

## V. Monetary Policy

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*This section focuses on the ECB's conduct of monetary policy during its first 20 years of existence. Whereas until October 2008 the ECB conducted monetary policy mainly by adjusting its key policy rates, during the global financial crisis and in its aftermath the Bank introduced a number of non-standard measures. Notably, it started to provide forward guidance on how it expected its key interest rates to evolve, and it conducted large-scale asset purchases to support monetary policy transmission in certain market segments and provide additional monetary stimulus once key interest rates approached their lower bound. As a result, the ECB succeeded in ensuring that annual HICP inflation in the euro area averaged 1.7% between January 1999 and December 2018. Nevertheless, whereas annual inflation averaged 2.2% over the first decade, it amounted to on average just 1.3% over the second decade, as average annual GDP growth in the euro area slowed down from about 4% during 1999-2008 to just 2.5% over 2009-2018 <sup>(246)</sup>.*

### V.1. ECB's mandate, policy strategy and the operational framework

The European Central Bank (ECB) was established on 1 June 1998 and assumed responsibility for setting monetary policy for the euro area on 1 January 1999. The ECB, together with the national central banks of euro-area Member States, constitute the central banking system of the euro area, known as the Eurosystem. While monetary policy decision-making is centralised at the ECB, monetary policy operations are (mostly) carried out by national central banks. In addition, unlike other major central banks, the ECB conducts monetary policy in the absence of an equivalent euro-area fiscal authority. This places a relatively larger burden on the ECB with respect to stabilisation of the overall euro-area economic activity.

According to the Maastricht Treaty signed in 1992, the primary objective of the Eurosystem is to maintain price stability <sup>(247)</sup>. The ECB Governing Council presented its monetary policy strategy in October 1998. It was based on a quantitative definition of price stability and a two-pillar approach to the analysis of risks to price stability, i.e. monetary and economic analysis. The ECB defined price stability as a year-on-year increase in the harmonised index of consumer prices (HICP) for the euro area of below 2% and signalled that price stability was to be maintained over the

medium term. By referring to increases in the HICP it made clear from the outset that deflation was excluded from the definition of price stability. The monetary analysis reflected the prominent role assigned to monetary developments (as also signalled by a reference value for the growth of a broad monetary aggregate). The economic analysis was a broader-based assessment of the outlook for price developments and the risks to price stability in the euro area using a wide range of economic and financial variables.

Following the comprehensive review of its monetary policy strategy, the ECB Governing Council clarified in May 2003 that in its pursuit of price stability it aimed to maintain inflation rates below, but close to, 2% over the medium term. It also clarified the way in which it integrated the indications stemming from the two complementary analytical pillars by emphasising that the monetary analysis mainly served as a means of cross-checking, from a medium to long-term perspective, the short to medium-term indications coming from economic analysis. Hence, with its medium-term orientation (i.e. without a fixed time horizon over which the price stability should be re-established), the two-pillar approach and the no single-point, symmetric inflation target, the ECB's monetary policy strategy continued to differ substantially from 'pure' inflation-forecast-targeting strategies, which most of the prominent academics at the time generally supported <sup>(248)</sup>.

The Eurosystem's standard operational framework consists of open market operations, standing

<sup>(246)</sup> This section benefited from comments by Eric Ruscher and Lucio Pench. Graphs were prepared by Ulrike Stierle-von Schütz and formatted by Erdemia Malagrida.

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<sup>(247)</sup> The Eurosystem was also assigned other tasks, as listed in Article 127 of the Treaty on the Functioning of the European Union.

<sup>(248)</sup> See e.g. Alesina, A., O. Blanchard, J. Gali, F. Giavazzi and H. Uhlig (2001), 'Defining a Macroeconomic Framework for the Euro Area', Centre for Economic Policy Research.

facilities and minimum reserve requirements for credit institutions. The Eurosystem's regular open market operations conducted in the form of collateralised loans comprise one-week liquidity-providing operations in euro, known as the main refinancing operations (MROs), as well as three-month liquidity-providing operations in euro, known as the longer-term refinancing operations (LTROs). Two standing facilities, i.e. the marginal lending facility and the deposit facility, aim to provide and absorb overnight liquidity and bound overnight inter-bank interest rates. The ECB requires euro-area credit institutions to hold minimum deposits on accounts with their national central bank, known as minimum reserve requirements, which generate demand for its regular liquidity-providing monetary policy operations and thus facilitate the transmission of its monetary policy <sup>(249)</sup>. In line with this operational framework, the ECB Governing Council sets three key interest rates: the MRO rate, the deposit facility rate and the rate on the marginal lending facility. These three key rates constitute an 'interest rate corridor' steering short-term euro interest rates and they indicate the ECB's monetary policy stance for the euro area.

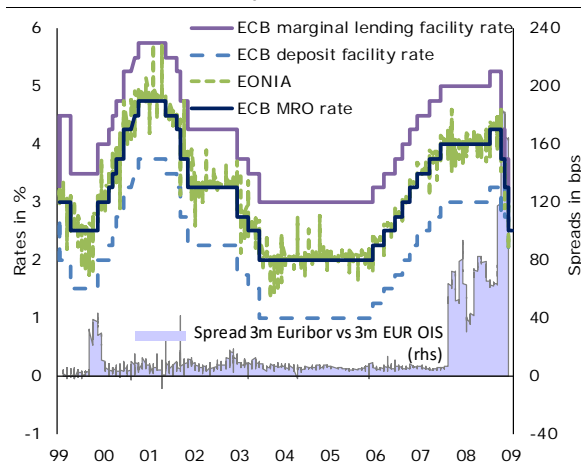
As required by its statute (Protocol No 4 of the Treaty on the Functioning of the European Union), the Eurosystem provides credit only against adequate collateral. Due to pre-existing differences in financial structures across the Member States, two categories of assets ('tier one' and 'tier two') were initially eligible for use as collateral in ECB credit operations. Tier one consisted of marketable debt instruments which fulfilled uniform euro-area wide eligibility criteria specified by the ECB. Tier two consisted of additional assets, marketable and non-marketable, which were of particular importance for national financial markets and banking systems and for which eligibility criteria were established by national central banks, subject to the minimum eligibility criteria established by the ECB. In 2004, the Eurosystem decided to introduce the single list of eligible collateral. It was implemented in 2005 for marketable assets and in 2007 for credit claims.

<sup>(249)</sup> By limiting holdings of net financial assets related to national, non-monetary policy tasks of the national central banks, the Eurosystem's Agreement on Net Financial Assets (ANFA) ensures that there normally is a structural deficit of central bank liquidity in the euro-area banking sector, i.e. that banks need to borrow liquidity from the Eurosystem in order to be able to fulfil their minimum reserve requirements.

## V.2. Conduct of monetary policy prior to the 2008-2009 global financial crisis

The ECB Governing Council set the MRO rate at 3% for the start of stage three of the EMU on 1 January 1999. After temporarily cutting it to 2½% between April and November 1999, it started gradually raising its key policy rates in early 2000 to counter upward risks to price stability amid a buoyant economy and a depreciating euro exchange rate <sup>(250)</sup>. The first hiking cycle ended in October 2000 with the MRO rate peaking at 4.75%. Between May 2001 and June 2003, the ECB gradually lowered the MRO rate to 2% in view of weaker economic performance and subdued inflationary pressures in the euro area. In December 2005, the ECB started raising its key policy rates as economic activity in the euro area re-gained momentum and inflationary pressures intensified against the backdrop of robust credit and monetary expansion. The second hiking cycle lasted until July 2008 when the MRO rate peaked at 4.25% (see Graph V.1).

Graph V.1: ECB policy and money market rates, 1999-2009



Source: ECB, Macrobond

The inter-bank euro money market functioned relatively well from early 1999 until mid-2007 with the liquidity injected by the Eurosystem distributed

<sup>(250)</sup> The trend euro depreciation started to gradually reverse after concerted FX market interventions conducted by the ECB together with the US Federal Reserve, the Bank of Japan, the Bank of England and the Bank of Canada in September 2000 and unilateral FX market interventions by the ECB in November 2000.

<https://www.ecb.europa.eu/press/pr/date/2000/html/pr000922.en.html>

<https://www.ecb.europa.eu/press/pr/date/2000/html/pr001103.en.html>

across the euro-area banking sector according to the liquidity needs of each credit institution. However, in summer 2007, as it became apparent that there were substantial risks embodied in some USD-denominated structured securities and related exposures, euro-area banks grew more circumspect about counterparty risks and started hoarding liquidity. This led to disruptions at inter-bank and other short-term funding markets, as reflected, for example, in widening spreads between unsecured term inter-bank borrowing rates (Euribor) and equivalent overnight index swap (OIS) rates, which largely display the increased perception of counterparty risks. The ECB reacted to the resulting increased demand for liquidity by adjusting both the timing and the maturity of its liquidity-providing operations. In particular, it decided to conduct supplementary three-month LTROs and later also introduced LTROs with a six-month maturity. Moreover, in December 2007, thanks to the swap line with the US Federal Reserve, the Eurosystem started providing US-dollar liquidity against its standard ECB-eligible euro-denominated collateral.

### V.3. Further non-standard measures adopted during the global financial crisis and in its aftermath

Up to October 2008, the ECB continued to limit the overall amount of liquidity provided to the euro-area banking sector. After the collapse of Lehman Brothers in September 2008, financial market turmoil intensified and further impaired the functioning of the inter-bank market. In response, between October 2008 and May 2009, the ECB adopted a package of non-standard measures (known as ‘enhanced credit support’<sup>(251)</sup>) targeted at the domestic banking sector. This reflected the fact that the euro-area financial system was predominantly bank-based, i.e. banks played a crucial role in channelling credit to the real economy. The enhanced credit support consisted of the following five main elements:

1) All refinancing operations started being conducted under the ‘fixed-rate full-allotment mode’. This implied that the demand from private banks for Eurosystem refinancing was fully

accommodated at the MRO rate, subject to sufficient availability of ECB-eligible collateral.

2) The list of eligible collateral was expanded. In particular, the credit rating threshold for marketable and non-marketable assets to be eligible as collateral in Eurosystem credit operations was lowered from A- to BBB-, with the exception of asset-backed securities.

3) The maturity of longer-term refinancing operations was extended up to 12 months.

4) The provision of US-dollar refinancing was enhanced and a weekly EUR/CHF swap line was introduced. These operations were financed through foreign exchange swap arrangements with the Federal Reserve and the Swiss National Bank.

5) The first covered bond purchase programme, set to amount to €60 billion, was launched in July 2009 in order to improve liquidity in this market segment and support the longer-term provision of credit.

The introduction of the enhanced credit support was accompanied by a fast reduction in key ECB policy rates as the MRO rate was cumulatively cut by 325 basis point to 1% by May 2009. Moreover, as excess reserves held by euro-area banks with the Eurosystem increased from close to zero in September 2008 to above €200 billion in late 2008, the EONIA rate<sup>(252)</sup> dropped close to the deposit facility rate, which represents the floor for pricing overnight inter-bank lending in euro. Money market tensions also eased with the three-month Euribor-OIS spread falling below 50 basis points by mid-2009.

Some of these ECB policy actions were part of a coordinated crisis response by major central banks. Specifically, on 8 October 2008 the Bank of Canada, the Bank of England, the ECB, the Federal Reserve, Sveriges Riksbank and the Swiss National Bank announced reductions in their key policy interest rates with the Bank of Japan expressing support for these actions<sup>(253)</sup>. Apart from reducing their key policy rates, central banks in the US, euro area and the UK rapidly expanded

<sup>(251)</sup>

[https://www.ecb.europa.eu/press/key/date/2010/html/sp100618\\_2.en.html](https://www.ecb.europa.eu/press/key/date/2010/html/sp100618_2.en.html)

<sup>(252)</sup> The Euro OverNight Index Average (EONIA) rate is the 1-day interbank interest rate for the euro area.

<sup>(253)</sup>

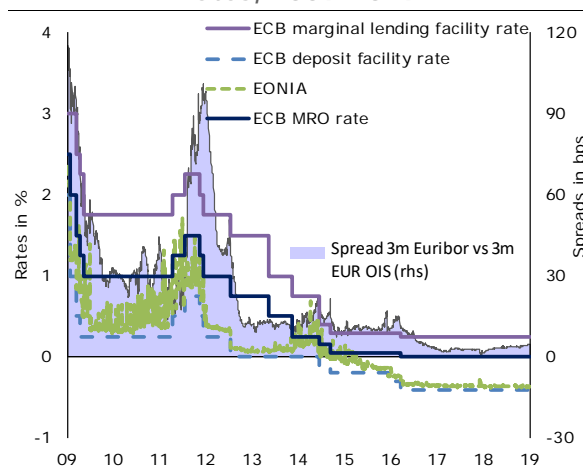
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their balance sheets through various non-standard liquidity-providing measures, which were, on a smaller scale and for a shorter duration, also deployed in Japan <sup>(254)</sup>. In particular, the Federal Reserve announced in November 2008 that it would purchase up to \$100 billion in direct obligations of housing-related government-sponsored enterprises and up to \$500 billion in mortgage-backed securities under the programme popularly known as ‘Quantitative Easing’ <sup>(255)</sup>.

Thanks to coordinated and decisive action by major central banks, the global financial market situation slowly improved throughout 2009. After declining from close to 4% in mid-2008 into negative territory by mid-2009, euro-area annual headline HICP inflation increased gradually to above 2% by end-2010 as global GDP growth and commodity prices recovered. Given that headline inflation further accelerated in early 2011, the ECB decided to increase its key interest rates by 25 basis points in April and then again in July 2011. These two rate hikes were, however, fully reversed again in late 2011 as rising financial market tensions within the euro area led to a tightening of financing conditions, which combined with faltering confidence, dented economic recovery.

During this time period (i.e. as long as its key policy rates remained above zero), the ECB communication was guided by the so-called separation principle, making a clear distinction between decisions on its key policy rates, which remained geared towards maintaining price stability, and non-standard measures aimed at addressing malfunctioning financial market segments and thus ensuring effective transmission of its monetary policy. This allowed the ECB to increase its key policy rates in 2008 and 2011 while at the same time keeping its non-standard measures in place (see Graph V.2). <sup>(256)</sup>

Graph V.2: ECB policy and money market rates, 2009-2019



Source: ECB, Macrobond

### Euro-area sovereign debt crisis

The negative impact of the global financial crisis on banking and public sector balance sheets gradually undermined financial market confidence in the credit-worthiness of some euro-area sovereigns and/or in the soundness of their domestic banking sectors and thus ultimately in the irreversibility of their euro-area membership. Consequently, spreads between the longer-term government bond yields of the most vulnerable euro-area countries and those of the most creditworthy countries started to widen in early 2010.

To address the severe tensions in certain segments of euro-area financial markets, which were hampering its monetary policy transmission mechanism, the ECB decided in May 2010 to conduct interventions (in the form of outright secondary market purchases) in the euro-area public and private debt securities markets under the securities markets programme (SMP). Effectively, the SMP targeted government debt securities issued by five euro-area sovereigns (Greece, Ireland, Portugal, Spain, and Italy) with about €214 billion in bonds acquired under the programme from 2010 until early 2012 <sup>(257)</sup>.

Despite government bond purchases under the SMP and two three-year very-long-term refinancing

<sup>(254)</sup> For more details, see e.g. Jevčák, A. (2014), ‘Monetary Policy Frameworks: Gradual Implementation of Steadily Evolving Theory’, *ECFIN Economic Brief*, Issue 29, European Commission.

<sup>(255)</sup> In March 2009, the Federal Reserve then decided to increase its total purchases of these securities to up to \$1.45 trillion in 2009 and to purchase up to \$300 billion of longer-term Treasury securities over the next six months.

<http://www.federalreserve.gov/monetarypolicy/bst.htm>

<sup>(256)</sup> See e.g. Hartmann, P. and F. Smets (2018), ‘The First Twenty Years of the European Central Bank: Monetary Policy’, *ECB Working Paper*, No. 2219.

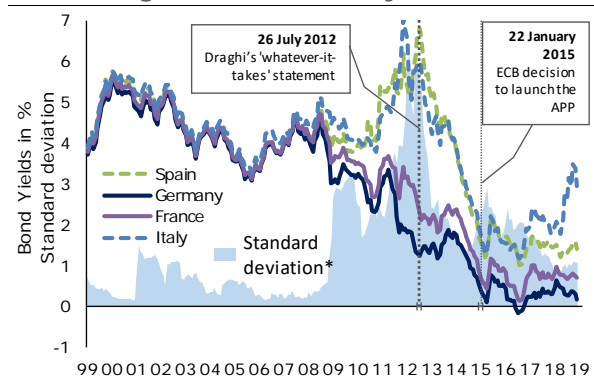
<sup>(257)</sup> Eser, F. and B. Schwaab (2016), ‘Evaluating the Impact of Unconventional Monetary Policy Measures: Empirical Evidence from the ECB’s Securities Markets Programme’, *Journal of Financial Economics*, 119(1), pp. 147-167.

operations<sup>(258)</sup> in late 2011 and early 2012<sup>(259)</sup>, financial market tensions in the euro area further intensified in the first half of 2012. In July 2012, the ECB therefore decided to cut its key interest rates by 25 basis points, i.e. lowering the deposit facility rate to zero. Moreover, in August 2012 the ECB announced<sup>(260)</sup> that it might undertake outright open market operations of a size adequate to address the severe malfunctioning in the price formation process in the bond markets of euro-area countries, as financial market fragmentation was hindering the effective transmission of its monetary policy. Subsequently, in September 2012, the ECB decided on the modalities for undertaking outright monetary transactions (OMT's) in secondary markets for sovereign bonds in the euro area and terminated the SMP<sup>(261)</sup>.

Following the introduction of OMT's<sup>(262)</sup>, the signs of severe financial market fragmentation within the euro area gradually receded, without such open market operations actually being launched for any country. In particular, spreads between the longer-term government bond yields of the most vulnerable euro-area countries and those of the most creditworthy countries narrowed considerably (see Graph V.3)<sup>(263)</sup>. This was surely

also thanks to the strengthening of the EMU architecture, as the June 2012 euro-area summit agreed to create a single supervisory mechanism for the euro-area banking sector, while the European Stability Mechanism (ESM) formally began operating in October 2012.

Graph V.3: **Benchmark long-term government bond yields**



\* Standard deviation covers all euro-area Member States.

Source: Eurostat, Macrobond

Nevertheless, there remained a considerable variation in credit risk spreads among euro-area sovereign issuers, which was also reflected in their overall domestic financing conditions. For example, although the second half of 2012 saw a significant decrease in the dispersion of the country-specific composite financing cost indicators for non-financial corporations (NFCs)<sup>(264)</sup>, which had increased considerably between early 2009 and mid-2012, the dispersion remained above its average pre-crisis levels throughout 2013-2014. The single ECB monetary policy thus still did not seem to be uniformly transmitted across the euro area. This also hampered economic recovery, as annual real GDP of the euro area declined marginally in 2013, before it started to expand in 2014.

### Forward guidance, credit easing measures and asset purchase programmes

Dampened by the sluggish pace of economic recovery, annual headline HICP inflation in the

<sup>(258)</sup> See e.g. Darracq-Paries, M. and R. A. De Santis (2015), 'A non-standard monetary policy shock: the ECB's 3-years LTROs and the shift in credit supply', *Journal of International Money and Finance*, Vol. 54, Issue C, pp. 1-34. They show that the 3-year long-term refinancing operations supported bank lending to non-financial corporations over the two- to three-year horizon thereby helping to avoid a major credit crunch.

<sup>(259)</sup> In addition, the ECB also launched the second covered bond purchase programme in November 2011 and reduced the minimum reserve ratio from 2% to 1% as from the reserve maintenance period starting on 18 January 2012 while further expanding the pool of eligible collateral.

<https://www.ecb.europa.eu/press/pressconf/2011/html/is111208.en.html>

<sup>(260)</sup> This followed ECB President Draghi's statement at the Global Investment Conference in London on 26 July 2012 that: 'Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough.'

<https://www.ecb.europa.eu/press/key/date/2012/html/sp120726.en.html>

<sup>(261)</sup> A necessary pre-condition for OMT's is strict and effective conditionality attached to an appropriate European Stability Mechanism (ESM) programme. OMT's would be focused on the shorter part of the yield curve, in particular on sovereign bonds with a maturity of between 1 and 3 years. No ex ante quantitative limits were set for OMT's. For more details, see:

[https://www.ecb.europa.eu/press/pr/date/2012/html/pr120906\\_1\\_en.html](https://www.ecb.europa.eu/press/pr/date/2012/html/pr120906_1_en.html)

<sup>(262)</sup> On 16 June 2015, the Court of Justice of the EU ruled that the OMT programme was compatible with EU law.

<https://curia.europa.eu/jcms/upload/docs/application/pdf/2015-06/cp150070en.pdf>

<sup>(263)</sup> See e.g. Altavilla, C., D. Giannone and M. Lenza (2016), 'The financial and macroeconomic effects of OMT announcements', *International Journal of Central Banking*, Vol. 12, No. 3, pp. 29-57.

They find that the OMT announcement decreased the Italian and Spanish two-year government bond yields by about 2 percentage points, while leaving the equivalent bond yields in Germany and France unchanged.

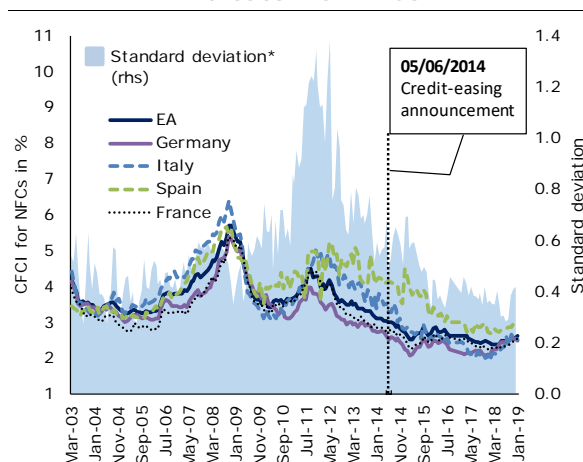
<sup>(264)</sup> For more details on the calculation of the composite financing cost indicator, see Briciu, L. and A. Jevčák (2013), 'Drivers of Diverging Financing Conditions across Member States', *Quarterly Report on the Euro Area*, Vol. 12, No.1, pp. 19-25.

euro area slowly declined from above 2% in mid-2012 to below 1% in late 2013. Given the limited space for further policy rate cuts, the ECB Governing Council abandoned its established line of never pre-committing regarding its future monetary policy orientation. In July 2013, it introduced the so-called forward guidance by signalling that it ‘expects the key ECB interest rates to remain at present or lower levels for an extended period of time’<sup>(265)</sup>. This decision was meant to provide more clarity over its assessment of the economic outlook and its reaction function<sup>(266)</sup>.

As euro-area HICP inflation declined further to around 0.5% by mid-2014, the ECB announced a major credit-easing package in June 2014. In an unprecedented move for a major central bank, the ECB moved its deposit facility rate into negative territory, setting it at -0.1% (while also lowering the MRO and the marginal lending rate). The other core element of the package was the decision to conduct a series of targeted longer-term refinancing operations (TLTROs) provided at a fixed rate with a maturity of up to 4 years. Their aim was to support bank lending to the non-financial private sector in the euro area, excluding loans to households for house purchase<sup>(267)</sup>.

In September 2014, the ECB lowered the deposit facility rate to -0.2% and decided to start purchasing non-financial private sector assets under the asset-backed securities purchase programme and the third covered bond purchase programme. Following the introduction of the credit-easing package, the financing costs of NFCs gradually declined across the euro area and their cross-country dispersion further compressed (see Graph V.4).<sup>(268)</sup>

Graph V.4: Composite financing costs indicator for NFCs



\* Based on data available for nine euro-area Member States  
 Source: ECB, Bloomberg, DG ECFIN calculations

The collapse of oil prices in the second half of 2014, when the price of Brent crude dropped from above \$110 per barrel in June 2014 to below \$60 per barrel in late 2014, further accentuated disinflationary pressures in the euro area, with the annual headline inflation dropping into negative territory in December 2014. In January 2015, the ECB decided to launch an expanded asset purchase programme (APP), encompassing the two ongoing private sector purchase programmes for asset-backed securities and covered bonds and a new public sector purchase programme<sup>(269)</sup>. The combined purchases of securities under the APP, amounting to on average €60 billion per month, were initially intended to be carried out until end-September 2016. The end of net asset purchases was, however, from the outset also conditional on a sustained adjustment in the euro-area inflation path that was consistent with the ECB aim of achieving inflation rates below, but close to, 2% over the medium term. The forward guidance on

<sup>(265)</sup> <https://www.ecb.europa.eu/press/pressconf/2013/html/i130704.en.html>

<sup>(266)</sup> See e.g. Praet, P. (2013), ‘Forward guidance and the ECB’, Column published on VoxEU.org on 6 August 2013. <https://voxeu.org/article/forward-guidance-and-ecb>

<sup>(267)</sup> For more details on the operational modalities of TLTROs, see: [https://www.ecb.europa.eu/press/pr/date/2014/html/pr140605\\_2\\_en.html](https://www.ecb.europa.eu/press/pr/date/2014/html/pr140605_2_en.html)

<sup>(268)</sup> ECB (2015), ‘The Transmission of the ECB’s Recent Non-Standard Monetary Policy Measures’, *Economic Bulletin*, Issue 7, pp. 32-51.

<sup>(269)</sup> The secondary market purchases of investment grade securities under the public sector purchase programme were allocated across issuers from different euro-area countries on the basis of the ECB’s capital key with purchases of domestic securities by national central banks not being subject to potential loss sharing. They were subject to an issue limit of 25% (raised to 33% in September 2015 subject to certain conditions) and an issuer limit of 33% in order to safeguard market functioning and price formation as well as to mitigate the risk of the Eurosystem becoming a dominant creditor of euro-area governments. The Eurosystem accepted the same (*pari passu*) treatment as private investors with respect to purchased securities. For more details on the operational modalities of the expanded APP, see: [https://www.ecb.europa.eu/press/pr/date/2015/html/pr150122\\_1.en.html](https://www.ecb.europa.eu/press/pr/date/2015/html/pr150122_1.en.html)

net asset purchases thus incorporated both date- and state-dependent conditioning elements.

In order to ensure a sustained adjustment in the euro-area inflation path, the ECB subsequently extended net asset purchases under the APP until March 2017, then until end-2017, September 2018 and finally until end-2018. At the same time, the average monthly pace of net asset purchases was temporarily increased to €80 billion from April 2016 until March 2017 and then gradually reduced to €60 billion until end-2017, €30 billion until September 2018 and €15 billion until end-2018. To facilitate the achievement of net asset purchase targets, a new corporate sector purchase programme was launched in June 2016. In addition, the deposit facility rate was lowered to -0.3% in December 2015 and to -0.4% in March 2016 when a new round of TLTROs was also announced. Finally, in March 2016, the ECB also for the first time linked the forward guidance on its key interest rates to its guidance on net asset purchases by stating that it expected these rates ‘to remain at present or lower levels for an extended period of time, and well past the horizon of [its] net asset purchases’ (270).

Thanks largely to the APP (271), the Eurosystem balance sheet increased from below 22% of euro-area GDP at the end of 2014 to almost 41% by end-2018 (see Graph V.5). As a result, excess liquidity held by euro-area banks at their accounts with the Eurosystem increased to about €1.8 trillion. This ensured that overnight euro money market rates continued to trade close to the negative deposit facility rate. However, as access liquidity accumulated in some euro-area countries, TARGET2 (272) balances, i.e. the net positions of national central banks participating in the payment system vis-à-vis the ECB, also widened considerably (273).

(270)

<https://www.ecb.europa.eu/press/pressconf/2016/html/is160310.en.html>

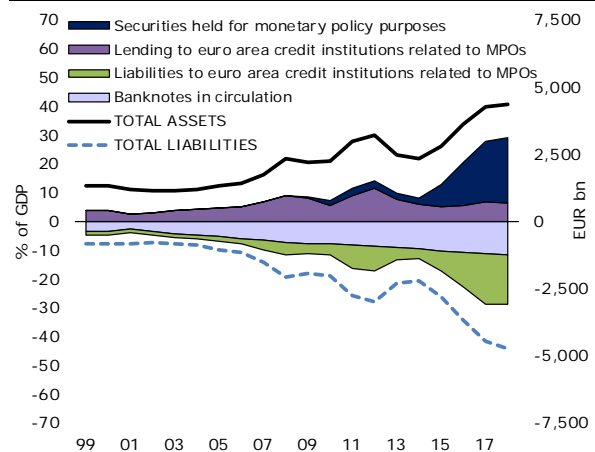
(271) On 11 December 2018, the Court of Justice of the EU ruled that the public sector purchase programme did not infringe EU law.

<https://curia.europa.eu/jcms/upload/docs/application/pdf/2018-12/cp180192en.pdf>

(272) TARGET stands for Trans-European Automated Real-time Gross settlement Express Transfer system. TARGET2 is the second generation of TARGET. It is the real-time gross settlement system owned and operated by the Eurosystem and used by both central banks and commercial banks to process payments in euro in real time.

(273) For a more thorough discussion, see e.g. Baldo, L., Hallinger, B., Helmus, C., Herrala, N., Martins, D., Mohing, F., Petroulakis, F.,

Graph V.5: Eurosystem balance sheet



Source: ECB

Supported by the ample degree of monetary accommodation and further reduction in financial market fragmentation, euro-area GDP growth accelerated from 1.4% in 2014 to 2.4% in 2017 before slowing again to below 2% in 2018. At the same time, euro-area inflation picked up from below 0.5% over 2014-2016 to 1.5% in 2017 and 1.7% in 2018 (for more details on the macroeconomic impact of the APP, see Box V.1). As a result, given its confidence in the sustainability of the euro-area inflation path, the ECB confirmed in December 2018 its intention (first announced in June 2018) to cease net asset purchases under the APP by end-2018. At the same time, the ECB enhanced its forward guidance on reinvestment by clarifying that it would ‘continue reinvesting, in full, the principal payments from maturing securities purchased under the APP for an extended period of time past the date when [it starts] raising the key ECB interest rates, and in any case for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation’ (274).

#### V.4. Inflation developments over the last 20 years

Annual HICP inflation in the euro area averaged 1.7% between January 1999 and December 2018 (see Graph V.6). This is a considerable achievement, given that annual inflation in the

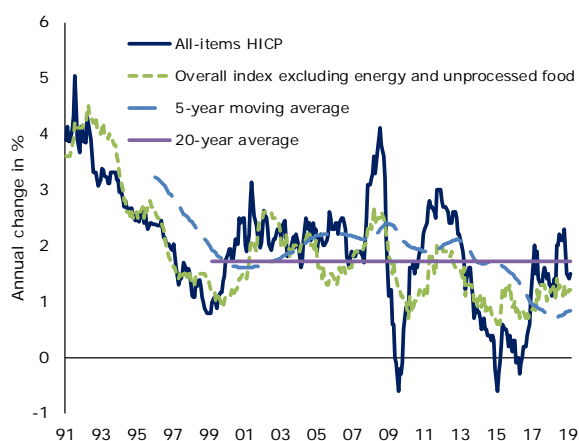
Resinek, M., Vergote, O., Usciati, B. and Y. Wang (2017), ‘The Distribution of Excess Liquidity in the Euro Area’, *ECB Occasional Paper*, No. 200.

(274)

<https://www.ecb.europa.eu/press/pressconf/2018/html/ecb.is181213.en.html>

initial 11 euro-area countries (EA11), which adopted the euro in 1999, averaged 2.6% between January 1991 and December 1998. Moreover, it declined gradually from above 4% in 1991 to 1.1% in 1998 also thanks to the efforts of these countries to comply with the so-called Maastricht criteria in order to be able to adopt the euro in January 1999.

Graph V.6: HICP inflation in the euro area



Source: Eurostat

Euro-area inflation developments, however, differed considerably between the first two decades. Whereas annual inflation averaged 2.2% over the first decade, it amounted to on average 1.3% over the second decade. The decline naturally reflected the disinflationary impact of the global financial crisis as well as the subsequent euro-area sovereign debt crisis, with average annual GDP growth in the euro area slowing down from 4.1% during 1999-2008 to 2.5% over 2009-2018 and the average annual growth rate of the broad monetary aggregate M3 from 8.1% in 1999-2008 to 3.2% in 2009-2018.

Although economic activity in the euro area has recovered in recent years (the unemployment rate declined from above 12% in early 2013 to below 8% in 2018), underlying consumer price pressures have remained relatively muted, with core inflation hovering around 1.2% over 2017-2018. Changes in the link between measures of economic slack and consumer prices (i.e. the Phillips curve) can stem from different causes, such as an increased role played by global factors<sup>(275)</sup> or a shift in short-

<sup>(275)</sup> For more details, see e.g. Forbes, K. (2018), 'Fixing the Astrolabe: Global Factors and Inflation Models', Conference proceedings: ECB Forum on Central Banking, 16-18 June 2018, Sintra, Portugal, pp. 170-186.

term inflation expectations, which appear to have become more sticky and backward-looking<sup>(276)</sup>.

## V.5. Broader institutional context

The past two decades have demonstrated that consumer price stability is not sufficient to ensure overall macro-financial stability in the euro area. In the run-up to the global financial crisis, a number of euro-area countries had accumulated large macroeconomic imbalances, which then exacerbated the negative impact of the external shock and necessitated a protracted adjustment process. This experience was reflected in the EU surveillance process, notably by introducing the macroeconomic imbalance procedure in 2011. The euro-area institutional architecture was subsequently strengthened by the creation of the single supervisory and resolution mechanisms for the banking sector and by the establishment of the ESM to assist countries in severe financial distress. The ECB also helped to restore macro-financial stability during the peak of the euro-area sovereign debt crisis, in particular by announcing OMTs in September 2012<sup>(277)</sup>.

Going forward, the ECB still faces the challenge of having to conduct monetary policy in a currency union without an equivalent fiscal authority. This makes stabilising overall euro-area economic activity more challenging<sup>(278)</sup>. In addition, large-scale asset purchases for monetary policy purposes are also more complex in the euro-area context due to the lack of a sufficiently large pool of common safe assets<sup>(279)</sup>. As a result, a further development of the EMU institutional architecture<sup>(280)</sup> could also make it easier to conduct monetary policy in the euro area.

<sup>(276)</sup> For a more thorough discussion, see e.g. Ciccarelli, M. and C. Osbat (eds., 2017), 'Low Inflation in the Euro Area: Causes and Consequences', *ECB Occasional Paper*, No. 181.

<sup>(277)</sup> For a more detailed review of the impact of OMTs on the euro-area financial system see e.g. Hartmann and Smets (2018), op. cit..

<sup>(278)</sup> For a more thorough discussion, see e.g. Claeys, G. (2017) 'The Missing Pieces of the Euro Architecture', *Bruegel Policy Contribution*, Issue 28.

<sup>(279)</sup> See e.g. Cœuré, B., 'Bond Scarcity and the ECB's Asset Purchase Programme', Speech at the Club de Gestion Financière d'Associés en Finance in Paris.

[https://www.ecb.europa.eu/press/key/date/2017/html/sp170403\\_1\\_en.html](https://www.ecb.europa.eu/press/key/date/2017/html/sp170403_1_en.html)

<sup>(280)</sup> As proposed by e.g. European Commission (2017), 'Reflection Paper on the Deepening of the Economic and Monetary Union'.

[https://ec.europa.eu/commission/sites/beta-political/files/reflection-paper-emu\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/reflection-paper-emu_en.pdf)



## V.6. Conclusions

According to the Maastricht Treaty, the ECB's primary objective is to maintain price stability. Over the first 20 years of its existence, the ECB succeeded in ensuring that annual HICP inflation in the euro area averaged 1.7%. However, its operational environment has become more challenging in the aftermath of the 2008 global financial crisis and the subsequent euro-area sovereign debt crisis. The ECB has therefore deployed a wide range of non-standard monetary policy measures, with some of them having been challenged before the Court of Justice of the EU, which confirmed their conformity with EU law. As a result, overnight euro money market rates have traded in the negative territory since late 2014 while the Eurosystem balance sheet increased to almost 41% of euro-area GDP by end-2018. Nevertheless, HICP inflation has averaged just 1.3% over the last decade.

After having carried the burden of the reflationary effort over the past years, monetary policy might be subject to diminishing returns while the risk of

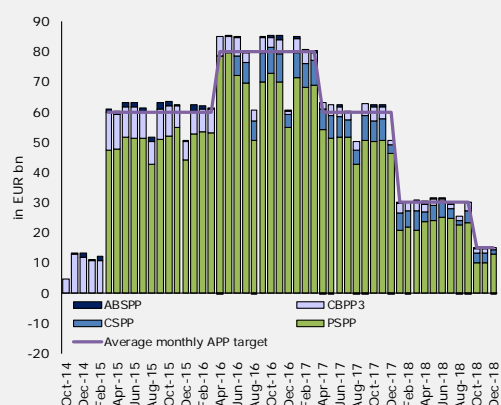
negative side effects could be increasing. As a result, to be fully effective over the longer term, monetary policy needs to be coupled with appropriate structural reforms and responsible fiscal policy supported by growth-friendly composition of public finances.

Moreover, some recent structural changes in the euro-area financial system, such as the increased demand for high quality liquid assets and the larger role played by the non-bank financial sector, together with the overall backdrop of lower potential growth will likely continue affecting monetary policy implementation and its subsequent transmission going forward. At the same time, further progress in building up the EMU institutional architecture, including a budgetary instrument as well as completing the banking and capital markets union, would make it easier to conduct single monetary policy. In particular, a more resilient euro-area economy and financial system would also imply that less burden is placed on the ECB when economic activity needs to be stabilised in view of negative developments/shocks.

### Box V.1: The macroeconomic impact of the ECB APP

Net purchases of securities under the expanded asset purchase programme were conducted from March 2015 until December 2018. They cumulatively amounted to €2.6 trillion (i.e. 22% of euro-area GDP) with the largest contribution of almost €2 trillion stemming from the public sector purchase programme. The APP portfolio was then held stable until November 2019 as the Eurosystem continued to fully reinvest all principal payments from maturing securities purchased under the APP.

Graph 1: Pace and composition of net asset purchases



Source: ECB

This massive withdrawal of longer-term securities (with remaining maturities of between 1 and 30 years) from financial markets and their primary substitution by central bank reserves implied significantly lower duration risk borne by the private sector (duration extraction effect). <sup>(1)</sup> Together with the APP-induced relative shortage of certain longer-term securities (scarcity/preferred habitat effects), this has suppressed term premia and thus longer-term financing costs in the euro area. Using an arbitrage-free term structure model, Eser et al. (2019) estimate that the overall dampening impact of the APP on the 10-year term premium amounted to around 95 basis points in June 2018. <sup>(2)</sup> This conclusion is broadly corroborated by empirical evidence based on event studies showing that term premia declined across various euro-area financial market segments following ECB communication and news stories related to the APP. <sup>(3)</sup>

By easing financing conditions across the euro area, the APP supported economic activity and the related build-up of inflationary pressures. According to various estimates, the APP thus had a significant positive impact on economic growth and inflation in the euro area over the past years. For example, a DSGE-model-based estimation by Hohberger, Priftis and Vogel (2019) suggests that the APP increased year-on-year output growth and inflation in the euro area by on average 0.4 and 0.9 percentage points, respectively, over the period 2015-2018. <sup>(4)</sup> Using the Gertler and Karadi (2013) model, which builds on a closed-economy framework, Andrade et al. (2016) find that the initial APP configuration (i.e. as announced in January 2015) increased output gradually by around 1.1 percent and inflation by about 40 basis points, reaching its peak in around 2 years. <sup>(5)</sup> Sahuc (2016), based on

- <sup>(1)</sup> Duration risk embodied in longer-term interest rates captures the uncertainty regarding the expected path of short-term/policy interest rates.
- <sup>(2)</sup> Eser, F., Lenke, W., Nyholm, K., Radde, S. and A. L. Vladu (2019), 'Tracing the Impact of the ECB's Asset Purchase Programme on the Yield Curve', *ECB Working Paper*, No. 2293.
- <sup>(3)</sup> See e.g. Altavilla, C., Carboni, G. and R. Motto (2015), 'Asset Purchase Programmes and Financial Markets: Lessons from the Euro Area', *ECB Working Paper*, No. 1864 or De Santis, R. A. (2016), 'Impact of the Asset Purchase Programme on Euro Area Government Bond Yields Using Market News', *ECB Working Paper*, No. 1939.
- <sup>(4)</sup> Hohberger, S., Priftis, R. and L. Vogel (2018), 'The Macroeconomic Effects of Quantitative Easing in the Euro Area: Evidence from an Estimated DSGE Model', mimeo.
- <sup>(5)</sup> Gertler, M. and P. Karadi (2013), 'QE 1 vs. 2 vs. 3...: A Framework for Analyzing Large-Scale Asset Purchases as a Monetary Policy Tool', *International Journal of Central Banking*, Vol. 9, pp. 5-53, and Andrade, P., Breckenfelder, J., De Fiore, F., Karadi, P. and O. Tristani (2016), 'The ECB's Asset Purchase Programme: an Early Assessment', *ECB Working Paper*, No. 1956.

(Continued on the next page)

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*Box (continued)*

the same model, estimates the initial effect on both real GDP growth and inflation in 2015-2016 at some 0.6 percentage points.<sup>(6)</sup> Finally, according to the Eurosystem staff estimates, all ECB monetary policy measures adopted since mid-2014 cumulatively contributed around 1.9 percentage points both to euro-area inflation as well as real GDP growth over 2016-2020, with the strongest impact in 2016.<sup>(7)</sup>

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<sup>(6)</sup> Sahuc, J.-G. (2016), 'The ECB's Asset Purchase Programme: A Model-Based Evaluation', *Economics Letters*, Vol. 145, pp. 136-140.

<sup>(7)</sup> ECB (2019), 'Taking Stock of the Eurosystem's Asset Purchase Programme After the End of Net Asset Purchases', *ECB Economic Bulletin*, Issue 2, pp. 69-92.