

Testing of emissions from cars

Air pollutant emissions are the cause of 400 000 premature deaths in the EU per year, major respiratory diseases and significant healthcare costs.

Urban transport is one of the triggers of excessive air pollution in many urban areas. That is why over the past decades, the Commission has led EU efforts to progressively reduce emissions of air pollutants from road vehicles. The maximum nitrogen oxides (NO_x) emission limits for diesel passenger cars have dropped from 500 mg/km in 2000 to 80mg/km in 2014. And the way in which emissions tests are conducted is becoming increasingly robust.

Until September 2017, only a laboratory test was used to measure air pollution emissions during the type approval process before the car could be placed on the market. However, air pollutants emissions measured on the road substantially exceeded emissions measured on the laboratory test cycle. The Commission has therefore made two major changes to strengthen the emissions testing regime and rebuild consumer confidence: the improvement of lab tests and the introduction of testing in real driving situation.

Improving emissions tests is only part of the Commission's wider work for a clean, sustainable and competitive car sector as laid down in the Commission Communication [‘Europe on the Move’](#). Commission initiatives include air quality and CO₂ standards, the overhaul of the type-approval framework or the support for alternative fuels and battery production.

What is the Real Driving Emissions test?

Already before the emissions scandal broke, the Commission had proposed to measure emissions in real driving conditions. This test procedure further tightens the rules since it checks the emissions of NO_x and ultrafine particles (Particle Number – PN) from vehicles on the road and significantly reduces the discrepancy between emissions measured in real driving and those measured in a laboratory. The Real Driving Emissions (RDE) procedure complements the laboratory test.

In the RDE procedure pollutant emissions are measured by portable emission measuring systems (PEMS) that are attached to the car while driving in real conditions on the road. This means that the car is driven outside and on a real road according to random variations of parameters such as acceleration, deceleration, ambient temperature, and payloads.

How was RDE developed?

RDE was developed in four separate regulatory acts:

- **RDE Act 1:** The first step was to define the actual test procedure. This was voted positively by the Member States in the Technical Committee of Motor Vehicles (TCMV) in May 2015 and entered into force in 2016. In the initial phase starting in early 2016, the RDE testing was only done for

monitoring purposes, without an impact on the actual type approval which continued to be delivered on the basis of laboratory measurements.

- **RDE Act 2:** The second step determined the phasing in of RDE testing to have an actual impact on type approvals issued by national authorities. On 28 October 2015, Member States meeting in the Technical Committee of Motor Vehicles (TCMV) agreed that RDE measurements of NO_x would be compulsory for new car models from September 2017, and for all new vehicles from September 2019.
- **RDE Act 3:** As a third step, Member States in the TCMV adopted on 20 December 2016 the Commission proposal to extend RDE testing to cover particle number (PN) emissions for all new vehicle types by September 2017 and for all new vehicles by September 2018. These very small particles exist in diesel cars as well as petrol cars with direct injection technology. Under RDE Act 3, the Commission also fine-tuned the testing methods to take into account that short city trips starting with a cold engine generate most city pollution. To cover a broader range of conditions, hot engine starts will now also be included. In addition, this Act also mandates that the real-world emission performance of a car should be clearly stated by the manufacturer in the certificate of conformity of each vehicle, i.e. that it is transparent and available for all citizens and public authorities.
- **RDE Act 4:** On 3 May 2018, Member States in the TCMV agreed on the Commission proposal to go one step further and strengthen RDE legislation even more. The 4th RDE act ensures transparent and independent control of emissions of vehicles during their lifetime. Type approval authorities will have to check each year the emissions of vehicles already in circulation ("in-service conformity" testing). Type approval authorities, independent parties and the Commission will be able to perform officially recognised tests through accredited laboratories and technical services. Taking account of latest improvements of the measuring technology, the 4th Act introduces a first reduction of the conformity factor, which caters for technical and statistical variations in RDE measurements, from 1.50 to 1.43. The Commission will continue reviewing the conformity factor with the aim of bringing it down to 1 as soon as possible and at the latest by 2023. The next reduction is scheduled for 2019. Finally the act includes a new unique, transparent, robust and simple methodology for evaluating real driving emissions and for making sure that vehicles are driven properly during such tests. After a three-month scrutiny period in the European Parliament and Council, the Commission will adopt the proposal, which would then apply from 1 January 2019.

What about CO₂ emissions testing?

The Commission has also introduced a new, more realistic laboratory test procedure – the World harmonised Light vehicle Test Procedure (WLTP) for measuring CO₂ emissions and fuel consumption from cars and vans. The WLTP is a globally harmonised test procedure developed within the United Nations Economic Commission for Europe (UNECE) with the support of the European Commission. The new WLTP test was adopted by the Commission on 1 June 2017 and became mandatory for all new car models from September 2017 and for all

new cars from September 2018.

The WLTP replaces the New European Drive Cycle (NEDC), which no longer reflected adequately today's driving conditions or vehicle technologies. The WLTP provides fuel consumption and CO₂ emission values that are more representative of real world conditions to the benefit of consumers and regulators both at EU and national levels. It is a stronger incentive for the deployment of fuel efficient and low-carbon technologies.

Member States voted on 3 May in the TCMV on the 2nd WLTP Act, which improves the lab test to provide more representative CO₂ emission and fuel consumption figures. The Commission proposal tightens testing tolerances and introduces a new evaporative emission procedure adapted to the WLTP. The proposal also introduces as of 2021 the obligation for all new cars and vans to have standardised and accessible fuel and energy consumption monitoring on board of the vehicle. Fuel consumption directly relates to the CO₂ emissions. The new feature, so called 'on-board fuel consumption monitoring device' hence allows for the first time to compare laboratory results for CO₂ emissions with the average real driving situation. This will also provide valuable information to consumers. After a three-month scrutiny period in the European Parliament and Council, the Commission will adopt the proposal, which would then apply from 1 January 2019.

What else is the Commission doing? – A snapshot

The new emissions tests will ensure more reliable results and help rebuild confidence in the performance of new cars. The tests represent one of several important steps in the Commission's work for a clean, sustainable and competitive car industry. This includes a full overhaul of the type approval system, strict [air quality standards](#) that Member States have to comply with, and a number of measures to foster low-emission mobility (i.e. [new CO₂ standards for cars and vans](#), [action plan for alternative fuel infrastructure](#), [development of full value chain of battery production](#)).

Under current rules the EU sets the legal framework but national authorities are fully responsible for checking the compliance of a vehicle. From 1 September 2020, the new EU 'type-approval' framework will be in place. It will significantly raise the quality level and independence of vehicle type-approval and testing, increase checks of vehicles that are already on the EU market and strengthen the overall system with European oversight (see [FAQs](#)).

The Commission has opened infringement procedures against eight Member States for breach of EU type approval legislation in [December 2016](#) and [May 2017](#), and continues to monitor whether EU law in the area is being properly enforced. The Commission has called on Member States to take all necessary measures to ensure that non-compliant vehicles are fixed or withdrawn from circulation. To that effect the Commission has been collecting data by Member States on the progress in the recalls of non-compliant vehicles and has [published the different recall rates](#). The Commission has supported Member States' work with [guidance](#) and a common testing methodology on defeat devices to ensure consistency of results of national investigations. The Commission ensures that competition rules are respected and has proposed a [new deal for](#)

[consumers](#).

Further information

- Main features of the reformed type approval framework – [FAQs](#)
- Political agreement on type approval framework (7 December 2017) – [press release](#)
- Agenda for transition towards clean, competitive and connected mobility:
Commission communication (20 July 2016) – [strategy for low emission mobility](#)
Commission communication (31 May 2017) – [Europe on the Move](#)

CALENDRIERS du 07 mai au 20 mai 2018

CALENDRIER du 07 mai au 13 mai 2018

(Susceptible de modifications en cours de semaine)

Déplacements et visites

Lundi 07 mai 2018

President Jean-Claude **Juncker** receives Mr Josef Ackermann, former CEO of Deutsche Bank.

Mr Andrus **Ansip** in Kigali, Rwanda: participates in the United Nations (UN) Broadband Commission meeting.

Mr Valdis **Dombrovskis** in Riga, Latvia (until 10/05): delivers opening remarks at the conference [“Europe. After 100 Before”](#) at the National Library of Latvia.

Mr Jyrki **Katainen** delivers a keynote speech at the joint forum [“EU, China and SDGs: A Likely Alliance?”](#), in Brussels.

Mr Jyrki **Katainen** receives Mr Jari Koskinen, Director-General of the Association of Finnish Local and Regional Authorities.

Mr Johannes **Hahn** receives Ms Grete Faremo, Executive Director of the United

Nations Office for Project Services (UNOPS).

Mr Karmenu **Vella** delivers a speech at the [EUROCITIES launch event "Cities4Europe – Europe for citizens"](#), in Brussels.

M. Pierre **Moscovici** à Paris, France: rencontre M. Emmanuel Macron, Président de la République française; M. Werner Faymann, ancien Chancelier d'Autriche et Envoyé spécial de l'ONU pour l'emploi des jeunes; et M. Didier Migaud, Premier Président de la Cour des Comptes de la France.

Mr Christos **Stylianides** in Greece (until 10/05): in Kavala: meets Mr Theodoros Markopoulos, Vice-Prefect of Kavala; Ms Dimitra Tsanaka, Mayor of Kavala; Mr Dimitrios Bantekas, Rector and the academic community of the Eastern Macedonia and Thrace Institute of Technology; participates in a [Citizens' dialogue](#) about "Europe of Solidarity and the rescEU proposal to strengthen the European Civil Protection Mechanism".

Ms Věra **Jourová** receives Mr Mark Thompson, President and CEO of the New York Times Company.

Ms Margrethe **Vestager** in Berlin, Germany: meets Mr Peter Altmaier, Minister for Economic Affairs and Energy of Germany; Mr Olaf Scholz, Vice-Chancellor and Minister for Finance; and Mr Helge Braun, Head of the Federal Chancellery.

Mr Carlos **Moedas** in Lisbon, Portugal (until 11/05): participates in a working dinner hosted by Mr Marcelo Rebelo de Sousa, President of Portugal.

Mardi 08 mai 2018

President Jean-Claude **Juncker** in Namur, Belgium: addresses the Walloon regional Parliament; and meets Mr Willy Borsus, Minister-President of Wallonia.

President Jean-Claude **Juncker**, together with President Donald Tusk, meets Mr Jens Stoltenberg, Secretary-General of NATO, for a working dinner, in Brussels.

Mr Frans **Timmermans** in Antwerp, Belgium: delivers a speech at the Shoah Commemoration organised by the Forum of the Jewish Organisations.

Mr Frans **Timmermans** delivers a speech on "The Future of Europe" at a dinner event organised by CIVICO Europa organisation supporting democracy and citizenship, in Brussels.

Mr Andrus **Ansip** in Kigali, Rwanda: participates in ["Transform Africa Summit"](#).

Mr Valdis **Dombrovskis** in Riga, Latvia: meets Mr Edgars Rinkēvičs, Minister for Foreign Affairs of Latvia; Mr Arvils Ašerādens, Minister for Economics and Deputy Prime Minister; and Mr Raimonds Vējonis, President of Latvia.

Mr Karmenu **Vella** receives Mr Phil Wynn Owen, Member of the European Court of Auditors (ECA).

Mr Dimitris **Avramopoulos** in Halkida, Greece: participates in the Europe Day event organised by the Region of Sterea Ellada.

Mr Christos **Stylianides** in Thessaloniki, Greece: meets Mr Nikos Marantzidis, Professor in the Department of Balkan, Slavic and Oriental Studies at the University of Macedonia.

Mr Phil **Hogan** in Parma, Italy: delivers a speech at the [Origo, Geographical Indications Global Forum 2018](#).

Mr Carlos **Moedas** in Lisbon, Portugal: participates in a closing discussion session with Mr Diogo Queiroz de Andrade, Deputy Executive Editor of Público, at the [conference "Democracia 4.0"](#).

Mr Julian **King** delivers a speech at the Ambrosetti Club roundtable, at the European House Ambrosetti, in Brussels.

Mercredi 09 mai 2018

President Jean-Claude **Juncker** addresses the Flemish regional Parliament, in Brussels.

President Jean-Claude **Juncker** meets Mr Geert Bourgeois, Minister-President of Flanders, in Brussels.

Mr Maroš **Šefčovič** in Bratislava, Slovakia (until 10/05): participates in the [Europe Day 2018 Events](#).

Mr Valdis **Dombrovskis** in Riga, Latvia: meets member of the European Affairs Committee on the European Monetary Union (EMU); participates in a [Citizens' dialogue](#); and attends the concert on the occasion of [Europe Day in Latvia](#).

Mr Christos **Stylianides** in Athens, Greece: speaks at the high-level breakfast on "Europe in front of Strategic Dilemmas", organised by DIKTIO-Network for Reform in Greece and Europe; and visits the premises of the organisation "Smile of the Child".

Ms Věra **Jourová** in Prague, the Czech Republic (until 11/05): attends a meeting of the Czech government; a joint meeting of the EU Committee and Committee on the Budget of the Chamber of Deputies and the EU Committee of the Senate of the Parliament of the Czech Republic; delivers a keynote speech at the conference ["Artificial Intelligence as an opportunity for the Czech and European economy"](#); and a speech at a debate on the occasion of Europe Day.

Mr Tibor **Navracsics** in Budapest, Hungary: attends an event organised by the European Commission Representation on the occasion of Europe Day.

Ms Corina **Crețu** in Italy (until 11/05): in Rome: meets Pope Francis; delivers a closing speech at the Europe Event organised by the Representation of the European Commission; and attends a reception at the EU Delegation to Vatican.

Mr Carlos **Moedas** in Lisbon, Portugal: delivers a keynote speech at the conference “Youth and Europe” at the occasion of Cascais – European Capital of Youth 2018; and in the official celebration event of Europe Day.

Ms Mariya **Gabriel** in Sofia, Bulgaria: on the occasion of Europe Day – participates in a [Citizens’ dialogue](#) ; and attends an event organised by Victor Hugo and Alphonse De Lamartine schools, and the National Music School.

Jeudi 10 mai 2018

Mr Frans **Timmermans** in Aachen, Germany: attends the [Charlemagne Prize Ceremony](#).

Mr Maroš **Šefčovič** in Bratislava, Slovakia: meets Mr Richard Raši, Deputy Prime Minister for Investments and Informatisation; and representatives of the Slovak-German Chamber of Commerce.

Mr Valdis **Dombrovskis** in Riga, Latvia: participates in a working lunch with Mr Māris Kučinskis, Prime Minister of Latvia; and delivers a keynote speech at the conference [“New Challenges in Economic and Business Development – 2018: productivity and economic growth”](#).

Mr Christos **Stylianides** in Athens, Greece: meets Mr Dimitris Vitsas, Minister for Migration Policy of Greece; Mr Stergios Pitsiorlas, Deputy Minister for Investment and Development of Greece; and Ms Anni Podimata, former Vice-President of the European Parliament.

Ms Věra **Jourová** in Prague, the Czech Republic: participates in a [Citizens’ dialogue](#) on “Fake news and data leaks from social media. How is EU prepared for those challenges?”; meets Mr Josef Taušer, Dean of the Faculty of International Relations at the University of Economics; Mr Dušan Navrátil, Director of the National Cyber and Information Security Agency; and business and state administration representatives to discuss LGBTI (Lesbian, gay, bisexual, transgender and intersex); and delivers a keynote speech at the [Future Leaders Europe Evening Talks](#).

Ms Corina **Crețu** in Rome, Italy: meets Mr Nicola Zingaretti, President of Lazio Region (Italy); and visits the EU-funded project “Redevelopment of the public building ex G.I.L.”.

Mr Carlos **Moedas** in Lisbon, Portugal: delivers a keynote speech at the 30th anniversary of the Universidade Aberta.

Vendredi 11 mai 2018

President Jean-Claude **Juncker**, Ms Federica **Mogherini**, Mr Maroš **Šefčovič** and

Ms Corina **Crețu** in Florence, Italy: deliver speeches at “[The State of the Union](#)” conference, organised by the European University Institute.

Mr Johannes **Hahn** in Podgorica, Montenegro: on official visit on the occasion of Europe Day; and meets Mr Duško Marković, Prime Minister of Montenegro.

Mr Phil **Hogan** receives Mr Cathal Fitzgerald, Head of Food and Agricultural Investments for the Ireland Strategic Investment Fund at the National Treasury Management Agency; Mr Conor Mulvihill, Director of Dairy Industry Ireland; and Mr Joe Crockett, Chairman of the Dairy Sustainability Working Group.

Ms Věra **Jourová** in Prague, Czech Republic: meets representatives of the Government Office and Interior Ministry of the Czech Republic to discuss Fake News; speaks at a roundtable with stakeholders on the post-2020 Multiannual Financial Framework (MFF); meets Mr Vladimír Jirousek, President of the Czech Bar Association and Mr Antonín Mokrý, President of Council of Bars and Law Societies of Europe and Vice-President of the Czech Bar Association.

Ms Corina **Crețu** in Florence, Italy: participates in a [Citizens’ dialogue](#).

Mr Carlos **Moedas** in Lisbon, Portugal: attends a joint meeting at the Portuguese Parliament to discuss the post-2020 Multiannual Financial Framework (MFF) and participates in a meeting with Portuguese scientists organised by Mr Carlos Coelho, Member of the European Parliament on the Horizon Europe Programme.

Samedi 12 mai 2018

Mr Frans **Timmermans** in Paris, France: participates in [Citizens’ dialogue](#) together with Ms Nathalie Loiseau, Minister for European Affairs of France and Ms Sylvie Guillaume, Member of the European Parliament.

Ms Margrethe **Vestager** in Copenhagen, Denmark: delivers a keynote speech on international policy to members of Radikal Ungdom party (Young Social-Liberals).

CALENDRIER du 14 mai au 20 mai 2018

(Susceptible de modifications en cours de semaine)

Déplacements et visites

Lundi 14 mai 2018

General Affairs Council

EU-Algeria Association Council

Ms Federica **Mogherini** chairs the EU-Algeria Association Council.

Ms Federica **Mogherini** participates, together with Mr Michel Barnier, European Commission Chief Negotiator for Art.50 negotiations, in the event “The future of EU foreign, security and defence policy post Brexit” organised by the European Union Institute for Security Studies, in Brussels.

Mr Maroš **Šefčovič** receives Mr Karl-Heinz Lambertz, President of the European Committee of the Regions (CoR).

Mr Valdis **Dombrovskis** receives Mr Zhang Ming, Head of the Chinese Mission to the European Union.

Mr Johannes **Hahn** in Berlin, Germany: on official visit.

Ms Cecilia **Malmström** in Katowice, Poland: participates in the session on “The future of free trade in Europe and worldwide” at the [10th European Economic Congress](#).

Mr Karmenu **Vella** receives Ms Eva Kjer Hansen, Minister for Fisheries, Equality and Nordic Cooperation of Denmark.

Mr Vytenis **Andriukaitis** receives Ms Winnie Sorgdrager, leader of the Dutch investigating commission on fipronil.

Mr Vytenis **Andriukaitis** receives Presidents of the European Medical Organisations.

Ms Marianne **Thyssen** meets Mr Charles Michel, Prime Minister of Belgium, to discuss the EU Semester, in Brussels.

Ms Marianne **Thyssen** meets representatives of Social Partners at the Central Economic Council, in Brussels.

Ms Marianne **Thyssen** meets Mr Kris Peeters, Deputy Prime Minister and Minister of Employment, Economy and Consumer Affairs in charge of Foreign Trade of Belgium, in Brussels.

M. Pierre **Moscovici** participe au groupe de travail de haut niveau sur le future de l'Union européenne du Parti Socialiste Européen (PSE), à Bruxelles.

Mr Christos **Stylianides** delivers a speech at the 3rd International Conference on Victims of Ethnic and Religious Violence in the Middle East, in Brussels.

Ms Violeta **Bulc** in Nicosia, Cyprus: delivers a keynote speech at the [5th European Conference on Sustainable Urban Mobility Plans](#).

Ms Věra **Jourová** in Berlin, Germany (until 15/05): delivers a keynote speech at the [8th European Data Protection Days](#) conference; meets Ms Katherina Barley, Minister for Justice and Consumer Protection of Germany; Mr Martin

Wansleben, CEO of the Association German Chambers of Commerce (DIHK); Mr Klaus Müller, Executive Director of the Federation of German Consumer Organisations (VZBV); and Mr Helmut Teichmann, State Secretary at the Federal Ministry of the Interior, Building and Community.

Ms Corina **Crețu** in Florence, Italy: visits, together with Mr Dario Nardella, Mayor of Florence, the EU-funded project Florence tramway – Line 3.1.

Ms Margrethe **Vestager** participates in the 2nd Trilogue on European Competition Network (ECN+), in Brussels.

Ms Margrethe **Vestager** receives Mr Noel Curran, Director-General of the European Broadcasting Union (EBU).

Mr Julian **King** in Berlin, Germany (until 15/05): delivers a speech at the Symposium of the Federal Office for the Protection of the Constitution; meets Mr Horst Seehofer, Federal Minister for the Interior, Building and Community of Germany; and participates in the Extraordinary Session of the Committee for Internal Affairs of the German Bundestag.

Ms Mariya **Gabriel** in Cannes, France: attends the European Film Forum at the Cannes Film Festival: chairs a roundtable on the European film heritage; chairs debate with film makers and film professionals on the topic 'Women in the audiovisual sector'; delivers a keynote speech at the conference "Teaming-up for wider audiences"; meets Ms Françoise Nyssen, Minister for Culture of France; Mr Pierre Lescure, President of the Cannes Film Festival; representatives of the International Union of Cinemas; and Mr Christophe Tardieu, Director-General of the Centre national du cinéma et de l'image animée (CNC).

Mardi 15 mai 2018

EU-Tunisia Association Council

EU-Cuba joint ministerial meeting

President Jean-Claude **Juncker** receives Mr Christophe Deloire, Secretary-General of Reporters without Borders.

Mr Frans **Timmermans** and Mr Karmenu **Vella** participate in the public launch of the Plastics Pledge and deliver speeches, in Brussels.

Mr Frans **Timmermans** receives Mr Werner Faymann, United Nations' Special Envoy on Youth Unemployment.

Mr Frans **Timmermans** in Mechelen, Belgium: delivers a speech on the occasion of [Dag van de Rechtsstaat](#) (Day of the Rule of Law).

Ms Federica **Mogherini** chairs the EU-Tunisia Association Council, in Brussels.

Ms Federica **Mogherini** co-chairs the first EU-Cuba joint ministerial meeting,

in Brussels.

Mr Andrus **Ansip** in Katowice, Poland: participates in the [10th European Economic Congress](#).

Mr Maroš **Šefčovič** in Vienna, Austria: participates in and delivers a keynote speech at the [R20 Austrian World Summit](#).

Mr Jyrki **Katainen** receives Mr Laurent Zylberberg, President of the Association European Long-Term Investors (ELTI).

Mr Jyrki **Katainen** delivers a keynote speech at the high-level conference on [“Sustainability in Europe”](#), in Brussels.

Mr Jyrki **Katainen** delivers a speech at the [Energy Forum 2018 of the International Federation of Industrial Energy Consumers](#) (IFIEC Europe), in Brussels.

Mr Johannes **Hahn** participates in the EU-Tunisia Association Council, in Brussels.

Mr Johannes **Hahn** receives students from the Ukrainian Leadership Academy.

Mr Johannes **Hahn** receives Mr Enver Hoxhaj, Deputy Prime Minister of Kosovo.

Mr Neven **Mimica** participates in the first EU-Cuba joint ministerial meeting, in Brussels.

Mr Miguel **Arias Cañete** in Katowice, Poland: participates in the [10th European Economic Congress](#); meets Ms Jadwiga Emilewicz, Minister for Entrepreneurship and Technology; Mr Krzysztof Tchórzewski, Minister for Energy; Michał Kurtyka, Deputy Minister for Energy and Under-Secretary of State; and Mr Piotr Naimski, Secretary of State at the Ministry of Energy.

Mr Vytenis **Andriukaitis** receives Mr Rolf Müller, Director of the Helmholtz-Institute for Pharmaceutical Research Saarland.

Mr Vytenis **Andriukaitis** receives stakeholders on Health Technology Assessment.

Mr Vytenis **Andriukaitis** receives Mr Francesco Pigliaru, President of the Sardinia region.

Mr Dimitris **Avramopoulos** delivers the keynote speech at the European Migration Network's 10 year anniversary event [“Understanding Migration in the EU: past, present, future”](#), in Brussels.

Ms Marianne **Thyssen** receives representatives of the European Transport Workers' Federation.

Ms Marianne **Thyssen** delivers a welcome speech at the [60th Year Celebration of the International Day of Families](#), in Brussels.

M. Pierre **Moscovici** en France: à Paris: rencontre des Présidents des régions

de la France; à Tours: participe à une [Dialogue avec les citoyens](#) au lycée Jean Monnet sur la mobilité des jeunes; visite le Centre d'Etudes et de Recherches Techniques pour l'Industrie Mécanique (CERTIM); l'Association pour le Droit à l'Initiative Economique (ADIE); et rencontre 300 acteurs économiques au Centre de création contemporaine Olivier Debré.

Mr Christos **Stylianides** meets members of the International Relations Committee, the Federal Advisory Committee for EU Affairs and the Interior Committee of the Federal Parliament of Belgium; and Mr Alexander De Croo, Deputy Prime Minister and Minister for Development Cooperation of Belgium.

Mr Christos **Stylianides** receives Mr Constantinos Yiorkadjis, Mayor of Nicosia.

Ms Violeta **Bulc** in London, the United Kingdom: meets transport investors; and delivers a keynote speech at the [FT Future of the Car Summit](#).

Ms Elżbieta **Bieńkowska** receives Mr Marco Fuchs, CEO and Chairman of the Managing Board of OHB System A.G.

Ms Elżbieta **Bieńkowska** receives representatives of BlaBlaCar.

Ms Elżbieta **Bieńkowska** delivers a speech at "Growing the Greek tourism sector with digital – the case of Google" event, at the European Parliament, in Brussels.

Ms Věra **Jourová** in Berlin, Germany: attends the Extraordinary Session on Legal Affairs and Consumer Protection of the German Bundestag; meets Bundestag Members; Mr Peter Altmaier, Minister for Economic Affairs and Energy; and Ms Dorothee Bär, State Minister for Digitalisation.

Mr Tibor **Navracsics** in Rome, Italy: participates in and delivers a speech at the international conference „Shrines and pilgrim-routes in Central-Eastern Europe" at the Accademia d'Ungheria.

Ms Corina **Crețu** receives Mr Tony Murphy, Member of the European Court of Auditors (ECA).

Ms Corina **Crețu** receives Mr Emil Boc, Mayor of Cluj-Napoca (Romania).

Ms Margrethe **Vestager** in Copenhagen, Denmark: delivers a speech at a roundtable at the Copenhagen Fashion Industry Summit; meets Ms Karen Haekkerup, CEO of the Danish Agriculture and Food Council; and Ms Pernille Skipper, Leader of the Red/green Alliance.

Mr Julian **King** delivers a speech at the Transatlantic Policy Network (TPN) roundtable, in Brussels.

Mercredi 16 mai 2018

College meeting

President Jean-Claude **Juncker** receives Mr António Guterres, Secretary-General of the United Nations (UN).

President Jean-Claude **Juncker**, together with the College of Commissioners, receives Mr António Guterres, Secretary-General of the United Nations (UN) in the meeting of the College.

President Jean-Claude **Juncker** holds a joint press point with Mr António Guterres, Secretary-General of the United Nations (UN).

Mr Frans **Timmermans** delivers a keynote speech at a High-Level discussion on Plastics, at the European Parliament, in Brussels.

Mr Andrus **Ansip** receives Ms Sharon White, Chief Executive of Ofcom.

Mr Jyrki **Katainen** delivers a keynote speech at the [9th Annual Internet of Things European Summit](#), in Brussels.

Mr Karmenu **Vella** delivers a speech at the high-level event “Can the Blue Economy Save Our Ocean?”, co-organised by the World Wide Fund for Nature (WWF) and Sky, in Brussels.

Ms Marianne **Thyssen** attends the opening of the first meeting of the European Labour Authority (ELA) Advisory Group, at the European Commission, in Brussels.

M. Pierre **Moscovici** reçoit M. Lars Klingbeil, Secrétaire général du Parti social-démocrate d'Allemagne.

M. Pierre **Moscovici** reçoit membres du Conseil exécutive de la Chambre de Commerce des Etats Unis auprès de l'Union Européenne.

Ms Věra **Jourová** delivers the opening speech at the conference on “[Freedom of Expression: Who draws the line?](#)” organised by EURACTIV, in Brussels.

Mr Tibor **Navracsics** in Louvain-la-Neuve, Belgium: meets Mr Jacques Borlée, former Belgian athlete, together with Mr Vincent Blondel, Rector of the Université Catholique de Louvain; participates in a panel of academics; and delivers a speech at a conference on Sport Policy, organised by the Université Catholique de Louvain.

Ms Corina **Crețu** receives Mr Alberto Núñez Feijóo, President of the region of Galicia (Spain).

Mr Julian **King** in London, the United Kingdom (until 17/05): delivers the dinner speech at the [Centre for European Reform \(CER\)](#) and attends the Aspen Institute, Chatham House International Dialogue.

Ms Mariya **Gabriel** in Sofia, Bulgaria: delivers speech and awards laureate certificates at the [ALLEA General Assembly Business Meeting 2018](#); delivers the opening speech at the conference “The Balkans in the European integration

– past, present and future” at Sofia University St. Kliment Ohridski.

Jeudi 17 mai 2018

EU-Western Balkans Summit in Sofia, Bulgaria

President Jean-Claude **Juncker** and Ms Federica **Mogherini** in Sofia, Bulgaria: participate in the [EU-Western Balkans Summit](#).

Ms Federica **Mogherini** in Sofia, Bulgaria: delivers an opening address at the Strategic Dialogue on the Western Balkans hosted by the World Economic Forum and the Bulgarian Presidency of the Council of the EU.

Mr Maroš **Šefčovič** in Bratislava, Slovakia (until 18/05): participates in panel debates and in a City Talk at the [GLOBSEC Bratislava Global Security Forum](#).

Mr Jyrki **Katainen** attends a working breakfast with the investors of the Blue Economy Business and Science Forum “[Blue Invest 2018](#)”, in Brussels.

Mr Jyrki **Katainen** receives Mr Keijo Hämäläinen, Rector of the University of Jyväskylä, Finland

Mr Jyrki **Katainen** receives Mr Kimmo Mäki, CEO of Finavia; and Mr Olivier Jankovec, Director-General of the European Region of the Airports Council International (ACI Europe).

Mr Johannes **Hahn** in Sofia, Bulgaria: attends the [EU-Western Balkans Summit](#).

Mr Karmenu **Vella** participates in a breakfast meeting with blue economy investors ahead of the “Blue Invest 2018” forum, in Brussels.

Mr Karmenu **Vella** delivers an opening speech at the Blue Economy Business and Science Forum “[Blue Invest 2018](#)”, in Brussels.

Mr Karmenu **Vella** participates in the [Natura 2000 Awards Ceremony](#), in Brussels.

Mr Vytenis **Andriukaitis** in Dubrovnik, Croatia: participates in the 60th Annual General Assembly of the Liaison Centre for the Meat Processing Industry in the European Union (CLITRAVI).

Ms Marianne **Thyssen** in Paris, France: attends and delivers the concluding remarks at the high-level conference, organised by the International Labour Organization (ILO), in cooperation with the European Commission, on industrial relations and fostering equality at work and cross-country convergence.

Ms Elżbieta **Bieńkowska** in Bucharest, Romania: on official visit.

Ms Věra **Jourová** speaks at the General Assembly of the European Consumer Organisation (BEUC), in Brussels.

Mr Tibor **Navracsics** receives high-level representatives of the American Chamber of Commerce to the EU (AmCham).

Ms Corina **Crețu** in Chișinău, Moldova (until 18/05): meets Mr Liviu Volconovici, Minister for Agriculture, Regional Development and Environment of Moldova; participates in a working lunch with Mr Iurie Leancă, Deputy Prime Minister for European Integration and Mr Tudor Ulianoschi, Minister for Foreign Affairs and European Integration; and meets Mr Pavel Filip, Prime Minister of Moldova.

Mr Carlos **Moedas** receives Mr Pascal Lamy, former Director-General of the World Trade Organisation (WTO) and former European Commissioner for Trade.

Mr Carlos **Moedas** delivers a keynote speech at the conference “Science and Innovation – open to the world. Strengthening cooperation through the 9th Framework Programme”, at the European Parliament, in Brussels.

Mr Carlos **Moedas** receives Mr Stephen Toope, Vice-Chancellor of the University of Cambridge.

Mr Julian King in London, the United Kingdom: participates in the Aspen Institute, Chatham House International Dialogue.

Vendredi 18 mai 2018

Mr Maroš **Šefčovič** in Bratislava, Slovakia: participates in panel debates at the [GLOBSEC Bratislava Global Security Forum](#).

Mr Jyrki **Katainen** attends a working lunch with representatives of VITAKO, the support association of the Lappeenranta University of Technology, in Brussels.

Mr Günther H. **Oettinger** in Denmark: on a tour to gather views on the Future of EU finances and the post-2020 Multiannual Financial Framework (MFF).

Mr Dimitris **Avramopoulos** in Thessaloniki, Greece: delivers a speech at the Supreme Joint War College.

Ms Elżbieta **Bieńkowska** in Stockholm, Sweden: on official visit.

Ms Věra **Jourová** receives Ms Evelyne Paradis, Executive Director of ILGA-Europe.

Ms Corina **Crețu** in Chișinău, Moldova: participates in a meeting on the Danube Strategy and Priority Axis People and Skills; delivers a public lecture together with Mr Pavel Filip, Prime Minister of Moldova; meets Mr Marian Lupu, leader of the Democratic Party of Moldova (DPM) and co-chair of the Euronest Parliamentary Assembly (Euronest PA); Ms Zinaida Greceanii, leader of Party of Socialists of the Republic of Moldova (PSRM) and former Prime Minister of Moldova; and Ms Maia Sandu, President of the Action and Solidarity Party.

Mrs Mariya **Gabriel** in Sofia, Bulgaria: delivers a speech at [Vienna Economic](#)

[Forum – Sofia talks 2018.](#)

Samedi 19 mai 2018

Mr Frans **Timmermans** participates with European Commission staff in the Belgian Pride Parade, in Brussels.

Mr Karmenu **Vella** in Kranj, Slovenia: delivers an opening speech at the [International Ministerial Conference on Bees and Pollinators](#).

Mr Christos **Stylianides** in Larnaca, Cyprus: participates in the [Climate change International Conference in the Mediterranean and the Middle East: Challenges and Solutions](#), organised by the Cyprus Institute.

Prévisions du mois de mai:

22/05 Foreign Affairs Council (Trade)

22/05 Foreign Affairs Council (Development)

22-23/05 Education, Youth, Culture and Sports Council

24/05 Eurogroup

25/05 European Economic Area Council

28/05 Foreign Affairs Council

28-29/05 Competitiveness Council

Permanence DG COMM le WE du 05 et 06 mai 2018:

Carlos MARTIN RUIZ DE GORDEJUELA: +32 460 79 17 16

Permanence RAPID – GSM: +32 (0) 498 982 748

Service Audiovisuel, planning studio – tél. : +32 (0)2/295 21 23

[Vítor Constâncio: Past and future of the ECB monetary policy](#)

Speech by Vítor Constâncio, Vice-President of the ECB, at the Conference on “Central Banks in Historical Perspective: What Changed After the Financial Crisis?”, organised by the Central Bank of Malta, Valletta, 4 May 2018

This is the full text of a speech delivered in abridged form at the Central Bank of Malta on 4 May.

Ladies and Gentlemen,

It is a pleasure to be here today and participate in this celebratory event for the 50th anniversary of the Central Bank of Malta. In accordance with the conference theme, I would like to take this opportunity to adopt a historical perspective and offer some reflections on monetary policy in the euro area over the past two decades. I will start with a review of the ECB journey from 1999 to date, to highlight the evolution of the practice of monetary policy in the euro area over this period. I will then draw some lessons from this experience, both for economic thinking and monetary policy making.

The ECB journey

As you all know, the Treaty on the European Union defines the contours of monetary policy in the euro area. According to Article 127 of the Treaty, price stability is the primary objective of monetary policy in the euro area. It is only without prejudice to the objective of price stability that monetary policy can support the general economic policies in the Union. This high-level mandate enshrined in the Treaty is the cornerstone of all ECB decisions and has remained unchanged over its two decades of existence.

Within the boundaries of the Treaty, however, the practice of monetary policy in the euro area has undergone a process of transformation over time. While the transformation has often been gradual, four key phases can be clearly identified.

First Phase: Monetary policy beginning and adjustment (1999-2003)

The first phase starts with the launch of the single currency and lasts until the revision of the monetary policy strategy in May 2003, when the weight of the monetary pillar and the “dominant role of money” were demoted and the framework got closer to the flexible inflation targeting regime adopted by many other central banks around the world.

In the preparation for monetary union, a document published in 1997 by the ECB predecessor, the European Monetary Institute, explained why both a monetary aggregates targeting strategy and an inflation targeting regime were not considered fully appropriate for the euro area.^[1] The first regime, which

was followed by the Bundesbank, in a tradition that understandably exerted a crucial influence on the initial ECB decisions, was refused for the practical reason that money demand functions at the European level would not be stable enough to allow for a reliable calibration of a M3 target. The refusal of pure inflation targeting was justified by the theoretical reason that it did not allow a role for money.

One of the first decisions of the Governing Council, already in 1998, was to announce the adoption of a “stability-oriented monetary policy strategy” to attain the goals set out in the Treaty. The strategy was a sort of hybrid based on the two main strategies previously examined and characterised by the following key elements, as described in the ECB’s Monthly Bulletin of January 1999: “The strategy consists of three main elements: (i) a quantitative definition of the primary objective of the single monetary policy, namely price stability; and the “two pillars” of the strategy used to achieve this objective: (ii) a prominent role for money, as signaled by the announcement of a reference value for the growth of a broad monetary aggregate; and (iii) a broadly based assessment of the outlook for future price developments and the risks to price stability in the euro area as a whole.”

There was clearly a dominant first pillar with a reference value initially set at 4.5% growth rate for M3. The text further explained: “To signal the prominent role it has assigned to money, the Governing Council has announced a quantitative reference value for monetary growth as one pillar of the overall stability oriented strategy”. So, some trace of technical monetarism^[2] was implicitly present. In 2006, explaining the origin of the “two pillars”, Otmar Issing quoted former President Wim Duisenberg’s reply to a question by a journalist in 1999: “it is not a coincidence that I have used the words that money will play a prominent role. So, if you call it the two pillars, one pillar is thicker than the other is or stronger than the other, but how much I couldn’t tell you”.^[3]

The reference value for the monetary aggregate M3 was considered a relevant variable for inflation assessment and was related to the theoretical approach of technical monetarism in that money predicts inflation and differs from credit or other aggregates. The reference value for M3 annual growth was calculated to be 4.5% and was used to produce a monetary overhang: the difference between actual M3 growth and the reference value, with higher numbers representing higher risks for medium term inflation.

The monetary policy framework announcement sparked a lively debate in the academic community, regarding the differences between the ECB approach and the inflation targeting regime.^[4] There were criticisms about the ambiguity of having two seemingly different approaches, one close to monetary targeting (the reference value) and another related to a public commitment of a quantified inflation target (less than 2%), an element of utmost importance in an inflation targeting regime.

The sobering experience of the following few years with the framework, determined the need for clarifications and ultimately for a revision of the strategy. Since 2001 the growth of M3 started to accelerate to values well above the 4.5%, registering 10.9% in December 2001 and in December 6.6% in

2002^[5]. It thus suggested significant risks for inflation that the behavior of prices did not show, even when considering meaningful lags. In fact, the money demand function became clearly unstable since 2001 and did not justify the use of a concept like the reference value referring to the medium-term of up to two years which is the operational horizon for monetary policy decisions.^[6] The continuous need to try to explain away the growing monetary overhang without corresponding inflation in the horizon, was turning into an embarrassing exercise.

Consequently, in May 2003, the ECB published a review of the monetary policy framework including the following elements. First, the medium-term target for inflation was redefined to a value “below but close to 2%”; second, the presentation of the monetary policy decisions would start with the “economic analysis to identify short- to medium-term risks to price stability”; third, the monetary analysis would “mainly serve as a means of cross-checking, from a medium- to long-term perspective, the indications coming from the economic analysis; fourth, the review of the reference value on an annual basis was dropped. While still at 4.5%, the reference value has, in fact, not been mentioned or used since then. The monetary pillar became thinner.

Finally, in June 2004 the ECB started publishing its staff macroeconomic projections for the euro area. In my assessment, the decisions taken in 2003 and 2004 were important steps towards a higher degree of transparency and accountability and made the ECB strategy even more aligned with inflation targeting. I therefore believe that the ECB’s monetary policy strategy can be seen as consistent with the broad features of flexible inflation targeting as described in Svensson (2008). It includes: first, an announced numerical inflation target; second, monetary policy decisions that make the inflation forecast published by the central bank, converge to this numerical target, and third, a high degree of transparency and accountability.^[7] Naturally, this does not mean that all central banks do not look at what is happening with monetary aggregates, especially credit, as they have information content. In the same way, central banks also follow general financial conditions. In both cases, however, central banks cannot extract quantitatively precise calibration on what will happen to inflation from those monetary and financial variables.

Second Phase: Monetary policy until the financial crisis (2003-2007)

The period spanning from the revision of the monetary strategy to the beginning of the crisis in 2007 coincided with the build-up of macroeconomic imbalances in several member countries. With hindsight, the ECB has been criticised for not helping prevent that development. I do not agree with such criticism as it ignores that a single monetary policy cannot cater for heterogeneity across member states.

Rates were increased in December 2005 as there was evidence that strong growth was contributing to a rise in inflation above 2%, with a rate of 2.5% in the third quarter of that year. Curiously, the interest rate decision was criticised at the time by a number of commentators^[8] and even by some policy

institutions. However, the IMF's economic outlook of April 2005 considered that monetary policy in the euro area "should remain firmly on hold".^[9] A similar recommendation was issued by the OECD in November 2005.^[10] With the benefit of hindsight, most observers now agree that the tightening decision in December 2005 was appropriate.

Let me emphasise however, that this conclusion does not imply that monetary policy interest rates are the best tool to respond to financial imbalances with what is called "leaning against the wind" policy. I do not believe that monetary policy should be normally used to prevent the build-up of financial imbalances. The main reason is that, due to the imperfect synchronisation of financial and business cycles, leaning against the wind would pose an intertemporal trade-off in achieving price stability.^[11] More precisely, "leaning against the wind" requires intentionally producing deviations from price stability over the short- to medium-term, as a precautionary move against the risk of a future financial crisis. Its benefit would be to help prevent potentially larger deviations from price stability over the medium- to long-term, once the financial crisis occurs. The risks of this approach are to increase the amplitude of business cycle fluctuations and hinder the credibility of the central bank regarding its inflation objective, while only marginally reducing the probability of financial crises.

My conclusion is that the costs of "leaning against the wind" are likely to exceed benefits as I illustrated in a recent intervention applying the methodology developed by Lars Svensson to the euro area.^[12] Macroprudential policy should be the main policy tool to respond to the build-up of financial imbalances. In this respect, the fact that monetary policy "gets in all the cracks" of the financial system was seen as an advantage by Jeremy Stein. However, it can easily become a significant inconvenience if it creates an unnecessary recessionary episode or when in a monetary union, a financial instability episode is not generalised across all countries.^[13]

Indeed, some influential authors have pointed out that a tightening of monetary policy could, in some cases, even boost the bubbly component of stock prices, or increase house price imbalances through debt deflation effects.^[14] This requires strong macroprudential policies to complement monetary policy in order to achieve both price and financial stability.

The Third Phase: Global financial crisis and Great Recession (2008-2013)

The third phase marks an abrupt change in euro area monetary policy. It can be identified as a result of the financial crisis of 2007, and especially its intensification after the bankruptcy of Lehman Brothers in September 2008. However, in July 2008, overreacting to a reading of 4% in headline inflation related to oil price developments we took the controversial decision to increase the policy rate to 4.25%. Following the dramatic effects of the Lehman bankruptcy, rates were subsequently cut three times to a level of 2.5% in December 2008. A broad policy of liquidity provision to the banking sector replacing auctions by the fixed rate full allotment regime was introduced in October and kept until this day.

The operational approach was to calibrate each measure to address the specific market impairment prevailing at that point. For example, liquidity was provided at much longer maturities than usual to help alleviate tensions exacerbating the maturity mismatch on the banking sector's balance sheet. The list of eligible collateral was also expanded to ease the shortages that emerged during the crisis.

A direct implication of the activity of eased liquidity provision to the market was the increase in the size of the ECB balance sheet. The increase in financial institutions' demand for ECB liquidity led to a progressive, and sizable, increase in bank reserves. This was accentuated by the effects of the SMP programme under which the ECB boldly intervened since 2010 with purchases of government bonds of countries where monetary policy transmission had been severely impaired as a result of excessive market pressures. Between 2007 and mid-2012, the size of the ECB's balance sheet more than doubled. Clearly, the larger balance sheet was then not the objective of our non-standard measures, but rather the result of the lender of last resort function to the market. Indeed, as the funding situation in the banking sector started improving in mid-2012, the ECB balance sheet slowly began to contract without any adverse effects.

Some commentators were nevertheless concerned by the increasing size of the ECB balance sheet. Based on the high long-run correlation between inflation and money growth, they interpreted the huge growth in the ECB monetary base as a signal of future high inflation risks. These fears obviously disregarded three things: first, no theory of inflation is directly related with the central bank's balance sheet; second, the relationship between the monetary base and the broad monetary aggregates is unstable and, in fact, during that period monetary aggregates did not increase in response to the expansion of central bank liquidity; third, that the crisis implied a shock to money demand that totally disrupted any potential relationship between monetary aggregates and inflation. This assessment has been vindicated by subsequent developments. Almost ten years after the initial increase in size of the ECB balance sheet, the problem in the euro area remains one of too low, rather than too high, inflation.

In the opposite direction, concerns were also voiced about the reduction in the ECB's balance sheet size beginning in 2012 and a possible link to the recession and low inflation period that followed. This view is compounded by the criticism of the two policy rate increases in April and July of 2011, taking it from 1% to 1.5%. This episode and the double dip in growth deserve therefore further comment. Those rate increases came on the wake of developments in the first half 2011, showing economic growth slightly above 2% and with inflation attaining 2.75 % in the second quarter. We were also overly influenced by growth forecasts which turned out to be excessively optimistic. Blanchard and Leigh, who also point out that many other forecasting institutions made recurring errors on euro area growth during this period, make an independent validation of this hypothesis in their 2013 paper.^[15] The authors argue that this is due to an underestimation of fiscal multipliers, which in turn led to an underestimation of the contractionary effects of the fiscal consolidation plans announced in early 2010.

With hindsight, it is now clear that increasing interest rates during this phase was premature. The economy weakened markedly after the summer, on the wake of the acute market pressures on the sovereign debt of Spain and Italy that led to a second round of interventions in the sovereign bond markets under the Securities Market Programme (SMP). The two consecutive rate hikes were quickly reversed in November and December of that same year. In view of the long lags of monetary policy effects, it is obvious that the quick succession of increases and reductions of policy rates cannot be responsible for the recessionary episode of that period. What really was responsible for the recession of 2012/2013 was the coordinated fiscal consolidation in which all member states engaged. A working paper published by the European Commission estimated that collective fiscal consolidation led to cumulative deviations from the baseline growth in 2011-2013 from 8% in Germany to 18% in Greece.^[16] Another paper finds a loss deviation from baseline between 14% to 20%, for the euro area GDP during the same period.^[17]

Monetary policy continued to help the situation when, at the end of 2011, the ECB introduced two three-year longer-term refinancing operations implemented in December 2011 and February 2012 amounting to EUR 1 trillion. This measure and the correction of the two rate hikes contributed to attenuate the severity of the 2012 recession.^[18] The announcement of the Outright Monetary Transactions (OMT) programme in 2012 further contributed to preventing an even worse deterioration of economic conditions by removing redenomination risk, which had become an important source of macroeconomic uncertainty. The programme facilitated an ease of tension in all financial markets, which was accompanied by a slow, but progressive return of spreads towards normal levels. Altogether, with the second round of sovereign bond purchases in 2011, the liquidity supplied at end-2011 and the OMT announcement, the ECB put an end to the euro area acute existential crisis.

The Fourth Phase: ultra-low inflation and QE (2014-today)

This brings me to the fourth and current phase of monetary policy in the euro area. In 2013, the euro area recovery had not yet gained traction. In spite of the ultra-low level of interest rates, renewed deflationary risks emerged with a progressive fall of inflation towards levels significantly below 2 percent. In contrast with the previous five years, financial disruptions could no longer be responsible for the economic slowdown. The coincident reduction of output and inflation suggested that the renewed economic weakness was driven by a negative aggregate demand shock. In turn, the negative demand shock could be the delayed result of the fiscal policy tightening since 2010, or possibly the consequence of weakened economic sentiment after two recessions.^[19]

Maintaining price stability in the face of insufficient aggregate demand and downward inflationary pressures required a more expansionary monetary policy stance. In response to these developments, a new phase in non-standard measures was launched, including increasing the balance sheet with asset purchases. The new non-standard policies were not merely expected to undo any

remaining financial market impairments, but to further ease the monetary policy stance at a point where policy rates had reached their lower bound. In July 2013, in response to the contagion of increased bond yields resulting from the “taper tantrum” in the U.S., the ECB had already introduced the non-standard policy of forward guidance, indicating its intention to keep interest rates at prevailing or lower levels “for an extended period of time”. As inflation continued to decelerate from October 2013, falling under 1%, a comprehensive package of expansionary measures^[20] was announced in June 2014 including: a cut in policy rates and a negative deposit facility rate; two asset purchase programmes for asset backed securities (ABS) and covered bonds (CBPP), and a facility to provide longer-term funding to banks for new loans, contingent on bank credit supply behaviour, which we refer to as targeted longer-term refinancing operations (TLTRO). In January 2015, the large-scale asset purchase programme (APP) was extended to include purchases of sovereign bonds.

A growing number of studies about the impact of APP suggest that the programme was effective in lowering spreads on long-maturity assets and thereby boosting inflation and growth.^[21] These studies also highlight that the APP announcement contributed to a re-anchoring of inflation expectations by reversing their previously observed decline. From a simpler perspective, we can state today that three years of large-scale asset purchases have eliminated the risk of prolonged deflation. This fact is incontrovertible and should be admitted by both the early APP critics and those who claimed it was unnecessary.^[22] Nevertheless, we should remain aware that the precise channels of transmission of Quantitative Easing (QE) are still imperfectly understood and they do not relate to technical monetarism. I think that making progress in our theoretical understanding of QE remains an important research priority for central banks, especially in view of the possibility that nominal interest rate will be more persistently low in the future, and thus that the effective lower bound constraint will be hit more frequently.

A particular aspect of QE programmes that needs to be investigated further regards its distributional effects. As an instrument of monetary policy accommodation, the APP led to an increase in economic activity, which was especially beneficial for those individuals who, as a result, found a job after being unemployed. At the same time, the APP increased the value of financial assets and thus led to capital gains for the holders of those assets. Improving our understanding of the relative strength of these distributional effects is also an important priority for central banks. Ongoing work at the ECB suggests that the decline in unemployment that followed the introduction of the APP had a disproportionately positive impact on low-income households.^[23] The net overall impact of APP has therefore reduced income inequality. Furthermore, as a result of housing price increases associated with the economic recovery, the same positive outcome took place with respect to wealth distribution.

Implications for the future

The ECB journey that I have recalled here can give rise to two obvious questions. The first one relates to economic analysis: were the mainstream

macroeconomic models used before the crisis appropriate to help guide policy decisions, or should these be changed? The second question relates to the monetary policy strategy: should lessons' learnt in the journey be reflected in a change of central banks' monetary policy strategies?

Implications for macroeconomics and monetary theory

Let me start with the first question. The shortcoming of mainstream macroeconomics and of the type of Dynamic Stochastic General Equilibrium (DSGE) models that prevailed before the crisis, are by now quite well known.^[24]

Besides extending DSGE models to include macro-financial linkages, the ECB decided to develop a new Multi-Country model starting from the premise that, in the words of Olivier Blanchard, "policy models" cannot be expected to have the same tight structure as "theory models".^[25] A semi-structural approach along the lines of the Federal Reserve's FRB/US model has been adopted.^[26] We can therefore put more emphasis on the model's ability to provide sound quantitative predictions. When introducing financial frictions, we have relied on a reduced form representation that is consistent with different theoretical micro-foundations. This more flexible, semi-structural approach allows us to model a wide range of banking and financial variables, going from bank lending spreads to term premia, without taking a stance on the theoretical fundamental debate about how they are linked to the macroeconomy.^[27]

A crucial theoretical aspect which requires improvement is related to the Phillips curve, the most commonly used empirical model of inflation that faces several estimation problems as it uses several unobservable variables.^[28] It started as a relationship between wage growth and unemployment and later, prices or inflation substituted wages. In 1967-8, Phelps and Friedman introduced expectations as a variable that shifted the previously considered stable relationship. Jointly with this change, Friedman added the concept of a fixed Natural Rate of Unemployment (NARU), determined only by supply factors, to which the economy would tend in the long-term. The difference between actual unemployment and this long-term unemployment rate became the variable used as proxy for demand pressure in the market of goods and services, seen as the main theoretical cause of inflation. Inflation was an excess demand phenomenon and demand could be controlled by monetary policy – via monetary aggregates for Friedman or with interest rates, as believed today. In practice, estimates of a Non-Accelerating Inflation Rate (NAIRU) are what is obtained instead of the unobservable long-term NARU, which are doubtfully deemed to be the same.

In the late 1970s, two different research approaches emerged, thus characterised by Robert Gordon^[29]: "The left fork in the road,... is the resurrection of Keynesian economics in the form of a ... Phillips Curve (PC) model that incorporates long-run neutrality and an explicit role of supply shocks in shifting the Phillips Curve up or down, together with an interpretation of the influence of past inflation as reflecting generalized inertia rather than expected inflation. The right fork in the road of the

post-1975 evolution, features an approach developed by Kydland, Prescott and Sargent, and more recently by Galí and Gertler and others. Inflation depends on forward-looking expectations, and expectations respond rationally to actual and expected changes in monetary and fiscal policy. This two-way game has no room for supply shocks or inertia". This second approach produces what is called the New Keynesian Phillips Curve (NKPC) that basically focuses on the output gap and expectations and is a crucial part of the DSGE models, where the interest rate is all-powerful to control demand and therefore inflation.

Gordon and others forged ahead with the first approach, adding variables representing supply shocks (as prices depend on demand and supply factors), inertia represented by long lags of inflation and a time-varying NAIRU determined by a simple stochastic process. To this day, using this so-called "triangle approach", Gordon continues to obtain very good results in predicting inflation out-of-sample^[30]. In 2013, Gordon shows that his model "can estimate coefficients up to 1996 and then in a 16-year-long dynamic simulation, with no information on the actual values of lagged inflation, predict the 2013 value of inflation to within 0.5 percentage point. The slope of the PC relationship between inflation and the unemployment gap does not decline by half or more as in the recent literature, but instead is stable."

This last aspect is particularly important as it highlights one of the puzzles found in the second approach of the NKPC, since Roberts^[31] obtained the result of a 50% decline in the slope coefficient for the U.S. in 2006. As is to be expected, the value of that coefficient depends on the entire specification of the regression. When it does not use supply-side variables, assumes inflation lags with coefficients that add to 1, and a constant NAIRU, as in the NKPC specified by Roberts, it is natural that the low inflation environment of the period shows up in a declining slope coefficient.

The problem is that the NKPC did not perform empirically well from the start. Many ad-hoc remedies have been tried in order to make it work, even when they did not conform to the pure theoretical paradigm of the model. First, lags of inflation were introduced by Galí and Gertler (1999) to create the so-called hybrid NKPC.^[32] This hybrid model has faced many difficulties in predicting inflation with acceptable accuracy, even when embedded in DSGE models. As I mentioned in another intervention^[33]: "As King and Watson (2012)^[34] highlight when using the labour income share or unit labour costs the models do not capture that the last 15 years do not show a co-movement of inflation with the significant decline of those ULCs". Gürkaynak, Kisacikoglu and Rossi (2013)^[35] also illustrate the subpar performance of DSGE models to forecast inflation. In their encompassing survey, Mavroeidis, Plagborg-Møller and J. Stock (2014)^[36], also conclude that, "we are unable to pin down the role of expectations in the inflation process sufficiently accurately for the results to be useful for policy analysis".

Many other transformations have been attempted to make variants of the hybrid model perform better. One way is to focus on core inflation on which the missing supply factors may be less important. Another approach is to take expectations from consumer surveys or professional forecasters, which of

course are not microfounded.^[37] In some estimates, the price of oil or the full price of imports is introduced as an ad-hoc element within the paradigm. Time-varying coefficients and NAIRUs are also used. So, pragmatically adjusted, hybrid NKPCs can be made to work, especially for core inflation. This specification is quite distant from the initial pretensions of the NKPC and from rationale of DSGE models where everything is microfounded and subject to rational expectations. The two strands of the literature identified by Robert Gordon seem to have undertaken some convergence.

An important source of the Phillips curve's poor performance can be the mis-measurement of the output gap and the NAIRU. An important part of the under-prediction of inflation in recent years may be the result of an underestimation of the slack in the economy. This is illustrated by the fact that we better predictions of inflation can be obtained when the broad concept of unemployment is used (e.g. U6, which is at 16% for euro area) instead of the usual measure of unemployment (standing at 8%). Usual measures of slack can vary substantially across methods and chosen variables, although they tend to agree on the timing of peaks and troughs.

The fact that economic activity is multidimensional suggests that there might be advantages in using large dynamic models to estimate it. For instance, ECB staff used a dynamic factor model that performs a trend/cycle decomposition of real activity variables and core inflation.^[38] Using different sets of variables and trend assumptions, they get different measures of the output gap. One way to discriminate among different estimates of the output gap is to check their ability to forecast inflation. It turns out that the variants associated with a continuation of a positive growth trend, implying a wider output gap, are the ones that produce better inflation forecasts. The best variant from this perspective implies that the output gap was as large as -6% in 2014 and 2015, on average, an estimate which is considerably more negative than most official estimates, hovering between -2 and -3% for those years.^[39] Results for 2017 still continue to show a quite meaningful negative output gap, instead of one already close to zero as reported by several international institutions. This points to the great uncertainty behind the estimation of the output gap, the same being true about the concept of an unemployment gap more directly involving the NAIRU.

In any case, what matters is that it is possible to find specifications that can be used as fairly good inflation forecasting tools. Either NKPC or Traditional Keynesian Phillips Curves (TKPC) can achieve that. For instance, in their estimations of the Non-Accelerating Wage Rate of Unemployment (NAWRU), the European Commission has used the NKPC for 21 countries and the TKPC for 7 countries.^[40]

In recent ECB work about understanding the low inflation environment, a variant of the hybrid NKPC for core inflation was used but with the inclusion of import prices, lagged inflation and expectations taken from surveys.^[41] Using that pragmatic specification, acceptable forecasting results are obtained and we find that the slope has been increasing in recent years. This is a source of confidence that our policy, having contributed to the recovery, will in the end contribute to achieve our inflation goal.

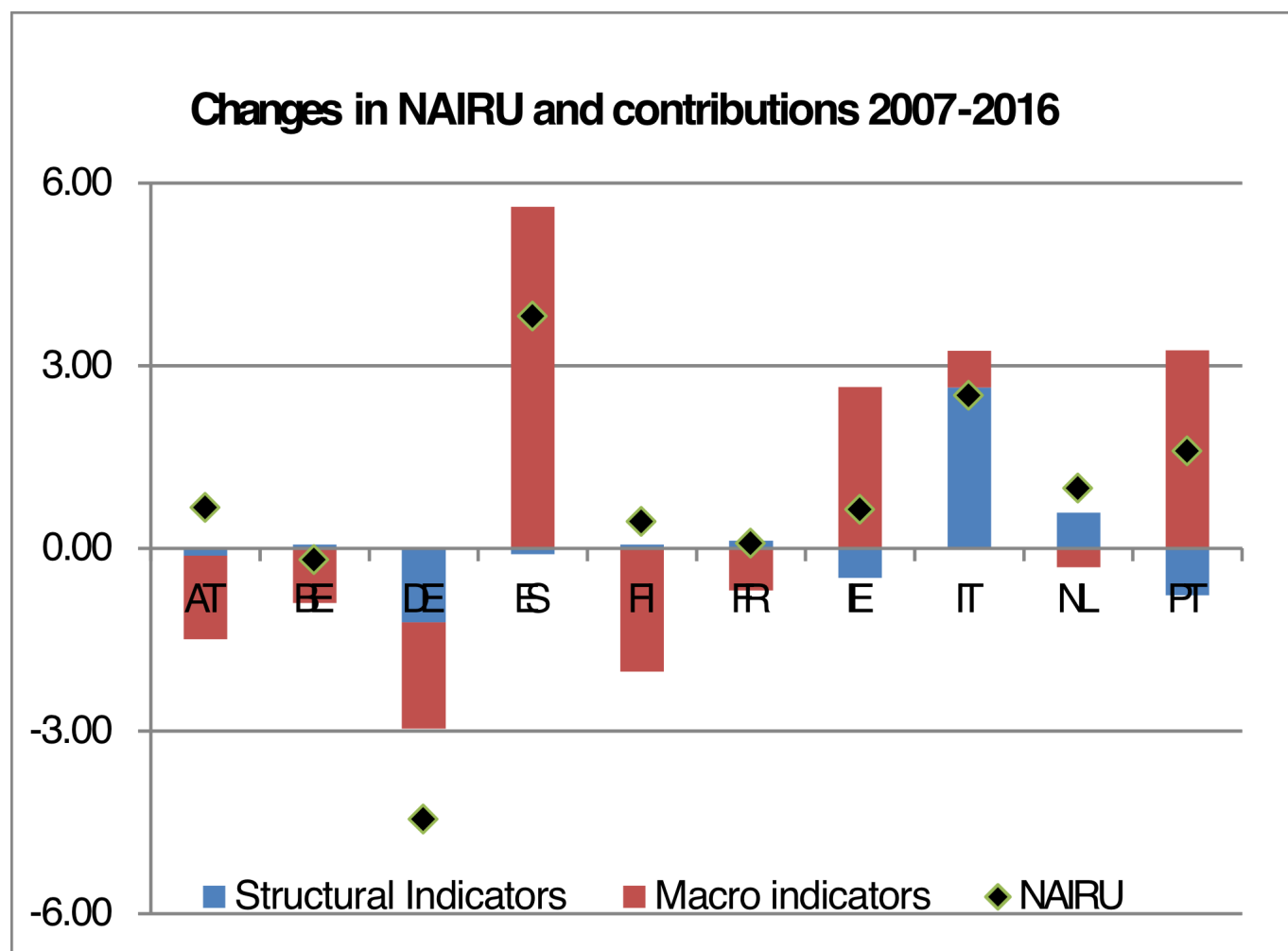
Another question related to the PC, beyond the forecast of inflation, refers to the interpretation and use of the NAIRU that can be extracted from it. It is common to see it as equivalent to the Friedman's NARU, a long-term structural rate of unemployment totally dependent on supply-side factors like demography, technology, institutions that shape market rules, etc. This view then endorses the use of estimated NAIRUs for several policy decisions: for instance, using that particular value as a measure of structural unemployment that enters into the calculation of potential output and the structural budget deficit with all its implication for fiscal policy. Trusting just one number to conduct policy can be dangerous. In their seminal paper, Staiger, Stock and Watson (1997) estimated standard deviations for the NAIRU and concluded that these were very large.^[42] The standard deviations are not usually calculated and/or disclosed in estimates of NAIRU but we can rely that they are normally quite large. This recommends caution in using NAIRU estimates for strict policy decisions.

A second aspect to underline is that it is difficult to accept that estimated NAIRUs are long-term constants determined exclusively by supply-side factors. This would correspond to the natural rate hypothesis (NRH) put forward by Friedman. This view of separating trend from cycle or supply from demand shocks has repeatedly been challenged, for example in the hysteresis hypothesis proposed by Blanchard and Summers.^[43] Recently, Blanchard even questioned whether the NRH should be rejected which in the end he refrains from doing while instilling a high degree of doubt and caution in its use. The main argument behind hysteresis is that there are various transmission channels that may induce a long-lasting impact of economic fluctuations due to aggregate demand. Unfortunately, it is very difficult to detect this hypothesis on empirical grounds from an aggregate economic viewpoint. However, some micro-evidence appears to support it, such as the decreased employability of long-term unemployed, as they lose skill and morale, or the decline in R&D activities and investment of firms during recessions.

One change in the NARU long-term assumption is to accept that it changes over time, albeit slowly and indeed much more sluggish than what is normally used in estimates of NAIRU that even show yearly changes. About these time-varying NARUs and NAIRUs, Farmer refuses the whole concept^[44]: "Defenders of the Natural Rate Hypothesis might choose to respond to these empirical findings by arguing that the natural rate of unemployment is time varying. But I am unaware of any theory which provides us, in advance, with an explanation of how the natural rate of unemployment varies over time. In the absence of such a theory the NRH has no predictive content. A theory like this, which cannot be falsified by any set of observations, is closer to religion than science." In the same vein, Solow once quipped "a natural rate that wanders permanently is not natural, is epiphenomenal".

The major point behind the previous discussion is that estimated NAIRUs are not good proxies of structural unemployment. Already in 1998, Estrella and Mishkin^[45] showed that the NAIRU use in monetary policy "... depends critically on redefining NAIRU as a short-term concept and distinguishing it from a long-term concept like the natural rate of unemployment...something that is not typically done in the literature. Furthermore, ...the view that the NAIRU

concept implies that the monetary authorities should try to move the economy towards the NAIRU, thus to some treating it as a target, is both incorrect and misguided". Indeed, the casual identification of the NAIRU with the level of long-term structural unemployment has pernicious consequences, either in using to calculate potential output or the structural budget deficit. Being a short term concept, the NAIRU estimates since 2007, for instance, seem, to a large extent, to be driven by macro-economic developments rather than by shifts in structural labour market characteristics. ECB staff have recently replicated and updated an earlier study of the European Commission (EC) to illustrate this point. The study relates the European Commission's NAIRU estimates to four structural labour market indicators (unemployment benefits, replacement rates, labour tax wedges, union density, and active labour market policies) and three macro-economic indicators (total factor productivity growth, the share of construction in GDP and the real interest rate).^[46] As shown in the chart, the structural indicators explain only a small fraction of the changes in NAIRU, whereas the macro-economic indicators appear to explain the bulk of its variation. Another paper, reaching the same conclusion and using a broader set of variables is Heimberger et al.



Overall, this evidence suggests that the shifts in unemployment rates observed since 2007 were mostly triggered by the macro-economic cycle and not by an increase of structural unemployment as allegedly indicated by very high NAIRU levels. This means that the estimated NAIRU from Phillips curves is not a good representation of structural unemployment.

Confirming this, an Economic Paper published by the European Commission uses a concept of Structural Unemployment Rate (SUR) to substitute the NAWRU^[47] in the calculation of the structural budget deficit. A subsequent Discussion Paper integrated the concept of SUR as a sort of anchor in the estimation of NAWRUs, that are therefore less pro- cyclical and less sensitive to data corrections.^[48] These analyses produce meaningful changes on fiscal policy stance indicators when compared with the previous straight estimates of NAWRUs.

In view of all the uncertainty, policy-makers should seriously consider the possibility of dropping the NRH as a long-term stable concept that can be estimated from Phillips curves and used in policy decisions. This does not imply abandoning the idea behind the Phillips curve as a pure forecasting device with a positive slope coefficient indicating that strong growth of aggregate demand, given time, will increase inflation. What should be refused is the idea that there is a unique identifiable level of unemployment, corresponding to a level of stable structural unemployment, above which expansionary macro policy exclusively accelerates inflation.

Monetary Policy Strategy in The Future

While our quest for better analytical tools continues, a broader question concerns whether there is a need to also change central banks' monetary policy strategies. Many commentators have started discussing whether these should undergo a more complete overhaul, rather than eventually returning to the pre-crisis status quo.^[49]

I think that the position to take in this debate hinges on the assessment of the recent experience with non-standard monetary policy measures. If non-standard measures were considered to be ineffective, then interest rates would really be the only available tool to achieve price stability. In other words, we would conclude that, once interest rates reach their effective lower bound, central banks are, de facto, powerless. The inconvenient truth behind that view is that it would crucially require reducing to literally zero the likelihood of hitting the effective lower bound ever again in the future.

A substantial overhaul of current strategies would in the end be necessary. Options that have been proposed in this context include the abolition of cash, to eliminate the arbitrage opportunity which prevents policy rates from going negative, and a higher inflation target to reduce the likelihood of hitting the lower bound even after large, adverse shocks.^[50] In my view, on the issue of the abolishment of cash, "a prudent policy-maker would advise to be very cautious before proceeding with this radical proposal, even if digitalisation may gain ground and finally prevail – as we start to observe in some countries".^[51]

Regarding proposals to increase inflation targets, I think they are in general problematic, in view of the difficulties of managing the transition without losing credibility. Notwithstanding this, I would have no theoretical objections to a mild correction as proposed by many economists. My reaction

is similar to what Janet Yellen replied in June 2017 to a question about the letter to the Federal Reserve signed by 22 prominent American economists^[52] in favour of increasing the inflation target: "...this is one of our most critical decisions and one we are attentive to evidence and outside thinking. It's one that we will be reconsidering at some future time. ... It needs to be a balanced assessment. But I would say that this is one of the most important questions facing monetary policy around the world in the future. And we very much look forward to seeing research by economists that will help inform our future decisions on this."

An interesting alternative proposal has recently been made by Bernanke, the former chairman of the Federal Reserve.^[53] In a nutshell, the idea is to switch to a temporary price level target during episodes in which the interest rates effective lower bound is binding. Under a price level target, the central bank aims to stabilise the price level, rather than inflation, and it therefore ensures that any low-inflation episode is compensated by a period of relatively high inflation.^[54] Outside the zero lower bound, the central bank would continue to target a standard inflation objective. The main advantage of this proposal is that it clearly communicates the horizon over which a period of inflation below trend would have to be compensated. Relative to other proposals, the fact that for most of the time, the central bank would continue to target the inflation rate also facilitates communication with the public. Nevertheless, I am not sure whether the practical difficulties of implementing the policy would prevent markets and the public from fully understanding it, which may make the proposal an unrealistic option to be adopted by a central bank in the future.

I have a positive assessment of the experience with non-standard measures, from large scale open market operations of asset purchases to negative rates, and I am glad that they now permanently belong to the ECB's toolkit of instruments to address particular stressful situations. Even outside those special conditions, it is somewhat doubtful that monetary policy can remain effective just by going back to the traditional approach of very small central bank balance sheets and the targeting of overnight money market rates, for a number of reasons.

First, the importance of banks in funding non-financial firms has declined everywhere, including in the euro area. There has been a dramatic change, as non-bank financing sources have become much more important since the onset of the financial crisis. Total assets of investment funds in percentage of total bank assets increased from 16% in 2007 to 44% last year. The percentage of bank loans in the total stock of firms' external financing in 2017 was just above 12% (or 15%, if intra-company loans and trade credit are excluded from total external financing). For the same year, if only the stock of debt instruments is considered (excluding equity sources), bank loans represented only 28% of total debt financing (or 45%, if net of intra-sectoral financing). Before the crisis, back in 2007, bank loans represented 37% of total debt financing (or 60%, if net of intra-sectoral financing).^[55]

Second, other structural changes in the financial system are also important in this context: the increased role of secured money market transactions; the

importance of a broad set of market rates beyond the overnight rate, in view of imperfections in arbitrage; the growing relevance of market-based finance; and finally, the scarcity of safe assets that affects the functioning of markets and the management of collateral.

These developments are behind proposals to keep central bank's balance sheet with significant size to allow the use of a programme like the Fed's reverse repo programme (RRP) where its stock of government securities is available for repo operations against cash.^[56] The programme would be used to involve more counterparties and affect several interest rates, thereby contributing to a better transmission of monetary policy, in view of the limits to arbitrage hampering the pass-through from short- to long-term interest rates. Recent internal work at the ECB also detects similar pass-through imperfections in European markets. Furthermore, by keeping a significant balance sheet, albeit much smaller than the present levels creates short-term safe assets. This would foster financial stability: the unsuccessful attempts by the financial system to engineer "safer" private assets, as we saw before the crisis would be unnecessary.

Both arguments deserve careful consideration for the design of future monetary policy after the present normalisation phase. Maintaining a much smaller but still significant balance sheet may be necessary to allow targeting a broader set of interest rates. Another related dimension refers to central bank counterparties. Central banks have traditionally granted access to monetary policy operations exclusively to credit institutions. Nevertheless, non-banks are beginning to play a greater role in the European financial landscape, and are likely to take an even greater role as the capital markets union deepens and broadens financial markets in Europe. Such a consideration is not neutral for market rates in the euro area. Secured money market rates, when backed by high quality collateral, have traded several times below the ECB deposit facility rate, which normally sets a floor for short-term money market rates. In part, this discount is explained by non-banks' activities that – not having access to central bank facilities – are accepting interest rates below the deposit facility rate in their repo activity. The discount is, of course, also attributed to the APP which has reduced the availability of high quality collateral at the same time as market demand for that collateral has increased. Nonetheless, understanding these drivers is crucial for the central bank when making decisions about future counterparty eligibility and the choice of money market rates to target to ensure an effective monetary policy transmission.

These are, however, questions for the long-term future of monetary policy. At present, we have started a very cautious withdrawal of monetary accommodation. The caution is justified by the subdued inflation dynamics since the second half of 2017 and the recent levels of headline inflation: 1.4 % in March, following 1.1% in February, with underlying inflation at just 1%. The ongoing robust recovery that the euro zone is experiencing is a source of optimism for the immediate future. The euro area is much more resilient to possible external financial shocks.^[57] Yet, a great deal still remains to be achieved. The euro area is a highly integrated economic and financial area which needs to be managed through common decisions. However,

it lacks powerful instruments in domains other than monetary policy, ranging from private risk sharing in a true capital markets union with a European safe asset, to a strong centralised fiscal stabilisation function to deal with asymmetric and symmetric shocks.

The creation of such instruments would also ensure that the fiscal policy mistakes made in 2011-12 would not be repeated so that we do not suffer from avoidable double dip recessions. Over the business cycle, we also need co-ordinated fiscal policies to ensure that the overall fiscal policy stance is sufficiently countercyclical, thereby contributing to economic stabilisation. Until now, the burden of countercyclical stabilisation has been mainly left to monetary policy. This situation is not sustainable, particularly in the context of a recessionary episode that should come at some point. Monetary policy will certainly require the help of strong fiscal policy that will then need to be in place. Governments need to act now and take advantage of the ongoing recovery to make the necessary institutional adjustments.

Conclusion

Let me conclude.

In my remarks today, I have reviewed the different phases of monetary policy since the introduction of the euro and have described how the financial crisis has affected the conduct of monetary policy. Like in other jurisdictions, the deployment of large scale asset purchase programmes is the most relevant change observed since the financial crisis. These new unconventional instruments, along with forward guidance, negative rates and reverse repos belong now to the monetary policy toolkit to be used whenever necessary. From now on, the ECB will have no excuse not to fulfil its mandate, either in fighting against deflation or in addressing the impairment of the single monetary policy transmission by intervening in the sovereign bond market. The ECB made the journey from a central bank still under the partial influence of the simple monetary aggregates approach, to join the community of central banks of other major jurisdictions using flexible inflation targeting regimes and asset purchases as non-standard measures. It is therefore prepared to continue to deliver on the priority of price stability for euro area citizens, while contributing to favourable growth conditions and financial stability in a world in which market-based finance is ever more complex and dominant. In sum, the ECB is now a modern, effective and prepared central bank to serve the goals of monetary union.

REFERENCES

Altavilla, C., G. Carboni and R. Motto (2015), "Asset purchase programmes and financial markets: lessons from the euro area", ECB Working Paper 1864.

Alves, N. and C.R. Marques (2004), "Money in the ECB's monetary policy strategy: a reassessment", Banco de Portugal, mimeo, December 2004, later published as Banco de Portugal Working Paper No. 20/2007 "Is the euro area M3 abandoning us?".

Bernanke, B. (2017), "Monetary Policy in a New Era", conference on Rethinking Macroeconomic Policy, Peterson Institute for International Economics, 12-13 October 2017.

Beyer, A. and R. Farmer (2002), "Natural rate doubts", ECB Working Paper 121.

Blanchard, O. and L. Summers (1986), "Hysteresis and the European Unemployment Problem", NBER Macroeconomics Annual, Vol. 1.

Blanchard, O., G. Dell'Ariccia and P. Mauro (2010), "Rethinking Macroeconomic Policy", *Journal of Money, Credit and Banking*, 42:199–215 and

Blanchard, O. and D. Leigh (2013), "Growth Forecast Errors and Fiscal Multipliers", *American Economic Review*, 103(3): 117-20.

Blanchard, O., E. Cerutti and L. Summers (2015), "Inflation and activity – two explorations and their monetary policy implications", ECB Forum on Central Banking on Inflation and Unemployment in Europe, Sintra 2015.

Blanchard, O. (2017), "The Need for Different Classes of Macroeconomic Models", Peterson Institute for International Economics Real Time Economic Issues Watch, 12 January 2017.

Blanchard, O. (2017), "Should we reject the natural rate hypothesis?", Peterson Institute for International Economics Working Paper 17/14.

Brayton, F. and P. A. Tinsley (1996), "A guide to FRB/US: a macroeconomic model of the United States", Finance and Economics Discussion Series 96-42, Board of Governors of the Federal Reserve System.

Breckenfelder J., F. De Fiore, P. Andrade, P. Karadi and O. Tristani (2016), "The ECB's asset purchase programme: an early assessment", ECB Working Paper Series 1956.

Ciccarelli, M and C. Osbat (ed) (2017), "Low inflation in the euro area: Causes and consequences", ECB Occasional Paper 181.

Coibion, O. and Y. Gorodnichenko, (2015), "Is the Phillips Curve Alive and Well after All? Inflation Expectations and the Missing Disinflation", *American Economic Journal: Macroeconomics*, 7(1):197-232.

Constâncio, V. (2014), ["A new phase of the ECB's monetary policy"](#), speech at the ECB workshop on non-standard monetary policy measures, Frankfurt 6 October 2014.

Constâncio, V. (2015), "Understanding Inflation Dynamics and Monetary Policy," panel remarks at the Annual Economic Policy Symposium, Federal Reserve Bank of Kansas City.

Constâncio, V. (2016), "Challenges for future monetary policy frameworks: A European perspective", speech at the 19th Annual International Banking Conference "Achieving Financial Stability: Challenges to Prudential Regulation", Federal Reserve Bank of Chicago, 4 November 2016.

Constâncio, V (2017), ["The future of monetary policy frameworks"](#), lecture at the Instituto Superior de Economia e Gestão, Lisbon.

Constâncio, V. (2017), "Inequality and macroeconomic policies", speech at the Annual Congress of the European Economic Association, Lisbon 22 August 2017.

Constâncio, V. (2017), "Growth, adjustment and resilience in the euro area", at the Forum Villa d'Este, Cernobbio, 2 September 2017.

Constâncio, V. (2017), "Developing models for policy analysis in central banks", speech at the Annual Research Conference, Frankfurt am Main 25-26 September 2017.

Constâncio, V. (2018), "Financial stability risks and macroprudential policy in the euro area", speech at the ECB and Its Watchers XIX Conference, Frankfurt am Main, 14 March 2018.

Constâncio, V. (2018) [Presentation of ECB Annual Report 2017 to the Committee on Economic and Monetary Affairs of the European Parliament](#), Brussels, 9 April 2018.

De Grauwe, P. (2005), ["Monetarists cry wolf on eurozone inflation"](#), Opinion, Financial Times.

Duffie D. and A. Krishnamurthy (2016), "Pass-through efficiency in the FED's new monetary policy setting", presented at the Annual Economic Policy Symposium, Federal Reserve Bank of Kansas City;

ECB (2011), "The monetary policy of the ECB", third edition, May.

EMI (1997) ["The single monetary policy in stage three: elements of the monetary policy strategy"](#).

Estrella, A. and F. Mishkin (1998), "Rethinking the role of NAIRU in Monetary policy: the implications of model formulation and uncertainty", Federal Reserve Bank of New York.

European Commission (2014), "The production function methodology for calculating potential growth rates & output gaps", Economic Papers 535, page 7.

European Commission (2015), "Structural unemployment vs. NAWRU: implications for the assessment of the cyclical position and the fiscal stance", Economic Papers 552.

European Commission (2017), "NAWRU estimation using structural labour Market indicators" Discussion Paper 069.

Farmer, R. (2013), "The Natural Rate Hypothesis: An idea past its sell-by date", NBER Working Paper No. 19267 and *Bank of England Quarterly Bulletin*, September Q3, pp 244-256, 2013;

Galí, J. and M. Gertler (1999), "Inflation dynamics: a structural econometric

analysis", *Journal of Monetary Economics*. 44:195-222;

Galí, J., M. Gertler and D. López-Salido (2005), "Robustness of the estimates of the hybrid new Keynesian Phillips Curve", *Journal of Monetary Economics*, 52:1107-18.

Gaspar, V., F. Smets and D. Vestin (2007), "Is the time ripe for price level path stability?", ECB Working Paper 818;

Galí, J. and L. Gambetti (2015), "The Effects of Monetary Policy on Stock Market Bubbles: Some Evidence", *American Economic Journal: Macroeconomics* 2015, 7(1): 233–257.

Gerlach, S. and L. E.O. Svensson (2000), "Money and Inflation in the Euro Area: A Case for Monetary Indicators?", NBER Working Paper No. 8025, published later in the *Journal of Monetary Economics* 50 (2003) 1649-1672.

Gordon, R. (2009), "The history of the Phillips Curve: consensus and bifurcation", *Economica* 78(309):10-50.

Gordon, R. (2013), "The Phillips curve is alive and well: inflation and the NAIRU during the slow recovery", NBER Working Paper 19390.

Greenwood R., S. Hanson, and J. Stein (2016), "The Federal Reserve's Balance Sheet as a Financial-Stability Tool", 2016 Economic Policy Symposium Proceedings, Jackson Hole: Federal Reserve Bank of Kansas City.

Gürkaynak, R.S., B. Kisacikoglu, and B. Rossi (2013), "Do DSGE Models Forecast More Accurately Out-of-Sample than VAR Models?", CEPR Discussion Paper, July 2013.

Heimberger, P., J. Kapeller, and B. Schütz (2016), ""What's 'structural' about unemployment in Europe: on the determinants of the European Commission's NAIRU estimates", ICAE, University of Linz, Working Paper No 47.

IMF World Economic Outlook, April 2005.

Issing, O. (2006), "The ECB's Monetary Policy Strategy: Why did we choose a two Pillar Approach?", contribution to the 4th ECB Central Banking Conference, Frankfurt, November.

Jarociński M. and M. Lenza (2016), "An inflation-predicting measure of the output gap in the euro area", ECB Working Paper 1966, forthcoming article in the *Journal of Money, Credit and Banking*.

Jasova M., C. Mendicino and D. Supera (2018), "Rollover Risk and Bank Lending Behavior: Evidence from Unconventional Central Bank Liquidity", mimeo.

King, R. and M.W. Watson (2012), "Inflation and unit labour costs", *Journal of Money, Credit and Banking*, 44(s2):11-149.

Krugman, P. (2014), "Inflation targets reconsidered", ECB Forum on Central Banking, May 2014.

- Lenza, M. and J. Slacalek (2017), "The effects of unconventional monetary policy on inequality in the euro area", mimeo, European Central Bank.
- Lorenzoni, G. (2009), "A Theory of Demand Shocks", *American Economic Review*, 99: 2050–84 as an example of models in which a drop in consumer sentiment can lead to demand shocks.
- Mavroeidis, S., M. Plagborg-Møller and J. Stock (2014), "Empirical Evidence on Inflation Expectations in the New Keynesian Phillips Curve", *Journal of Economic Literature* 52(1):124-188, March 2014.
- OECD Economic Outlook, Vol 2005, issue 2.
- Orlandi, F. (2012), "Structural Employment and its Determinants in EU Countries", European Commission Economic Papers 455.
- Quint, D. and O. Tristani (2017), "Liquidity provision as a monetary policy tool: The ECB's non-standard measures after the financial crisis", *Journal of International Money and Finance*, 80:15-34.
- Rannenberg, A., C. Schoder and J. Strasky, (2015), "The macroeconomic effects of the European Monetary Union's fiscal consolidation from 2011 to 2013: a quantitative assessment", IMK Working Paper 156.
- Roberts, J.M. (2006), "Monetary Policy and inflation dynamics", *International Journal of Central Banking* 2:193-230.
- Rünstler, G. and M. Vlekke (2018), "Business, Housing and Credit Cycles", *Journal of Applied Econometrics*, 33(2):212-226.
- Schmidt, S. (2011), "The cost channel, indeterminacy, and price-level versus inflation stabilization", *The B.E. Journal of Macroeconomics*, 11(1).
- Schüler, Y., P. Hiebert and I. Jaccard (2017), "Contrasting financial and business cycles: Stylized facts and candidate explanations", mimeo Bundesbank and ECB.
- Staiger, D., J.H. Stock, and M.W. Watson (1997), "The NAIRU, unemployment and monetary policy" *Journal of Economic Perspectives* 11:33-49.
- Stark, J., ["The Irresponsible ECB"](#).
- Stein, J. (2013), "Overheating in Credit Markets: Origins, Measurement, and Policy Responses", speech at the "Restoring Household Financial Stability after the Great Recession: Why Household Balance Sheets Matter" research symposium sponsored by the Federal Reserve Bank of St. Louis.
- Svensson, L.E.O. (1999), "Price-Level Targeting versus Inflation Targeting: A Free Lunch?", *Journal of Money, Credit and Banking*, 31(3):277-295.
- Svensson, L.E.O. (2008), "Inflation targeting", in *The New Palgrave Dictionary of Economics*, Second Edition, 2008.

Svensson, L.E.O., (2010), "Inflation Targeting," in: Benjamin M. Friedman and Michael Woodford (ed.), *Handbook of Monetary Economics*, Edition 1, Volume 3, Chapter 22, pp 1237-1302.

Svensson, L.E.O. (2017c), "[Leaning Against the Wind: Costs and Benefits, Effects on Debt, Leaning in DSGE Models, and a Framework for Comparison of Results](#)," *International Journal of Central Banking* 13:385-408.

Svensson, L.E.O. (2017), "Cost-Benefit Analysis of Leaning against the Wind", *Journal of Monetary Economics*, 90:193–213.

Tarullo, D (2017), "Monetary policy without a theory of inflation", Hutchins Center at Brookings Institution Working Paper No.33.

The Oxford Review of Economic Policy Volume 34, Issue 1-2, Spring-Summer 2018.

Veld, J. (2013), "Fiscal consolidations and spillovers in the Euro area periphery and core", EU Commission European Economy Paper, Economic Papers 506, October 2013, Table 5, pages 10 and 11.

If President Juncker wants to use the EU budget to demonstrate 'solidarity', it is EU Cohesion Policy that makes a real difference to how citizens perceive and identify with the EU

The launch of the European Commission's proposals for the next Multiannual Financial Framework (MFF) throws a spotlight on how the EU budget should be used to maximise the added value of EU spending. In presenting the MFF proposals, President Juncker referred to the fundamental EU principle of "solidarity" and the need for spending to make "a real difference to the lives of citizens and businesses." Yet, new research indicates a potential contradiction between the MFF proposed by the Commission, and what makes a difference to citizens' perception of the EU.

On 26 April 2018, the multi-disciplinary Horizon2020 project COHESIFY presented its main research results at the European Committee of the Regions. For two years a consortium of 8 universities and 2 SMEs investigated the question of how EU citizens perceive Cohesion Policy and whether they identify themselves with the EU.

- The study found clear evidence of **the impact of Cohesion Policy on**

citizens' perceptions of the EU and European identity .

- A key finding is that **Cohesion Policy improves the recognition of the advantages of the EU and EU integration .**

The key recommendations and results of the project were presented to EU policy-makers and to the Commissioners responsible for the EU budget and Cohesion Policy just in time for the finalisation of the **Multianual Financial Framework** (MFF) which sets out the annual budget of the EU for the period 2021 – 2027 – and actually proposes major cuts to spending on Cohesion Policy after 2020.

According to **Prof. John Bachtler**, lead COHESIFY researcher from the **University of Strathclyde** and responsible for coordinating the 10 project partners, there is a contradiction between the EU's ambitions and its proposals in the MFF.

"Public trust in EU institutions has deteriorated over the past decade. A key message from our study is that citizens recognise the importance of Cohesion Policy for their region or locality and want to see more control of EU spending at local level. The MFF is going in the reverse direction: proposing the biggest cuts in Cohesion Policy in its history and centralising rather than decentralising EU spending."

The COHESIFY study is ground-breaking in providing a new and much more comprehensive view of how Cohesion Policy – currently accounting for one third of the EU budget – is perceived by citizens on the ground. The project applied an innovative methodological approach by combining case studies in 17 pilot regions across 12 Member States, stakeholder interviews, a large-scale telephone survey among 8,500 citizens, a cross-national media framing analysis (including over 110,000 posts and comments on social media) as well as 47 focus groups including 240 citizens.

Dr Carlos Mendez, COHESIFY Project manager from the **University of Strathclyde**, added:

"Our study found that perceptions of the EU and specifically EU Cohesion Policy are influenced by the scale of funding under the policy as well as its performance and good management. The results also show the importance of EU spending being regionally and locally differentiated – and considered by citizens to be addressing the needs and development changes that matter to them. Introducing a more participatory citizen-focused approach to the programming and communication of EU funds is therefore needed and would undoubtedly further strengthen people's identification with the EU."

The study also has important implications for how the EU communicates with citizens. Although many people recognise the importance of the policy for addressing regional disparities and improving their quality of life, they do not feel adequately informed about it. Future communication strategies therefore need to be given a higher priority and need to target citizens more explicitly so that they feel an ownership of the projects in their area. *"It needs to be a two-way process,"* **Dr. Andreja Pegan** from **Trinity College Dublin**

stressed, “ *citizens want to have more say on how funds are allocated or governed in their area .*”

Another part of the study also analysed the way Cohesion Policy is currently framed in the media. **Dr. Vasiliki Triga** from the **Cyprus University of Technology** explained that “ *indeed Cohesion Policy frames are rich and diverse and overall positive since the two dominant frames describe the positive economic effects of Cohesion Policy for Member States as well as the dominant impact on the citizens’ quality of life.*” However, the analysis also brought to the fore a difference between regional and national media: the former frame the effects of Cohesion Policy more positively while the national media focus more on criticising national governments or authorities regarding the way Cohesion Policy is being implemented.

All the results of the project and the presentations of the final event are available at www.cohesify.eu/final-conference

Conflict of interest and ethics policy – ESMA staff

[Download PDF](#)