate?**

The analysis of evidence in response to this question has focused on five issues:

- country desk officers' formal training and informal knowledge flows within ECFIN;
- job descriptions of country desk officers;
- knowledge management systems such as internal guidance, FAQs etc.; and
- existence of a hand-over file between country desk officers.

Evidence from the following sources was analysed to answer this question:

- interviews;
- FDMS+ documentation;
- comparative benchmark analysis.

The analysis of evidence in response to this question has focused on five issues:

- country desk officers' formal training and informal knowledge flows within ECFIN;
- job descriptions of country desk officers;
- knowledge management systems such as internal guidance, FAQs etc.; and
- existence of a hand-over file between country desk officers.

Evidence from the following sources was analysed to answer this question:

- interviews;
- FDMS+ documentation;
- comparative benchmark analysis.

Formal training primarily covers FDMS+ (see also EQ 10a), but it does also address other horizontal topics (primarily on the forecast of fiscal variables, but also on broadly used infrastructure, e.g. modelling suites or the standard Excel forecast files) on an irregular basis. In addition, a "summer school", where voluntary staff members offer training sessions, is organised, and end-to-end training ("how to do a forecast") is planned to be offered. As regards the training for FDMS+, three country desk officers who commented on the frequency of training sessions (approximately one per year) considers the number of trainings to be adequate. On the other hand, two country desk officers indicated that the frequency should be higher, e.g. for newcomers, since it is not guaranteed that the latter can receive formal training shortly after arrival and they have to rely on written documentation and online training. All interviewed country desk officers consider the training material and written documentation for FDMS+ to be adequate, though. Based on a survey of the material (version of November 2015), the evaluation team shares the view that the documentation for the FDMS+ system is comprehensive, well presented and useful; Six country desk officers did not voice strong opinions regarding the frequency and content of the FDMS+ training; amongst those, two country desk officers mention that they do not often attend formal training because they do not need it anymore.

As regards other measures to induce the transfer of knowledge, interviews revealed a mix of views across country desk officers. Four out of eleven country desk officers stated that the infrastructure at the desk level (e.g. models, forecasting files, data

sources) is well documented in hand-over files and other written documentation. However, seven country desk officers reported that they have hand-over files and documentation within the country desk, but not for every model or irregularly updated. Amongst those, four country desk officers indicated that the documentation they have would – due to its limited scope and insufficient presentation – not be comprehensive enough to guide new country desk officers and, consequently, transfer of knowledge at some country desks depends strongly on interpersonal relationships and informal exchange of information. No rules or codified procedures are in place at DG ECFIN that oblige country desk officers to document their infrastructure.

Experiences from the multilateral benchmark institutions (in particular: ECB, IMF) indicate that written manuals are an important measure to transfer knowledge between team members. It was also indicated that it is crucial to have a central platform for storing and reading these manuals, and to have codified procedures and the clear requirement for staff members to document their infrastructure. For example, the ECB reports that all country desks are requested to fully document their respective models and other infrastructure in a way that can be understood by newcomers, and that desks are obliged to store this material in a centralized location on the intranet. The IMF reports to follow a similar approach.

As regards the set of required competencies, job descriptions are fairly generic, mainly requiring a “solid background in economic theory and empirical analysis”.<sup>49</sup> While recruitment through the EPSO ‘concours généraux’ might limit the possibilities to formulate specific requests, it seems that vacancies could be tailored a bit more towards the fields of work of a country desk officer, e.g. requesting econometric skills or expertise in macroeconometrics. The ECB is more explicit in its vacancies, requesting, among other things, substantial theoretical and practical experience of up-to-date econometric techniques and, as an important asset, experience in analysing, monitoring and forecasting macroeconomic developments. In contrast, the IMF’s main recruitment program for economists (“Economist Program”) does not explicitly formulate eligibility criteria with respect to forecasting activities; among other things, a strong understanding of macroeconomics and strong analytical, quantitative and computer skills are requested.

Taking all evidence together, the findings suggest clear room for improvement. While formal training is well perceived, its scope in terms of content and frequency is limited. Informal knowledge flows are unreliable and not well organised. Training would be all the more relevant since the set of competences required from a country-desk officer is not clearly defined and is not tailored towards the specific needs in a forecasting environment.

#### 4.4 Results of analysis – coherence

The following section focuses on one specific question that falls under the evaluation criterion coherence outlined in the evaluation framework (Annex 1 ).

##### **Question 12: Are the timing and content of the three annual forecasts in line with surveillance needs?**

The analysis of evidence in response to this question has focused on two issues:

- the European Semester Calendar; and,
- flowchart analysis of the surveillance process, focusing on the timing of inputs and outputs.

Evidence from the interviews was analysed to answer this question.

<sup>49</sup> The analysis is based on a vacancies list generated on 19/01/2012. See <https://ecvacancies.files.wordpress.com/2012/01/vacanciesjan2012pdf4.pdf>.

All eleven country desk officers indicated that two fully-fledged forecasts are the minimum number necessary due to the fiscal surveillance. Three annual forecasts meet, in the view of country desk officers, the requirements of the surveillance processes.

In general, the exact time of the publication of forecasts is also a function of the Secretary General and President's agenda in a given period and consequently is not fixed and may vary from year to year.

Another Cabinet member raised one specific point referring to the timing of the forecast, with clear acknowledgement of some objective constraints. It was stated that the Spring forecast is in a certain respect too early to rely on as guidance for the following year while the Autumn forecast tends to be too late given the timing of the recommendations. The new '2+2' system with additional interim forecast in July that is being considered (see Question 3a) would address this concern.

Users in all multilateral benchmark institutions indicate that the ECFIN forecasts feed into forecast comparisons and are used as an input into the process of developing stories and, in particular, the risk assessment. They do not rely on a particular timing of the ECFIN forecast; thus, they appear to be – from the perspective of multilateral institutions – in line with surveillance needs (see also Question 3a).

#### **4.5 Results of analysis – DG ECFIN forecast added value**

The following section focuses on one specific question that falls under the evaluation criterion DG ECFIN forecast added value outlined in the evaluation framework (Annex 1).

##### **Question 13: Is it useful and necessary for DG ECFIN to produce its own forecast**

There are absolutely no doubts about the fact that it is necessary for DG ECFIN to produce its own forecast in-house.

Nine out of eleven country desk officers indicate that the forecasting exercise is necessary for the fiscal surveillance exercise. Outsourcing the forecast outside of the organization could effectively mean the outsourcing part of the crucial process of fiscal coordination outside of the organization with all implications and risks.

None of the benchmark institutions interviewed outsources any part of their forecasting activities to external partners. There is insufficient evidence to draw conclusions from the private sector.

One country desk officer mentions the forecast also means that they remain informed about the economic conditions of the country. One further country desk officer indicates that the forecasts enter into the national debate of their country.

## **5 Conclusions**

This section presents the conclusions from the study grouped by evaluation criteria.

### **5.1 Relevance**

**The assessment of the *relevance* criterion has been captured in the following evaluation questions: 1, 2a, 2b, 2c, 3a, 3b, 4, and 5.**

*EQ1: In light of the uses of the forecast and of other forecasters' practice, does the balance between presentation of the forecast figures and analysis in the forecast document appear adequate?*

According to all interviewed stakeholders and the overwhelming majority of survey respondents, the DG ECFIN forecast document is relevant and adequate in terms of the balance between the presentation of the figures and the analysis. There were some recent changes of the forecast publication in terms of the content and its presentation e.g. use of boxes to discuss some most topical issues, and those changes were also positively received. Limited insights from surveys and interviews suggest that there may be benefit of increasing the length of country notes beyond 2 pages.

*EQ2a: Is the set of variables adequate considering the uses of the forecast, in particular to provide an input to Treaty-based surveillance and policy advice?*

The study team concludes, based on both online surveys and relevant interviews, that the existing set of forecast variables offered by DG ECFIN is relevant and adequate, also in the context of the Treaty-based surveillance process.

*EQ2b: Is the analysis of financial flows adequate? Could its use in the forecast process be improved and if so, how?*

The study team concludes that financial market variables are not considered in the projection as extensively as they might merit, given the existing practices in other forecasting institutions and findings from the literature review. Potential benefits are to be expected primarily in the context of nowcasting and very short term forecasts. Those benefits are, however, likely to depend heavily on the institutional characteristics of the financial sector in the respective country. The limited use of financial market variables in DG ECFIN's forecast could be related to constraints of resources and data availability problems, albeit financial market aspects are also only reflected to a limited degree in horizontal tools such as the forecast Excel files or model suites.

*EQ2c: What are the pros and cons of more ample use of quarterly data in the forecast publication?*

DG ECFIN's forecast variables available on an annual data basis (except GDP and inflation) was found appropriate by significant majority of subscribers and professional forecasters (nearly 80 per cent for both) and this view was also shared by both the ECB and UN. The focus of the publication on annual data should not prompt forecasters to monitor and project higher frequency (e.g. quarterly) data with less care, given that consistency with available high-frequency data is of utmost importance for the accuracy of the forecast.

*EQ3a: Currently, three fully-fledged forecasts are produced per year. Does this forecast frequency appear adequate in view of resource requirements and policy needs?*

The study team finds that the current forecast publication frequency is considered appropriate by half the users while one third would prefer to have forecasts every quarter. There is no consensus among the interviewees whether to keep the current system with 3 fully-fledged forecasts or switch to a '2+2' forecast system as both imply certain trade-offs. Yet, the introduction of '2+2' system would free-up some country desk officers' capacity and resemble the systems followed by some other organizations (e.g. OECD).

*EQ 3b/4a. Is the forecast actually being used for surveillance and beyond (3b), and does it fulfil its role as reference in the surveillance processes (4a)?*

There was full consensus that the forecast, in particular the Spring and Autumn forecasts, is a fundamental input to the surveillance process serving as a reference in the surveillance process. There is also a plethora of other examples of its use, either within the EC and among other EU institutions, or outside.

*EQ5: What are the strengths and weaknesses of the current external communication strategy of the Commission forecasts as compared with other international*

*organisations namely, a) What is the media coverage of the Commission forecasts as compared to that of other international organisations, b) How could the communication strategy be further improved, c) What other target populations/locations, if any, should the Communication strategy of the Commission forecasts focus on and why?*

Overall, the study finds no clear rationale based on collected evidence to change the communication strategy. Although there are certain aspects related to communication activities/ outputs that may need to be reconsidered/ amended, none are material or significant enough to justify major changes to the current communication strategy, including change in focus on selected audiences.

Although the media coverage is most likely less extensive than in case of the IMF, it is not seen by DG ECFIN as a priority driver of communication effort, as oppose to credibility of the forecast. Generally, any benchmarking of media coverage (but also communication strategies/activities/outputs), needs to take into account the inherent differences between DG ECFIN, IMF, OECD and ECB forecasts' products, their purposes and existing constraints.

Until recently, a relatively basic analysis of the consumption, perception and media coverage of the forecasts was a clear area for improvement. But with new analytical capabilities and content brought in by a private contractor, this gap has been filled in.

## 5.2 Effectiveness

**The assessment of the effectiveness criterion has been captured in the following evaluation questions: 6a, 6b, 6c, 6d and 7.**

*EQ6a: Are the current forecast procedures adequate to ensure high accuracy of the forecasts*

There is no evidence that DG ECFIN's forecast accuracy is hampered by the current forecast procedures. The forecasting errors of DG ECFIN are of the same magnitude as those in the benchmark institutions (ECB, IMF, OECD) and are unbiased at the aggregate euro area level and, with the exception of Italy, at the Member State level for the current year forecasts. There is widespread recognition of the comparatively good accuracy of the ECFIN forecasts among key stakeholders, although it was beyond the scope of this evaluation to verify/assess the accuracy of the forecasts in practice. There is, however, room for a more systematic evaluation of forecast errors at DG ECFIN, which might support the identification of the influence of changes in the processes on forecast accuracy;

*EQ6b: Are the current forecast procedures adequate to incorporate new information efficiently into the forecasts?*

The study team finds that the current DG ECFIN forecast procedure allows new information to be incorporated efficiently in the forecasts. Procedures are comparable to benchmark institutions' processes and forecast participants at DG ECFIN indicate that they are content with the processes in place. Recent changes to Eurostat's publication strategy ("t+30") re-enforce a challenge to the up-to-dateness of DG ECFIN's forecast, which can at times foresee a cut-off date shortly before the release of certain key indicators (unemployment, inflation, preliminary flash GDP estimate). There is, however, no leeway to delay the cut-off date without postponing the publication of the forecast;

*EQ6c: Are the current forecast procedures adequate to ensure cross-country consistency of the forecast (numerical and economic)?*

Based on comparisons with other institutions and desk research, the study team finds that forecast procedures at DG ECFIN are well-designed to support cross-country consistency of the forecast both in numerical and in economic terms. Procedures in



this regard are comparable to other institutions. Possible room for improvement relates to the cross-country consistency of financial flows (e.g. current accounts);

*EQ6d: Are the current forecast procedures adequate to what major operational risks are related to the current forecast processes?*

While DG ECFIN's forecast procedures are not immune against typical operational risks (staff absences, IT-related risks), potential risks are comparable to other institutions and do not seem to play an important role in practice; in particular, backup procedures appear to work well;

*EQ7: To what extent do the current forecast processes in DG ECFIN ensure that forecasts are produced by staff independently, particularly with regard to variables that are relevant for fiscal surveillance purposes (e.g. in the framework of the Stability and Growth Pact)? In case the independence is found to be incomplete, how could it be improved?*

The study team concludes that DG ECFIN forecast processes support the independence of the staff when preparing the forecast. This is indicated by the interviews with country desk officers. Some staff members mention potential obstacles to independence (e.g. pressure from the hierarchy), and one country desk officer reports to have experienced politically motivated pressure from within DG ECFIN, but those do not appear to hinder independence at an institutional level. From a user perspective, both users in the Commission including Cabinet members and more broadly, stakeholders from non-EU organizations, expressed the firm impression that forecasts are prepared by the staff independently.

### 5.3 Efficiency

**The assessment of the efficiency criterion has been captured in the following evaluation questions: 8a, 8b, 8c, 9a, 9b, 10a, 10b and 11.**

*EQ8a: In what way do approaches to forecasting among other professional forecasters (in particular other international organisations, but also research institutes and the private sector) differ from that implemented by DG ECFIN?*

Overall, forecasters have drawn two main lessons since the Great Recession: Forecasting should take financial market developments into account more consequently and risks and uncertainties should be analysed and communicated more prominently. In both dimensions, DG ECFIN's forecasting activities and the main forecast publication leave some room for improvement. As regards the inclusion of financial market aspects in the projection, the evidence suggests that DG ECFIN's use of financial market variables in the forecasting context is limited (see also EQ 2b). This appears to be due to the high complexity of horizontal tools for the analysis of financial market data and data inconsistencies arising in this context. It seems, however, also to reflect resource constraints and a limited expertise of country desk officers regarding recent innovations in forecasting methods and modelling approaches. As regards risks and uncertainties, the analysis and communication in DG ECFIN's main forecast publication is heterogeneous across countries and the quantification of risks to euro area GDP growth is intransparent.

*EQ8b: What recent innovations in forecasting methods are being taken up and why?*

Reliance on modelling outputs in DG ECFIN's core forecasting activities is limited. Judged by the findings from the survey of professional forecasters, model development and the use of models in the forecasting context is an important dimension of forecasters' work. In contrast, DG ECFIN country desk officers did not substantially develop their model infrastructure over recent years and innovations in the forecasting literature did not find their way into country desk officers' toolboxes. While the expertise obviously exists on the institutional level, there appears to be a

pronounced lack of cohesion across country desks with regard to their experience and ability to include recent innovations in forecasting methods in their own methodology. The standard round of deadlines placed on the country desk officers and existing capacity constraints also prevent changes in current methodologies.

*EQ8c: Is the set and design of external assumptions efficient?*

DG ECFIN's approach to setting external assumptions is comparable to practices found in multilateral benchmark institutions and is in line with recent findings in the literature regarding the efficient design of external assumptions for forecasting purposes. In relation to the communication of assumptions, the presentation in the report could be more accessible and based on both verbal and tabular descriptions, taking other multilateral institutions' forecast publications as examples.

*EQ9a: What portfolio of forecasting tools exists in other international organisations (in particular OECD, IMF, ECB)?*

Reliance on macroeconomic models and quantitative tools varies between benchmark institutions. The ECB reports its whole forecast process to be entirely model-based; all country desks work with structural models based on a tight theoretical structure, which are operated as satellite models for the ECB's "New Multi-Country Model". A similar approach, albeit based on a less theoretically advanced model, is reported by the UN with its "UN World Economic Forecasting Model". The IMF and the OECD report to work, in parallel, with a bottom-up and a (model-based) top-down approach. Thereby, a global macro model is used to ensure consistency across countries; in an iterative process, country desk officers and the modelling division interact closely to converge to a consistent projection. As regards modelling tools on the country desk level, structural models in use in multilateral institutions (with the exception of the UN, where no quantitative models except the WEFM is used) include both traditional (ad-hoc) macro-econometric models and DSGE models, Philips curve approaches and behavioural and bridge equations for nowcasting. Non-structural models in use are mainly BVARs and dynamic factor models. In addition to models being employed to derive the forecast baseline, all multilateral benchmark institutions use structural models for scenario analysis and policy simulations as well historical decompositions; most prominent examples include the ECB's "New Area Wide Model" and the IMF's "Global Integrated Monetary and Fiscal Model".

*EQ9b: How do these forecasting tools compare to the DG ECFIN's forecasting tools in terms of strengths and weaknesses?*

Currently, DG ECFIN together with the European Commission's Joint Research Centre is developing a new Global Multi-country Model (GM), constructed as a suitable framework for international spillover analysis and short-medium term forecasts. This DSGE model is meant to be used by DG ECFIN's country desks as a supporting tool in the forecasting process and a complement to desks' econometric models. At this stage, the model focuses on three economic regions – euro area, US and rest of the world – and is used by country desks for the largest member states (DE, FR, IT, ES). Using this model more broadly could be a way to fill an obvious gap between DG ECFIN's forecasting toolbox and other institutions' infrastructure. The lack of a structural multi-country macro econometric model to ensure consistency of the projection across countries. In addition, such a model can also facilitate the consistency regarding global trade and financial flows and allow for a greater consideration of financial markets in the forecasting process. The resource requirements for the development and maintenance of such a large-scale quantitative multi-country model should be expected to be significant, however. In addition, the success of such an ambitious endeavour will depend on the accessibility of the model's user interfaces, the support of country desk officers in handling the model, and on the integration of the model infrastructure in the forecasting process.

*EQ10a: Is there scope for a more systematic and/or efficient use of the FDMS+'s features and possibilities?*

The centralisation of the data provided by FDMS+ is both useful and desirable. However, the lack of a user-friendly interface and limited training curbs the use of the FDMS+ as a preferred system to exchange data between forecast participants.

*EQ10b: Is the standard Excel file used by desk officers to organise and input forecast data an efficient tool in terms of e.g. organisation, user-friendliness and knowledge transfer?*

The main Excel sheet is used by all interviewed country desk officers and generally considered to be fairly user friendly. There are, however, some concerns about its size and complexity, the difficulty of identifying mistakes and documentation.

*EQ11: Is the knowledge about forecasting managed efficiently? Is the set of forecasting skills and competences required from a country-desk officer clearly defined? Is the formal (training) and informal transfer of knowledge adequate?*

As regards the management of the knowledge about forecasting, the evidence suggests clear room for improvement. While formal training is well perceived, its scope in terms of content and frequency is limited. Informal knowledge flows are unreliable and not well organised. The set of competences required from a prospect country desk officer is not clearly-defined. Among the multilateral benchmark institutions, the ECB stands out as being much more explicit in their vacancies regarding the required set of competences.

## 5.4 Coherence

**The assessment of the *coherence* criterion has been captured in the evaluation question 12.**

*EQ12: Are the timing and content of the three annual forecasts in line with surveillance needs?*

Overall, there seems to be a consensus among country desk officers regarding the appropriateness of the current content of forecasts and their timing. However, some Members of the Cabinet tend to see some scope for changes in the latter, although they are also aware of existing constraints that are the function of other institutional arrangements. Potential introduction of 4<sup>th</sup> (interim) forecast round in mid-July, does not seem to rise any issues in terms of the timing, based on insights from those stakeholders who commented on it explicitly.

## 5.5 DG ECFIN Forecast added value

**The assessment of the *EU added value* criterion has been captured in the evaluation question 13.**

*EQ13: Is it useful and necessary for DG ECFIN to produce its own forecast*

There are absolutely no doubts about the fact that it is necessary for DG ECFIN to produce its own forecast in-house. There are no examples of peer institutions that would outsource their own forecast and the importance of the exercise, also in terms of the policy formation/ coordination in the European Commission, show that it adds considerable value over and above existing forecasts produced elsewhere

## 6 Recommendations

This section presents recommendations. Those have been formulated for selected aspects only, when it is deemed constructive and potentially feasible.

**EQ1:** Given the weight of some of the EU economies relative to others and subsequently greater interest and appetite for detailed analysis of those, increasing the page limit for country note for some larger Member States' economies could allow more granularity of the analysis;

**EQ2b:** Financial-market aspects should be taken into account more in DG ECFIN's forecast. Given limited resources, a "smart monitoring" of financial markets is advisable; this should include the systematic use of composite indicators or financial stress indicators, at least in an "off-model" type of exercise. Going forward, the usefulness of financial market variables in the nowcasting and forecasting models for the respective countries should be evaluated and the consistent projection of selected financial variables (e.g. loans to NFCs and households and house prices) in the forecasting process should be an objective, if resource constraints permit. As a basis, current efforts to reduce the complexity of the financial forecast file are welcome. Management should encourage the use of this new file and should aim at a greater representation of financial market variables in the forecast publication.

**EQ3a:** Based on the evidence gathered in this study, the evaluation team cannot formulate a clear-cut recommendation on whether the forecast release should remain unchanged (three fully-fledged forecasts per year), or turn into a 2+2 system with two fully-fledged and two interim forecasts. It is suggested that DG ECFIN prepares an in-depth evaluation of the costs and benefits of a change of the system, taking into account that the evaluation results do not indicate strong user preferences with respect to this question.

**EQ5:** No clear-cut recommendations are formed in relation to the external communication strategy. Yet, when opportunities arise, the study team would suggest conducting the satisfaction survey of media representatives who typically attend press conferences on DG ECFIN forecasts, and to explore the IT solutions to get more detailed data on the consumption of the forecasts' main products and its designated webpage (IT solution permitting).

**EQ6a:** The study team recommends that a more systematic approach to reviewing forecast accuracy is implemented. All forecast errors / revisions for all variables covered by the projection exercise should be recorded and systematically traced back to revisions of historical data, changes in the assumptions or additional available information.

**EQ6b:** If it does not come into conflict with the requirements of the surveillance process, the study team recommends to delay the publication of the forecast document by a few days in order to allow for the incorporation of important Eurostat data before the cut-off date, especially of EU and euro area preliminary flash estimates for GDP.

**EQ6c:** If financial market aspects are taken into account more consequently in DG ECFIN's forecast (see EQ2b), the consistency of international financial flows should be monitored (e.g. with respect to current account balances).

**EQ6d:** DG ECFIN should introduce clear rules regarding the documentation of critical infrastructures. This would support the resilience of the forecast processes in case of unforeseen disturbances (see EQ11).

**EQ8a:** To improve on the use of financial variables in DG ECFIN's forecast, a push from horizontal units and management is required (see above, EQ2b). As regards the communication of risks and uncertainties, the study team suggests an improvement in the transparency of the risk assessment; this pertains primarily to the way risks are quantified in the QUEST model, which is completely undocumented. The ECB's

approach to quantify the risks to the outlook could serve as an alternative example.<sup>50</sup> As regards the communication of risks, the study team proposes a clearer structure of the country texts, including a dedicated paragraph on country-specific risks and the implications of general risks discussed in Part I of the document for the respective country.

**EQ8b:** DG ECFIN has a considerable backlog regarding the use of models in the forecasting context; multilateral benchmark institutions and professional forecasters generally relied more heavily on model output than is the case at DG ECFIN. This pertains to both the nowcast model infrastructure as well as structural models for the short and medium term. The study team recommends that the reasons behind the differences between country desks are investigated and where possible mitigated. The study team also suggests investigating the use of a common model across country desks as a check for the forecast process. The study team further proposes a semi-regular round-table event including both country desks, the modelling group and the forecast unit A3 to evaluate both the methods being currently used and any recent changes in the literature. This round-table could be augmented by the inclusion of external experts who could present either their own work or summaries of prevailing thoughts on forecasting for internal review by DG ECFIN.

**EQ8c:** There is no need for DG ECFIN to deviate from its current approach for setting assumptions. As regards the communication of these assumptions, the study team suggests presenting them more prominently in the forecasting report (on one of the first few pages) and with the help of a tabular overview.

**EQ9:** Reliance on macroeconomic models appears to be less pronounced in DG ECFIN's forecast processes than in most benchmark institutions. In particular DG ECFIN does not use a multi-country model in its core forecasting activities; using such a model could improve cross-country consistency and ensure that international trade (and possibly: financial) flows are consistent. The ECB's approach could serve as an example: All country desks work with satellite models for their respective country; those models are connected through a database system with the core model system, which also calculates global and regional aggregates. Current – ambitious – efforts at DG ECFIN together with the Commission's Joint Research Center to develop a multi-country model based on a similar satellite approach are welcome in this context. Based on the experience in the multilateral benchmark institutions, the study team suggests to not rely on a full-fledged DSGE model derived from microfoundations, but rather on a semi-structural model, which combines theoretical soundness and transparency of a DSGE model with the usability, flexibility and econometric fit of a time-series based model.

**EQ10a:** With a view to facilitate the use of FDMS+ by country desk officers, the study team recommends offering systematic training sessions to newcomers. Further, the documentation of FDMS+ could be re-drafted (Administrators' FAQ: more repeated instructions instead of internal referencing; Quickstart training: tasks should be further divided into common, standard and rare). Finally, the FDMS+ interface could be adjusted to users' needs: ideally, common tasks should be automated so that they are relatively 'point-and-click', with all necessary reports provided once the forecast has been uploaded. The current need to manually check forecast results adds unnecessary complexity. Tasks which are linked should ideally be run sequentially. If the program is not open to modification, the study team would suggest writing an additional interface to stream-line the interaction of the country desks with FDMS+.

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<sup>50</sup> Quantitative risk assessment for the euro area is based on a survey among senior ECB managers or MPC members who are asked to fill in a questionnaire, in which they attach a probability of occurrence to previously determined risk events and quantify the impact, if the risk materializes, on selected macroeconomic variables (euro area GDP and subcomponents, inflation, ...).

This would have the benefit of being owned in-house by DG ECFIN and could be written in a more legacy-proof language (e.g. Python, Java).

**EQ10b:** There is room for improving the user-friendliness of the Excel file used by country desk officers: simplifying it, choosing a single and easily identified editing colour (currently the yellow colour which the manual denotes as an area available for editing has also been used in the input sections) and improving documentation. One suggestion is for the forecasting horizontal unit to circulate a questionnaire to all users (country desk officers, statistical assistants) with a view to collecting exhaustive feedback from country desk levels on needed improvements in the existing Excel file.

**EQ11:** As regards the management of the knowledge about forecasting, training on FDMS+ could be offered more frequently. Training could also cover a broader range of topics (e.g. including modelling frameworks and other horizontal tools). Knowledge flows on the country desk level should follow codified procedures, including the mandatory documentation of all tools and infrastructure; documentation should be made available in a central location on the intranet. Regarding the set of competences required from a country desk officer, a more targeted request for econometric or modelling skills could support efforts to improve on the model infrastructure.

**EQ13:** DG ECFIN should continue producing its own forecast.

## **Annexes**

## Annex 1 Evaluation Framework

Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
<b>Relevance: Are the content and scope of the forecast suited for its objective to underpin enhanced economic surveillance?</b>			
EQ1. In light of the uses of the forecast and of other forecasters' practice, does the balance between presentation of the forecast figures and analysis in the main forecast document appear adequate?	<ul style="list-style-type: none"> <li>The vast majority of user groups are satisfied with the balance between forecast figures and analysis in the main forecast publication</li> <li>The balance between forecast figures and analysis in DG ECFIN publications is comparable to the balance struck in the publications of other international forecasting institutions (e.g. ECB, IMF, OECD)</li> </ul>	<ul style="list-style-type: none"> <li>User feedback on usability of DG ECFIN's forecast document (specifically: balance between forecast figures and analysis) compared to other institutions;</li> <li>Comparative analysis – and in particular balance between forecast figures and analysis in DG ECFIN forecast publications compared to publications of other international forecasting institutions' (e.g. ECB, IMF, OECD);</li> <li>Suggestions for improvement offered by users;</li> <li>Prioritisation and feasibility of those suggestions.</li> </ul>	<ul style="list-style-type: none"> <li>Online survey of professional forecasters;</li> <li>Online survey of subscribers to DG ECFIN publications;</li> <li>Interviews with technical and non-technical users;</li> <li>Interviews with other multilateral forecasting institutions;</li> <li>Desk research including careful analysis of main publications produced by other international forecasting institutions (e.g. ECB, IMF and OECD);</li> <li>Literature review;</li> <li>Views expressed during the final workshop.</li> </ul>
EQ2a. Commission forecasts cover a large number of (interdependent) variables. Is the set of variables adequate considering the uses of the forecast, in particular to provide an input to Treaty-based surveillance and policy advice?	<ul style="list-style-type: none"> <li>Commission officials in charge of treaty-based surveillance and policy advice are largely satisfied with the set of variables covered by the forecast</li> </ul>	<ul style="list-style-type: none"> <li>Descriptive overview of how the forecast feeds into treaty-based surveillance and the Commission's policy advice (e.g. Macroeconomic Imbalance Procedure, the European Semester etc)</li> <li>Comparative analysis of variables used by ECFIN and other international forecasting institutions</li> </ul>	<ul style="list-style-type: none"> <li>Online survey of professional forecasters</li> <li>Online survey of subscribers to DG ECFIN publications</li> <li>Interviews with technical and non-technical users</li> <li>Interviews with other multilateral forecasting institutions</li> </ul>



Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
		<ul style="list-style-type: none"> <li>Suggestions for improvement offered by users</li> <li>Prioritisation and feasibility of addressing those suggestions</li> </ul>	<ul style="list-style-type: none"> <li>Desk research/literature review</li> <li>Views expressed during the final workshop.</li> </ul>
<p>EQ2b. Is the analysis of financial flows adequate? Could its use in the forecast process be improved and if so, how?</p>	<ul style="list-style-type: none"> <li>There are no technical weaknesses in the analysis of financial flows</li> </ul>	<ul style="list-style-type: none"> <li>Descriptive overview of how financial flows are analysed and taken into account in the forecast process</li> <li>Desk research on possible improvements regarding the use of financial flows in the forecast process</li> <li>Compare with other institutions</li> </ul>	<ul style="list-style-type: none"> <li>Interviews with technical and non-technical users</li> <li>Interviews with other multilateral forecasting institutions</li> <li>Desk research/literature review</li> <li>Views expressed during the final workshop.</li> </ul>
<p>EQ2c. Quarterly projections are produced for many forecast variables, but most are used only for internal purposes. What are the pros and cons of more ample use of quarterly data in the forecast publication?</p>	<ul style="list-style-type: none"> <li>The extent to which users express a demand for quarterly data</li> <li>The incremental costs vs. benefits of including more quarterly data in the forecast publication</li> </ul>	<ul style="list-style-type: none"> <li>User feedback on the desired periodicity (quarterly/ annual) of forecast indicators</li> <li>User feedback on the value of an increased use of quarterly data in the forecast publication</li> <li>Comparative analysis of periodicity used by ECFIN and other international forecasting institutions</li> <li>Desk research and stakeholder feedback on the pros and cons of more ample use of quarterly data in the forecast publication</li> <li>Problem of large quarterly data revision</li> </ul>	<ul style="list-style-type: none"> <li>Online survey of professional forecasters</li> <li>Online survey of subscribers to DG ECFIN publications</li> <li>Interviews with technical and non-technical users</li> <li>Interviews with other multilateral forecasting institutions</li> <li>Desk research/literature review</li> <li>Views expressed during the final workshop.</li> </ul>
<p>EQ3a. Currently, three fully-fledged</p>	<ul style="list-style-type: none"> <li>The extent to which policy</li> </ul>	<ul style="list-style-type: none"> <li>Descriptive overview of how the</li> </ul>	<ul style="list-style-type: none"> <li>Online survey of professional</li> </ul>

Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
<p>forecasts are produced per year. Does this forecast frequency appear adequate in view of resource requirements and policy needs?</p>	<p>makers are satisfied with the frequency of the forecasts</p> <ul style="list-style-type: none"> <li>The incremental costs versus benefits of increasing frequency</li> </ul>	<p>forecasts are used for policy making purposes by: the Commission services, the Council and the Parliament, ESRB, ECB, EBA and ESM</p> <ul style="list-style-type: none"> <li>Policy makers' satisfaction with the current frequency</li> <li>Policy makers' demand for increased frequency</li> <li>Time and resources involved in producing forecasts</li> <li>Potential benefits of increased frequency as cited by policy makers and experts</li> <li>Comparative analysis</li> <li>Changes between Autumn and winter / winter and spring: large enough to maintain the winter forecast?</li> </ul>	<p>forecasters</p> <ul style="list-style-type: none"> <li>Online survey of subscribers to DG ECFIN publications</li> <li>Interviews with technical and non-technical users</li> <li>Interviews with other multilateral forecasting institutions</li> <li>Desk research</li> <li>Views expressed during the final workshop.</li> </ul>
<p>EQ3b/EQ4. Is the forecast actually being used for surveillance and beyond?/ Does DG ECFIN's forecast fulfil its role as reference in the surveillance processes</p>	<ul style="list-style-type: none"> <li>There is evidence of extensive use of forecasts for surveillance and other purposes (e.g. as a source of background information, as an input into decision/ policy making, as an input into macroeconomic analysis etc.)</li> <li>ECFIN's forecasts are fit for various economic surveillance procedures in</li> </ul>	<p>Descriptive overview of how the forecasts are used by:</p> <ul style="list-style-type: none"> <li>European Commission</li> <li>Other EU institutions</li> <li>The Member States</li> <li>International Organisations: OECD, IMF</li> <li>The academic community</li> <li>Civil Society</li> </ul>	<ul style="list-style-type: none"> <li>Online survey of professional forecasters</li> <li>Online survey of subscribers to DG ECFIN publications</li> <li>Interviews with technical and non-technical users</li> <li>Interviews with other multilateral forecasting institutions</li> <li>Desk research</li> <li>Views expressed during the final</li> </ul>

Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
	place, most notably the European Semester	<ul style="list-style-type: none"> <li>• Media</li> <li>• Private sector organisations</li> <li>• Descriptive overview of how forecasts are used in the various surveillance procedures</li> <li>• Feedback from those involved in surveillance procedures at EU and national level</li> </ul>	workshop.
<p>EQ5. What are the strengths and weaknesses of the current external communication strategy of the Commission forecasts as compared with other international organisations?</p> <p>a) What is the media coverage of the Commission forecasts as compared to that of other international organisations?</p> <p>b) How could the communication strategy be further improved?</p> <p>c) What other target populations/locations, if any, should the Communication strategy of the Commission forecasts focus on and why?</p>	<ul style="list-style-type: none"> <li>• 'Share of Voice' of Commission as compared to other actors</li> </ul>	<ul style="list-style-type: none"> <li>• Comparative analysis of the data on media coverage and existing systems to capture consumption of the data;</li> <li>• Analysis of current and potential target populations/locations (audiences and channels) and expert assessment of relative benefits of inclusion;</li> <li>• User perceptions and feedback on comparative reputation of relevant products/ processes related to the forecasts.</li> </ul>	<ul style="list-style-type: none"> <li>• Media tracking data available from the European Commission and other forecasters</li> <li>• Observation of press conference</li> <li>• Survey of journalists attending the press conference</li> <li>• Online survey of professional forecasters</li> <li>• Online survey of subscribers to DG ECFIN publications</li> <li>• Interviews with technical and non-technical users</li> <li>• Interviews with other multilateral forecasting institutions</li> <li>• Desk research</li> </ul>
<b>Effectiveness: Are forecast processes and procedures set up in a way that serves the objective of underpinning surveillance?</b>			
DG ECFIN's forecasts are produced by country desk officers subject to	<ul style="list-style-type: none"> <li>• Accuracy of the forecast and the influence of DG ECFIN's</li> </ul>	<ul style="list-style-type: none"> <li>• Desk research on accuracy of DG ECFIN's forecasts for selected</li> </ul>	<ul style="list-style-type: none"> <li>• Interviews with technical and non-technical users</li> </ul>

Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
<p>common assumptions, guidance from horizontal units, discussions with other forecasters and management as well as consistency checks. This has been described as bottom-up forecast with top-down elements. Are the current forecast procedures adequate to:</p> <p>EQ6a. ensure high accuracy of the forecasts?</p>	<p>forecast procedures thereon</p>	<p>countries and discussions with DG ECFIN Forecast officials regarding the forecast procedures' influence on the accuracy of the forecast</p>	<ul style="list-style-type: none"> <li>• Interviews with other multilateral forecasting institutions</li> <li>• Desk research/ literature review</li> <li>• Views expressed during the final workshop.</li> </ul>
<p>EQ6b. incorporate new information efficiently into the forecasts?</p>	<ul style="list-style-type: none"> <li>• Efficiency of incorporating new information into the forecast and the influence of DG ECFIN's forecast procedures thereon</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion with DG ECFIN Forecast officials regarding the forecast procedures' influence on the efficiency of incorporating new information into the forecast</li> </ul>	<ul style="list-style-type: none"> <li>• Interviews with technical users</li> <li>• Interviews with other multilateral forecasting institutions</li> <li>• Desk research/ literature review</li> <li>• Views expressed during the final workshop.</li> </ul>
<p>EQ6c. ensure cross-country consistency of the forecast (numerical and economic)?</p>	<ul style="list-style-type: none"> <li>• Cross-country consistency of the forecast and the influence of DG ECFIN's forecast procedures thereon</li> </ul>	<ul style="list-style-type: none"> <li>• Desk research on cross-country consistency of the forecast and discussion with DG ECFIN Forecast officials regarding the forecast procedures' influence on the consistency of the forecast</li> </ul>	<ul style="list-style-type: none"> <li>• Interviews with technical users</li> <li>• Interviews with other multilateral forecasting institutions</li> <li>• Desk research/ literature review</li> <li>• Views expressed during the final workshop.</li> </ul>
<p>EQ6d. What major operational risks are related to the current forecast processes?</p>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Desk research and discussion with DG ECFIN Forecast officials to identify operational risks related to the forecast process</li> </ul>	<ul style="list-style-type: none"> <li>• Interviews with technical users</li> <li>• Interviews with other multilateral forecasting institutions</li> <li>• Desk research</li> </ul>

Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
<p>EQ7. To what extent do the current forecast processes in DG ECFIN ensure that forecasts are produced by staff independently, particularly with regard to variables that are relevant for fiscal surveillance purposes (e.g. in the framework of the Stability and Growth Pact)? In case the independence is found to be incomplete, how could it be improved?</p>	<ul style="list-style-type: none"> <li>The organisational structure, the status of the staff and the forecasting process of DG ECFIN compare favourably with that of similar institutions and provide reasonable guarantees for the</li> <li>independence of the results</li> <li>The staff of DG ECFIN is not submitted to significant pressures from the Member States or from its hierarchy</li> <li>The forecasts of DG ECFIN do not reveal a systematic bias (more optimistic or more pessimistic outlook) when compared with those of other institutions</li> </ul>	<ul style="list-style-type: none"> <li>Examination of organisational structure and workflows</li> <li>Interviews with DG ECFIN Forecast officials to explore potential pressures from Member States or hierarchy</li> <li>User perceptions regarding independence and quality</li> <li>Comparative analysis to check for any bias</li> </ul>	<ul style="list-style-type: none"> <li>Views expressed during the final workshop.</li> <li>Interviews with technical users, predominantly Country desk officers, and non-technical, predominantly Members of the Cabinet</li> <li>Desk research/ literature review</li> <li>Views expressed during the final workshop.</li> </ul>
<p><b>Efficiency: Do the technical forecasting tools and use of human resources allow a cost-effective forecast production?</b></p>			
<p>In what way do approaches to forecasting among other professional forecasters (in particular other international organisations, but also research institutes and the private sector) differ from that implemented by DG ECFIN?</p>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>Comparative analysis between ECFIN's approach to forecasting and approaches of other professional forecasters</li> <li>Desk research/ literature review and interviews with professional forecasters to identify improvements</li> </ul>	<ul style="list-style-type: none"> <li>Desk research/ literature review</li> <li>Online survey of professional forecasters</li> <li>Interviews with technical users</li> <li>Views expressed during the final workshop.</li> </ul>

Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
EQ8a. What lessons have other forecasters drawn since the Great Recession to improve their forecasts?		to forecast approaches since the Great Recession	<ul style="list-style-type: none"> <li>•</li> </ul>
EQ8b. What recent innovations in forecasting methods are being taken up and why?	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Desk research/ literature review and interviews with professional forecasters and ECFIN to identify recent innovations in forecasting methods</li> </ul>	<ul style="list-style-type: none"> <li>• Desk research/ literature review</li> <li>• Online survey of professional forecasters</li> <li>• Interviews with technical users</li> <li>• Interviews with other multilateral forecasting institutions</li> <li>• Views expressed during the final workshop.</li> </ul>
EQ8c. Is the set and design of external assumptions efficient?	<ul style="list-style-type: none"> <li>• Efficiency of current set and design of assumptions</li> </ul>	<ul style="list-style-type: none"> <li>• Description of the current set of external assumptions used by ECFIN, such as oil and other raw material prices, exchange rates, interest rates and other variables</li> <li>• The process through which external assumptions are defined at ECFIN</li> <li>• Interviews with professional forecasters to identify the set of external assumptions that they use in their forecasting tools and how these are defined</li> <li>• Expert judgement</li> </ul>	<ul style="list-style-type: none"> <li>• Online survey of professional forecasters</li> <li>• Interviews with technical users</li> <li>• Interviews with other multilateral forecasting institutions</li> <li>• Desk research/ literature review</li> <li>• Views expressed during the final workshop.</li> </ul>
Quantitative forecasting tools in DG	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Survey of tools/methods employed in</li> </ul>	<ul style="list-style-type: none"> <li>• Online survey of professional</li> </ul>

Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
<p>ECFIN exist at the level of horizontal units as well as geographical desks. They comprise different tools for nowcasting and short-term (e.g. quarter-ahead) forecasting as well as tools for forecasting near-to-medium term developments.</p> <p>EQ9a. What portfolio of forecasting tools exists in other international organisations (in particular OECD, IMF, ECB)?</p>		<p>other international organisations based on interviews with these institutions' forecast officials</p>	<p>forecasters</p> <ul style="list-style-type: none"> <li>• Interviews with technical users</li> <li>• Interviews with other multilateral forecasting institutions</li> <li>• Desk research/ literature review</li> <li>• Views expressed during the final workshop.</li> </ul>
<p>EQ9b. How do these compare to the DG ECFIN's forecasting tools in terms of strengths and weaknesses?</p>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Survey of tools/methods employed in other international organisations based on interviews</li> <li>• Identification of strengths and weaknesses of these tools.</li> <li>• Comparative assessment of their strengths and weaknesses vis-a-vis ECFIN's tools</li> <li>• User perceptions and feedback on the strengths and weaknesses of ECFIN's forecasting tools vis-à-vis tools produced by other organisations</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Online survey of professional forecasters</li> <li>• Interviews with technical users</li> <li>• Interviews with other multilateral forecasting institutions</li> <li>• Desk research/ literature review</li> <li>• Views expressed during the final workshop.</li> <li>•</li> </ul>
<p>The Forecast Data Management System (FDMS+) collects forecast data from geographical desks and carries out calculations and aggregations that are necessary for</p>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Survey of FDMS+ features and possibilities based</li> <li>• Identification of possible efficiency gains and scope for more systematic use</li> </ul>	<ul style="list-style-type: none"> <li>• Online survey of professional forecasters</li> <li>• Interviews with technical users</li> <li>• Interviews with other multilateral</li> </ul>

Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
<p>the production of the forecast publication (statistical annex, tables and graphs) as well as internally used tables. In the process, consistency checks and validations are carried out.</p> <p>EQ10a. Is there scope for a more systematic and/or efficient use of the system's features and possibilities?</p>			<p>forecasting institutions</p> <ul style="list-style-type: none"> <li>• Views expressed during the final workshop.</li> <li>•</li> </ul>
<p>EQ10b. Is the standard Excel file used by desk officers to organise and input forecast data an efficient tool in terms of e.g. organisation, user-friendliness and knowledge transfer?</p>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>	<ul style="list-style-type: none"> <li>• Analysis of Excel file and identification of scope for increased efficiency in terms of organisation, user-friendliness and knowledge transfer</li> <li>• User feedback on excel file</li> </ul>	<ul style="list-style-type: none"> <li>• Interviews with technical users, predominantly Country desk officers</li> <li>• Views expressed during the final workshop.</li> </ul>
<p>EQ11. Is the knowledge about forecasting managed efficiently? Is the set of forecasting skills and competences required from a country-desk officer clearly defined? Is the formal (training) and informal transfer of knowledge adequate?</p>	<ul style="list-style-type: none"> <li>• There are knowledge management systems in place in ECFIN</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Job descriptions of country desk officers</li> <li>• Formal training and informal knowledge flows within ECFIN</li> <li>• Processes and tools for incorporating external knowledge (e.g. participation in OECD working Group on short-term economic projections etc.)</li> <li>• Knowledge management systems such as internal guidance, FAQs etc. Existence hand-over file.</li> </ul>	<ul style="list-style-type: none"> <li>• Interviews with technical users, predominantly Country desk officers</li> <li>• Desk research</li> <li>• Views expressed during the final workshop.</li> </ul>
<p><b>Coherence: Does the forecast fit seamlessly into the processes it has to serve?</b></p>			



Evaluation Question	Judgement criteria	Evidence and analysis required	Sources of evidence
<p>EQ12. Are the timing and content of the three annual forecasts in line with surveillance needs?</p>	<ul style="list-style-type: none"> <li>The timing of forecasts is well aligned with ECFIN's surveillance needs</li> </ul>	<ul style="list-style-type: none"> <li>The European Semester Calendar</li> <li>Flowchart analysis of surveillance process – timing of inputs and outputs</li> </ul>	<ul style="list-style-type: none"> <li>Interviews with technical users, predominantly Country desk officers, DG ECFIN management and Members of the Cabinet</li> <li>Desk research</li> </ul>
<p><b>EU added value: Is it useful and necessary for DG ECFIN to produce its own forecasts?</b></p>			
<p>EQ13: Is it useful and necessary for DG ECFIN to produce its on forecast?                      NB: the 2007 Evaluation found that:                      the production of forecasts within DG ECFIN is a major element in the maintenance and development of the DG's knowledge and skills;                      there are no convincing examples of extensive outsourcing of forecasting activities in other administrations, and in those instances where partial outsourcing does take place the superiority of that approach is not demonstrated and                      stopping in-house forecasting activities would deprive users of a useful source of information for which there is no comparable alternative.                      Is this assessment still valid today?</p>	<ul style="list-style-type: none"> <li>The extent to which these evaluation conclusions are still valid</li> </ul>	<ul style="list-style-type: none"> <li>Changed context since 2007 – the enhanced macroeconomic surveillance framework for the euro area</li> <li>Identification of the internal knowledge and skills base generated by DG ECFIN forecasting activities and comparison of findings with the findings of the 2007 evaluation</li> <li>Identification of significant examples of outsourcing of forecasting activities by other forecasting organisations; comparison of findings with the findings of the 2007 evaluation</li> <li>Identification of users' alternatives and evaluation of costs/benefits of switching from DG ECFIN forecasting products to alternative products</li> </ul>	<ul style="list-style-type: none"> <li>Desk research</li> <li>Interviews with technical users, predominantly country desk officers</li> <li>Interviews with non-technical users</li> <li>Interviews with other multilateral forecasting institutions</li> <li>Online survey of professional forecasters</li> <li>Views expressed during the final workshop.</li> </ul>

## Annex 2 Completed work, caveats and limitations

Table A2.1 Scope, limitations and caveats of data collection and analysis

Method	Scope	Caveats and limitations
Desk research	<p>The desk research began already at the stage of bid writing and was continued immediately after the kick off meeting. The review encapsulated various sources of relevant information including:</p> <ul style="list-style-type: none"> <li>• Samples of ECFIN’s main forecast publications;</li> <li>• Past evaluations of the DG ECFIN forecasts (i.e. 2007 evaluation, Court of Auditors evaluation and forecast accuracy papers) as well as internal assessments (i.e. post-mortem note on Spring and Winter 2016 forecast);</li> <li>• Examples of internal tools, manuals and guidelines i.e. FDMS+ manual, FAQs, forecast spreadsheets, documentation on existing models’ portfolio;</li> <li>• Communication related data including number of viewings/ downloads of main DG ECFIN forecast publication, media coverage data including social media statistics, documentation related to media relations as well as examples of analytical outputs provided by external consultants who also deliver media monitoring and analysis;</li> <li>• Sample of publications related European Semester Cycle (i.e. Country Reports, Country Specific Recommendations);</li> <li>• Review of the data collected by ICF as part of the <i>2015 Evaluation study on DG ECFIN's communication strategy and activities</i>.</li> </ul>	<p>The study team received the full set of required documentation in a timely manner.</p>
Scoping interviews	<p>Scoping interviews with selected DG ECFIN officials including the management personnel from Unit A4 overseeing the production of the forecast and selected staff responsible for communication aspects took place immediately after the kick-off of the study. Most were carried out face-to-face in Brussels.</p> <p>These interviews had formative nature and their main goal was to allow the members of the evaluation team to have a better understanding of the context, processes and tools used in course of the forecasting exercise conducted by DG ECFIN. The interviews meant to have a flexible and less formal character to allow an unconstrained discussion as well as exploration of</p>	<p>All relevant staff envisaged to be consulted was available.</p> <p>The team was provided sufficient time for the scoping discussions and the received feedback was detailed and backed up with sufficient data and helpful examples.</p>

Method	Scope	Caveats and limitations
	<p>aspects about which the evaluation team had still insufficient knowledge following the desk research.</p>	<p>No deliberate bias in responses was observed.</p>
<p>Semi-structured 'technical' and 'non- technical' interviews</p>	<p>In total, the study team carried out 22 'technical' and 17 'non-technical' interviews (excluding scoping interviews). While former were typically largely focused on aspects related to models, tools and processes used in the forecast production in DG ECFIN/ elsewhere, the latter put greater emphasis on the actual use of the DG ECFIN forecast, user's satisfaction and the contribution of DG ECFIN forecast to policy formulation. Key types of consulted stakeholders within both groups were as following:</p> <p><u>Non-technical interviewees:</u></p> <ul style="list-style-type: none"> <li>• Selected Members of the Cabinet of the Commissioner Pierre Moscovici;</li> <li>• Relevant staff from other DG AGRI, BUDGET, DG FISMA and DG REGIO;</li> <li>• Selected European Semester Officers;</li> <li>• Representatives from other EU organizations/ agencies (i.e. EBA, ESM, ESRB);</li> <li>• Communication staff from ECB, IMF and OECD.</li> </ul> <p><u>Technical interviewees:</u></p> <ul style="list-style-type: none"> <li>• Sample of DG ECFIN Country Desk Officers;</li> <li>• Professional forecasters from four multilateral organizations (ECB, IMF, OECD and the UN);</li> <li>• Selected number of professional forecasters from national administration (i.e. central banks and treasuries) and private sector organizations.</li> </ul> <p>Nearly all those interviews were carried out over the phone and lasted between 45-60 minutes. The exception were technical interviews with ECB, IMF and OECD, which given the importance of the benchmarking analysis for the evaluation, incorporated longer and more detailed list of questions and lasted circa 90 minutes each. Topic guides with specific questions were routinely provided few days prior to the discussion to allow the preparation.</p>	<p>Nearly all stakeholders envisaged to be consulted at the planning phase were eventually interviewed.</p> <p>In limited cases, interviewees were only vaguely familiar with certain aspects related to the DG ECFIN forecast (i.e. structure and content of the main publication).</p> <p>Due to the broad scope of the analysis (i.e. detailed assessment of communication activities pursued in the benchmark institutions), it was not possible to clarify all issues and certain gaps remained after the interviews (i.e. format of the IMF press conference).</p> <p>In few odd cases, interviewees could not provide full answer due to internal confidentiality rules.</p> <p>NB: <i>Openness and frank insights provided by interviewed Country desk officers shall be noted.</i></p>
<p>On-line survey of professional</p>	<p>Survey of professional forecasters involved respondents from national public administration (i.e. central banks, treasuries, fiscal councils) and private sector organizations (i.e. private banks and</p>	<p>In few individual cases, private forecasters refused to take part</p>

Method	Scope	Caveats and limitations
forecasters	<p>consultancies).</p> <p>Overall, 205 individual forecasters were contacted of which 68 responded (63 fully and 5 partially) resulting in the response rate of 33%. For detailed description of the sample characteristics see Annex 5 .</p> <p>Apart from questions exploring the general assessment of the DG ECFIN forecast (also in the context of forecasts produced by peer institutions), this survey aimed also at exploring more technical aspects i.e. type of methods/ tools used by forecasters or examples of recent innovations.</p>	<p>in the study due to inability to comment on some questions e.g. confidential character of the information related to the models' infrastructure.</p> <p>Certain questions assumed fairly good familiarity with the DG ECFIN main publication which may not have been the case for all respondents.</p>
On-line survey of subscribers to DG ECFIN publications	<p>Invitation to online survey of subscribers to DG EECFIN publications was send out to 7170 individuals of which 255 responded (232 fully and 23 partially) resulting in 4% response rate. For detailed description of the sample characteristics see Annex 5 .</p> <p>Unlike in the survey of professional forecasters, this survey did not include any questions related to more technical aspects i.e. methodological approaches/ models applied.</p>	<p>Low response rate suggests that some response bias may exist.</p> <p>There was also insufficient information about the key characteristics of the sample. The survey did not control for the experience in forecasting or degree of familiarity with DG ECFIN product. It is plausible thought that the group of subscribers is presumably fairly heterogeneous.</p> <p><b>The results from this survey should be therefore interpreted with considerable caution.</b></p>
Direct observation of EC press conference on	<p>The observation was conducted by two members of the evaluation team with facilitating role of DG ECFIN. It concentrated, <i>inter alia</i>, on:</p>	<p>The evaluation team was provided full access to all zones of the conference venue and</p>

Method	Scope	Caveats and limitations
Spring 2017 forecast	<p>Gauging the general interest in the event among media representatives;</p> <ul style="list-style-type: none"> <li>• Adequacy and quality of the visuals used (i.e. PowerPoint presentation accompanying the presentation of results by the Commissionaire);</li> <li>• Common type of questions asked by journalists and character of responses provided;</li> <li>• Arrangement of the technical briefing following the conference;</li> <li>• Logistics (i.e. punctual kick off, length of main blocks of the event, quality of available live translation, availability of press releases).</li> </ul>	<p>opportunity to consult all participants. Yet, as observation had a one off and rapid character, it did not allow for extensive discussion with its participants (i.e. journalists attending the press conference or Country desk officers whose views are in particular demand during the technical briefing).</p> <p>Although it could be potentially a very useful feedback that would have substantiated the findings from the observation, there was eventually no final agreement of the European Commission to launch the on-line survey of relevant media representatives who tend to attend press conference.</p>
Comparative benchmark analysis	<p>Comparative benchmark analysis focusing on the approaches to forecasting followed by three selected multilateral institutions: ECB, IMF and OECD.</p> <p>The analysis aimed at detailing the approaches to forecasting employed by other professional forecasters including recent innovations in forecasting methods (i.e. lessons drawn since the Great Recession), type of quantitative forecasting tools and comparison in terms of strengths and weaknesses to those used by DG ECFIN, the adequacy of the methods to ensure high accuracy and consistency, timely incorporation of new information into the forecast as well as communication activities surrounding forecasts and applied by those institutions. Finally, it was assessed whether the approaches adopted in other organizations could be transposed to DG ECFIN.</p>	<p>Interviews with officials at multilateral benchmark institutions were taken primarily with forecast coordinators at horizontal units. Discussions with country desk officers might have yielded different views on the importance of forecasting infrastructure (including models) and the effectiveness / efficiency</p>

Method	Scope	Caveats and limitations
	<p>The comparative benchmarking analysis relied on following sources of information:</p> <ul style="list-style-type: none"> <li>• review of internal reports and official publications outlining DG ECFIN’s forecasting procedures and outputs,</li> <li>• interviews with 11 ECFIN country desk officers, both from smaller and larger countries, to gain deeper insights into currently employed methods at DG ECFIN and country desk officers’ perspectives on potential improvements,</li> <li>• review of 40 publications by the ECB, IMF and OECD on those institutions’ forecast procedures and products as well as the results of their respective forecast evaluations. In addition, insights were drawn from a recent independent review of the Bank of England's forecasts and forecasting processes;</li> <li>• 6 technical in-depth interviews with responsible staff members at multilateral institutions (ECB, IMF, OECD and UN) focusing on technical aspects and 3 in-depth interviews focusing on communication aspects respectively;</li> <li>• the results from the survey among professional forecasters, to gain insights into other institutions forecast procedures and products.</li> <li>• 6 follow-up interviews with professional forecasters who had provided particularly insightful feedback via on-line survey.</li> </ul>	<p>of forecasting processes.</p> <p>Analysis of forecasting tools and infrastructure employed at benchmark institutions is based on descriptive accounts given in interviews and on descriptions provided in publicly available or internal documents; no direct access to forecasting tools and infrastructure was provided. In addition, only limited data and insights about media coverage from those organizations was provided.</p> <p>In some cases, interviewees were only vaguely familiar with DG ECFIN’s forecast, and were not able to answer detailed questions on the quality of the forecast and the forecast publication.</p>
<p>Review of now-casting and forecasting literature</p>	<p>The team conducted a review of the forecasting and nowcasting literature to place the approaches of DG ECFIN and other forecasting bodies in relation to the current academic literature; a particular focus was put on the use of financial market data in the forecasting context. Thereby, the team was aware that the research frontier of academia is not necessarily optimal from a practical forecaster’s perspective, especially those where forecaster judgement, be it from within the context of ‘bottom-up’ country desk forecasts or ‘top-down’ model based forecasts is an essential element of the process. The literature review formed a useful input into the interviews conducted with DG ECFIN and other forecasters and as well as provided a useful</p>	<p>N/A</p>

Method	Scope	Caveats and limitations
	<p>reference point for the report and its conclusions.</p> <p>The literature review covered 100 publications in academic journals, working paper series and grey literature such as model documentations, plus a small number of internet-exclusive publications.</p>	
Final workshop	<p>As a last stage of the study, the study team, in collaboration with the DG ECFIN, organized the final workshop where presentation of final findings and conclusions from the study was followed by specific discussion on selected recommendations namely: (i) financing side and the consistency of financing flows, (ii) use of modelling inputs in the DG ECFIN forecast, (iii) training provided to DG ECFIN forecasting staff, and (iv) risk quantification.</p> <p>The 3 hours' workshop was attended by key DG ECFIN representatives involved in the forecast production process as well as selected experts from other DGs (e.g. DG FISMA). It allowed detailed exchanges on particular findings and recommendations, as well as potential actions that could be undertaken by DG ECFIN. Number of observations made during the workshop was taken into account in the revised version of the Draft Final Report.</p>	N/A

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### **Annex 3 List of completed interviews**

In total, 54 interviews were conducted as a part of this study. Table 4 shows the details of all those.



Table 4 List of completed scoping interviews

No	Organization	Name	Role of interviewee	Date of the interview
<b>Scoping Interviews</b>				
1	DG ECFIN, European Commission	Mr LEANDRO Jose	Director in Directorate A (Policy, Strategy, Coordination and Communication)	December 16 <sup>th</sup> , 2016
2	DG ECFIN, European Commission	Ms REITANO Elena	Head of Unit, (Unit G3 - UK, CZ, SK) <sup>51</sup>	December 6 <sup>th</sup> , 2016
3	DG ECFIN, European Commission	Mr STIERLE Michael	Deputy Head of Unit, (Unit H3 - IT, MT, PL, and also former forecast coordinator)	December 6 <sup>th</sup> , 2016
4	DG ECFIN, European Commission	Mr. WOZNIAK Przemyslaw	Economic Analyst – Desk Officer, (Unit D4)	December 6 <sup>th</sup> , 2016
5	DG ECFIN, European Commission	Mr TOD Philip	Head of Unit, (Unit A4)	December 16 <sup>th</sup> , 2016
6	DG ECFIN, European Commission	Mr KOH Peter	Information and Communication Officer – EN Editor, (Unit A4)	December 16 <sup>th</sup> , 2016
7	DG ECFIN, European Commission	Mr BRICIU Lucian	Economic Data Analyst, (Unit C3)	December 6 <sup>th</sup> , 2016
8	DG ECFIN, European Commission	Ms GONZALEZ CABANILLAS Laura	Coordinator/ Team Leader – Economist & Team leader forecast coordination, (Unit A3)	December 6 <sup>th</sup> , 2016
9	DG ECFIN, European Commission	Ms HESPEL Evelyne	Head of Sector, (Unit A3)	December 6 <sup>th</sup> , 2016
10	DG ECFIN, European Commission	Mr DÖHRING Björn	Head of Unit, (Unit A3)	December 6 <sup>th</sup> , 2016

<sup>51</sup> Upon Elena Reitano's suggestion, this interview was held partly jointly with Björn Döhring to address especially the issues of no-policy change assumption, and the way of addressing Brexit in the forecasting exercise, and partly jointly with Peter Symons, ECFIN UK country desk, and David Havrlant; ECFIN Slovak country desk.

No	Organization	Name	Role of interviewee	Date of the interview
	Commission			
11	DG ECFIN, European Commission	Mr LESCRAUWAET Pim	Head of Sector (Unit A1)	December 6 <sup>th</sup> , 2016
12	DG ECFIN, European Commission	Mr CAPELLA RAMOS Joao	Policy Officer – Economist (Unit A1)	December 16 <sup>th</sup> , 2016
13	DG ECFIN, European Commission	Ms CASAUX Suzanne	Coordinator/ Economic Analyst, (Unit A3)	December 16 <sup>th</sup> , 2016
14	DG ECFIN, European Commission	Mr DIECKMANN Oliver	Senior Expert – Economic Forecast, (Unit A3 - author of chapter I)	December 16 <sup>th</sup> , 2016
15	DG ECFIN, European Commission	Mr FERRANDIS VALLTERRA Salvador Adrian	Statistical Assistant, (Unit A3 - statistics, FDMS+)	December 16 <sup>th</sup> , 2016
<b>Interviews since Inception Phase onwards</b>				
16	DG ECFIN, European Commission	Mr Simon O'Connor	Member of the Cabinet	May 4 <sup>th</sup> , 2017
17	DG ECFIN, European Commission	Mr Reinhard Felke	Deputy Head of Cabinet	March 29 <sup>th</sup> , 2017
18	DG ECFIN, European Commission	Mr Massimo Suardi	Deputy Head of Cabinet	March 30 <sup>th</sup> , 2017
19	DG ECFIN, European Commission	Mr Fabien Dell	Member of the Cabinet	August 2 <sup>nd</sup> , 2017
20	DG ECFIN, European Commission	Mr Tsevetan Tsalinski	Country Desk Officer	March 27 <sup>th</sup> , 2017
21	DG ECFIN, European Commission	Mr Wojciech Paczyński	Country Desk Officer	March 27 <sup>th</sup> , 2017
22	DG ECFIN, European Commission	Ms Chrissopighi Braila	Country Desk Officer	March 28 <sup>th</sup> , 2017

No	Organization	Name	Role of interviewee	Date of the interview
23	DG ECFIN, European Commission	Mr Csanad Sandor Kiss	Country Desk Officer	March 29 <sup>th</sup> , 2017
24	DG ECFIN, European Commission	Mr Ismael Valdés	Country Desk Officer	March 30 <sup>st</sup> , 2017
25	DG ECFIN, European Commission	Mr Stefano Santacroce	Country Desk Officer	March 31 <sup>st</sup> , 2017
26	DG ECFIN, European Commission	Mr. Janis Malzubris	Country Desk Officer	March 28 <sup>th</sup> , 2017
27	DG ECFIN, European Commission	Mr. Julien Hartley	Country Desk Officer	March 28 <sup>th</sup> , 2017
28	DG ECFIN, European Commission	Mr. Guillaume Cleaud	Country Desk Officer	March 28 <sup>th</sup> , 2017
29	DG ECFIN, European Commission	Mr. Ernesto Reitano	Country Desk Officer	March 28 <sup>th</sup> , 2017
30	DG ECFIN, European Commission	Ms. Violeta Klyviene	Country Desk Officer	April 10 <sup>th</sup> , 2017
30	DG AGRI, European Commission	Mr Fabien Santini	Economist	April 12 <sup>th</sup> , 2017
31	DG BUDGET, European Commission	Ms Rasa Daukantiene	Head of Unit	July 18 <sup>th</sup> , 2017
32	DG FISMA, European Commission	Mr Alexandru Zeana	Economist	August 24 <sup>th</sup> , 2017
33	DG REGIO, European Commission	Mr Angel Catalina-Rubianes	Economist	March 30 <sup>th</sup> , 2017
34	EU Delegation in Czech Republic, European	Mr Zdenek Cech	European Semester Officer in Czech Republic	July 18 <sup>th</sup> , 2017

No	Organization	Name	Role of interviewee	Date of the interview
	Commission			
35	EU Delegation in Spain, European Commission	Ms Paz Guzman Caso de los Cobos	European Semester Officer in Spain	April 26 <sup>th</sup> , 2017
36	EU Delegation in the US, European Commission	Ms Valérie Rouxel-Laxton	Head of Economic and Financial Section	April 3 <sup>rd</sup> , 2017
37	European Banking Authority	Mr Benjamin Friedrich	Principal Bank Sector Analyst	March 28 <sup>th</sup> , 2017
38	European Systemic Risk Board	Mr Tuomas Peltonen	Deputy Head of Secretariat	May 5 <sup>th</sup> , 2017
39	Economic and Financial Committee	Mr Thomas Wiser	President	March 27 <sup>th</sup> , 2017
40	ECB	Mr. Nikiforos Vidalis	Senior Advisor, Head of Forecast Administration	March 22 <sup>nd</sup> , 2017
41	ECB	Mr. Matteo Ciccarelli Mr. Michele Lenza	Head of Monetary Policy Research Senior Adviser, DG Research	August 14 <sup>th</sup> , 2017
42	ECB	William Lelieveldt*	Principal Press Officer	August 29 <sup>th</sup> , 2017
43	IMF	Ms. Oya Celasun and Mr. Joannes Mongardini	Division chief, research department Deputy Division chief, research department	May 19 <sup>th</sup> , 2017
44	IMF	Mr Christoph Rosenberg and Ms Olga Stankova	Advisors in the IMF Communication Department	May 26 <sup>th</sup> , 2017
45	OECD	Mr. Alvaro Pereira Mr. Patrick Lenain Mr. Nigel Pain	Director of Country Studies Branch Economist, Country Studies Branch Head of Economic Outlook Department	July 3 <sup>rd</sup> , 2017
46	OECD	Mr. David Turner	Head of Macroeconomic Analysis Division	May 22 <sup>nd</sup> , 2017
47	OECD	Mr Sebastain Barnes	Senior Economist	July 20 <sup>th</sup> , 2017
48	United Nations	Ms. Dawn Holland	Senior Economic Affairs Officer	April 19 <sup>th</sup> , 2017

No	Organization	Name	Role of interviewee	Date of the interview
49	KOF Zurich	Mr. Heiner Mikosch	Economist	July 20 <sup>th</sup> , 2017
50	ESRI Dublin	Mr. Kieran McQuinn	Research Professor	August 3 <sup>rd</sup> , 2017
51	Bloomberg Intelligence EMEA	Mr. Jamie Murray	Chief Economist EMEA	August 24 <sup>th</sup> , 2017
52	PROMETEIA, Bologna	Mr. Lorena Vincenzi	Senior Economist	August 25 <sup>th</sup> , 2017
53	Bureau Fédéral du Plan, Bruxelles	Mr. Ludovic Dobbelaere	Economist	August 28 <sup>th</sup> , 2017
54	RWI, Essen	Mr. Roland Döhrn	Head of Forecasting Department	August, 25 <sup>th</sup> , 2017

## **Annex 4 On-line questionnaires**

### **A4.1 Survey questionnaire for professional forecasters**



Online Survey  
Questionnaire\_Professi

### **A4.2 Survey questionnaire for subscribers to DG ECFIN publications**



Online Survey  
Questionnaire\_Other - I

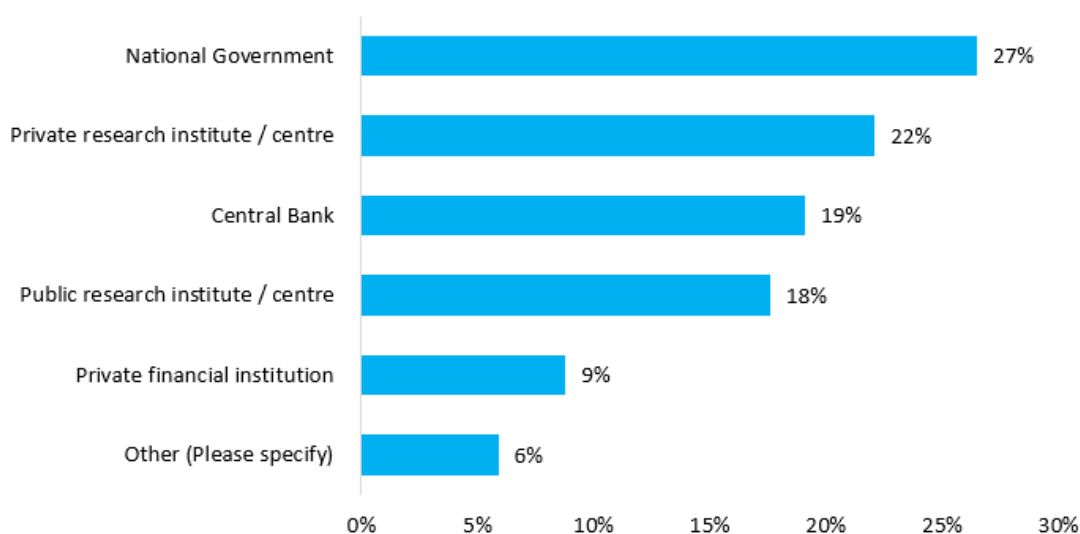
## Annex 5 On-line survey of professional forecasters and subscribers to DG ECFIN’s publications – sample composition

### A5.1 Respondents – ‘professional forecasters’ survey

As of May 15<sup>th</sup>, we received 56 responses (51 complete ones and 5 partial ones) out of approximately 250 respondents<sup>52</sup> who had been invited to take part in the survey. Those were taken into account for the analysis that subsequently fed into our responses to selected evaluation questions, as per Section 4.

The distribution of respondents based on the type of organizations they represent has been fairly even. Nearly three quarters of all respondents were from the private research institutes (25 per cent), national governments including treasuries (23 per cent) and central banks (21 per cent) respectively.

Figure 23 Respondents by the type of organization

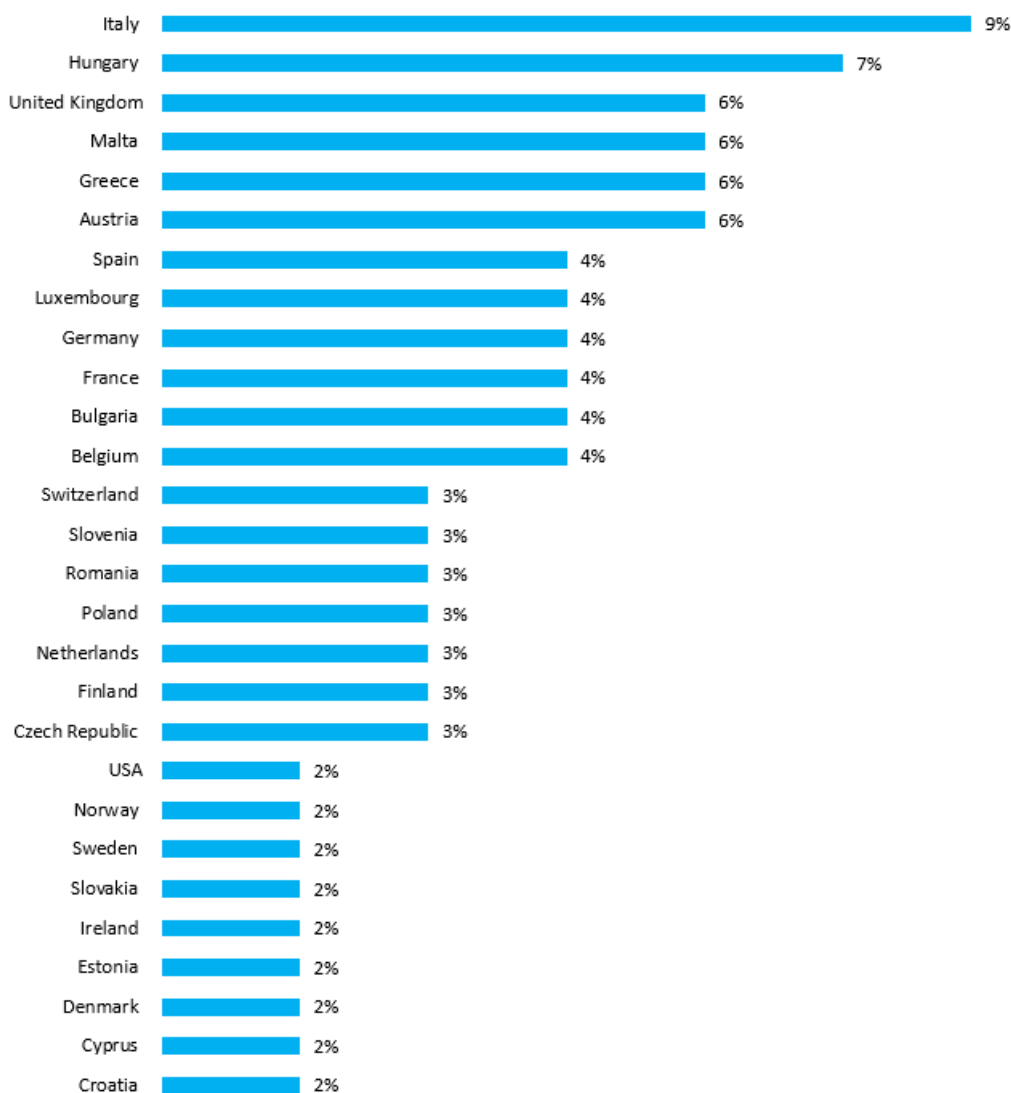


N=68

The geographical distribution of the analysed set of responses is presented in Figure 24.

<sup>52</sup> Actual figure needs to be validated by DG ECFIN which has disseminated the survey

Figure 24 Geographical distribution of responses



N=68

### Respondents – subscribers to DG ECFIN’s publication

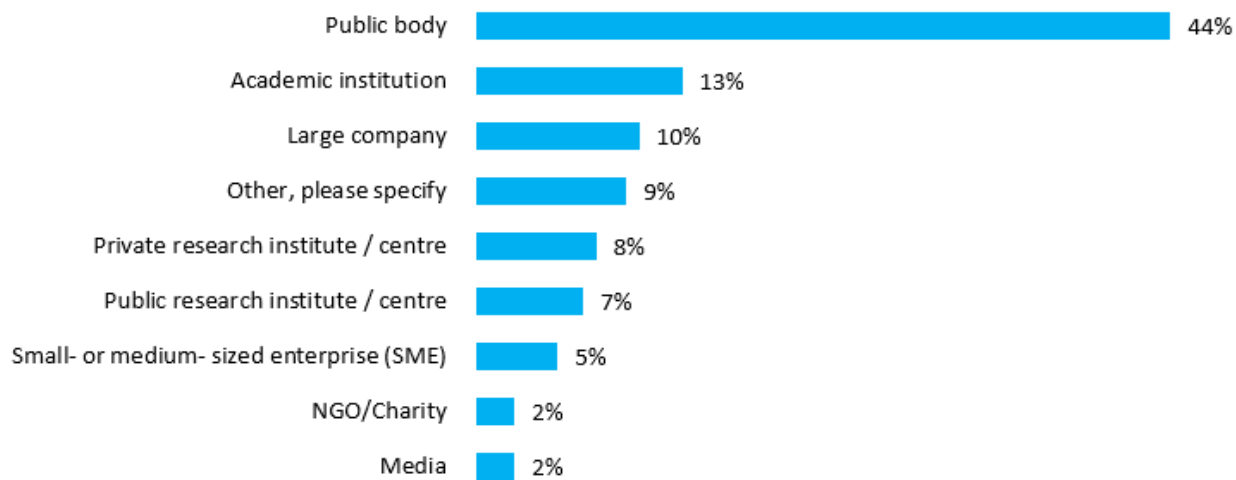
As of May 15<sup>th</sup>, we received 226 responses (191 complete ones and 35 partial ones) out of approximately 6,500 individuals who have subscribed at some point to receive DG ECFIN’s publications. After the review of the quality of partial responses, 209 responses were ultimately used for the analysis that fed into our responses to selected evaluation questions, as per Section 4.

It shall be noted that there is currently nearly no information available regarding the profile of 6,500 individuals who are subscribers to DG ECFIN’s publication. Therefore, any inferences about the geographical distribution, employment or the level of competences in forecasting can not be drawn.

Yet, received responses allow to establish some essential characteristics of those who provided the feedback. More specifically, most of respondent came from public body (40 per cent) followed by academic institution (12 per cent), as depicted in Figure 25



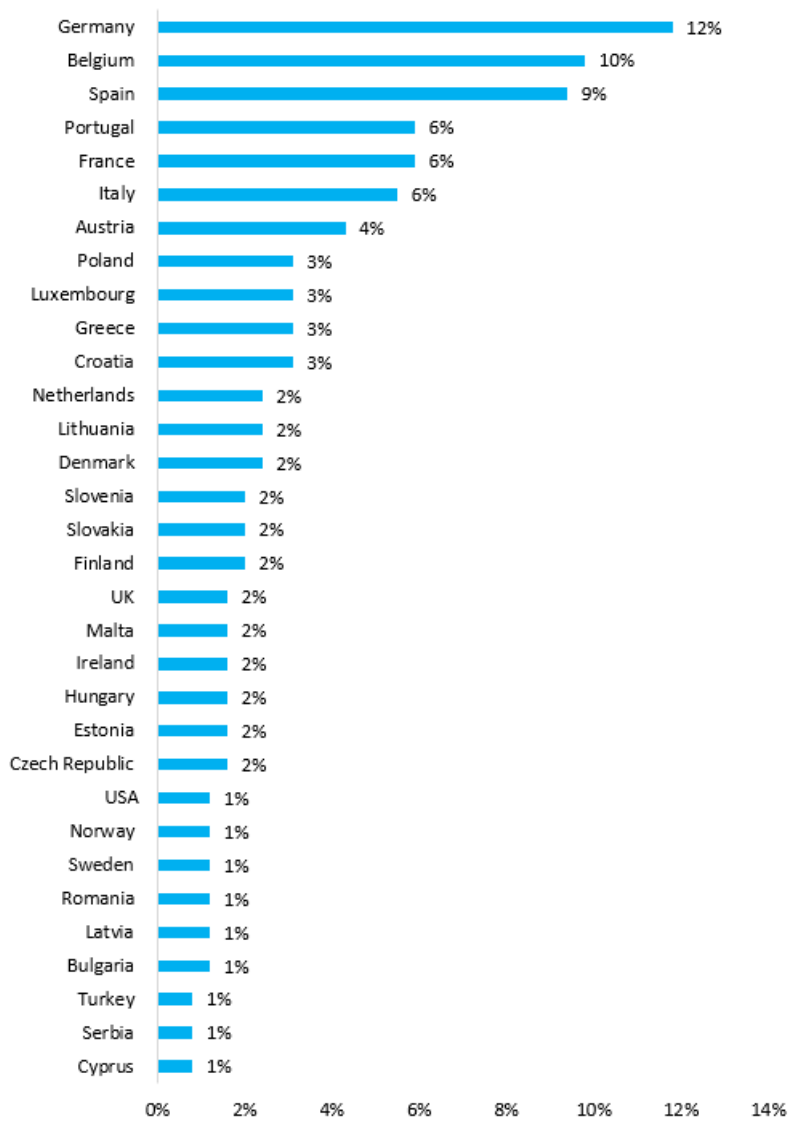
Figure 25 Respondents by the type of organization



N=255

The geographical distribution of the analysed set of responses is presented in Figure 26

Figure 26 Geographical distribution of responses



N=255

## Annex 6 Results of analysis – literature review

### A6.1 Now-casting literature

The fundamental problem the now-casting literature seeks to address is how to use information that is published early and possibly at higher frequencies than the target variable in order to get an estimate of the variable of interest before its official data is released. Given the extensive literature on the topic, the following discussion concentrates on model classes that have been widely applied, namely Bridge Models (BMs), Mixed Data Sampling (MIDAS) and Dynamic Factor Models (DFMs). Subsequently, we highlight examples where these models have been used in both Europe and the United States of America (US).

#### Bridge Models

BMs have a long tradition in policy institutions, particularly central banks. They aim at deriving information for low-frequency (e.g. quarterly) indicators such as GDP or its subcomponents from higher frequency (e.g. monthly) predictors such as industrial production. The mixed frequency problem is resolved by temporally aggregating the predictors to the lower frequency. However, due to differences in data release dates, what Wallis (1986) called the “ragged edge” of data, not all data points may be available for aggregation. To handle this “ragged edge”, BMs use auxiliary models to “bridge” this gap, such as ARMA or VAR models.

#### MIDAS Models

While still commonly popular, the standard bridging approach is relatively outdated in the modern nowcasting literature. As a single equation variety, the MIDAS approach proposed by Ghysels et al. (2005, 2006) in the context of financial applications and extended to a macroeconomic context by Clements and Galvao (2008) has become an important alternative.

In the MIDAS model class, the higher-frequency variables are included at their original frequency in the regression and they get projected onto the lower-frequency variable as separate variables for each time period across the lower frequency. For monthly and quarterly indicators, this leads to including three new variables, each representing one month in the quarter. In case of even higher frequencies, e.g. if daily financial market data is used, it is common to temporally aggregate the higher-frequency predictors using a parsimonious function; Ghysels et al. (2006) suggest the exponential Almon lag. Then, the temporal aggregation weights are data-driven in MIDAS regressions. As the regression is no longer linear, MIDAS models are generally estimated with Non-Linear Least Squares. It is worth noting that Foroni et al (2015) find that for quarterly observations with monthly indicators an unrestricted MIDAS (U-MIDAS) performs well and is straightforward to calculate. U-MIDAS does not impose functional lag polynomials in the temporal aggregation and thus can be estimated by OLS.

In contrast to bridging equations, the forecasting procedure of MIDAS models is typically  $h$ -step ahead rather than iterative. Which setup performs better is an empirical matter: Theoretically, iterated forecasts are more efficient if correctly specified, but  $h$ -step forecasts fair better under model misspecification.

#### Dynamic Factor Models

Yet another approach to now-casting is based on state-space formulations, which generally treat low-frequency data as high-frequency data with periodically missing observations and specify the underlying model dynamics at the higher frequency. Thus, the mixed frequency and ragged-edge problems are easily solved in linear Gaussian frameworks by the Kalman filter. A key benefit of these methods is the joint modelling of the target variable and indicators. This facilitates the reading and interpretation of forecast updates as one can extract the unexpected component from

the released indicator data, or the “news”, as well as its relevance for the variable of interest, for example Banbura and Modugno (2010). We concentrate on the most prominent variant in the literature, namely Dynamic Factor Models (DFMs).

DFMs are another way in which to extract information from large datasets of indicators in a parsimonious manner. They have received attention in recent years due to their ability to effectively model macroeconomic datasets which are characterised by the number of series significantly exceeding the number of time series observations. DFMs also aim to capture situations where the majority of co-movements between series can be captured by a few latent factors. There is strong evidence that this is indeed the case for panels of macroeconomic variables; see work stemming from Sargent and Sims (1977).

The prominent reference within the now-casting literature is Giannone, Reichlin, and Small (2008). They model the high frequency variables with a factor structure allowing the factors to follow a VAR time series process. This is useful with the ragged edge as both cross-sectional and time series information should be valuable. They predict US GDP using a large number of ‘hard’ and ‘soft’ monthly indicators and show that forecast accuracy increases monotonically with each release.

There are different methodologies available to estimate the factors, see Forni and Marcellino (2013). Giannone et al (2008)’s methodology relies on a two-stage estimator by Doz et al. (2011). First, the factors are obtained via principal component analysis on a balanced version of the dataset, i.e. truncating at either end. Then the parameters of the model are estimated by OLS. To deal with the ragged edge, the Kalman smoother is used in a second stage to update the signal to account for this.

For the factor model, the data screening process is well justified, especially as Principal Components Analysis (PCA) is an unsupervised algorithm based around the variance/covariance structure in the set of variables. However, comparing the results from the screening process to outcomes derived using a supervised algorithm would be instructive and helpful to evaluate whether useful predictive information is being lost. One such approach suited to large datasets is the Partial Least Squares (PLS, alternatively known as projection onto latent structures) algorithm (Abdi, 2010 provides an excellent overview of the topic). An advantage over PCA is that PLS determines the extraction of the latent factors from a set of independent variables with reference to a dependent variable while retaining the standard advantage of factor-based analyses, namely their applicability in cases with exceptionally large datasets at hand. Not only does this help with the screening, the latent factors can furthermore be cross-referenced against the blocked PCA analysis. This would help to provide intuition as to whether the blocks are effective. Furthermore, PLS is a predictive model in its own right and can be applied to nowcasting problems. For example, Groen and Kapetanios (2015), show for the US that PLS provides better point forecasts than the equivalent produces from principal components.

A more sophisticated approach would be to incorporate VAR methodology within mixed frequencies as in Schorfheide and Song (2015). This approach relies on the state-space form of the VAR to place the quarterly variable into monthly frequency and treats it as a missing variable for the intra-quarter periods. While this is computationally more burdensome as it requires Monte Carlo Markov Chain (MCMC) methods to conduct Bayesian inference for model parameters and unobserved monthly variables, it allows for a richer set of dynamics to be incorporated in the forecasting procedure, potentially limiting the carryover of forecast error. Furthermore, this could be adapted to the panel VAR (PVAR) methodology of Canova and Ciccarelli (2013) which seeks to compress and uncover linkages in cross-country VARs while mitigating the effects of the curse of dimensionality. The PVAR would also offer a suitable approach to providing nowcasts across multiple European economies simultaneously.

## Selected examples

We now turn to two prominent models used within the Euro area and then to models applied to the United States. First, Frale et al. (2011) develop the “Euro area monthly indicator of economic conditions” (EUROMIND), a Euro area measure tracking monthly real gross domestic product using information provided in the Eurostat Euro-IND database. As Forni and Marcellino (2014), they consider a decomposition of GDP by the output and the expenditure approaches and use small-scale DFMs to model each individual component. They choose indicators for each component, including both “hard” macroeconomic variables and “soft” survey data. The supply-side and-demand side estimates are combined to derive final GDP using optimal weights which reflect their relative precision. This pooled forecast performs better than the individual forecasts, as in the Euro Area comparison by Forni and Marcellino (2014).

Second, Altissimo et al. (2010) describe the New Eurocoin (NE) indicator published by the Centre for Economic Policy Research and Banca d'Italia. NE is an estimate of the medium- to long-run growth (MLRG) component of GDP, defined as the component of the GDP growth rate obtained after removing the fluctuations of a period shorter than or equal to one year. Such a smoothing of GDP growth to isolate the MLRG component can be achieved by using the band-pass filter if one is willing to accept the well-known poor end-of-sample properties of the procedure, see Baxter and King (1999) for example. NE, instead, uses only contemporaneous values of a large panel of macroeconomic time series, mitigating the issue of end-of-sample deterioration. A small number of smooth factors are constructed, which are generalized principal components of current values of the variables in the data set, specifically designed to remove short-run and variable-specific sources of fluctuation. The method used is based on a large-scale generalized dynamic factor model (GDFM) proposed by Forni et al. (2000, 2005), and NE is ultimately obtained as a linear combination of the smooth factors. As only current values of the variables are used, no end-of-sample deterioration occurs. As the MLRG component of GDP is observable, although with delay, NE performance is evaluated at the end of the sample. The authors find that NE outperforms the bandpass filter at the end of the sample which can be attributed in part to the factors used in the projection onto MLRG containing information from forward-looking variables.

Turning to the US, the Federal Reserve Bank of Atlanta (FRBA) publishes GDPNow, its nowcast of GDP growth (Higgins, 2014, has a detailed description of the methodology). GDPNow takes a “bottom-up” approach and aggregates the 13 subcomponents that make up GDP using the chain-weighting methodology used by the US Bureau of Economic Analysis. Individual GDP components are obtained by “bridge” equations with the missing data dealt with using DFMs as in Giannone et al. (2008). They find that GDPNow forecasts are more accurate than a number of statistical benchmarks since 2000 (AR, Quarterly BVARs) and, using real-time data since the second-half of 2011, are slightly inferior to consensus near-term GDP forecasts from Blue Chip Economic Indicators

The Federal Reserve Bank of New York (FRBNY) recently started to publish its nowcast of GDP growth as well. They follow Giannone et al (2008) and emphasise the benefit of this state-space formulation to treat the data as “news,” mimicking the way markets work. Through 2016/17 the divergence between the two FED nowcasts generated significant press coverage (see for example <http://nypost.com/2017/03/23/federal-banks-cant-agree-on-how-the-economy-is-doing/>). This highlights that, although the models are similar in nature to the extent that they both use DFMs, the numerous and differing modelling decisions have a significant impact on forecast outcomes.

## Performance of modelling approaches compared

Froni and Marcellino (2014) compare BMs, MIDAS, AR-MIDAS (including a lag of the dependent variable), FACTOR-MIDAS (including factors such as monthly indicators) models and a quarterly factor model (following Stock and Watson, 2002) for the Euro area using a large set of monthly indicators (around 150) to predict quarterly GDP as well as its disaggregated components by expenditure and production. In addition to the single-indicator models, they acknowledge potential model misspecification and use forecast pooling as a way to deal with model uncertainty (see Timmermann, 2006, for a review of forecast pooling). Some general results are drawn: First, of the single indicator models, AR-MIDAS and BMs generally obtain better nowcasts in terms of mean square errors (MSE) whilst MFVARs do not show any particular improvement. Second, the pooling results show that BMs and AR-MIDAS perform better depending on the component of GDP under analysis. DFMs, which can be thought of as “bridging with factors” and pool information via the factors obtain even better results. The biggest gains are for those components for which more relevant monthly indicators are available in the dataset. For example, BMs outperform DFMs in the case of government final consumption for which few relevant high-frequency indicators are available.

### Model averaging

Koop and Potter (2004) propose to deal with considerable data and model uncertainty by combining forecasts from a wide range of models with different features using Bayesian model averaging across different DFMs. They find that the gains provided by using Bayesian model averaging over forecasting methods based on a single model are appreciable.

Kuzin et al. (2013) study pooling versus model selection for now-casting large datasets in the presence of model uncertainty. Comparing different specifications of DFMs and MIDAS models they find that pooling provides more stable and generally better point nowcasts than model selection. Aastveit (2014) confirms these results when evaluating density nowcasts for GDP growth using 120 variables grouped into 15 data block releases during each month of a quarter. Froni and Marcellino (2014) also find that pooled forecasts perform better than individual ones using a “bottom-up” approach to forecasting GDP growth.

Koop and Korobilis (2012) address the time variation inherent in macroeconomic forecasting with Dynamic Model Averaging (DMA). They allow for a wide range of predictors as well as for changing coefficients on those predictors over time and postulate that a different forecasting model might hold at any given point in time. They find that the set of good predictors changes substantially over time and DMA forecast, in most cases leading to large improvements in forecast performance relative to standard benchmarks.

## A6.2 Forecasting literature

The main tools currently used for forecasting can be divided into three categories: data-based time series models of the vector auto-regression class, dynamic stochastic general equilibrium models founded in microeconomic theory and semi-structural models that somewhat bridge the gap between the two former approaches.

### Vector auto-regressive models (VAR)

The workhorse of modern macroeconomic forecasting is the vector auto-regression (VAR) model. The framework was introduced to macroeconomics by Sims (1980) as an alternative approach to estimating the relationship between macroeconomic variables without the imposition of spurious *a priori* restrictions which characterised the large-scale models of that era. However, in VAR systems the number of parameters which require estimation increases by  $N^2$  for each additional variable. In

practice, the estimation is constrained by the number of variables and lags that could be used to avoid over-fitting these models.

An important contribution to the practical use of VARs as a forecasting tool was made by Litterman (1980). He proposes Bayesian estimation techniques in order to overcome the curse of dimensionality by imposing a prior that implies that the more distant the lags, the more likely they are to be zero. BVARs have become the benchmark by which the accuracy of forecasting models is often assessed.

In practical applications of BVARs, the forecaster faces the important choice over the parameters which define the prior distribution. In an example, Litterman (1986) estimates a system of seven core macroeconomic variables, setting the prior coefficient on a variable's first lag to one (so-called 'Minnesota' prior). He shows that the BVAR provides more accurate predictions than the equivalent VAR estimated by simple OLS. Kadiyala and Karlsson (1993, 1997) and George et al. (2008), for instance, propose more flexible methods to setting priors which improve the estimation performance but often increase the computational burden. The academic literature has largely converged on a suitable set of parameterisations which perform reasonably well in forecasting exercises, for example see Canova (2007). Giannone et al. (2015) extend the standard Bayesian estimation routine to choose parameters endogenously. They find that data-based prior estimates tend to be more accurate than those which are imposed.

Bayesian approaches can also be used to improve the forecasting performance of vector autoregressive moving average (VARMA) models. By providing means to deal with the relatively large number of parameters to be estimated for this class of models, potential accuracy gains of a VARMA specification can be exploited (e.g. Kapetanios, 2002, Chan and Eisenstat, 2013).

A useful feature of VAR models is that they are relatively simple to extend in order to investigate or predict alternative processes that may drive the data. Large crisis episodes may constitute a regime shift in the data-generating process or lead to parameter instability. For instance, Viefers (2011) and Feroni, Guerin and Marcellino (2015) allow for regime shifts in a mixed frequency VAR (MFVAR) and find that the MFVAR performs well in identifying downturns, while not in real time but within a quarter. As an alternative, VARs with time-varying parameters (TVP) can be used to make economic inferences about policy changes, for example of monetary policy (Primiceri, 2005). They have also proven useful in forecasting. Bekiros (2014) evaluates the predictive accuracy of a TVP-BVAR for the Euro Area and finds that this type of model is most useful during crisis periods. Barnett et al. (2014) compare a wide variety of BVAR models which allow for parameter instability, including switching and threshold models as well as TVP models in their predictive ability and find that TVP-VARs perform best on average but especially during crises and when factors are included, i.e. when large datasets are used.

To what extent the large amount of information created by statistical offices, central banks and private institutions can be exploited is a key question in the modern sphere of forecasting. While dynamic factor models (DFM), which condense a large number of economic time series into a small number of common factors (e.g. Sargent and Sims, 1977, Geweke, 1977), have been incorporated to good effect into nowcasting, they have also been used widely in forecasting applications. Based on a survey of 46 studies, Eickmeier and Ziegler (2008) find that the forecasting performance of DFMs is slightly better than that of smaller models but depends highly on the countries and variables being forecast. While the reduction in dimension of DFM models leads to a parsimonious system, it also implies a trade-off as information useful to forecasting the target variable is lost when extracting the common trend(s). This has led forecasters to investigate whether or not the parameter shrinkage from BVARs could be used with larger macroeconomic datasets. For instance, Banbura et al. (2010) and Koop (2013) find that larger BVARs improve on small-scale BVARs in terms of forecast

accuracy. Carriero et al. (2015) provide a set of guidelines to practitioners for the estimation of large BVAR models: variables should be transformed into their stationary form before entering the VAR, relatively long lag lengths should be used, posterior coefficients should be calculated from their closed form rather than Monte Carlo Markov Chains (MCMC), and point forecasts should be generated using the posterior mean rather than through simulation. Koop and Korobilis (2013) further suggest the use of so-called 'forgetting factors' to reduce the computational burden as well as a form of dynamic model averaging to allow the dimension of the VAR to change over time.

Practitioners at international institutions are often interested in analyses that span across a set of countries or regions. To evaluate cross-country interlinkages, Pesaran et al. (2004) propose the Global VAR (GVAR) approach which is also used for forecasting, for instance by the International Monetary Fund and European Central Bank (see also the handbook by di Mauro and Pesaran, 2013). While BVARs solve the curse of dimensionality by shrinking the parameter space through imposed priors, GVARs decompose the underlying VAR with a large dimension into a smaller number of country models that are conditional on weighted cross-sectional averages of global variables. Country models are then stacked and solved simultaneously. Due to this set-up, forecasts can become cross-sectionally as well as serially dependent. Pesaran et al. (2009) propose a test to evaluate the forecasting performance of GVARs assuming cross-sectional independence. The GVAR approach has also been combined with Bayesian methods (Feldkircher et al., 2014), regime-switching elements (Binder and Gross, 2013), and survey data (Garratt et al., 2016) to improve the out-of-sample forecast accuracy.

Panel VARs (PVAR) constitute an alternative approach to GVARs in capturing global interdependencies (Canova and Ciccarelli, 2013). A panel structure is applied to a standard VAR model which is augmented with lags of all endogenous variables and all panel units. Cross-sectional lags enter the model for each individual unit, e.g. each country, while error terms are allowed to be cross-sectionally dependent. Compared to GVARs, parameter dimensionality is reduced by assuming that a component of coefficients is common across units, while interlinkages across units are modelled more flexibly. As with other models of the VAR class, Bayesian approaches are also applied to PVAR models (e.g. Canova and Ciccarelli, 2004, Koop and Korobilis, 2016), and Bayesian PVARs are becoming an important part of forecasting toolsets (e.g. the BEAR toolbox of the European Central Bank described in Dieppe et al., 2016).

Overall, VARs have been shown to provide a flexible and reasonably accurate forecasting tool. However, their flexibility is at the same time a limitation: because forecasts are based on historical relationships rather than theory, they may be difficult to explain intuitively. For policy-making institutions pure accuracy may not be the overriding aim of forecasting and they may also wish to provide a narrative around the forecast.

### **Dynamic stochastic general equilibrium models (DSGE)**

The alternative approach to VARs is DSGE modelling. Dynamic stochastic general equilibrium models are based on microeconomic theory in which representative agents and firms have rational expectations and optimise their utility and use of factor inputs to production over time. These types of models have largely been utilised by central banks and are extensions of the seminal models of Christiano et al. (2005) and Smets and Wouters (2007). At their core, these models have a real business cycle structure, but also include rigidities such as sticky prices and wages of the Calvo variety, investment adjustment costs, and habit formation of household consumption. Smets and Wouters (2007) find that these types of models have an in-sample predictive performance that is slightly better than that of a simple BVAR. However, Del Negro, Schorfheide and Wouters (2004) find that, although these models have smaller



misspecification errors than previous iterations, such errors are still present and are large enough to warrant attention.

The relatively rigid structure of these models provides a number of appealing features from a modeller's point of view, the general approach will be similar across different models, and they can be easily re-estimated. Furthermore, it is possible to provide an error decomposition of these models to show which structural shocks have been most prominent in causing movements in the business cycle, which can help to inform and motivate policy discussions.

DSGE models have come under strong criticism, especially after the 2007 crisis, for their lack of ability to predict such crises. In response, most models have been augmented with a financial sector and financial frictions of the type proposed by Bernanke et al. (1999) and Kiyotaki and Moore (1997), or with a housing market (e.g. Iacoviello, 2005). A particularly ambitious DSGE model is the Global Integrated Monetary and Fiscal Model (GIMF, see Kumhoff et al. 2010). This is a multi-regional DSGE model, which is modular in so far as specific sectors can be turned off and on. Alongside financial frictions, a key departure from many DSGE models is the non-Ricardian equivalence of fiscal policy, and as such it is useful to evaluate the effectiveness and sustainability of fiscal policy in the short and long term respectively, while maintaining consistency of trade at a global level.

Many central banks have adopted DSGE models for forecasting while some central banks only retain these for scenario analysis. The Bank of England forecasting tool Central Organising Model for Projection Analysis and Scenario Simulation (COMPASS, Burgess et al 2013) is a New Keynesian small open economy model which is used to create the modal path of, and fan charts around the forecasts published in the *Inflation Report*, and it is also used for scenario analyses. Included within the ECBs suite of models is the New Area Wide Model (NAWM), a New Keynesian open economy model of the Euro Area (Christoffel et al., 2008).

So far, ultimate forecasts from DSGE models often remain mainly judgemental. For example, if MPC and Bank of England staff realise a prevailing economic phenomenon is not captured by the model, they will apply judgement inferred from a suite of satellite models and expertise from MPC members. With the development of Bayesian methods which are frequently employed to estimate DSGE models, their forecasting performance has been improved but often remains outperformed by time series models. Christoffel et al. (2010) evaluate the forecasting accuracy of the NAWM. They find that a number of real variables are forecast with similar accuracy compared to VARs and BVARs but NAWM is less successful in forecasting nominal variables including nominal wage growth. Del Negro and Schorfheide (2013) show that forecast accuracy can be improved when external information is included in model-based forecasts, such as survey data. DSGE-based forecasts, however, remain very much dependent on the modelling assumptions which limits their flexibility and applicability.

### **Semi-structural models (SSM)**

SSM models provide somewhat of a middle ground between micro-founded DSGE models and data-driven VAR approaches. They remain a relatively popular choice of modelling format, albeit largely outside of the academic environment. Table 4.5 provides a summary of SSMs by country and their respective uses. SSMs are commonly large-scale models which provide a significant number of linkages throughout an economy. Unlike DSGEs, these models are not based on microeconomic theory, which is why the individual equations in these models are likely to be different across model versions. There are, however, a number of common themes running across these models. The short run is dominated by the demand side of the economy and New-Keynesian style restrictions imply stickiness. The supply side determines the long run and therefore the eventual equilibrium of the economy. Finally, the equations are often modelled in error correction form to ensure a return to such an equilibrium.

The lack of microeconomic foundations allows modellers to build a detailed picture of certain sectors of the economy which may not be possible in fully micro-founded models. This is especially true for the fiscal sector. However, such structural models imply an initial sunk cost in their development and an ongoing cost associated with their maintenance and use. The institutions reported in Table 5 use SSMs for both forecasting and scenarios, specifically policy analysis, with the exception of Belgium's MODTRIM model, which is a purely short-term forecasting model, and the OECD, which uses a spreadsheet-based forecasting tool and NiGEM for scenario analysis

*Table 5 Semi-structural macroeconomic models in use across policy making institutions*

Country	Model Name	Description	Use
Denmark Danmarks Centralbank (2003)	MONA	MONA's relations are typically in error-correction form, and it produces a steady-state solution in the long term.	MONA is applied to forecasting of the Danish economy and other macroeconomic calculations. The forecasts are always internal and are not published
Netherlands Nederlandsk a Centralbank (2011)	DELFI	DELFI combines the neoclassical approach to economics with optimizing rational economic agents and clearing markets with New-Keynesian elements, in which imperfections and frictions affect the short-run dynamics of product markets, the labour market and financial markets.	DELFI stands for Dutch Economic Linkages: a Forecasting Instrument. Used for simulation as well.
Spain Hutardo (2014)	MTBE	Large-scale, small open economy macro-econometric model. Error Correction Model (ECM) equations, demand driven in the short run, supply determines the long run	Used for medium-term macroeconomic forecasting of the Spanish economy. As well as for evaluating the staff projections and scenario analysis.
USA FRB (2014)	FRBUS	FRB/US is a large-scale quarterly econometric model of the US economy, Expectations of a particular group can be either consistent with full knowledge of the dynamics of the model or based on projections from the estimated small-scale auxiliary VAR models that are used in the estimation of FRB/US.	Forecasting and scenario analysis
Denmark Danmarks Statistik	ADAM		Is the primary model used by the Danish Ministry of Finance for forecasting and policy analysis.

Country	Model Name	Description	Use
(2012)			
France Bardaji et al. (2010)	OPALE	Output is driven by demand in the short-term and supply in the long-term, with the dynamics following error-correcting equations. It is New-Keynesian in the sense that there is some degree of stickiness in prices and volumes. Fiscal policy and external sector are exogenous.	Used since 2005 by the French Treasury for short-term (1 to 2 years) forecasting and policy analysis.
Canada Robidoux and Wong (1998)	CEFM	Firms maximize profits and use labour, capital, and natural resources to produce goods with a Cobb-Douglas production technology. ECM structure.	Used by the Department of Finance for macroeconomic forecasting and policy analysis.
New Zealand Ryan and Szeto (2009)	NZTM	(CGE model) NZTM consists of two parts: the steady-state model and the dynamic model. The growth path for the economy is determined by the interaction of the model's steady-state and dynamic equations.	NZTM is an important part of the economic forecasting process at the Treasury.
Sweden Bergvall et al. (2007)	KIMOD	The neoclassical features dominate in the longer run (say 7–15 years) and constitute the core theory of the model. In the short run (say 1–6 years), New-Keynesian nominal rigidities drive departure from equilibrium.	KIMOD is designed for both policy analysis and projection purposes. The model's comparative advantage is on the policy side.
Belgium Ketelbutter et al. (2014)	MODTRIM	Structural model, dynamic equations are estimated in ECM.	Developed for short-term forecasting.
Netherlands Kranendonk and Verbryggen (2007)	SAFFIER	SAFFIER emerged from the integration of the annual model JADE and the quarterly model SAFE. Estimated in ECM form.	SAFFIER is a multi-purpose model. The quarterly version of the model, used for short-term analyses, only differs from its yearly version, used for medium-term analyses, in the specification of the lag structures.

Country	Model Name	Description	Use
OECD Hurst et al (2014)	NIGEM	Global econometric model, relies on an underlying constant-returns-to-scale CES production function with labour-augmenting technical progress. Behavioural equations are modelled in ECM form.	Used for simulations.

### A6.3 On the use of financial market variables in forecasting

Prior to the recent global financial crisis, financial markets were not perceived as important drivers of real macroeconomic developments. For instance, state-of-the-art macroeconomic models used for business cycle analyses and forecasting often lacked financial sectors completely or at best incorporated stylized financial intermediaries to introduce features aimed at improving the response of real economic variables to real economic shocks in the model (e.g. Bernanke et al. 1999, Woodford 2003). This view has changed dramatically over the last decade, as the experiences of the Great Recession have led to an acknowledgement of the importance of financial disturbances, both as a source and amplification mechanism of shocks that can affect the real economy. The acknowledged link between financial variables and business cycles has ultimately triggered extensive research on how to incorporate their interplay in standard macroeconomic models and tools used for forecasting.

Evaluating the importance of financial variables for business cycle analyses requires a thorough understanding of 1) which variables should be considered in a respective forecasting model and 2) how these indicators are linked to the macroeconomy. A promising starting point for discussing the role of financial variables for real economic forecasting depicts the financial cycle literature (Drehmann et al. 2012, Borio 2014), which extensively evaluates the movement of financial variables and their relation to the business cycle.

Several studies define financial cycles in terms of movements in a set of key financial variables – most prominently in terms of credit growth (Aikman et al. 2010, Schularick and Taylor 2012, Jordà et al. 2011, Jordà et al. 2016, Dell’Arriccia et al. 2012, Chen and Ranciere 2016, Claessens et al. 2011, IMF 2009, Mendoza and Terrones 2008, or Gourinchas and Obstfeld 2012) or asset price movements (English et al. 2005, Ng 2011, Claessens et al. 2011). Even though most studies differ in terms of financial cycle definitions, as well as on the methodology and sample period employed, some key findings emerge from the empirical literature on financial cycles and their link to business cycle movements. First, financial cycles appear to be characterized by substantially lower frequencies than business cycles (Drehmann et al. 2012, Borio 2014, Claessens et al. 2012). Second, financial cycle swings are often more pronounced than business cycle fluctuations, a finding in line with earlier studies on the high volatility of asset prices compared to economic fundamentals (Campbell 2003, Claessens et al. 2012). Third, business cycle recessions that coincide with a financial recession tend to be longer and deeper than recessions without

contemporaneous disruptions in financial markets, and recovery from double recessions tends to be more sluggish (Claessens et al. 2012, Borio 2014).<sup>53</sup>

Building on the insights drawn on the interplay of financial and macroeconomic variables, a multitude of forecasting models – both structural and reduced-form frameworks – explicitly accounting for financial variables and frictions have been proposed over recent years. On the theoretical side, financial frictions and their linkages to macroeconomic outcomes and policy design have been extensively evaluated with the help of financial sector-augmented dynamic stochastic general equilibrium (DSGE) models. Whereas these models have been used for various purposes, some studies evaluate to what extent incorporating financial intermediaries explicitly and allowing for feedback from financial variables to macroeconomic variables within a general equilibrium framework enhances the forecasting performance of state-of-the-art DSGE models. Christiano et al. (2011) use a medium-size DSGE model for the Swedish economy and find that augmenting the model with a financial sector setup as in Bernanke et al. (1999) increases the accuracy of point forecasts of macroeconomic variables, especially of CPI inflation and the nominal interest rate. In a similar way, Del Negro et al. (2013) and Del Negro and Schorfheide (2013) extend the standard Smets and Wouters (2007) DSGE model with a financial sector, which improves forecasts for the Great Recession period of the US economy. By considering both crisis and non-crisis periods, Kolasa and Rubaszek (2015) find that extending a standard New-Keynesian DSGE model by one of the two leading financial friction setups – the financial accelerator setup (Bernanke et al. 1999, Gilchrist et al. 2009) or the collateral constraint framework (Kiyotaki and Moore 1997, Iacoviello 2005, Iacoviello and Neri 2010) – separately does not result in an overall improvement of macroeconomic forecasts during normal times, but can have statistically and economically significant positive effects for the prediction of several macroeconomic variables during periods of financial turmoil. Relying on the same modelling approaches for financial frictions, Pagan and Robinson (2014) evaluate two macroeconomic models, each featuring one of those setups, in terms of their ability to replicate business cycle movements. They do so by using turning point analyses (Bry and Boschan 1971) to compare business cycle characteristics of data generated with the respective model to those in the actual data. While they do find that financial factors can play a role in explaining some of the business cycle features, the average cycle characteristics generated by the model are not strongly affected by adding financial friction information to the model. Finally, Cardani et al. (2015) compare the forecast performance of a version of the Smets and Wouters (2007) model with and without a banking sector modelled as in Gertler and Karadi (2011) and confirm the improvement in output and inflation forecasts for the US economy in the banking-augmented model.

In addition to structural models, a multitude of (non-structural) econometric frameworks able to explicitly account for financial indicators in the forecast of

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<sup>53</sup> Whereas most studies evaluate the interplay of financial and economic downturns, Claessens et al. (2012) also look at the relation of both cycles over boom periods, i.e. when economic expansions are associated with strong growth in credit and/or asset prices compared to booms without significant developments in financial markets. They find that economic expansions associated with strong financial upswings tend to be shorter but more pronounced in terms of output growth than other booms.

macroeconomic variables have been proposed since the outbreak of the Great Recession. Whereas incorporating information stemming from financial indicators in statistical forecasting models is promising for several reasons<sup>54</sup>, two particular challenges when combining real and financial variables emerge. First, given the vast amount of financial market data available to forecasters, adequate methods for either pre-selecting financial indicators relevant for forecasting a specific macroeconomic indicator, or for efficiently compiling a large set of financial indicators in a comprehensive way need to be applied. Furthermore, econometric methods used for forecasting real economic variables need to be capable of capturing differences in the frequencies at which financial and macroeconomic variables are usually measured.

In practice, several non-structural empirical frameworks have been developed to incorporate financial data in business cycle forecasts. For instance, financial variables play a prominent role as leading indicators in recession forecast models. Studies relying on probit models for recession forecasting often find that including financial variables such as the yield curve or stock market returns increases the predictive power of these models significantly (Nyberg 2010, Erdogan et al. 2015, Fornari and Lemke 2010). Studies using Bayesian model averaging techniques find that financial as well as housing market indicators are particularly powerful for forecasting real economic developments, particularly over longer horizons (Faust et al. 2013, Berge 2015).<sup>55</sup>

To deal with the issue of frequency mismatch when financial variables available in real time are used to forecast lower-frequency economic variables, mixed-frequency forecasting models have been developed. Using financial data in Mixed Data Sampling (MIDAS) regression models<sup>56</sup> for macroeconomic variables often reduces the forecast errors compared to models lacking the information stemming from high-frequency financial data (Ghysels and Wright 2009, Monteforte and Moretti 2013, Andreou et al. 2013, Kuzin et al. 2011, Ferrara et al. 2014). Furthermore, increasing the frequency of the data used (for instance daily financial data instead of monthly data to forecast quarterly economic variables) reduces the forecast error of the MIDAS model further.

Alternatively, (dynamic) factor models can deal with the issue of consolidating information from a vast array of financial indicators in macroeconomic forecasts. Including high-frequency financial data generally increases the statistical and forecasting properties of these models (Breitung and Schumacher 2008, Angelini et al. 2011). Finally, Marcellino and Schumacher (2010) combine both factor models and the MIDAS framework to deal with both frequency mismatch and large sets of financial

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<sup>54</sup> For instance, as financial asset prices are affected by market expectations about economic developments and thus set in a forward-looking manner, they should be considered in macroeconomic forecasting (Chen and Ranciere 2016). Furthermore, timely available financial market data can improve both nowcasting and forecasting outcomes whenever macroeconomic data is collected with a considerable time lag (Andreou et al. 2013).

<sup>55</sup> See Espinoza, Fornari and Lombardi (2012) for a similar finding in a vector autoregression (VAR) framework for the US and the Euro Area.

<sup>56</sup> MIDAS models have originally been used to forecast financial market data. See Ghysels et al. (2004, 2006) for an introduction to the MIDAS approach.

and macro variables contemporaneously and find that including high-frequency data in such a framework improves the adequacy of nowcasts and short-term forecasts of German GDP.

## Annex 7 Comparative benchmark analysis

The focus of the comparative benchmark analysis is other multilateral institutions. In particular, processes and products of the Eurosystem/ECB staff<sup>57</sup> (in the following: ECB projection, (Box 9), the IMF (Box 10), the OECD (Box 11) and the UN (Box 12) are taken into account and compared to DG ECFIN's forecasting exercise for details of the employed methodology).

### A7.1 Aspects relating to the relevance of forecasts (EQ1-5)

- The IMF and OECD publish two full reports per year, with two shorter updates or interim reports appearing in between. The ECB publishes four reports of similar scope, with two of the forecast exercises including the national central banks and two reports being prepared by ECB staff alone. The UN has one full report early in the year and an update around mid-year;
- The projection reports vary strongly between the benchmark institutions in terms of scope and content. While IMF, OECD and UN publish very detailed analyses of recent and future developments and add, in their report, chapters providing in-depth analyses of current questions, the ECB only provides very limited context and in-depth analysis in its main forecast publication. In the case of the ECB, the forecast is intended less as public information compared to the other institutions; instead, the main purpose of the forecast is to inform monetary policy decisions and thus the scope of the document is more limited;<sup>58</sup>
- Generally, the IMF, OECD and UN tend to strongly link the projection with policy-oriented statements. In contrast, the forecast document of the ECB projections do not take a political position and stay away from an explicit formulation of risks to the outlook, which tend to convey a policy-relevant message. This is due to the institutional environment of the projection: the ECB projections (formally called "ECB/Eurosystem staff projections") do not reflect the ECB's or Eurosystem's views (or, in particular, the ECB Governing Council's views), but only serve as one of many inputs into the monetary policy deliberations of the Governing Council. In contrast, the IMF, OECD and UN projections reflect the respective institution's views on economic developments, leaving more scope to communicate policy-oriented statements. This tends to increase media coverage and public perception of the reports. Given that ECFIN forecasts are not formally adopted by the European Commission as an institution (or, specifically, by the College of Commissioners), ECFIN faces similar constraints as the ECB does in its communication strategy;
- In their projection reports, all institutions focus clearly on the two- to three-year time horizon; the IMF additionally presents growth figures for the five-year horizon (reflecting the estimate for the medium-term scenario), but does not discuss those numbers in the text;
- In terms of quantitative projections, there are clear differences between the institutions included in this comparison (see table 6.2 below);

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<sup>57</sup> In the following, remarks with respect to infrastructural aspects of the ECB projection refer to the infrastructure created, maintained and employed by ECB staff members, not necessarily by national central banks' staff members.

<sup>58</sup> The Eurosystem/ECB staff projections are the basis for more extensive reports which are made available inside the Eurosystem, but are not available to the public.



- While the IMF and UN publish projections for almost all countries worldwide, the OECD's coverage is limited to OECD member countries and selected non-member countries. DG ECFIN focuses on EU member countries and selected non-member countries. All aforementioned institutions also publish numbers for selected aggregates (e.g. world, advanced economies, euro area, etc.) based on bottom-up calculations. The ECB used to publish projections for the euro area alone, until June 2016. This is still the case for the forecasts produced by ECB staff members in March and September. But in June and December, when the forecast is produced jointly by euro area national central banks and ECB staff members a country breakdown is also published, two weeks after the euro area projections. This country breakdown shows annual forecasts for GDP and HICP growth, and the unemployment rate.
- The OECD and ECFIN have the broadest (and roughly comparable) coverage in terms of variables; the IMF's, ECB's and, in particular, the UN's projections are of limited scope in that dimension;
- Variables not published by DG ECFIN but reported by other institutions include some financial market variables (house prices, financial account balances, households' wealth and indebtedness) as well as components of HICP inflation (e.g. excluding energy) and net public debt. Generally, coverage of financial market variables in the benchmark institutions' forecasts is limited.

Table 6 Comparative overview over multilateral institutions' forecast coverage

	ECFIN	ECB	IMF	OECD	UN
<b>Country Coverage</b>	<b>EU-28 (by country) + USA, Japan, Russian federation, Norway, Switzerland, Iceland, candidate countries (1)</b>	<b>Euro area (aggregate) and member countries</b>	<b>All IMF members, selected non-IMF countries (total: 192)</b>	<b>All OECD member countries, selected non-OECD countries (total: 61)</b>	<b>All UN members, selected non-UN countries (total: 200)</b>
Real GDP	x	x	x	x	x
Nominal GDP	o		o	x	
Components of real GDP	x	s (EA agg.)	x / o	x	
Components of nominal GDP	o			o	
Potential GDP	x,a			x	
Output Gap	x,a		x	x	
Capital stock	o			x	
Deflators of GDP and components	x		x / o	x	
HICP / Consumer Prices	x	x	x	x	x
HICP components (e.g. excluding energy)		s (EA agg.)		o	
Employment	x	s (EA agg.)		x	
Unemployment (rate)	x	x	o	x	x

	ECFIN	ECB	IMF	OECD	UN
<b>Country Coverage</b>	<b>EU-28 (by country) + USA, Japan, Russian federation, Norway, Switzerland, Iceland, candidate countries (1)</b>	<b>Euro area (aggregate) and member countries</b>	<b>All IMF members, selected non-IMF countries (total: 192)</b>	<b>All OECD member countries, selected non-OECD countries (total: 61)</b>	<b>All UN members / selected non-UN countries (total: 200)</b>
Participation rate	o			o	
Labour productivity	x,a	s (EA agg.)		x	
Unit labour costs	x,a	s (EA agg.)		x	
Compensation of employees, (2)	x,a	s (EA agg.)		x	
Household disposable income	o			o	
Household saving rate	x			x	
Taxes and contributions to social security	o			o	
Nominal and real exchange rates	x	s (EA agg.)		x	s
Competitiveness	o			x	
Interest rates	o			x	s
Nominal house prices				x	
Real house prices				x	
House price-to-rent ratio				s	
House price-to-income ratio				s	
Corporations revenues and expenditures	o				
Government revenues and expenditures	x,a		o	x	
... of which: interest expenditures	x,a		o	x	
... of which: details (e.g. taxes, social sec. benefits)	o,b			x	
Fiscal balance	x	s (EA agg.)	x / o	x	s
Primary balance	x,a			x	
Cyclically-adjusted balance	x,b			x	
Structural budget balance	x,b	s (EA agg.)	x / o	x	
Public net debt			x / o	x	
Public gross debt	x,b	s (EA agg.)	x / o	x	
Gross national saving	x,a			x	

	ECFIN	ECB	IMF	OECD	UN
<b>Country Coverage</b>	<b>EU-28 (by country) + USA, Japan, Russian federation, Norway, Switzerland, Iceland, candidate countries (1)</b>	<b>Euro area (aggregate) and member countries</b>	<b>All IMF members, selected non-IMF countries (total: 192)</b>	<b>All OECD member countries, selected non-OECD countries (total: 61)</b>	<b>All UN members / selected non-UN countries (total: 200)</b>
Household wealth and indebtedness				x	
Trade balance	x		x	x	
Current account balance	x	s (EA agg.)	x	x	s
Components of current account (savings, investment)	o		x / o	x	s
Financial account balance			x		
Components of financial account (FDI, portfolio invest.,...)			x		
<p>(1) The report also provides forecasts for the following variables for China: GDP, Exports and imports of goods and services, GDP deflator, Merchandise trade and current account balance. Besides, the set of forecast variables is not fixed for candidate countries and other non-EU countries.</p> <p>(2) Compensation of employees/head</p>					
<p>x: Reported for all countries in the main forecast publication.  a: Reported for each EU-28 country, euro area and EU-28 aggregate, US and Japan.  b: Reported for each EU-28 country, euro area and EU-28 aggregate.</p>					
<p>o: Reported for all countries online.  o,b: reported online for each EU-28 country, euro area and EU-28 aggregate.</p>					
<p>x/o: Reported for selected countries in the main forecast publication and for the remaining countries online.</p>					
<p>s: Reported for selected countries in the main forecast publication.</p>					
<p>Blank field – not reported</p>					
<p>Note: Based on ECFIN EEF Autumn 2016, ECB MPE March 2017, IMF WEO April 2017, OECD EO November 2016, UN WESP January 2017.</p>					

- The OECD is the only organisation that provides quarterly projection data for a broad set of variables to the public. While the IMF and the ECB publish selected variables (e.g. real GDP and HICP inflation) on a quarterly basis – possibly in the form of charts – the OECD publishes all publicised variables also on a quarterly basis (online, selected data in the forecast publication).

- The institutions make different use of online platforms as a means to distribute their forecasts: the IMF and OECD (as DG ECFIN with AMECO) rely strongly on the online publication of a broad range of variables, while the UN does not make their projections available in an online database<sup>59</sup>. Generally, the IMF and OECD database appear to be more accessible for infrequent users, while DG ECFIN's AMECO database lends itself easier to an automated retrieval of data.

## **A7.2 Aspects relating to the effectiveness of forecasts (EQ6-7)**

- All institutions indicate that the accuracy of the forecasts is reviewed on an ad-hoc basis and not in a systematic fashion. Staff members of the benchmark institutions published several research papers comparing the quantitative accuracy of the forecasts with other institutions; accuracy or biasedness of the forecast is also an aspect taken into account in (internal or external) evaluations (e.g. Genberg and Martinez, 2014; Pain et al., 2014). However, none of the benchmark institutions currently has in place a systematic analysis of forecast errors. The ECB reported being in the process of building up a forecast error database, which is intended to provide a basis for a systematic and regular evaluation of forecast errors;
- Consistency in terms of story and narrative relies, in all institutions, on forecast meetings at different stages of the forecast preparation phase. Furthermore, guidance from the hierarchy and from horizontal units can support the economic consistency across countries;
- In terms of quantitative consistency, both the ECB and IMF and OECD reported employing a trade consistency exercise similar to the approach of DG ECFIN to ensure that global trade flows are consistent. For international financial flows (e.g. current account balances), none of the benchmark institutions reported having systematic consistency checks in place; the IMF reported checking consistency for those variables on ad-hoc basis (though frequently);
- Quantitative consistency is further supported in all institutions by common assumptions which are set before the beginning of the projection exercise and updated on a regular basis.
- Differences between DG ECFIN and the benchmark institutions arise in terms of the implementation of the policy assumptions. DG ECFIN is the only of the institutions under review to use systematically the no-policy change assumption;
- Typically, multi-country models are employed to improve on (quantitative and qualitative) cross-country consistency. IMF and UN are working – in the case of the IMF: in parallel to the bottom-up, country-by-country approach – with global structural models. The ECB uses a multi-country model of the euro area for the bottom-up aggregation of the projections of the member countries, an approach that also allows cross-country consistency checks. At OECD, the forecast process follows a bottom-up approach. Country desks produce a judgemental forecast, with NiGEM being used at the start of the forecast for setting the impact of some of the major changes and driving underlining assumptions since the last forecast. NiGEM is also run for simulation purposes.
- All institutions report to be confronted with operational risks due to the unexpected absence of team members. In all institutions, leeway to create redundancies to ensure that processes still work in this situation is very limited

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<sup>59</sup> The ECB provides the Excel sheet with key forecast variables on its website

and there are no codified plans to mitigate those risks. Furthermore, IT-related risks such as network failures are mentioned;

- The ECB reports premature leakage of the forecast data as an important operational risk. As a countermeasure, an embargo period is defined to precede the official publication (within ECB, approx. 100 people are identified who need access to embargoed numbers [that is: euro area and Germany numbers]; secret folders, no attachments, data exchange exclusively through the document management system DARWIN, which allows to control access on the user level);
- Independency of the forecast appears to be less of an issue in the case of the benchmark institutions. In the case of the ECB projections, independency is not given by intention (due to close cooperation with national central banks), while the IMF and the UN report to strongly rely on information gathered in country missions or close cooperation with national or regional forecasters.

### **A7.3 Aspects relating to the efficiency of forecasts (EQ8-11)**

- The use of models varies widely across and within benchmark institutions.
- As a basis, the ECB, the OECD and the IMF reported having, for all countries, unified frameworks based on national accounts identities programmed in MS Excel, to ensure within-country consistency.
- In general, reliance on macroeconomic models appears to be more pronounced in most benchmark institutions than in DG ECFIN's forecast processes:
  - The ECB reported that its whole forecast process is entirely model-based, i.e. all projections are generated through structural macroeconomic models (with judgement being applied through add-factors) and macroeconomic models are used for the bottom-up aggregation of country-specific forecasts ("New Multi-Country Model", NMCM). The ECB follows a fairly standardised approach for the structural country-models: they are based on a unified platform and adapted to different countries. With respect to the nowcast models, heterogeneity between ECB country desks is larger than the heterogeneity of models used for longer forecast horizons. Structural models in use for the preparation of the baseline forecast at the ECB include both traditional (larger scale) macroeconometric models, single equation rule-of-thumbs, Philips curve approaches and bridge equations for nowcasting. Non-structural models in use are mainly BVARs; dynamic factor models were found to be less useful.
  - The IMF reported having a parallel structure, i.e. all countries are projected following a bottom-up approach, based on heterogeneous infrastructures, and at the same time, following a model-based top-down approach with country-specific assumptions ("Global Projection Model", GPM); both outcomes for the projections (on the country level) compete with each other and differences need to be explained. In the context of the bottom-up approach, the IMF's forecast procedures do not appear to be strongly model based. Some country desks are reported to work with rather simple sets of equations and rule-of-thumb approaches,
  - The OECD reported to use a global macroeconometric model (NiGEM) as a starting point for the projection. NiGEM separately distinguishes most OECD countries and the largest non-OECD countries, with other countries modelled in terms of regional blocks. It is based around a 'New-Keynesian' framework, with the long-run properties of equations imposed consistent with theory, but with dynamic adjustment estimated using historical data, so striking a balance between theory and data (NIESR, 2016),

- The UN reported relying strongly on the “UN world economic forecasting model”, which models the world economy as a collection of international country models linked together through international trade and other international economic relations to form a consistent global model. Other than that, the UN’s approach to forecasting is not dominated by models; in particular, non-structural data-driven models are reported not to play an important role in the nowcast and forecast.
- In addition to models being employed to derive the forecast baseline, the ECB, the OECD and the IMF use structural models for scenario analysis and policy simulations. Models include both traditional (ad-hoc) macroeconometric models and DSGE models. Details of the models in use are discussed in future reports.
- Some of the multilateral institutions take into account financial market considerations more strongly than before the crisis.
  - The ECB reported having introduced some financial market considerations (e.g. lending rates for NFCs and households, loans to NFCs and households, house prices) and is using an indicator for credit supply constraints judgements in the projection of e.g. consumption or investment. Furthermore, the impact of non-standard monetary policy measures on GDP and inflation has been analysed extensively. In addition: flow of funds is forecast in the projection exercise, though not fully integrated, but rather as an “off-model” type of exercise.
  - The OECD and the IMF use financial conditions indices as an explanatory variable for economic growth.
  - The UN has emphasised energy prices as a driver of economic developments due to large swings in recent years.
- In all institutions (including DG ECFIN) except the UN, technical assumptions are set for:
  - exchange rates (random walk assumption);
  - long- and short-term interest rates (market-based);
  - oil prices (market-based); and
  - other commodity prices (market based)

Some institutions average out day-to-day volatility of the technical assumptions: the ECB employs 10-day averages to smooth-out possible volatility in exchange rates and oil prices. The IMF reports to employ a 1-month average to smooth-out volatility in the exchange rate.

Some institutions reported defining a broader set of technical assumptions. The ECB additionally sets stock prices, bank lending rates and credit supply conditions as exogenously given.

The OECD does not employ a technical assumption for oil and commodity prices, but includes those as endogenous variables consistently in the projection. The UN does not use technical assumptions at all, but sets an ad-hoc path for selected exogenous variables (namely exchange rates, commodity prices) over the forecast horizon.

*Box 10 Overview of ECB Forecast*

There are two types of projection exercises conducted by the Eurosystem/ECB staff: the Eurosystem staff Broad Macroeconomic Projection Exercise (BMPE) and the ECB staff Macroeconomic Projection Exercise (MPE).<sup>60</sup>

The BMPE is conducted twice a year and published in June and December. It involves staff from both the euro area national central banks (NCBs) and the ECB in a process that ensures that the euro area and individual country projections draw on all the expertise available and that there is consistency between the euro area and the individual country projections, reflecting a consensus among Eurosystem/ECB staff. It delivers the short- and medium-term economic outlook for the euro area and for the individual euro area countries, including short-term inflation projections by NCB experts. The exercise generates projections for a broad set of macroeconomic variables – overall HICP and its components, other key price and cost variables (such as deflators, unit labour costs and profit margins), real GDP and its components, labour market variables (employment, unemployment, compensation per employee and labour force), external trade (exports, imports and trade balances), fiscal variables (government balances and debt), house prices and financial variables (such as lending rates and loans to households and non-financial corporations). For most countries and for the euro area, the frequency of the forecast series is quarterly. In the case of some smaller euro area countries, whose quarterly national accounts data are highly volatile and subject to notable revisions, the frequency of the projection figures is annual. When aggregating to obtain the figure for the euro area, these annual figures are therefore interpolated. To capture the effects of the international environment on the euro area, ECB staff also makes projections for the global economy, focusing on forecasts for global output, trade and inflation. Global projections are primarily a bottom-up exercise, in which individual country and regional forecasts are aggregated to arrive at global projections.

The projection figures, a discussion of the features of the exercise and special issues derived from the BMPE are compiled in the resultant BMPE report, that is only available within the Eurosystem. The report is drafted by ECB staff and is discussed and finalised by the monetary policy committee (MPC), which comprises senior staff representatives of the NCBs and the ECB. The report is submitted to the Governing Council at its meetings in early June and December as an input to its monetary policy deliberations. The reports include parts on the real economy and labour markets, prices and costs, the assessment of risks as seen by staff and key cross-country themes. The reports also contain a number of special features focusing on topical issues relevant to the projections and, occasionally, ad hoc alternative scenarios. In order to illustrate the uncertainty surrounding the projections, the reports also include sensitivity analysis simulations. In addition, since December 2010, the reports include a Medium-Term Reference Scenario for economic activity and inflation in the euro area, which extends the baseline by five years. The reports also contain a review of the technical assumptions underlying the projections, the outlook for the international environment and the fiscal outlook. The reports include a very detailed statistical annex, which sets out, inter alia, the euro area projections and the projections for each euro area country, as well as a model-based analysis of the baseline projections, fiscal sensitivity analyses and standard simulation results. The reports are supplemented by the International Environment Outlook (IEO) report, which provides a detailed assessment of the global outlook. The IEO presents an assessment of the world economy and of the largest economies outside the euro area. It also analyses developments

<sup>60</sup> See ECB (2016) for an overview.

in global trade and the prospects for euro area foreign demand, as well as the outlook for global inflation. Finally, it discusses the risks underlying the global baseline projections. The IEO contains a number of boxes focusing on topical issues and, occasionally, certain ad hoc scenarios.

An article based on the BMPE report is published on the ECB's website immediately after the press conference following the respective meetings of the Governing Council.<sup>61</sup> It contains a detailed assessment of and projection for euro area economic developments, including real economic developments, cost and price variables as well as fiscal developments. The article further contains sensitivity and scenario analyses (e.g. reflecting alternative policy environments) and comparisons with other institutions' forecasts. Quantitative projections for the euro area are published on an annual basis for 19 important variables;<sup>62</sup> in addition, charts are shown for the quarterly profile for euro area real GDP and inflation. No projections for single euro area countries are published. The forecast horizon includes the current year and the following two to three years.<sup>63</sup>

Like the BMPE, the MPE is conducted twice a year, it is published in March and September. It delivers the short and medium-term economic outlook for the individual euro area countries and the euro area, the latter being consistent with the country aggregation. It covers the same variables as the BMPE but is produced mainly by ECB staff, with NCBs only contributing the short-term inflation projections. As with the BMPE, for most countries and for the euro area the frequency of the forecast series is quarterly.

The Forecast Task Force (FTF), a group comprising experts from a wide range of business areas within the ECB, is responsible for the production of the projection figures. Guiding the work of the FTF is the Forecast Steering Committee (FSC), which consists of ECB managers.

ECB staff is responsible for compiling the resultant MPE report, whose structure is the same as the BMPE report. The MPE report is presented to the MPC, whose Chair conveys the Committee's opinion on the outcome of the exercise in the form of a letter to the President of the ECB. The report and the related letter by the Chair of the MPC are subsequently submitted to the Governing Council at its meetings in early March and September. As with the BMPE, an article based on the MPE report is published on the ECB's website immediately after the press conference following the respective meetings of the Governing Council.

Models and econometric tools in general play a key role in the Eurosystem/ECB staff projection exercises. They provide a clear accounting framework (identities) and a medium-term path for the economy based on estimated historical relationships (behavioural equations). According to the ECB, models can also help tell "stories", in terms of driving forces and dynamics for the outlook, and they are also very useful for conducting alternative scenarios. However, all models are necessarily a simplification of reality and their results need to be complemented by the impact of factors that are not and/or cannot be included in the model structure. This implies the need for expert judgement. So, while the Eurosystem/ECB staff projection exercises are

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<sup>61</sup> <https://www.ecb.europa.eu/pub/projections/html/index.en.html>.

<sup>62</sup> Real GDP and components, employment, unemployment rate, HICP and components, unit labour costs and compensation per employee, labour productivity, government budget balances, public debt and the current account balance.

<sup>63</sup> Three years in the case of projections published in December.



model-based, the final projections may incorporate a fair amount of expert judgement. An effort is made in the projection exercises to clarify and quantify the judgemental calls made by staff and to provide explanations for the reasons that may have led to departures from the pure model-based outcome.

Source:

ECB (2016), A guide to the Eurosystem/ECB staff macroeconomic projection exercises, European Central Bank.

#### *Box 11 Overview of the IMF Forecast*

The IMF publishes forecasts in the World Economic Outlook (*WEO*) twice a year, in the Spring to coincide with the Spring Meetings of the IMF and in the Fall to coincide with their Annual Meetings. Updates of the forecasts for the largest economies<sup>64</sup> are published in January and in June/July.

The IMF uses largely the same processes for the two updates as are used for the main *WEO* forecasts apart from the fact that the former involve fewer countries and therefore take somewhat less time. One challenge of the IMF forecast is to produce forecasts for a very large number of countries (more than 180), which requires additional coordination to account for trade and financial linkages between countries.

The IMF forecast process combines top-down and bottom-up approaches. The top-down approach entails the production of highly aggregated global forecasts using formal econometric models, a set of assumptions about the future paths of a few crucial global variables such as oil prices, and the communication of the aggregated forecasts and background assumptions to country desk economists. The bottom-up approach entails the production of forecasts by country desk economists, each of whom uses whatever forecast methods and information he/she judges to be most appropriate for the country in question.

After country desk officers submit their first set of forecasts, an iterative process begins. During this process, the country-level forecasts are reviewed within each respective area department and aggregated. The aggregated forecasts are then checked for consistency and compared to the forecasts produced by the top-down approach for the world and its regions. When various adding-up constraints cannot be satisfied or when gross inconsistencies emerge between aggregated country desk forecasts and top-down forecasts, country desks are asked to revise their forecasts with an eye to removing the discrepancies. Once the process converges, the forecasts are deemed ready for publication.

The production of IMF forecasts entails interactions among many different IMF units and between those units and country authorities. The IMF Research Department's Economic Modeling Division (EMD) is responsible for producing forecasts with the Global Projection Model (GPM) as inputs to the *WEO* process. The Research Department's World Economic Studies Division (WES) is responsible for coordinating the production of forecasts by country desks and for producing the forecast-based analysis that is published in the *WEO*.

Country desks are responsible for producing IMF forecasts for their individual economies. These forecasts are coordinated within each area department. The

<sup>64</sup> 47 countries, accounting for about 90 percent of world GDP, called Group A countries by the IMF. Their distribution by department is: Africa (6), Asia Pacific (11), Europe (14), Middle East and Central Asia (8), Western Hemisphere (8)

IMF's Interdepartmental Forecast Committee (IDFC) coordinates information sharing between country desks and EMD in order to promote a global perspective in the forecasting process. The Committee includes representatives from each area department and from Fiscal Affairs (FAD), Monetary and Capital Markets (MCM), WES, EMD, the Commodities Unit, and Strategy and Policy Review (SPR). Others may be invited to participate depending on global economic conditions and issues. A representative from the area departments and the Deputy Director of the Research Department responsible for the *WEO* co-chair the Committee.

The IMF's weekly Meeting on Surveillance Issues (MSI) brings together the First Deputy Managing Director, the Economic Counselor, the Financial Counselor, and two representatives from each IMF department. Though its primary function is to provide IMF Management with a weekly assessment of global economic conditions, the meeting also plays a role in the IMF forecast process as it reviews GPM forecasts and forecast updates when they are available. Country authorities are an important part of the forecast process as they bring perspectives on economic conditions, economic policies, and other relevant factors to the attention of the IMF country desk officers.

The semi-annual *WEO* publication is a substantial volume of more than 200 pages. It combines recurrent and thematic chapters. The first chapter is always dedicated to prospects and policies. A statistical appendix provides elements on assumptions underlying the forecast (exchange rates, interest rates, oil prices, economic policy assumptions), historical and forecast figures. In addition to the standard forecast publication, there are thematic chapters (generally two to three) on topics related to world global developments, differing from one publication to the next. The release of the forecast document is associated with the *WEO* database containing a broad set a historical series and their short and medium-term forecasts.

Source:

Genberg Hans, Martinez Andrew and Michael Salemi (2014), The IMF/*WEO* forecast process, IEO Background Paper.

#### *Box 12 Overview of OECD Forecast*

The OECD's Economic Outlook is produced twice a year (spring and autumn) and represents an amalgamation of projections by the OECD's country and topic experts and consultation with (and peer review by) government economists and policy makers in member and non-member countries and other key international organisation through the auspices of the OECD's Economic Policy Committee (EPC) and its expert working groups. This work is further augmented by country expertise drawn from the Economic and Development Review Committee (EDRC).

The Economic Outlook is primarily designed to provide a consistent framework for the policy debate in and between Member countries so specifically focuses on recent and future macroeconomic developments in current and prospective OECD Member countries and the larger non-OECD economies, most notably Brazil, Russia, India and China (the "BRICs"). With a two-three-year projection horizon, providing both annual and quarterly data, typical coverage in Member countries includes the standard range of national accounts demand and production aggregates, supply side and labour market indicators, wage and price inflation measures, monetary conditions, household and public sector accounts, trade volumes and prices and balance of payments accounts. Non-member countries typically cover summary GDP, inflation, fiscal, trade and current account balances for enhanced engagement and the larger economies, and main trade aggregates and balances for other

regionally grouped non-OECD economies

The initial forecasting process begins with a review of the current economic climate and information on commodity prices (in particular the oil price), exchange rates and interest rates, fiscal trends, the path of economic activity and other key variables to reassess future projections. Scenarios using this information are run on NiGEM to provide the impact of major changes and country nowcasting using short-term indicator models. As the forecast will form part of the OECD's narrative for their view on the world economy, scenario information fed into the forecast will be kept consistent with that narrative.

The OECD have moved to a more top-down approach to forecasting so a global view of the economy will be created by a core group of forecasters, model team and chief economists and the resulting key indicators are then made available the country and topic experts. However, the forecast is an iterative process and not exclusively top-down so country desk projections will be fed back into this global view.

The country desks enter their judgements and data via a centralised Forecast Entry system whose underlying data base is maintained and updated continuously through the forecasting round by the centralised Analytical Data Base team, which also prepares associated data sets for publication. There are further checks and balances to ensure country forecasts and aggregated values match in areas such as trade etc. Once the initial country projections have been created, short term economic prospect meetings (steps) between country desks and their counterparts in the Ministry of Finance or Central Banks as well as more themed step meetings with other international organisations. A great deal of emphasis is placed on the expertise of desks, but internal and external reviews are used to ensure a consistent story

Source:

<http://www.oecd.org/eco/outlook/keyfactsabouttheoecdeconomicoutlook.htm>

## **Annex 8 Overview of ECB, ECFIN, IMF and OECD forecasts related communication activities and outputs**

Table 7 Forecast products – communications-related activities/arrangements

	ECFIN	IMF	OECD	ECB
<b>Communication strategy</b>				
<i>Activities related to forecasts</i>	<ul style="list-style-type: none"> <li>The existing communication strategy refers to the forecast but there is no specific information about tailored communications activities.</li> <li>There is no specific implementation document like the one used by IMF for the World Economic Outlook (WEO). The main details, like key responsible staff for a given task/activity and specific deadlines in the run up and during the day of the publication have a form of a brief summary description drafted before each round and shared via-email.</li> <li>Key audiences: policy-makers, academia/think-tanks, business, civil society/NGOs, financial institutions, trade unions and media.</li> <li>NB: <i>in practice, communication activities are strongly focused on media representatives as key 'multipliers'</i></li> </ul>	<ul style="list-style-type: none"> <li>There is a general communication strategy but also a specific strategy and implementation document devoted to the WEO. It provides details on a number of aspects related to its communication strategy/activities (e.g. time zones of information posting, translation, webcasts, roles of key IMF staff, communication with media etc.) and has a strong operational focus.</li> <li>Key audiences: influencing policy-makers is a primary objective, and the media play an important role to this effect.</li> </ul>	<ul style="list-style-type: none"> <li>There is no one single document which outlines communication principles/activities related to the OECD Economic Outlook specifically. Communication is driven by some guidelines as well as long-standing and well-understood practices in the OECD.</li> <li>Key audiences: policy makers and professional economists are two crucial type of audiences who are explicitly targeted with tailored communication.</li> </ul>	<ul style="list-style-type: none"> <li>There is no clearly defined/ documented communication strategy for the ECB projections</li> <li>Key audiences: media and market participants and analysts are priority groups</li> </ul>
<b>Structure of the main publication</b>				
<i>Length</i>	<ul style="list-style-type: none"> <li>~200 pages</li> </ul>	<ul style="list-style-type: none"> <li>&gt;200 pages</li> </ul>	<ul style="list-style-type: none"> <li>&gt;200 pages</li> <li>NB: <i>OECD is currently</i></li> </ul>	<ul style="list-style-type: none"> <li>10-20 pages</li> </ul>

ECFIN	IMF	OECD	ECB
		<p><i>considering shortening the General Assessment chapter.</i></p>	<ul style="list-style-type: none"> <li>NB: One of the reasons for the short format is that the report is given to the Governing Council members just a few days before the Governing Council meetings. The report is focused on the main issues related to the current projection round.</li> </ul>
<p><i>Foreword</i></p> <ul style="list-style-type: none"> <li>Yes, from Director General of DG ECFIN, 1 page</li> </ul>	<ul style="list-style-type: none"> <li>Yes, from Director of Research Department at IMF, ~ 2 pages</li> </ul>	<ul style="list-style-type: none"> <li>Yes, editorial from OECD Chief Economist, Catherine Mann, 2-3 pages.</li> </ul>	<ul style="list-style-type: none"> <li>No.</li> <li>NB: there is no editorial from the ECB Chief of Staff since the projection report is an internal document intended for the Governing Council. An interviewee from ECB does not consider it as necessary or useful to include such an editorial.</li> </ul>

	ECFIN	IMF	OECD	ECB
<i>Overview/ Executive Summary</i>	<ul style="list-style-type: none"> <li>Yes, ~5 pages 'Overview'. Language accessible to general audience.</li> </ul>	<ul style="list-style-type: none"> <li>Yes, ~3 pages. Language may be seen as less accessible to non-economists.</li> </ul>	<ul style="list-style-type: none"> <li>Not in addition to the editorial from the OECD Chief Economist.</li> </ul>	<ul style="list-style-type: none"> <li>No, although there are two short introductory paragraphs at the start of the document.</li> </ul>
<i>Country chapter</i>	<ul style="list-style-type: none"> <li>Yes, ~2 pages</li> </ul>	<ul style="list-style-type: none"> <li>No</li> </ul>	<ul style="list-style-type: none"> <li>Yes, typically 2-3 pages (up to 5 pages for largest economies).</li> </ul>	<ul style="list-style-type: none"> <li>No</li> </ul>
<i>Assumptions</i>	<ul style="list-style-type: none"> <li>No specific section outlining assumptions. Numerous references to assumptions in the body of the report though.</li> </ul>	<ul style="list-style-type: none"> <li>Very clearly outlined at the front of the main publication under 'Assumptions and Conventions' section.</li> </ul>	<ul style="list-style-type: none"> <li>Clear (but not detailed), outlining the assumptions in the Annex to the <i>General Assessment</i> including main exogenous assumptions and specific examples of key policies where major assumptions were applied<sup>65</sup>.</li> </ul>	<ul style="list-style-type: none"> <li>Clearly spelled-out in the main document and there is also a very detailed description of key assumptions presented in the accompanying document <i>A guide to the Eurosystem/ ECB staff macroeconomic projection exercise</i><sup>66</sup>.</li> </ul>
<i>Revision compared to</i>	<ul style="list-style-type: none"> <li>Not explicitly. User can read those from the summary tables included in</li> </ul>	<ul style="list-style-type: none"> <li>Yes, differences compared to previous projections</li> </ul>	<ul style="list-style-type: none"> <li>No</li> </ul>	<ul style="list-style-type: none"> <li>Although the main publication does not</li> </ul>

<sup>65</sup> See for instance Annex 1.A1 in the OECD Economic Outlook June 2017 available at: [http://www.oecd-ilibrary.org/economics/oecd-economic-outlook-volume-2016-issue-2\\_eco\\_outlook-v2016-2-en](http://www.oecd-ilibrary.org/economics/oecd-economic-outlook-volume-2016-issue-2_eco_outlook-v2016-2-en)

<sup>66</sup> ECB, July 2016. A guide to the Eurosystem/ ECB staff macroeconomic macroeconomic projection exercise. Available at: <https://www.ecb.europa.eu/pub/pdf/other/staffprojectionsguide201607.en.pdf>

	ECFIN	IMF	OECD	ECB
<i>previous forecast</i>	the publication though.	very clearly displayed ( $N_{t+1} - N_t$ )		specify the scale of any revisions between current and previous forecasts, projections of key variables (and assumptions) are illustrated in tabular form that allows easy comparison.  • NB: <i>Tables also display ranges around the projections</i>
<i>Thematic boxes</i>	<ul style="list-style-type: none"> <li>• Yes, typically 5 across the publication</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, typically 10-12 across the publication</li> </ul>	<ul style="list-style-type: none"> <li>• Yes, typically 10-11 across the publication</li> <li>• NB: <i>Boxes are often long and take more than 1 page</i></li> </ul>	<ul style="list-style-type: none"> <li>• Yes, 4 boxes with stable content across all reviewed forecast documents: (1) technical assumptions about interest rates, exchange rates and commodity prices, (2) the international environment, (3) sensitivity and scenario analysis, (4) forecasts by other institutions.</li> </ul>
<i>Inclusion of details on key</i>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• Yes</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>	<ul style="list-style-type: none"> <li>• No</li> </ul>



	ECFIN	IMF	OECD	ECB
<i>estimates (e.g. key equations)</i>				
<i>References to scientific literature</i>	<ul style="list-style-type: none"> <li>No</li> </ul>	<ul style="list-style-type: none"> <li>Yes, extensive list after each main chapter</li> </ul>	<ul style="list-style-type: none"> <li>Yes, frequent referencing in the <i>General Assessment</i> chapter. No referencing in the country notes.</li> </ul>	<ul style="list-style-type: none"> <li>No</li> </ul>
<i>Charts</i>	<ul style="list-style-type: none"> <li>Line, bar and scatterplot charts dominate</li> <li>Stable and basic colouring</li> </ul>	<ul style="list-style-type: none"> <li>Considerable variation of type of charts used e.g. line, bar, scatterplots, whisker, waterfall, hybrid charts</li> <li>Diverse and bright colouring</li> <li>NB: <i>still constrained by Excel and Word which are two main tools but it has been also using Adobe. Rapid schedule is seen as a key constraint in terms of production of visuals.</i></li> </ul>	<ul style="list-style-type: none"> <li>Generally, charts themselves occupy larger part of a page than in DG ECFIN and IMF publications (e.g. frequent use of horizontal bar charts). It is one of the recent shifts indicated by the OECD – <i>shorter message &amp; more visuals</i></li> <li>Stable and basic colouring</li> <li>Line, bar and scatterplot charts dominate</li> <li>NB: <i>Each chart/ table contains individual reference to the source in the form of the access path leading directly to the underlying data in the Excel sheet<sup>67</sup>.</i></li> </ul>	<ul style="list-style-type: none"> <li>Very limited number of charts. Typically fan charts that display main projection along with alternative scenarios.</li> </ul>

<sup>67</sup> See for instance <http://dx.doi.org/10.1787/888933437152> (OECD Economic Outlook 2017, General Assessment Chapter, Figure 1.2)

	ECFIN	IMF	OECD	ECB
Statistical Appendix	<ul style="list-style-type: none"> <li>Yes</li> </ul>	<ul style="list-style-type: none"> <li>Yes</li> </ul>	<ul style="list-style-type: none"> <li>Yes (detailed)</li> </ul>	<ul style="list-style-type: none"> <li>No (but detailed standalone document <i>A guide to the Eurosystem/ ECB staff macroeconomic projection exercise</i><sup>68</sup> is provided.</li> </ul>
Other		<ul style="list-style-type: none"> <li>IMF is currently conducting an online survey of the users of its main publication to get more detailed information on: (i) popularity of specific parts, (ii) consumption patterns, (iii) satisfaction levels.</li> <li></li> <li>NB: <i>the structure of the main document has remained largely unchanged for the past 20 years.</i></li> </ul>	<ul style="list-style-type: none"> <li>OECD indicated that it is the PowerPoint presentation<sup>69</sup> summarising key results/ insights rather than main publication which is a key product through which the dissemination of results takes place. We explicit focus on story telling.</li> <li></li> <li>NB 1: <i>A distinctive feature of the publication is a very explicit discussion of policies including policy implementation and assessments (discussion of the gap between OECD</i></li> </ul>	<ul style="list-style-type: none"> <li>There have not been any major changes to the structure of the report recently.</li> </ul>

<sup>68</sup> ECB, July 2016. A guide to the Eurosystem/ ECB staff macroeconomic macroeconomic projection exercise. Available at: <https://www.ecb.europa.eu/pub/pdf/other/staffprojectionsguide201607.en.pdf>

<sup>69</sup> See example from OECD Economic Outlook 2017 available at: <http://www.oecd.org/eco/outlook/Better-but-not-good-enough-oecd-economic-outlook-presentation-june-2017.pdf>

ECFIN	IMF	OECD	ECB
		<p><i>policy recommendations and their implementation including an attempt to capture that gap visually).</i></p> <ul style="list-style-type: none"> <li>•</li> <li>• NB 2: <i>Well-developed interface allowing users to review the main publication/ specific parts in PDF or directly through web explorer<sup>70</sup>.</i></li> <li>•</li> <li>• NB 3: <i>Main publication available in EN, FR and DE</i></li> <li>•</li> <li>• NB 4: <i>the structure of the main document has remained largely unchanged for a number of years</i></li> </ul>	
<b>Press conference</b>			
<p><i>Frequency (per year)</i></p> <ul style="list-style-type: none"> <li>• 3</li> </ul>	<ul style="list-style-type: none"> <li>• 4 (two after main rounds + 2 after update rounds)</li> </ul>	<ul style="list-style-type: none"> <li>• 2 conferences for main Economic Outlook (around May/June and November/December of a</li> </ul>	<ul style="list-style-type: none"> <li>• There is no separate press conference. The document is largely internal in</li> </ul>

<sup>70</sup> See example for OECD Economic Outlook June 2017 available at: [http://www.oecd-ilibrary.org/economics/oecd-economic-outlook\\_16097408](http://www.oecd-ilibrary.org/economics/oecd-economic-outlook_16097408)

	ECFIN	IMF	OECD	ECB
			<p>given year) and 2 additional events for interim outlooks.</p> <ul style="list-style-type: none"> <li>•</li> <li>• NB: <i>publication &amp; press conference in May/June is usually synchronised with a Ministerial Meeting</i></li> </ul>	<p>nature and is intended for the Governing Council.</p> <ul style="list-style-type: none"> <li>•</li> <li>• NB: <i>in the regular press conferences following the (monetary policy) Governing Council meetings, the President mentions the main results of the new projections</i></li> </ul>
<i>Length</i>	<ul style="list-style-type: none"> <li>• ~30 minutes for presentation + ~15 minutes for Q/A + ~15 minutes during technical briefing</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• ~30 minutes + additional time for Q/A</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
<i>Presenting panel</i>	<ul style="list-style-type: none"> <li>• Commissioner Moscovici and Spokesperson</li> </ul>	<ul style="list-style-type: none"> <li>• 4 people including 3 technical staff</li> </ul>	<ul style="list-style-type: none"> <li>• Typically, Chief Economist, Catherine Mann alone. Occasionally joined by Secretary General.</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
<i>Media representatives</i>	<ul style="list-style-type: none"> <li>• High attendance, 150-200 journalists, mainly Brussels-based</li> <li>• Brussels-based journalists have advance access to the results (under embargo)</li> </ul>	<ul style="list-style-type: none"> <li>• High attendance</li> </ul>	<ul style="list-style-type: none"> <li>• Low attendance (partly due to lower number of economic journalists in Paris)</li> </ul>	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
<i>Promotion of the event among</i>	<ul style="list-style-type: none"> <li>• Release of the main document and press release (under embargo) 1h before the publication.</li> </ul>	<ul style="list-style-type: none"> <li>• Each conference has a theme, e.g. '<i>Gaining momentum</i>' for WEO April</li> </ul>	<ul style="list-style-type: none"> <li>• Limited.</li> <li>• NB: <i>Bilateral briefings prior to the event with</i></li> </ul>	<ul style="list-style-type: none"> <li>• Very limited. Occasionally, Peter Praet, member of</li> </ul>

ECFIN	IMF	OECD	ECB
<p><i>journalists</i></p>	<p>2017</p> <ul style="list-style-type: none"> <li>Two-stage release takes place:</li> <li>1 week before publication – this relates to two analytical chapters – focused on policy-makers, some specialised media, professional economists</li> <li>24h before publication – this relates to the forecast and main analysis – this is done under embargo (accredited journalists) which is enforced by deprivation of future access in case of infringement of the embargo</li> <li>NB: <i>Background calls/ briefing sessions with journalists may also take place prior to the official publication. The main rationale for this, according to the IMF, is to facilitate media work and ensure that high-quality materials are published in relation to the forecast.</i></li> </ul>	<p><i>selected press (under embargo) are seen as far more effective</i></p>	<p>the Executive Board in charge of economics, briefs journalists on background to the projections after the publication of the projections with the purpose to explain and clarify.</p>
<p><i>Press release</i></p> <ul style="list-style-type: none"> <li>Yes, available in all EU languages</li> </ul>	<ul style="list-style-type: none"> <li>Yes</li> </ul>	<ul style="list-style-type: none"> <li>Yes, available in several</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>

ECFIN	IMF	OECD	ECB
		languages including Japanese	
<p><i>Specific rules of Q/A session</i></p> <ul style="list-style-type: none"> <li>No responses to questions related to deficit procedure</li> <li>Moderation: 1 question per country</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>	<ul style="list-style-type: none"> <li>All questions, apart from purely political, are answered.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
<p><i>Technical briefing</i></p> <ul style="list-style-type: none"> <li>Yes, circa 30 minutes with possibility to ask questions 'off the record' directly to the Country desk officers</li> </ul>	<ul style="list-style-type: none"> <li>Yes</li> <li>NB: <i>journalists accredited to IMF press conference have an opportunity to ask questions on-line which are then read out by IMF staff and answered live.</i></li> </ul>	<ul style="list-style-type: none"> <li>No</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
<p><i>Key challenges according to the staff</i></p> <ul style="list-style-type: none"> <li>Risk of leaks still material</li> <li>'Political' answers to some questions</li> </ul>	<ul style="list-style-type: none"> <li>Risk of leaks still material</li> </ul>	<ul style="list-style-type: none"> <li>Press conference is <i>not</i> seen as the main promotional channel anymore due to low turnout (driven by the limited number of economic journalists based in Paris). OECD attaches greater importance to bilateral briefings with selected press that take place 24h prior to the publication of the outlook (under embargo) and where briefing of the most influential media outlets</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>

ECFIN	IMF	OECD	ECB
<p><i>Key lessons</i></p>		<p>(e.g. FT, Reuters, Bloomberg) takes place.</p> <ul style="list-style-type: none"> <li>Press conference is not seen as essential event. Targeted briefing of selected media and dissemination of the PowerPoint presentation (in short and quickly digestible format) are seen as far more crucial in ensuring press coverage.</li> </ul>	<ul style="list-style-type: none"> <li>Not applicable</li> </ul>
	<p><b>Key channels of promotion of the product</b></p>	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
<p><i>Website</i></p> <ul style="list-style-type: none"> <li>The forecast is referenced visibly on the EC homepage and DG ECFIN homepage on the day of the publication and immediately after (under 'news' heading). Beyond that period, the direct link to the forecast ('economic performance and forecast') is displayed on the DG ECFIN homepage.</li> <li>NB: <i>Anecdotal evidence suggests that a direct link to the forecast is not always easy to locate though</i></li> </ul>	<ul style="list-style-type: none"> <li>Displayed in a prominent way – directly available under 'Data' webpage</li> </ul>	<ul style="list-style-type: none"> <li>Separate webpage with all outlook-related content but no displaying on the main homepage</li> </ul>	<ul style="list-style-type: none"> <li>The forecast has its own designated webpage<sup>71</sup>. Apart from Twitter, webpage is the main channel through which the promotion takes place. Since June 2017 it also publishes the underlying numbers in an Excel format on its webpage.</li> </ul>

<sup>71</sup> ECB, 2017. ECB Macroeconomic projections. Available at: <https://www.ecb.europa.eu/pub/projections/html/index.en.html>

	ECFIN	IMF	OECD	ECB
<i>Short videos</i>	<ul style="list-style-type: none"> <li>Short video, ~2 minutes with narrative<sup>72</sup></li> </ul>	<ul style="list-style-type: none"> <li>Short video, ~ 1 minute without narrative</li> <li>Short video, ~ 2 minutes with narrative of IMF Chief Economist explaining the outlook<sup>73</sup></li> <li></li> <li>NB: <i>Deliberate decision to shorten video documents had been made some time ago</i></li> </ul>	<ul style="list-style-type: none"> <li>No</li> </ul>	<ul style="list-style-type: none"> <li>No</li> </ul>
<i>Social media</i>	<ul style="list-style-type: none"> <li>Twitter and Facebook</li> </ul> <p>NB: <i>extensive tweeting on the day before, of the publication and after. For instance, there were 43 specific tweets related to the Spring forecast in May 2017</i><sup>74</sup></p>	<ul style="list-style-type: none"> <li>Social media are used mainly to promote the main document</li> <li>Twitter</li> <li>Facebook (including live webcast)</li> <li>NB: <i>Increase in the use of social media has been highlighted by the IMF as one of the key changes in the communication approach in recent years</i></li> </ul>	<ul style="list-style-type: none"> <li>Used quite extensively via targeting of specific audiences:</li> <li>Facebook</li> <li>Twitter</li> <li>LinkedIn</li> <li>NB 1: <i>extensive tweeting on the day of publication and the day after e.g. 38 tweets from @OECDDeconomy at the day of publication of</i></li> </ul>	<ul style="list-style-type: none"> <li>Twitter only. ECB highlights the projections (of GDP growth and HICP) in its live tweeting on Twitter.</li> </ul>

<sup>72</sup> [https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/spring-2017-economic-forecast\\_en](https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/spring-2017-economic-forecast_en)

<sup>73</sup> <http://www.imf.org/external/pubs/ft/weo/2016/02/>

<sup>74</sup> Examples of some tweets available at: <https://twitter.com/ecfin>



ECFIN	IMF	OECD	ECB
		<p><i>Economic Outlook June 2017</i><sup>75</sup></p> <ul style="list-style-type: none"> <li>NB 2: by default, OECD retweets immediately the news on its outlook from leading economic media outlets e.g. FT, Bloomberg etc.</li> </ul>	
<p><i>Other</i></p> <ul style="list-style-type: none"> <li>Infographics<sup>76</sup></li> <li>Top story of the newsletter on the day of the publication<sup>77</sup></li> </ul>	<ul style="list-style-type: none"> <li>Infographics targeting general audience<sup>78</sup> (typically via Twitter)</li> <li>'Road shows'</li> </ul>	<ul style="list-style-type: none"> <li>No specific infographics (being considered now)</li> <li>Bilateral briefings of selected media 24 hours prior to the publication (under embargo) are seen as critical to get media coverage. Most journalists rely on press release though.</li> <li>BlogPost by OECD Chief Economist<sup>79</sup></li> </ul>	<ul style="list-style-type: none"> <li>Occasionally, Peter Praet, member of the Executive Board in charge of economics, briefs journalists on background after the publication of the projections with the purpose to explain and clarify. ECB does not prioritise/</li> </ul>

<sup>75</sup> OECD, 2017. Economic Outlook June 2017 – Twitter account. Available at: [https://twitter.com/OECDeconomy?ref\\_src=twsrc%5Etfw&ref\\_url=http%3A%2F%2Fwww.oecd.org%2Feco%2Feconomicoutlook.htm](https://twitter.com/OECDeconomy?ref_src=twsrc%5Etfw&ref_url=http%3A%2F%2Fwww.oecd.org%2Feco%2Feconomicoutlook.htm)

<sup>76</sup> [https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/european-economy-explained/graphs-economic-topics/spring-2017-economic-forecast-steady-growth-ahead\\_en](https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/european-economy-explained/graphs-economic-topics/spring-2017-economic-forecast-steady-growth-ahead_en)

<sup>77</sup> DG ECFIN, May 2017. Newsletter – Spring forecast 2017. Available at: [http://ec.europa.eu/newsroom/ecfin/newsletter-specific-archive-](http://ec.europa.eu/newsroom/ecfin/newsletter-specific-archive-issue.cfm?newsletter_service_id=199&newsletter_issue_id=3563&page=1&fullDate=Sun%2005%20Nov%202017&lang=default)

[issue.cfm?newsletter\\_service\\_id=199&newsletter\\_issue\\_id=3563&page=1&fullDate=Sun%2005%20Nov%202017&lang=default](http://ec.europa.eu/newsroom/ecfin/newsletter-specific-archive-issue.cfm?newsletter_service_id=199&newsletter_issue_id=3563&page=1&fullDate=Sun%2005%20Nov%202017&lang=default)

<sup>78</sup> Example of infographic used for WEO January 2016: <http://www.imf.org/external/pubs/ft/weo/2016/update/01/info.htm>

<sup>79</sup> See example available at: <https://oecdoscope.wordpress.com/2017/06/07/oecd-global-economic-outlook-better-but-not-good-enough/>

ECFIN	IMF	OECD	ECB
		<ul style="list-style-type: none"> <li>OECD centres in Mexico City, Berlin, Washington DC and Tokyo organise some events on the day of publication</li> </ul>	<p>put particular focus on any specific media outlet.</p>
<b>Consumption including media coverage</b>			
<p><i>Consumption</i></p> <ul style="list-style-type: none"> <li>Forecast main publication is most sought DG ECFIN publication, between 30,000-70,000 viewings (via DG ECFIN webpage) of each forecast publication.</li> <li>NB: <i>no disaggregation for internal (EU) versus external consumer is available</i></li> </ul>	<ul style="list-style-type: none"> <li>Approximate number of downloads of the main document (pdf format) from the website last year: 80,000</li> <li>NB: <i>no tool(s) are in place that would allow the disaggregation for internal (IMF) versus external consumer</i></li> </ul>	<ul style="list-style-type: none"> <li>Data for specific type of outputs:               <ul style="list-style-type: none"> <li><i>OECD Economic Outlook</i><sup>80</sup>: on average 21,000 views (data for 12 month period) for Issue 2, 2015 and Issue 1, 2016 (views exclude OECD staff);</li> <li><i>Country notes</i><sup>81</sup>: ~1,000 downloads of a country note (pdf) for smaller economies ~2,000 downloads for largest economies (data for 12 months period)</li> <li><i>Main PowerPoint Presentation</i><sup>82</sup>: between 53,000 and 134,000 views</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>ECB does not monitor the media coverage of its projections specifically. It monitors the media coverage (including social media) of the regular monetary policy press conferences of which projections are a part.</li> </ul>

<sup>80</sup> OECD, 2017. Economic Outlook – library. Available at: [http://www.oecd-ilibrary.org/economics/oecd-economic-outlook\\_16097408](http://www.oecd-ilibrary.org/economics/oecd-economic-outlook_16097408)

<sup>81</sup> OECD, 2017. Projections by country. Available at: <http://www.oecd.org/eco/economicoutlook.htm#cns>

<sup>82</sup> OECD, 2017. Global Economic Outlook. Available at: <http://www.oecd.org/eco/economicoutlook.htm>

ECFIN	IMF	OECD	ECB
		<p>for a forecast summary presentation (data for 12 month period, views include OECD staff)</p> <ul style="list-style-type: none"> <li>• <i>Blog of Chief Economist – post related to specific forecast: between 1,500 and 2,000 for a post related to specific forecast (views between February 2016 – July 2017)</i></li> <li>•</li> <li>• <i>NB: in general, no disaggregation for internal (OECD) versus external</i></li> </ul>	
<p><i>Media coverage</i></p> <ul style="list-style-type: none"> <li>• Overall (very) high coverage, at least one media outlet per Member States at the day of publication, all major news agencies</li> <li>• High turn-out at the press conference</li> </ul>	<ul style="list-style-type: none"> <li>• Overall (very) high coverage</li> <li>• Global, circa 7,000 journalists registered in the IMF media centre who receive the results under embargo</li> <li>• High turn-out at the press conference</li> </ul>	<ul style="list-style-type: none"> <li>• Overall, considerable coverage including regular coverage of most prominent media outlets and agencies</li> <li>• Low turn-out at the press conference, mainly due to low number of economic correspondents in Paris so bilateral briefings of selected media (under embargo) 24h prior to the publication is seen as a way of ensuing coverage</li> <li>• A few hundred journalists</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>

ECFIN	IMF	OECD	ECB
		<p>are on the notification list (receive alerts about upcoming outlook)</p> <p>.</p>	
<ul style="list-style-type: none"> <li>• <b>Monitoring of consumption including media coverage</b></li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
<p><i>Press analysis</i></p> <ul style="list-style-type: none"> <li>• Well developed and comprising:</li> <li>• Basic analysis of wires</li> <li>• More recently in-depth qualitative analysis provided by private subcontractor has been also undertaken</li> </ul>	<ul style="list-style-type: none"> <li>• After each release the media analysis report (<i>Impact Report</i>) is produced which draws on, inter alia, specialised software allowing quantitative and qualitative analysis. It goes beyond traditional media analysis and focuses also on blogs etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Provided by OECD communication unit around 1 month after the date of the publication of the outlook</li> </ul>	<ul style="list-style-type: none"> <li>• No specific analysis is done.</li> </ul>
<p><i>Analysis of the web consumption</i></p> <ul style="list-style-type: none"> <li>• Basic, no disaggregation by EU officials <i>versus</i> external consumers</li> <li>• NB: <i>the issue of analysis allowing disaggregation for external versus internal consumers of the main publication (via webpage downloads/views) was discussed with EC's IT experts. Yet, DG ECFIN indicated that, due to technical constraints, it is currently not possible to set-up a system that would allow such disaggregation.</i></li> </ul>	<ul style="list-style-type: none"> <li>• In place. No disaggregation by IMF consumers <i>versus</i> external consumers</li> </ul>	<ul style="list-style-type: none"> <li>• In place, relatively detailed figures on the consumption of key outputs including OECD Economic Outlook, main PowerPoint presentation, or figures on OECD Chief Economist's blog readership also available.</li> <li>• No disaggregation by OECD <i>versus</i> external consumers with the exception of the paid</li> </ul>	<ul style="list-style-type: none"> <li>• No specific analysis is done.</li> </ul>

ECFIN	IMF	OECD	ECB
<p><i>Social media analysis</i></p> <ul style="list-style-type: none"> <li>Very detailed analysis of overall DG ECFIN activity/perception on Twitter and Facebook prepared by an external contractor on a monthly basis. Analyses from the months when forecasts are published provide an in-depth overview of the forecast related aspects.</li> </ul>	<ul style="list-style-type: none"> <li>Very detailed (quantitative and qualitative)</li> </ul>	<p>content from Economic Outlook library.</p> <ul style="list-style-type: none"> <li>Very basic monitoring that does not go beyond the number of tweets (re-tweets), shares on Facebook etc. OECD acknowledged that some expertise is lacking here.</li> </ul>	<ul style="list-style-type: none"> <li>No specific analysis is done.</li> </ul>

## Annex 9 References

### A9.1 Results of analysis - relevance

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## Annex 10 European Semester – examples of forecasts as inputs into the process

### A10.1 Specific references to ECFIN forecasts in recent Annual Growth Survey Reports

#### 2017 AGS Report<sup>83</sup>

- Investment forecasts total investment predicted to grow (EU: 2014: +1.2%; 2015: +2.2%; 2016: +2.0%; 2017: +2.1% 2018: +2.8%) (p.3)
- Fiscal policy: projected decline in average public deficit and levels of government debt (p.2)

#### 2016 AGS Report<sup>84</sup>

- Summary Box at the introduction part of the report with the key autumn 2015 forecast findings for EU GDP, employment and unemployment rate, inflation and debt/ deficit to GDP set the scene in the opening part of the report. (p.3)
- Explicit references to ECFIN forecast in the context of an analysis of fiscal policies:

### A10.2 Specific references to ECFIN forecasts in recent Alert Mechanism Reports

#### 2017 AMR<sup>85</sup>

- The assessment in the AMR is set against the background of projected period of one year ahead. Clear reference to forecast with one paragraph of key predicted variables (EU and Eurozone GDP, inflation, unemployment rate) is made in the Executive Summary of the document. (p.2-3)
- In the later part of the text, forecast is quoted in the context of:
- Overview of specific Member States' imbalances
  - Germany: *'In March 2016, the Commission concluded that Germany was experiencing macroeconomic imbalances, in particular involving risks stemming from excess savings and subdued private and public investment..This surplus is expected to remain high in coming years. Investment is forecast to remain subdued and as a share of GDP has remained broadly at the same low level since 2011'.* (p.27)
  - France: *'The high and increasing government debt remains a major source of vulnerability and is forecast to increase in the coming years.'* (p.30)
  - Cyprus: *'Although real GDP growth resumed in 2015 and is expected to*

<sup>83</sup> European Commission, 2016. AGS 2017. Available at: [https://ec.europa.eu/info/publications/2017-european-semester-annual-growth-survey\\_en](https://ec.europa.eu/info/publications/2017-european-semester-annual-growth-survey_en)

<sup>84</sup> European Commission, 2015. AGS 2016. Available at: [http://ec.europa.eu/europe2020/making-it-happen/annual-growth-surveys/index\\_en.htm](http://ec.europa.eu/europe2020/making-it-happen/annual-growth-surveys/index_en.htm)

<sup>85</sup> European Commission, 2016. AMR 2017. Available at: [https://ec.europa.eu/info/sites/info/files/2017-european-semester-alert-mechanism-report\\_en\\_0.pdf](https://ec.europa.eu/info/sites/info/files/2017-european-semester-alert-mechanism-report_en_0.pdf)

*strengthen over the forecast horizon, falling prices reduce nominal GDP growth and make the deleveraging process more difficult'. (p.32)*

- Lithuania: *'Weak productivity and strong wage growth implied strong ULC growth in 2015 moving the indicator beyond the threshold, but over the forecast horizon a deceleration is foreseen' (p.34)*
- Netherlands: *'In March 2016, the Commission concluded that the Netherlands was experiencing macroeconomic imbalances, in particular involving risks stemming from the large and persistent current account surplus and the very large stock of household deb...Nevertheless, investment is forecast to grow more strongly in line with robust domestic demand which may result in a moderate decline in the current account surplus. (p.36)*

### **2016 AMR<sup>86</sup>**

- Two explicit reference to the forecast results in the Executive Summary:
  - In the context of the surpluses level over for the period of N+2: *'Surpluses in some Member States remain large over the forecast horizon (2015-2017)' (p.3)*
  - Growth in emerging markets: *'Over the past few months, global trade has considerably slowed down and downside risks, in particular in relation to emerging markets' prospects, have increased - see 'European Economic Forecast-Autumn 2015' (p.3)*
  - In the context of pace of recovery in the EU (p.6)
- References to specific Member States imbalances and importantly, actions to be taken:
  - Indication to Germany and Netherlands to increase investment spending: *'The risk of protracted low growth and low inflation at euro-area level should be mitigated especially by countries that are better placed to boost investment consistently with available fiscal space and positive savings investment balance. This is the case of Germany and the Netherlands whose current account surpluses are forecast to remain high in the coming years'. (p.8)*

### **A10.3 Country Reports – sample for 2016 reports for Germany and Italy**

In general, forecasts' results (primarily winter forecasts) feed extensively into *Country Reports* (e.g. 24 explicit references in 2016 *German Country Report* and 36 explicit references in 2016 *Italy Country Report*).

Typically, the forecast is used for all key indicators, often going also beyond the main ones (e.g. inventory stock or decomposed investment into equipment/ other construction). In addition, the forecast adds not only the prospect perspective (N+2), but it is also used as a latest input for the data for year N (e.g. 2016 Winter Forecast used to depict changes in employment/ unemployment/ real earning in 2014 and 2015 – Graph 3.2.1 and current account balance in 2015 – Graph 2.1.1, both in 2016 *Germany Country Report*).

More generally, the *CRs* contain frequent references to the future perspective (see for instance number of graphs with time horizon of N+2 or the central table outlining key

economic, financial and social indicators included in the CRs) and it is also used for backing up key Commission's argument about the necessary actions to be taken by the MS (see for instance some extracts from 2016 *Germany Country Report*) or even challenge the authorities assumptions (see for instance highlighted discrepancies in public debt trajectory between 2016 winter forecast and 2016 Draft Budgetary Plan depicted on Graph 2.2.2.).

To examine specific examples, please see the extracts from selected CRs presented below.

### **2016 Germany Country Report**

- Forecast as an important evidence backing up Commission's argument about insufficient investment measures pursued by Germany: *'The Commission 2016 winter forecast projects public investment to gain some momentum in 2016-2017 but measures do not appear to bring about a sustainable upward trend'* (p.5)
- Forecast as an important evidence backing up Commission's argument about the benefit of wage increase: *'Notwithstanding past adjustments, the above analysis indicates that there is scope for further wage increases in Germany. Even if a slight acceleration in the compensation of employees (per head) is projected for 2016 and 2017 in the Commission 2016 winter forecast, wage dynamics are not as strong as previously projected'*. (p.29)

### **2016 Italy Country Report**

- Forecast results in relation to GDP growth for N+2 horizon used as a crucial evidence to set the scene of the report (Graph 1.1): *'After three years of recession, a slow recovery started in 2015 and is expected to strengthen in 2016 and 2017, with some downside risks'* (p.4)
- Forecast result used to outline the state of the public finances at the opening part of the report: *'On the revenue side, taxation is forecast to increase much less than nominal GDP as a result of a reduction in labour and property taxation...In 2017, the headline deficit is projected to continue declining (to 1.5 % of GDP) based on a no-policy-change assumption. The government debt-to-GDP ratio is set to only slightly decrease to 132.4 % in 2016 and to 130.6 % in 2017, mainly due to higher nominal growth and primary surplus'* (p.7)
- Main table outlining all key economic, financial and social indicators presented in the report with N+2 perspective for all indicators (p.11)
- Forecast results used to challenge the public debt trajectory assumed by the Italian authorities in their Draft Budgetary Plan – see Graph 2.2.2 (p.16)

## **A10.4 National Reform Programmes – references to forecasts in a sample of reports reviewed for UK, Poland, Netherlands and Ireland**

### **2016 National Reform Programme for UK<sup>87</sup>**

There are references to the OECD and IMF forecast data in number of central parts of the document. Though, the most extensively cited projections are those made by Office for Budget Responsibility (OBR). There was no reference to winter forecast.

Often, the time horizon goes beyond 2 years e.g. see main table (Table 2A, p.9) with the forecast of key economic indicators from OBR for N+5.

<sup>87</sup> National Reform Programme for the UK, 2016. Available at: [http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016\\_uk\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016_uk_en.pdf)

### **2016 National Reform Programme for Poland<sup>88</sup>**

There is almost no references to ECFIN forecast in the document. The forecast data comes largely from the national sources e.g. Ministry of Finance (financial and economic variables) and Central Statistical Office (population variables) and the time horizon exceeds two years (typically N+3).

The report does not include any references to OECD or IMF forecasts.

- Reference to the Winter forecast in the context of EU GDP growth and the EU demand for Polish goods: *'Winter forecasts of the European Commission concerning the economic situation of Poland's main trading partner, which is the EU, indicated a slowdown in foreign demand for Polish goods. Although, the European Commission predicts that GDP growth in the EU in 2016 will remain at the level of 2015 (1.9%), and in 2017 it will accelerate slightly to 2.0%, but the rate of growth of EU imports in 2015-16 will reach 5.1% and 5.5% respectively, e.g. below the 5.7% growth from 2015. (p.6)*

### **2016 National Reform Programme for Ireland<sup>89</sup>**

Virtually all forecast data comes from national sources e.g. Department of Finance. The time horizon for key indicators is fairly long (N+6, see table 1 on p.4). There are also some references to IMF and OECD forecasts in the context of external environment. There was no reference to DG ECFIN forecast in 2016 report.

### **2016 National Reform Programme for Netherlands<sup>90</sup>**

All forecasts data comes from national sources - Netherlands Bureau for Economic Policy Analysis (CPB). Time horizon of all forecasts used in the document was N+2.

### **2016 National Reform Programme for Belgium<sup>91</sup>**

All forecasts data comes from national sources - Federal Planning Bureau, National Accounts Institute. Time horizon spans up to 2020.

## **A10.5 Stability/ Convergence Programmes – references to forecasts in a sample of reports reviewed for Ireland, UK and Poland**

*Stability/ Convergence Programmes* reports may vary in length (e.g. 306 pages for UK report *versus* 70 pages for Poland and 53 pages for Ireland report) and extent to which various forecast data is used (e.g. more than 1000 explicit references in the UK report *versus* less than 100 in Irish and Polish report).

Quite often, cited forecast data provides longer than two years horizon (e.g. N+5). When non-domestic sources of forecast are cited e.g. in the context of GDP growth in other countries, these are often IMF and OECD forecasts and less frequently ECFIN forecasts.

Typically, the reports contain also one aggregate table that compares the forecasts' results for main indicators (GDP, inflation and unemployment) from several key

<sup>88</sup> National Reform Programme for Poland, 2016. Available at: [http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016\\_poland\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016_poland_en.pdf)

<sup>89</sup> National Reform Programme for Ireland, 2016. Available at: [http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016\\_ireland\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016_ireland_en.pdf)

<sup>90</sup> National Reform Programme for Netherlands, 2016. Available at: [http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016\\_netherlands\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016_netherlands_en.pdf)

<sup>91</sup> National Reform Programme for Belgium, 2016. Available at: [http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016\\_belgium\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/nrp2016_belgium_en.pdf)

organisations.

### **2015-2016 Convergence Programme for the UK<sup>92</sup>**

The majority of the forecast data comes from Office for Budget Responsibility (March 2016 Economic and Fiscal Outlook). Other two frequently cited sources of forecasted data is OECD and IMF, typically when British performance is benchmarked at the international level. In addition, occasional references to the forecast made by National Institute for Economic and Social Research (NIESR), Bank of England and Oxford Economics can be found.

In terms of the references to the ECFIN forecast specifically, some albeit limited examples can be found (see for instance table 4.37 with comparison between OBR and ECFIN winter forecast for public debt and deficit level).

The time horizon used for the forecast is very often longer than the one provided by ECFIN forecast, typically N+5 (perspective provided by OBR).

#### Some examples of relevant content:

- First opening sentence of the document (Foreword) refers to the OECD forecast for the UK growth in 2016. In the same, (p.3);
- In the same Foreword, the IMF forecast is used to illustrate the global outlook for 2016, (p.3);
- OECD Forecast used to put British growth in the international perspective: '*Britain is forecast to grow faster than any other major advanced economy in 2016...*' (p.9);
- Yet, the forecasts for the economy and public finances included in the UK's Convergence Programme are prepared by the independent Office for Budget Responsibility (OBR) (see explanatory text on p.5);
- Main table with key indicators (GDP growth and main components, CPI, Employment, LFS) draws on OBR data, and importantly presents N+5 perspective (p.11).
- 

### **2016 Stability Programme for Ireland**

Most frequently cited source of forecasted data is Department of Finance. The time horizon is often longer than two years, typically N+5. ECFIN winter forecast is used rarely – one of the exception is near-term forecast.

#### Some examples of relevant content:

- ECFIN Winter forecast is used, in parallel to IMF, to provide the external assumptions on US GDP growth, exchange rate and prices of oil (see Table 2), (p.5).
- Aggregate table that compares the forecast outputs from Department of Finance, Central Bank of Ireland, IMF, ESRI, EC and OECD (see Table 7), (p.11).
- **2016 Convergence Programme for Poland**
- Majority of the forecast data used in the report comes from the Polish Ministry of Finance (MoF). The time horizon of projected data is most frequently N+3, as per MoF projections. Yet. ECFIN forecast (mostly Winter one but with some

<sup>92</sup> HM Treasury, March 2016. 2015-16 Convergence Programme for the United Kingdom. Available at:  
[http://ec.europa.eu/europe2020/pdf/csr2016/cp2016\\_uk\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/cp2016_uk_en.pdf)

references to Autumn as well) is a major source of data for several important aspects e.g. sensitivity analysis related to risk factors in trade between Poland and EU, assessment of external environment, or comparison of fiscal sustainability indicators with MoF projections.

- The report discusses also discrepancies between Autumn 2015 and Winter 2016 forecasts.

Some examples of relevant content:

- Winter forecast as a crucial input for the mid-term scenario for Polish economy: *'Winter forecasts of the European Commission concerning the economic situation of Polish main trading partner, which is the EU, indicate a slowdown in foreign demand for Polish goods. The European Commission predicts though that GDP growth in the EU will remain at the level of 2015 (1.9%) in 2016 and in 2017 it will accelerate slightly to 2.0%, but the rate of growth of EU imports between 2016-17 will reach 5.1% and 5.5%, e.g. below the 5.7% of the growth in 2015'* (p.11);
- Winter forecast used to establish the key external risk factors: *'The negative risk factors in the European Commission's economic growth forecast include...'*, (p.35);
- Winter (2016) forecast is compared with Spring (2015) one: *'According to the European Commission, compared to the Autumn forecast of 2015, in the balance of risk factors, the negative ones still outweigh them. This may mean that after the Spring forecasting round, the European Commission revises downwards its previous forecast for GDP growth in the EU countries, which are the basis for the scenario of GDP growth in Poland presented in the Programme'*, (p.35).
- Comparison MoF and ECFIN projections (August forecast) related to fiscal sustainability indicators: *'Table 7 shows the indicators S1 and S2 estimated by the Ministry of Finance as compared with the assessment of the European Commission performed in the Fiscal Sustainability Report'*, (p.41).

## A10.6 Country Specific Recommendations

*Country Specific Recommendations (CSRs)* are presented in succinct documents which by default do not include analytical content that is present at earlier phases of the European Semester Cycle.

The ECFIN forecast used at this stage is the spring one. In general, the references to it are relatively limited. Yet, it is common that if the forecast is quoted, it is used to back absolutely crucial propositions e.g. to boost the spending on investment (see examples in 2016 CSR for Germany) or to ordinate additional measures to comply with SGP (see example in 2016 CSR for Poland).

### **2016 CSR for Poland<sup>93</sup>**

- Spring forecast used as central evidence to substantiate crucial claim on risk of Poland's non-compliance with SGP: *'Based on the Commission 2016 spring forecast, there is a risk of a significant deviation from the recommended adjustment both in 2016 and, under unchanged policies, in 2017. Based on its assessment of the convergence programme and taking into account the Commission 2016 spring forecast, the Council is of the opinion that there is a risk that Poland will not comply with the provisions of the Stability and Growth Pact. Therefore, further measures will be needed to ensure compliance in 2016 and 2017'* (p.3).

<sup>93</sup> European Commission, 2016, 2016 CSR for Poland. Available at: [http://ec.europa.eu/europe2020/pdf/csr2016/csr2016\\_poland\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/csr2016_poland_en.pdf)

### 2016 CSR for Germany<sup>94</sup>

- Crucial input in the context of the further steps towards Germany under preventive arm of SGP. Spring forecast provides the structural balance and its relation vis-à-vis medium-term budgetary objective: *'Based on the Commission 2016 spring forecast, the structural balance is forecast to register a surplus of 0.4 % of GDP in 2016 and in 2017, above the medium-term budgetary objective'* (p.3);
- Used to stress again the existence of room to increase investment: *'As the budget is expected to remain balanced in headline and structural terms in 2016-2017, there continues to be sufficient fiscal space for higher public investment, without breaching the rules of the Stability and Growth Pact and the national debt brake'* (p.4);
- Crucial evidence for backing up the Council propositions: *'Based on its assessment of the stability programme and taking into account the Commission 2016 spring forecast, the Council is of the opinion that Germany is expected to comply with the provisions of the Stability and Growth Pact'* (p.4);
- At certain instances, it contains the forecast for the period exceeding the ECFIN Spring forecast (2016-2020): *'According to the stability programme, the government debt-to-GDP ratio is expected to gradually decline to 59½% in 2020'*, (p.3).

### 2016 CSR for Sweden<sup>95</sup>

- Spring forecast as crucial evidence to assess whether the country complies with SGP, or not: *'Based on the Commission 2016 spring forecast, the structural balance is forecast to be at -0.5 % in 2016 and -0.9 % of GDP in 2017, above the medium-term budgetary objective. Possible future deviations would be assessed against the requirement to maintain the structural balance at the medium-term budgetary objective. Based on its assessment of the convergence programme and taking into account the Commission 2016 spring forecast, the Council is of the opinion that Sweden is expected to comply with the provisions of the Stability and Growth Pact'* (p.3).

### 2016 CSR for Italy<sup>96</sup>

- Used to assess the plausibility of compliance with SGP: *'Italy is in the preventive arm of the Stability and Growth Pact and subject to the transitional debt rule over 2013-15. According to the stability programme, the government debt-to-GDP ratio is projected to peak in 2015 at 132.7 % and to gradually decline to 123.8 % in 2019. The Commission 2016 spring forecast expects the debt-to-GDP ratio to stabilise in 2016 and start a slight decline only as of 2017, (p.3);*
- Used to back up the claim that greater structural adjustment than envisaged by Italian authorities is needed: *'Based on the Commission 2016 spring forecast, the projected structural deterioration of -0.7 % of GDP in 2016 points to a risk of some deviation from Italy's obligations under the preventive arm of the Stability and Growth Pact, after taking into account the deviation allowed for investments and the implementation of structural reforms. In 2017, under the no-policy-change assumption, the Commission's forecast shows a zero structural effort in 2017, as a result of which there would be a risk of significant deviation from the required 0.6 % of GDP structural adjustment'* (p.5).

<sup>94</sup> European Commission, 2016. 2016 CSR for Germany. Available at: [http://ec.europa.eu/europe2020/pdf/csr2016/csr2016\\_germany\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/csr2016_germany_en.pdf)

<sup>95</sup> European Commission, 2016. 2016 CSR for Sweden. Available at: [http://ec.europa.eu/europe2020/pdf/csr2016/csr2016\\_sweden\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/csr2016_sweden_en.pdf)

<sup>96</sup> European Commission, 2016. 2016 CSR for Italy. Available at: [http://ec.europa.eu/europe2020/pdf/csr2016/csr2016\\_italy\\_en.pdf](http://ec.europa.eu/europe2020/pdf/csr2016/csr2016_italy_en.pdf)

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