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Research Report

The use of the Eurosystem's monetary policy instruments and operational framework since 2012

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The use of the Eurosystem's monetary policy instruments and operational framework since 2012

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Abstract

This paper provides a comprehensive overview of the use of the Eurosystem's monetary policy instruments and the operational framework from the third quarter of 2012 until the first quarter of 2016. The paper reviews the context of Eurosystem market operations, counterparty and collateral framework, participation in tender operations, recourse to standing facilities, patterns of reserve fulfilment, outright asset purchase programmes, as well as the impact of the ECB's monetary policy implementation on the Eurosystem's balance sheet and liquidity conditions.

Keywords: Monetary policy implementation; Central bank operational framework; Central bank liquidity management; Non-standard monetary policy measures.

JEL codes: D02, E43, E58, E65, G01

Non-technical summary

The purpose of the Eurosystem operational framework and its monetary policy instruments is to implement the monetary policy decisions of the Governing Council of the European Central Bank (ECB). The task of monetary policy implementation is decentralised and therefore involves, in addition to the ECB, the national central banks (NCBs) of those countries that have adopted the euro. Together the ECB and the NCBs form the Eurosystem.

While traditionally the main objective of the Eurosystem's monetary policy implementation is to control short-term interest rates, outright purchases of debt instruments have become increasingly important during the financial crisis and in its aftermath. As the size and composition of the central bank balance sheet has become a tool for monetary policy, and as the focus of monetary policy implementation has come to extend beyond the unsecured overnight money market segment to include secured money markets and the longer end of the yield curve up to 30 years, monetary policy implementation has spanned a wider array of instruments and markets.

The present paper gives a comprehensive and detailed overview of the context and use of the Eurosystem's monetary policy instruments since 2012, which addressed the significant challenges posed by the financial crisis, the subsequent sovereign debt crisis and the current environment of low growth and inflation. The paper is a sequel to the ECB Occasional Paper No 135 published in August 2012¹. The paper at hand covers the period from the third quarter of 2012 until the first quarter of 2016.

Several phases can be distinguished during the review period. At the start, some euro area government bond markets were particularly affected by high risk premia, which became excessive towards the middle of 2012, reflecting, among other factors, unfounded fears over the reversibility of the euro. These excessive risk premia added to funding stress already present in the banking sector, with some banks struggling to access interbank and capital markets. The resulting pressure on banks to tighten credit standards and to deleverage risked curtailing credit provision to the real economy. To address the severe distortions in the pricing of sovereign debt in some euro area countries, the Governing Council announced its readiness to undertake Outright Monetary Transactions (OMTs) in euro area secondary sovereign bond markets, subject to countries complying with conditionality. Although so far OMTs have not been activated, the announcement was instrumental in addressing excessive risk premia and improving financial market confidence.

In June 2014, a series of new monetary policy measures was gradually introduced, which together constitute a package of credit easing policies. These measures aimed to enhance the transmission of monetary policy but also to reinforce the

¹ Eser, F. et al. (2012), "[The use of the Eurosystem's monetary policy instruments and operational framework since 2009](#)". ECB Occasional Paper No 135, August.

accommodative monetary policy stance in view of the persistently weak inflation outlook, slowing growth momentum and subdued monetary and credit dynamics at the time. This package of measures comprised two series of targeted longer-term refinancing operations (TLTROs), the introduction of a negative interest rate on the deposit facility and an asset purchase programme (APP) comprising both private and public sector securities.

Recourse to TLTROs has been substantial and broad-based. These operations currently form the bulk of Eurosystem lending to banks. The implementation of a negative rate on the deposit facility has been smooth and money market rates have followed the rate on the deposit facility into negative territory. To ensure the smooth implementation of the APP, the terms of the various constituent programmes have been revised as necessary along the way. These revisions have enabled the Eurosystem to achieve the required purchase volumes, while minimising any negative side-effects on market functioning.

Throughout the review period, the Eurosystem continued to provide liquidity in all of its liquidity-providing reverse transactions at a fixed rate with full allotment, i.e. at the main refinancing rate and as much as counterparties requested, subject to providing Eurosystem eligible collateral. The only exception was the TLTROs for which bank specific limits applied based on their lending to the real economy (excluding loans to households for house purchases) and where a small 10 basis point spread was added to the first two operations. The fixed rate full allotment procedure removed allotment uncertainty for banks, which was of particular importance in a context of fragile bank access to interbank and capital markets.

During the review period, Eurosystem credit operations and asset purchase programmes implied excess liquidity of the banking system (i.e. an excess of deposits with the central bank relative to required reserves). The length of the Eurosystem balance sheet increased to €2 900 bn by end of March 2016 i.e. towards all-time highs as observed in 2012. Higher amounts of excess liquidity lower the need and incentives for banks to operate in the interbank market and pin the money market rates close to the bottom of the interest rate corridor, which is the rate on the deposit facility.

In addition to credit operations and asset purchases, the report also looks at other components of the implementation framework, namely collateral and counterparty frameworks, as well as standing facilities and reserve requirements. Changes to these key pillars of the implementation framework were relatively limited during the review period. The report also provides deeper analysis of excess liquidity distribution, negative rates, the TLTROs and the implementation of the asset purchase programmes.

1 Context and overview of Eurosystem market operations since 2012

To set the background for the use of monetary policy instruments since Q3 2012, this section briefly reviews the developments from 2012 to Q1 2016 in the euro area banking system and money and bond markets, and focuses on relevant risks in the monetary economic environment. It characterises the specific challenges addressed by Eurosystem monetary policy measures². The impact of the ECB's monetary policy implementation on the Eurosystem balance sheet and liquidity conditions is covered in greater detail in Section 8.

In response to the financial crisis that emerged in 2007/2008, which later evolved into the euro area sovereign debt crisis, a number of initiatives were taken by the EU institutions and Member States with the aim of curtailing the increasing risk of fragmentation along national borders. Along these lines, they promoted a coordinated process to strengthen the EU economic governance framework³, established a crisis management mechanism to safeguard financial stability⁴ and called for a banking union to break the nexus between banks and sovereigns⁵. Moreover, the ECB adopted non-standard monetary policy measures to allow for the effective implementation of the single monetary policy in order to maintain price stability⁶.

Nonetheless, in mid-2012, a high and persistent degree of market fragmentation among euro area countries was accompanied by an increasing level of stress in financial markets.⁷

As shown in Chart 1, the nominal 10-year euro area government bond yields reached particularly high levels in some countries, due to increasing risk premia, which became excessive towards the end of July 2012, reflecting, among other factors, unfounded fears over the reversibility of the euro. These excessive risk premia added to funding stress already present in the banking sector, with some banks struggling to access interbank and financial markets. Tighter bank funding conditions were also observed in the covered bonds market (Chart 2), mirroring increasing fragmentation along national borders and a pronounced sovereign-bank

² See full list of monetary policy measures in Table A in the Annex.

³ For further details, see European Central Bank (2011), "[Stronger EU economic governance framework comes into force](#)", Monthly Bulletin, December, pp. 98-100. See also European Central Bank (2011) "[The reform of economic governance in the euro area – essential elements](#)", Monthly Bulletin, March pp. 99-119.

⁴ For further details, see European Central Bank (2011), "[The European Stability Mechanism](#)", Monthly Bulletin, July, pp. 71-84.

⁵ For further details, see Constâncio, V. (2012), "[Towards a European Banking Union](#)", speech given at the start of the academic year of the Duisenberg School of Finance, 7 September.

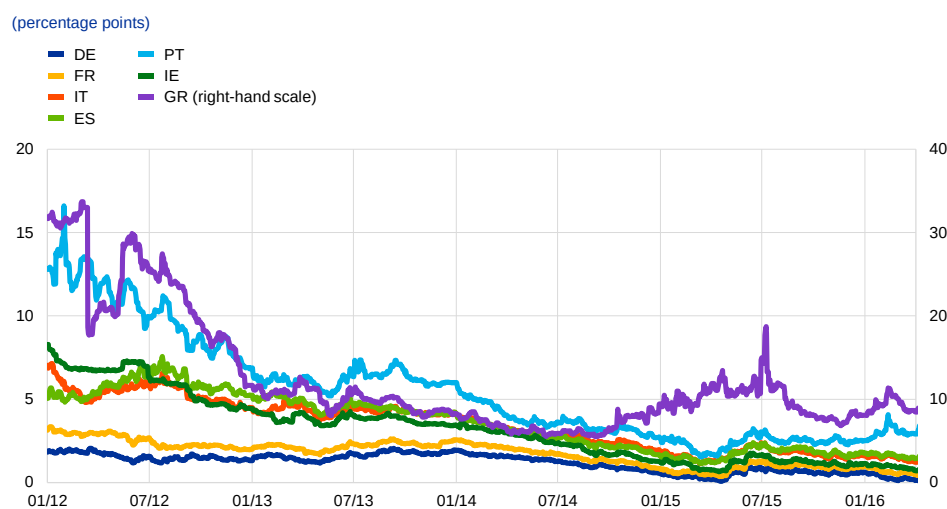
⁶ European Central Bank (2010), "[ECB decides on measures to address severe tensions in financial markets](#)", Press Release, 10 May.

⁷ European Central Bank (2014), "[The determinants of euro area sovereign bond yield spreads during the crisis](#)", Monthly Bulletin, May, pp. 67-83.

nexus as credit institutions' financial soundness was perceived to be strictly bound to the credit risk of the respective host sovereign. The resulting pressure on banks to tighten credit standards and to deleverage risked curtailing credit provision to the real economy.

Chart 1

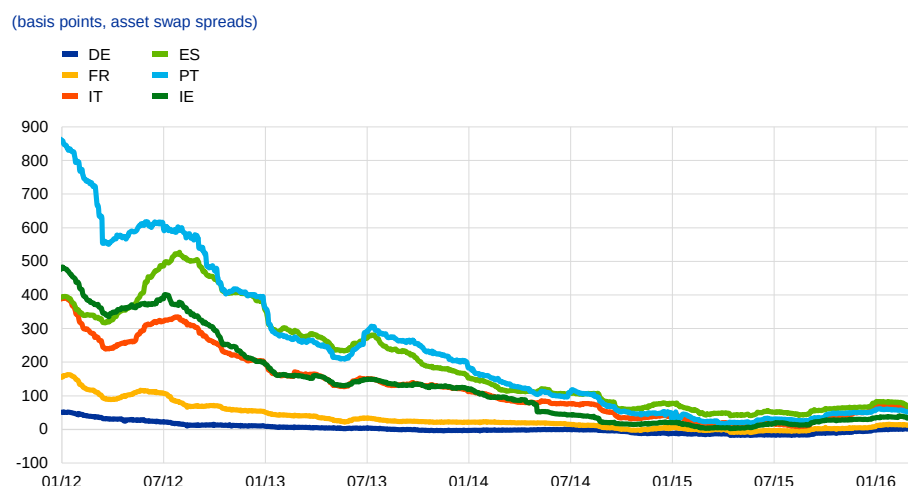
10-year euro area government bond yields in selected countries



Sources: Bloomberg, ECB.

Chart 2

iBoxx spreads for European covered bank bonds in selected countries



Sources: Bloomberg, ECB.

Increased risk aversion, together with high levels of excess liquidity created by the Eurosystem (see Box 4), slowed down interbank money market activity. The higher recourse to Eurosystem refinancing operations from banking systems of lower-rated countries, together with the liquidity concentration in a few higher-rated countries and the higher use of domestic collateral, provided evidence of persistent money market dysfunction and fragmentation, which impaired the transmission of monetary policy.

In July 2012, the Governing Council decided to cut key interest rates for the euro area by 25 bps, bringing the rate on the deposit facility to 0 % as inflationary pressures over the policy-relevant horizon had been dampened further. This was because some of the downside risks to the euro area growth outlook – relating in particular to a further increase in the tensions in several euro area financial markets and their potential spill-over to the euro area real economy – had materialised. Later that month, in order to alleviate continuing tensions in the financial markets, President Draghi delivered a speech where he said that, ‘Within our mandate, the ECB is ready to do whatever it takes to preserve the euro.’⁸

Following this, in August 2012, the ECB announced the introduction of Outright Monetary Transactions (OMT) in order to address the severe distortions in the pricing of sovereign debt in some euro area countries, thus removing the unwarranted redenomination risk that was being factored in for some jurisdictions. In September 2012, technical details on OMT were announced⁹ and the Securities Market Programme (SMP) was terminated. OMT is described in detail in Section 7.12.

The OMT announcement helped to ease tensions in all market segments, resulting in decreasing and converging government bond yields as well as covered bond spreads in lower-rated countries, which continued over the course of 2013 and 2014 (Chart 1 and Chart 2).

Improvements in economic confidence, financial market sentiment and financing conditions were broadly observed. Nonetheless, economic activity remained subdued and inflation rates declined. In addition, a substantial degree of financial market segmentation along national borders persisted, resulting in significant heterogeneity in financing conditions for households and firms across the euro area countries.¹⁰

Moreover, despite improvements in the funding situation of the euro area banking system, banks continued to deleverage in a number of euro area countries. In addition, the reduction of excess liquidity, along with spill-overs from the rising US Treasury yields during the ‘taper tantrum’, exerted some upward pressure on money market rates, which increased from the rate on the deposit facility towards the level of the interest rate on the main refinancing operations (MRO) and became more volatile, encompassing the risk of an undue tightening of monetary conditions (Chart 23 and Chart 24).

Against this background, and with the aim of anchoring market expectations of money market rates more firmly towards the rate on the deposit facility and avoiding

⁸ See Draghi, M. (2012) [Verbatim](#) of the remarks, speech given at the Global Investment Conference, 26 July.

⁹ European Central Bank (2012), “[Technical features of Outright monetary Transactions](#)”, Press Release, 6 September.

¹⁰ In the course of 2013, economic activity was rather weak but recovered gradually in the course of 2014. HICP inflation declined perceptibly over the period under review from 2.2% in December 2012 to 0.5% in June 2014, mainly reflecting oil and food price developments. Monetary and, in particular, credit dynamics remained subdued throughout 2013 and the first part of 2014.

unwanted divergence from the accommodative monetary policy stance, the Governing Council decided in July 2013 to provide forward guidance on ECB key interest rates over the policy-relevant horizon. The Governing Council stated that it 'expects the key ECB interest rates to remain at present or lower levels for an extended period of time. This expectation is based on the overall subdued outlook for inflation extending into the medium term, given the broad-based weakness of the economy and subdued monetary dynamics.' Such conditional statements about the future path of policy interest rates are commonly referred to as forward guidance¹¹.

The interest rate on the MRO was also reduced twice, in May and in November 2013, narrowing the interest rate corridor as the rate on the deposit facility was kept at zero. Moreover, to prevent banks from facing liquidity constraints once the three-year longer-term refinancing operations (LTRO) mature, in November 2013 the Governing Council announced that the Eurosystem would continue to provide liquidity to banks through fixed rate tender procedures with full allotment in all refinancing operations for as long as necessary and at least until 7 July 2015.

The forward guidance, rate cuts and lengthening of fixed rate full allotment adopted by the ECB in 2013 helped to alleviate tensions in financial markets and reduced uncertainty, which contributed to a sustained improvement in financing conditions across the whole euro area. Risk premia on the government bonds of lower-rated jurisdictions continued to decline, incentivising new bond issuances by banks, companies and sovereigns.

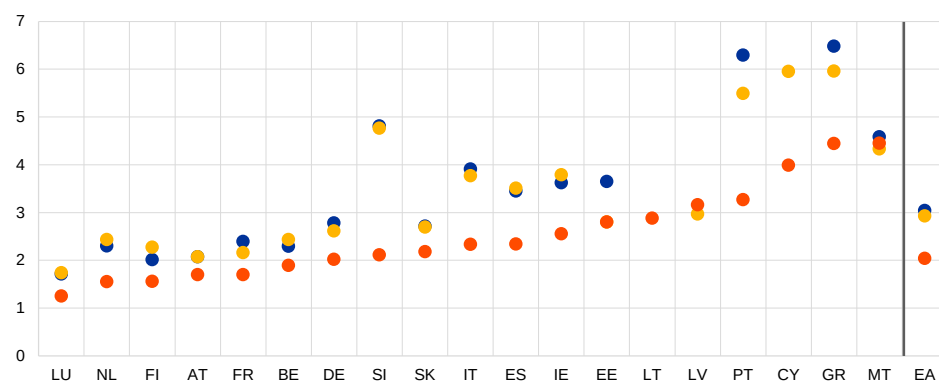
However, towards the middle of 2014, the momentum of the recovery was fading, as weaker domestic demand, increased geopolitical tensions and insufficient implementation of structural reforms in some euro area countries negatively affected economic conditions. Additionally, with the decline of excess liquidity in the banking system mainly as a result of repayments of three-year LTROs, the euro area money market rates rose and became more volatile, which was not consistent with the ECB's monetary policy stance. Headline inflation remained low and declined further, while credit developments remained subdued. The improvements in broader financial conditions – arising from past monetary policy decisions – were transmitted to households and firms' borrowing conditions only imperfectly, especially in some euro area countries. Indeed, the cuts in the interest rate on the MRO until mid-2014 were not reflected in significantly easier credit conditions for non-financial corporations (NFCs) and households, as shown in Chart 3 and in Chart 4.

¹¹ European Central Bank (2014), "[The ECB's forward guidance](#)", Monthly Bulletin, April, pp. 65-73.

Chart 3**Cost of borrowing for NFCs**

(percentage points)

- August-2012 MRO = 0,75%
- May-2014 MRO = 0,25%
- March-2016 MRO = 0%



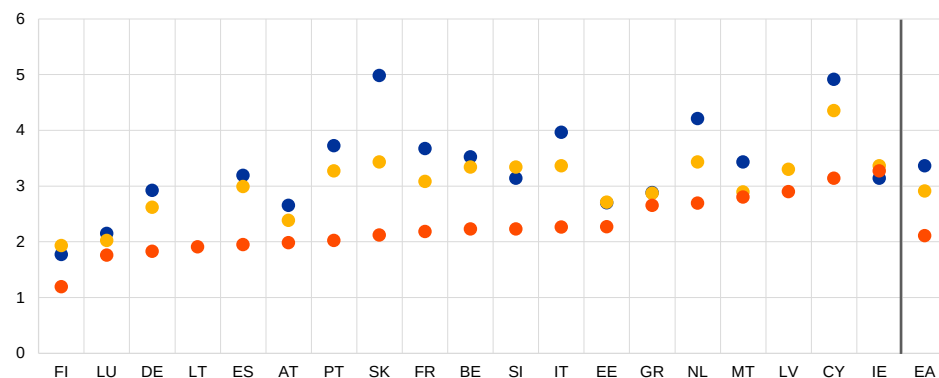
Sources: ECB.

Notes: Cost of borrowing indicator for non-financial corporations.

Chart 4**Cost of borrowing for households for house purchase**

(percentage points)

- August-2012 MRO = 0,75%
- May-2014 MRO = 0,25%
- March-2016 MRO = 0%



Sources: ECB.

Notes: Cost of borrowing indicator for households.

Against this background, the Governing Council has since mid-2014 adopted a package of new measures with the objective not only of enhancing the transmission of monetary policy, but from now on of also reinforcing the accommodative monetary policy stance in light of a persistently weak inflation outlook, slowing growth momentum and subdued monetary and credit dynamics. The main elements of the package of measures are targeted longer-term refinancing operations (TLTROs), a negative deposit facility interest rate, large-scale purchases of private and public sector assets and forward guidance.

First, in June 2014, the ECB announced the introduction of TLTROs. These operations gave banks the opportunity to borrow from the Eurosystem at fixed

interest rates for a period of up to four years in a series of eight operations conducted at quarterly intervals starting in September 2014. The targeted nature of these operations derives from the fact that the borrowing allowance of banks is linked to their lending behaviour (see Section 4.1.2 and in particular Box 1).

Second, in the context of a broader reduction in the key ECB interest rates, the Governing Council also decided to introduce for the first time a negative rate on the deposit facility and on reserves in excess of the minimum reserve requirements (-0.10 %, see Box 2).

Third, in September 2014, the Governing Council further eased the monetary policy stance amid stronger downside risk to the inflation outlook by once again reducing the key ECB interest rates: the interest rate on the MRO and the rate on the deposit facility were lowered to 0.05% and to -0.20%, respectively. Further, to enhance the functioning of the transmission mechanism and support the provision of credit to the real economy, two new private sector purchase programmes were announced: the Covered Bond Purchase Programme 3 (CBPP3; see Section 7.1) and the Asset-Backed Securities Purchase Programme (ABSPP; see Section 7.3).¹²

With the introduction of the aforementioned measures along with the effects of increased excess liquidity, money market rates fell significantly and returned towards the lower bound of the interest rate corridor (Chart 23 and Chart 24). Credit support measures such as TLTROs, CBPP3 and ABSPP helped to ease bank funding conditions and lower real economy funding costs.¹³ Bank bond yields and ABS spreads (Chart 20) fell across rating and asset classes, especially in lower-rated countries, and covered bond yields in higher-rated jurisdictions reached negative territory (Chart 2). The purchase programmes contributed to a significant easing of perceived bank credit risk. In this process, overall loan origination started to improve. However, due to the ongoing deleveraging process and impaired loans on the balance sheet, credit provided by banks in lower-rated countries continued to decline.

In early 2015, the Governing Council thoroughly reassessed the inflation outlook and the stimulus provided by the measures implemented since mid-2014. While the package of credit easing policies introduced since mid-2014 had been effective in enhancing the transmission of the monetary policy impulse to the real economy, inflation dynamics had continued to be weaker than expected while slack in the economy continued to be sizeable amidst subdued money and credit. Market-based measures of inflation expectations fell across horizons and most indicators of actual or expected inflation stood at, or close to, their historical lows indicating heightened risks of an overly prolonged period of low – and possibly even consistently

¹² In June, the Governing Council had announced an initiative to intensify preparatory work and consider purchasing simple and transparent ABS with underlying assets consisting of claims against the euro area non-financial private sector related to outright purchases of ABS. This was intended to improve the functioning of the monetary policy transmission mechanism, given the role of the market in facilitating new credit flows to the economy.

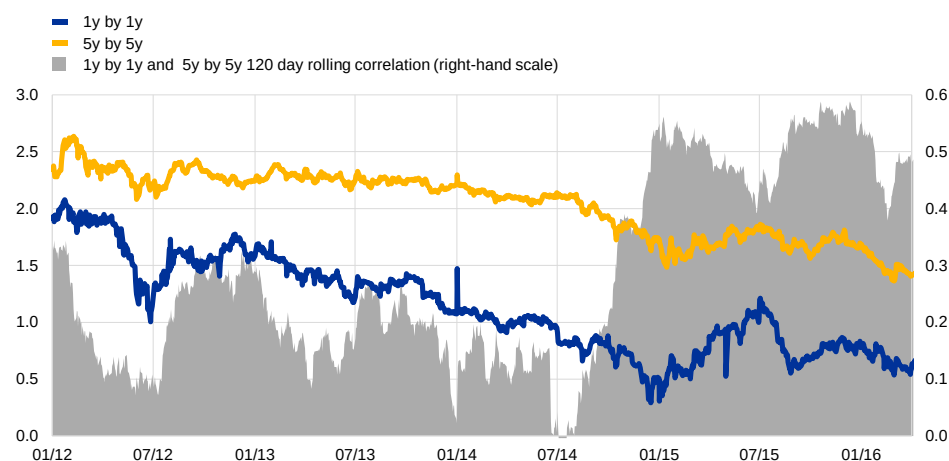
¹³ European Central Bank (2016), “Recent developments in the composition and cost of bank funding in the euro area”, Economic Bulletin, Issue 1, pp. 26-45.

negative – inflation. Similarly, the correlation of market-based inflation expectations across horizons increased significantly as can be seen in Chart 5.

Chart 5

Inflation expectations: 5y by 5y and 1y by 1y forward inflation swap

(left-hand scale: percentage points; right-hand scale: correlation)



Sources: Bloomberg, ECB.

The risks to the inflation outlook warranted a forceful monetary policy response. In January 2015, the ECB announced the introduction of a public sector purchase programme (PSPP; see Section 7.4), which together with the ABSPP and the CBPP3 initially made up the asset purchase programme (APP).¹⁴

As decided in January 2015, APP purchases would amount to €60 bn per month and were intended to run at least until September 2016 and, in any case, until the Governing Council saw a sustained adjustment in the path of inflation consistent with its price stability objective. The APP thus also contributed to strengthening the ECB's forward guidance.

The three-pronged package of measures comprising TLTROs, the negative deposit facility rate and the APP was re-calibrated again in December 2015 and March 2016 with a view to adding further monetary policy stimulus. In this respect, December 2015 saw a 10 basis point decrease in the deposit facility rate to -0.3%, as well as an extension of the APP horizon by 6 months to March 2017 and a commitment to reinvest principal repayments, keeping the stock of the APP portfolio constant after the end of net increases for as long as necessary. Furthermore, in March 2016, the monthly pace of the APP was expanded to €80 bn per month and the corporate sector purchase programme (CSPP, see Section 7.5.) was added to the APP. In addition, a new series of four targeted long-term refinancing operations (i.e. the

¹⁴ European Central Bank (2015), "[The Governing Council's expanded asset purchase programme](#)", Economic Bulletin, Issue 1, pp. 15-18. See also Cœuré, B. (2015), "[Embarking on public sector asset purchases](#)", speech given at the Second International Conference on Sovereign Bond Markets, 10 March as well as further details on the implementation of the APP and the TLTROs in European Central Bank (2015), [Annual Report](#), pp. 47-53.

TLTRO-II), each with a four-year maturity, was announced to be conducted at a quarterly frequency from June 2016 to March 2017.

The complementary measures are transmitted via three main channels: direct pass-through, portfolio rebalancing and signalling, all of which reinforce each other.¹⁵ First, the direct pass-through channel operates through purchases having an immediate effect on the price of credit set by financial intermediaries. For instance, such effects are achieved by the TLTROs and the purchases of asset-backed securities and covered bonds under the APP. By targeting the pricing of banks' liabilities, such as central bank credit and wholesale funding, the direct pass-through influences the pricing of bank credit. Second, the portfolio rebalancing channel operates through the compression of returns incentivising market participants to move up the risk and maturity ladder, bidding up assets with higher risk-adjusted returns. In particular, the large-scale purchase of sovereign bonds depresses the term premium and provides impetus for banks to rebalance their balance sheets, increasing their asset holdings and lending as well as offloading their cash reserves, which is further incentivised by the negative interest rate policy. Third, as regards the signalling channel, both the asset purchases and the forward guidance on interest rates and on the duration of purchases are in operation and, again, can reinforce each other. On the one hand, the forward guidance of setting policy rates on a certain course in the future is enhanced by purchasing assets today, which demonstrates the commitment to provide the necessary stimulus. Conversely, the expectations of the future path of interest rates also affect the net stimulus provided by asset purchases.

The reinforcement of the package of measures introduced since early 2015 and, in particular, the initiation of the PSPP supported the pass-through to the financing conditions of the real economy and contributed to an attenuation of the downward trend of inflation expectations. Money market rates and yields across bond markets declined to historically low levels. The easing in bank funding conditions exerted its effect through the bank lending channel: as shown in Chart 3 and Chart 4, cost of borrowing indicators both on loans for NFCs and households eased significantly across euro area countries.

¹⁵ For further details of the transmission of the ECB's non-standard policy measures see European Central Bank (2015), "[The transmission of the ECB's recent non-standard monetary policy measures](#)", Economic Bulletin, Issue 7, pp. 32-51. See also European Central Bank (2015), *Annual Report*, pp. 43-47.

2 Counterparty framework

This section reviews the Eurosystem counterparty framework. It briefly reviews the relevant eligibility criteria and provides an overview of counterparty participation in Eurosystem monetary policy operations. Moreover, this section summarises the developments in the counterparty framework since 2012 and the measures the Eurosystem may take in respect of counterparties.

2.1 Eligibility and participation

The Eurosystem monetary policy framework aims at ensuring the participation of a broad range of credit institutions as counterparties in Eurosystem monetary policy operations. The eligibility criteria which need to be fulfilled by counterparties are laid down in Article 55 of the General Documentation (GD)¹⁶. Hence, credit institutions must be (i) financially sound and (ii) subject to the minimum reserve system. They furthermore have to be (iii) under an accepted supervisory regime, i.e. either harmonised EU/EEA supervision by competent authorities or a comparable supervisory standard with respect to institutions subject to non-harmonised supervision. In addition, institutions have to (iv) fulfil the operational requirements specified by the NCBs or ECB. The decision to grant counterparty status is taken by NCBs after assessing whether an institution fulfils the eligibility criteria. This is in line with the decentralised implementation of monetary policy.

Table 1 summarises the eligibility and participation of counterparties in the different types of Eurosystem monetary policy operations. More information regarding open market operations conducted as tenders is provided in Section 4, while standing facilities are covered in Section 5.

¹⁶ Guideline (EU) 2015/510 of the ECB of 19 December 2014 on the implementation of the Eurosystem monetary policy framework (ECB/2014/60), OJ L 91, 2.4.2015, p. 3.

Table 1**Counterparty eligibility in operations**

	2012		2013				2014				2015				2016
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
Credit institutions	6,112	6,055	6,002	5,976	5,922	5,872	5,812	5,734	5,672	5,618	5,623	5,553	5,500	5,458	5,304
Eligible for															
OMO	2,366	2,330	2,276	2,209	2,024	1,743	1,762	1,755	1,757	1,796	1,812	1,799	1,798	1,786	1,774
MLF	2,603	2,387	2,306	2,249	2,131	1,987	2,000	1,984	1,966	1,973	1,967	1,955	1,943	1,934	1,927
DF	2,939	2,917	2,908	2,902	2,736	2,466	2,470	2,458	2,445	2,448	2,440	2,421	2,405	2,335	2,204
Participation in															
MRO	90	84	75	71	72	84	119	185	137	155	147	132	112	121	106
	161	172	125	150	137	264	296	376	280	330	286	217	214	240	204
LTRO 1M	27	28	18	18	23	24	29	44							
	39	43	27	24	27	38	36	65							
LTRO 3M	42	46	43	42	44	55	72	90	84	104	139	125	125	99	89
	88	92	83	81	85	113	130	162	150	171	215	190	168	174	142
FTO: weekly SMP	65	57	75	90	116	118	149	140							
	138	85	133	135	159	180	209	192							
TLTRO									255	306	143	128	88	55	19
									255	306	143	128	88	55	19
Recourse to															
DF	133	89	89	78	71	62	56	46	32	31	38	46	54	66	71
	589	161	159	132	118	121	117	106	81	82	86	92	105	115	105
MLF	5	6	4	4	4	4	4	3	4	5	7	5	5	4	4
	82	101	91	65	76	66	76	71	83	90	88	79	78	68	75

Sources: ECB.

Notes: The data are quarterly averages with the following exception. Data in italics denote the number of counterparties which participated in the respective type of operation at least once in a given quarter. OMO: open market operations; MLF: marginal lending facility; DF: deposit facility; MRO: main refinancing operations; LTRO 1M: maintenance period operation; LTRO: longer-term refinancing operation; TLTRO: targeted longer-term refinancing operation; SMP: Securities Markets Programme.

2.2 Developments in the counterparty framework since 2012

One part of the eligibility assessment, i.e. of the financial soundness criterion,¹⁷ is evaluated taking into account certain supervisory data, which is one aspect of a general risk-oriented assessment. The supervisory data encompasses capital, leverage and liquidity ratios in accordance with the applicable supervisory requirements. The aforementioned data is checked regularly, both on an individual and consolidated basis, for all eligible counterparties. In the case of branches, this information must be reported with respect to the institution to which the branch belongs.

¹⁷ The financial soundness criterion is defined in Article 55a of the GD.

The continuous refinement of the counterparty framework was driven by the aim, on the one hand, to enhance equal treatment between counterparties and, on the other hand, to strengthen the Eurosystem's risk management framework¹⁸.

As early as 2012, although the GD did not provide a dedicated specification of the financial soundness criterion, the Eurosystem was operationalising a regular assessment of counterparties' capital adequacy as one of the aspects for assessing counterparties' financial soundness. Capital ratios for counterparties eligible for monetary policy operations were checked regularly to evaluate their compliance with minimum regulatory requirements. The Eurosystem used to rely on the information on capital ratios provided by the National Supervisory Authorities (NSAs) of the country where the credit institution was located.

In light of the establishment of the Single Supervisory Mechanism (SSM), in November 2015 a revised counterparty framework came into force and was reflected in the GD. Under the revised framework, the financial soundness of Eurosystem counterparties continues to be assessed on the necessary – but not sufficient – condition that counterparties must be in compliance with minimum harmonised own funds requirements.¹⁹ Besides data on regulatory capital and its specific components, data on liquidity and leverage ratios also began to be checked as of September 2015. With the establishment of the SSM, data on all counterparties supervised either directly or indirectly by the SSM have become available to the Eurosystem, with the exception of data on non-SSM branches²⁰. Consequently, the Eurosystem relies to the extent possible on SSM input for credit institutions under its supervision. Prudential data for non-SSM supervised institutions are expected to be provided either by the relevant home supervisor or directly by the Eurosystem counterparty itself. In the case of direct reporting, the Eurosystem requires that the data is delivered along with a confirmation by the home supervisor as to the correctness of the data.

In this context, branches of institutions established outside the EU, which are not required by their supervisor to report the specified data in a way comparable to the requirements for institutions located in the EU, do not fulfil the counterparty eligibility criteria. They therefore do not have access to Eurosystem monetary policy operations.

Although the current set-up of the counterparty framework fostered the development of a level playing field for the Eurosystem's counterparties and strengthened the Eurosystem risk management framework, ongoing developments may justify further refinements of the counterparty framework. For example, the technical specifications and standards of the European Banking Association (EBA) regarding the Liquidity Coverage Ratio (LCR) were finalised in March 2016, but only became applicable in

¹⁸ For more detailed information on the Eurosystem's risk management framework, refer to European Central Bank (2015), "[The financial risk management of the Eurosystem's monetary policy operations](#)", pp. 13-15.

¹⁹ As established by the Capital Requirements Regulation (CRR) – Regulation (EU) No 575/2013.

²⁰ Branches of non-SSM entities established within the EU and branches of institutions established in non-EU/EEA countries, as well as counterparties under a special supervisory regime.

September 2016. Moreover, the technical standards for the Net Stable Funding Ratio (NSFR) have not yet been finalised, so there is currently no harmonised definition available for the NSFR.

In addition, the implementation date for the Bank Recovery and Resolution Directive (BRRD) for EU Member States was 1 January 2015, with the exception of the section on the bail-in resolution tool, which entered into force one year later. Currently, the GD says that asset management vehicles resulting from the application of the asset separation tool pursuant to the BRRD are not eligible to access Eurosystem monetary policy operations.

Non-compliance with the rules established by the Eurosystem regarding the participation of counterparties in Eurosystem monetary policy operations is subject to the application of sanctions and penalties set out in the GD (Part V). In addition, the Eurosystem might also, due to justified concerns, take a number of discretionary measures in relation to counterparties, which are described in more detail in the following subsection.

2.3 Discretionary measures

According to Article 158 of the GD, the Eurosystem may apply discretionary measures towards counterparties. These measures can be taken both on the grounds of prudence and in the case of the occurrence of an event of default. Without prejudice to any other measures decided by the Eurosystem, the discretionary measures are: (i) the rejection, the limitation of the use or the application of supplementary haircuts to assets mobilised as collateral by the counterparty; and/or (ii) the limitation, suspension or exclusion of the counterparty's access to Eurosystem monetary policy operations.

In broad terms, the Eurosystem may apply discretionary measures due to concerns about the counterparty's financial soundness or other justified concerns. Moreover, the Eurosystem will implement restrictive measures against counterparties in the context of financial sanctions introduced by the EU.

With regard to the financial soundness eligibility criteria, the Eurosystem may, on the grounds of prudence, limit, suspend or exclude access to Eurosystem monetary policy operations by counterparties, inter alia, in the following situations:

1. counterparties that do not meet the relevant own funds requirements on an individual and/or consolidated basis, in accordance with the supervisory requirements, or
2. counterparties for which information on capital ratios is not made available to the Eurosystem at the latest within 14 weeks from the end of the relevant quarter.

Furthermore, any other considerations that raise concerns about a counterparty's financial soundness may be taken into account when deciding about related discretionary measures.

However, if the Eurosystem considers that compliance with capital ratios can be restored through adequate and timely recapitalisation measures or that the information on capital ratios can be made available to the Eurosystem within a predefined period, the Eurosystem may then decide to abstain from applying any discretionary measures on a case-by-case basis.

Furthermore, on the grounds of prudence, the Eurosystem shall limit the counterparties' access to Eurosystem monetary policy operations if they are deemed to be 'failing or likely to fail' by the relevant authorities²¹. The limitation shall correspond to the prevailing level of access to Eurosystem monetary policy operations at the time of the relevant authorities' assessment.

In addition to this limitation, the Eurosystem may further limit, suspend, or exclude counterparties if they are deemed to be 'failing or likely to fail' and they meet any of the following:

1. they are not subject to a resolution action because there are reasonable prospects that an alternative private sector measure or supervisory action would prevent the failure of the institution within a reasonable timeframe; or
2. they are assessed as meeting the conditions for resolution, in view of the development of the resolution action; or
3. they result from a resolution action or from an alternative private sector measure or supervisory action.

In the case of an occurrence of an event of default,²² the Eurosystem may also suspend, limit or exclude a counterparty's access to Eurosystem monetary policy operations.

The suspension or exclusion of a counterparty's access to Eurosystem monetary policy operations entails the full repayment of the outstanding operations (including accrued interests). The Eurosystem may revoke the limitation, suspension or exclusion, based on additional information made available after a discretionary measure has been applied.

A discretionary measure applies to the counterparty and its branches. It does not extend automatically to its subsidiaries or other counterparties belonging to the same banking group as they are separate legal entities, unless an additional decision is taken by the Governing Council.

²¹ Based on the conditions laid down in Article 18(4)(a) to (d) of Regulation (EU) No 806/2014 or laid down in national legislation implementing Article 32(4)(a) to (d) of Directive 2014/59/EU.

²² Laid down in Article 165 of the GD.

Finally, a decision of the Eurosystem to limit, suspend or exclude a counterparty's access to monetary policy operations normally leads the respective NCB to also implement that decision in respect of access to intraday credit.²³

With regard to discretionary measures applied to collateral, the Eurosystem can determine whether an issue, issuer, debtor or guarantor fulfils the Eurosystem's credit quality requirements on the basis of any information it considers relevant. In such cases the Eurosystem may reject, limit the mobilisation or use of assets or apply supplementary haircuts. The intention of such measures is to ensure adequate risk protection of the Eurosystem. For example, the Eurosystem may exclude assets issued or guaranteed by entities subject to measures restricting their use of funds or by entities that have been suspended or excluded from accessing Eurosystem open market operations or standing facilities.

²³ According to paragraph 12(c) of Annex III of the TARGET2 Guideline.

3 Collateral framework

This section looks at developments in the collateral framework and in the use of collateral to guarantee Eurosystem credit operations, including intraday credit.²⁴ The changes in the composition of total collateral posted by Eurosystem counterparties (Chart 7) reflect developments observed throughout the period, including amendments to the framework (summarised in Section 3.1).²⁵ The Eurosystem collateral framework currently comprises a general framework (reflected in the GD) and a temporary framework (reflected in specific Guidelines).²⁶

3.1 Changes to collateral framework

At the end of 2011, in order to continue to support bank lending and liquidity in the euro area money market and ensure full bank access to central bank liquidity, temporary rules were introduced in the collateral framework. Guideline ECB/2014/31 includes the full list of temporary measures in place, regarding (i) the admission of certain additional asset backed securities (ABS); (ii) the admission of certain additional credit claims (ACC - adopted by the NCBs of AT, CY, ES, FR, GR, IE, IT, PT, SI), (iii) the acceptance of certain short-term debt instruments (e.g. commercial paper); (iv) the acceptance of certain government guaranteed bank bonds (GGBBs); (v) the admission as eligible collateral of certain assets denominated in foreign currency, such as pounds sterling, yen or US dollars; and (vi) the suspension of the requirements for credit quality thresholds for certain marketable instruments.

ABS are among the assets most affected by the revision of the framework. These measures aim to expand the list of ABS accepted while mitigating the related risk with the request for additional information. The November 2012 Eurosystem collateral framework revision introduced loan-level reporting requirements for a first subset of eligible ABS as of January 2013²⁷; in October 2013, the revision of the Eurosystem's risk control framework lowered the rating requirements at issuance (from triple-A to single-A) for ABS that comply with loan-level information requirements. At the same time, a 'comply or explain' approach was adopted for Residential Mortgage-Backed Securities and ABS backed by small-and-medium sized loans that were unable to reach the target compliance score by end-November 2013. As of 1 October 2014, new servicing continuity provisions were introduced for temporarily eligible ABS.

²⁴ See also European Central Bank (2013), "[The Eurosystem collateral framework throughout the crisis](#)", Monthly Bulletin, July, pp. 71-86.

²⁵ See full list of collateral measures in Table B in the Annex.

²⁶ See the collection of relevant Guidelines on the [ECB website](#) and in particular the [General Documentation](#).

²⁷ These requirements were gradually extended to all eligible ABS.

The criteria applied to covered bonds also underwent several changes, pursuing the mitigation of risk both on the composition of the covered pool and on the opportunity of posting collateral for 'own-use'. The November 2012 revision introduced (i) restrictions in the composition of the cover pool of eligible covered bonds; and (ii) amendments to the close link exemption applied to such assets (linking such exemption to Capital Requirements Directive compliance). In October 2013, new Eurosystem risk control rules introduced specific valuation markdowns for own-used covered bonds, applied to the whole issued amount if 75 % of the outstanding amount of the covered bond was being own-used. On 25 January 2016, a new standalone ECB Guideline on valuation haircuts related to the general framework was issued. Previously, valuation haircuts were included in the GD. At the same time, the rules on the own-use of covered bonds with respect to additional valuation haircuts were amended: these are now applied only to the share of the covered bond issuances that are actually own-used (and not to the whole issued amount as before).²⁸

The Governing Council decided in March 2013 to prevent, as of 1 March 2015, the use as collateral in Eurosystem monetary policy operations of uncovered government-guaranteed bank bonds that were issued by the counterparty itself or an entity closely linked to that counterparty i.e. so called own use.²⁹ The decision also applied to covered bonds containing such assets in the cover pool. The decision followed the measures implemented in July 2012, which limited³⁰ counterparties' use of uncovered government-guaranteed bank bonds that they themselves have issued.

Regarding other asset types, the revisions, applicable as of 2 November 2015, introduced 'non-marketable debt instruments backed by eligible credit claims (DECCs)' as a new category within the general framework. This measure aims at further enlarging the set of eligible non-marketable assets.

3.2 Use of collateral

From Q3 2012 to Q1 2016, the universe of eligible marketable assets amounted to €13 500 bn, stable throughout the period. No such statistic on non-marketable eligible assets is available, given that the eligibility assessment of these types of assets only occurs upon mobilisation requests. In the same period, total collateral posted by Eurosystem counterparties decreased by 34%, from €2 520 bn to €1 654 bn, less than the average outstanding credit³¹ which decreased by 57% from €1 216 bn to €528 bn (Chart 6). As a consequence, the collateral buffer (as a

²⁸ Due to operational constraints on the application of own-use CBBs, triparty collateral management systems (TPCMS) and autocollateralisation processes in TARGET2-Securities (T2S) are still applying higher haircuts to all potentially own-used covered bonds.

²⁹ For further details see European Central Bank, (2013), "[ECB announces changes to the use as collateral of certain uncovered government-guaranteed bank bonds](#)", Press Release, 22 March.

³⁰ The decision froze the use of such instruments at the prevailing level and required ex ante approval by the Governing Council of a request accompanied by a funding plan for any subsequent request to increase such levels.

³¹ Includes open market credit operations conducted as tenders and recourse to marginal lending facility. It excludes intraday credit.

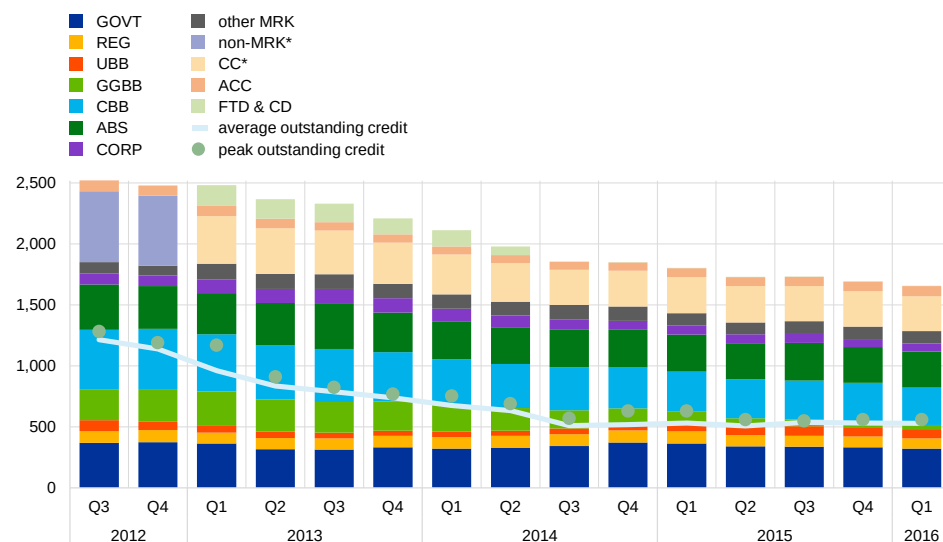
percentage of the pool) available to Eurosystem counterparties increased from 52% to 68%.

Following the adoption of new collateral measures, the breakdown of total collateral posted changed significantly between Q3 2012 and Q1 2016: Government bonds³² (GOVTs) increased from 19% to 24% of the total value of collateral posted; Asset-backed securities (ABS) increased from 15% to 18%; Covered bonds (CBBs) were almost unaffected, with a slight decrease from 19% to 18%; Uncovered bank bonds (UBBs) decreased from 14% to 7%, mostly following (i) the introduction of the concentration limit for banking groups (introduced in 2011); and (ii) the own-use prohibition of government-guaranteed bank bonds (GGBBs) in March 2015; other marketable assets (MRK), comprising supranational and agency assets, increased from 4% to 6%, while corporate bonds (CORP) remained stable at 4%. Regarding non-marketable assets³³, credit claims (in the form of CC and ACC) increased from 19% to 22%, while fixed-term deposit (FTD)³⁴ and cash deposit (CD) reduced from 7% to 0%, as a result of negative interest rates. REG stands for regional government bonds.

Chart 6

Use of collateral and outstanding credit

(EUR billions)



Sources: ECB.

Notes: * Split only available since Q1 2013. See footnote 33.

³² Including regional government bonds.

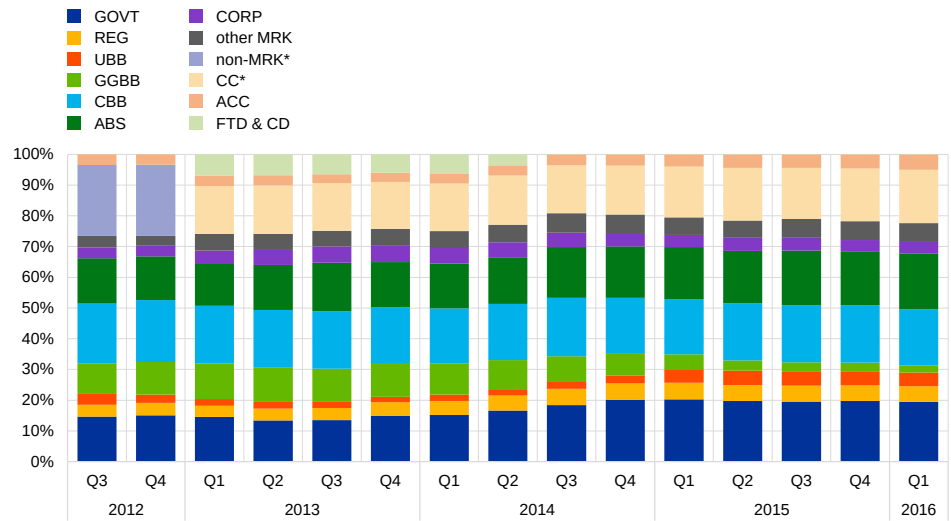
³³ Since Q1 2013, the category "Non-marketable assets" is split into two categories: "Fixed term and cash deposits" and "Credit claims".

³⁴ FTDs were related to the operations conducted to absorb the liquidity created by the SMP. The operations were discontinued in June 2014. For more information see Section 4.1.3.

Chart 7

Composition of posted collateral

(percentage points)



Sources: ECB.

Notes: * Split only available since Q1 2013. See footnote 33.

4 Open market operations conducted as tenders

This section looks at monetary policy operations conducted as tenders. Monetary policy operations conducted as outright asset purchases are covered in Section 7. The section is divided into euro and foreign currency (US dollar) operations. It first summarises the decisions taken and then discusses the main developments with regard to the different types of open market operations conducted.

4.1 Euro operations

This subsection describes the main developments with regard to Eurosystem open market operations from the end of Q2 2012 until the end of Q1 2016. The account of the open market operations in the preceding period is provided in the previous report published in 2012³⁵.

4.1.1 Decisions

On 5 June 2014, the Governing Council took a number of measures relating to the modalities of its open market operations. In particular, the Governing Council decided to discontinue the weekly liquidity absorbing fine-tuning operations (FTOs), which were conducted in the period between May 2010 and June 2014, in order to sterilise the liquidity injected under the SMP. The liquidity absorption of the SMP operations, even though this programme had originally not been initiated with the intention of creating additional excess liquidity and signalling a further easing of monetary policy, was then no longer deemed consistent with the Eurosystem's very accommodative monetary policy stance. Thus, the discontinuation was part of a broader package of non-standard measures aimed at providing an additional monetary stimulus and easing financial conditions, which included a cut in the rate on the deposit facility into negative territory and the announcement of a series of TLTROs (See Section 4.1.2 and Box 1).

Furthermore, in June 2014, the Eurosystem's special-term refinancing operations with a maturity of one maintenance period, which had been conducted for the period from October 2008 to 10 June 2014, were discontinued.

Finally, on 10 March 2016, the Governing Council launched a new series of four targeted longer-term refinancing operations (TLTRO-II) with the aim of offering attractive longer-term funding to banks in order to further ease private sector credit conditions and stimulate credit creation.

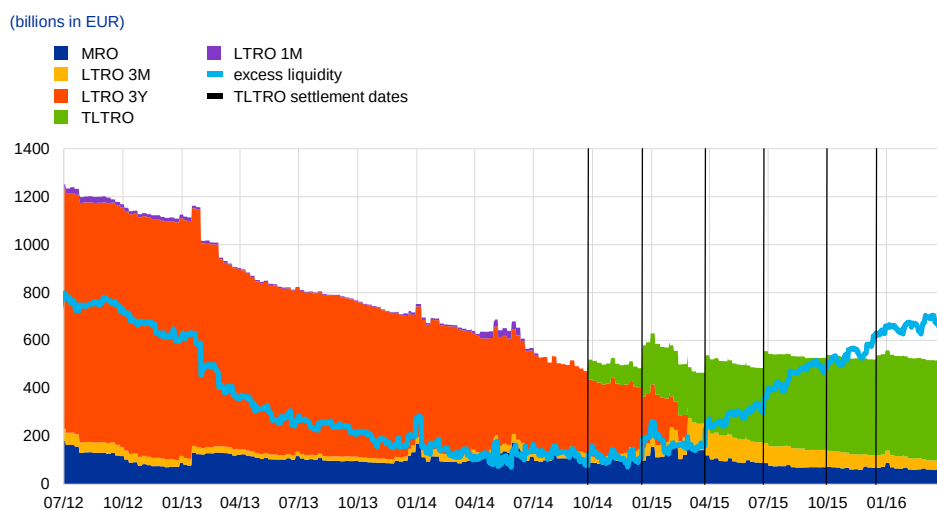
³⁵ See Eser, F. et al, (2012), "[The use of the Eurosystem's monetary policy instruments and operational framework since 2009](#)". ECB Occasional Paper No 135, August.

4.1.2 Liquidity-providing open market operations

The Eurosystem continued to offer liquidity by means of the full allotment procedure in its various refinancing operations, i.e. the MROs, one-maintenance-period operations (MPO), three-month longer-term refinancing operations (LTROs), three-year LTROs and targeted LTROs (TLTROs). Consequently, as observed since 2008, the size of outstanding refinancing operations was determined by counterparties' demand for Eurosystem liquidity. Only in the case of TLTROs is banks' participation constrained by a counterparty-defined borrowing limit.

From the open market operations listed above, the MPO, which had been introduced in October 2008 as part of the enhanced support package, was discontinued in June 2014. In view of limited demand for those operations, the impact of the discontinuation on the total liquidity provided by Eurosystem open market operations was negligible (as shown in Chart 8).

Chart 8
Excess liquidity and participation in refinancing operations



Sources: ECB.

Notes: The vertical black lines indicate TLTRO settlement dates. "LTRO 1M" stands for the one-maintenance-period operation that was discontinued in June 2014.

The participation in Eurosystem refinancing operations declined gradually between Q3 2012 and Q3 2014 reflecting how funding concerns faded and three-year LTROs were gradually repaid (see Chart 8). By mid-2012 there was still more than €1 200 bn outstanding in the operations, mainly reflecting the wide participation in the two 3-year LTROs allotted at the end of 2011 and beginning of 2012. In the second half of 2012, participation in the MRO decreased as financial market tensions subsided after President Draghi's July 2012 speech³⁶. As of early 2013, banks were allowed to repay the three year LTRO amounts and did so significantly at the first opportunity, after which weekly repayments led to a gradual downward trend in the

³⁶ See Draghi, M. (2012) [Verbatim](#) of the remarks, speech given at the Global Investment Conference, 26 July, where President Draghi stated: "Within our mandate, the ECB is ready to do whatever it takes to preserve the euro."

outstanding amount. During the same period, MRO participation was relatively contained in size, remaining for the most part below €200 bn with the exception of some temporary spikes.

As of the first allotment of TLTROs in September 2014, the total amount outstanding in refinancing operations fluctuated around the level of €500 bn, with the composition gradually shifting towards TLTRO participation. Over that period, the total outstanding amount in the operations reached a maximum of €629 bn at the beginning of 2015 and a minimum of €465 bn in March 2015. By the end of February 2015, the three-year LTROs had matured, but banks with a TLTRO borrowing allowance had already started substituting three-year LTRO funds with TLTRO funds as of September 2014. This substitution did not necessarily involve the same institutions, but on aggregate kept the amount of outstanding operations around the €500 bn mark. When the three-year LTROs matured, banks first increased their reliance on the MROs and three-month LTROs to close to €276 bn, before reducing that reliance gradually over time, with the outstanding amount standing at €100 bn at the end of March 2016.

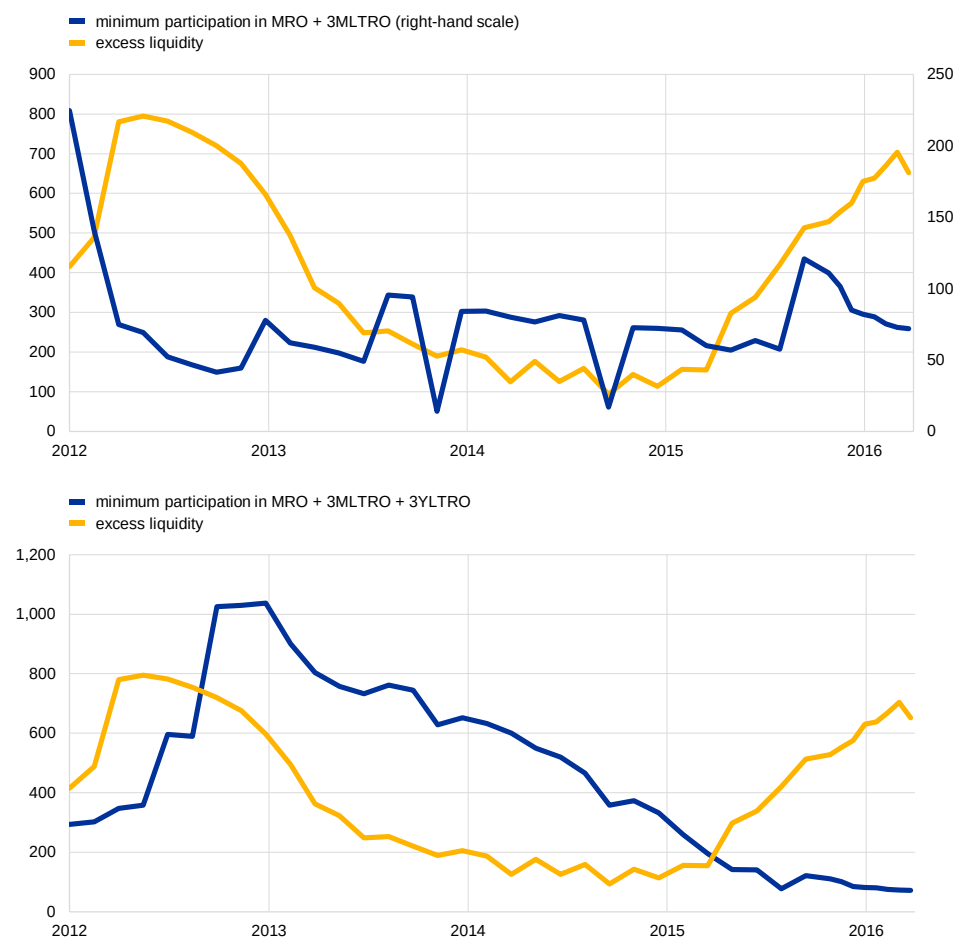
The quarterly settlement of new TLTROs raised excess liquidity in net terms each time, but the effect was partly offset given the downward trend in regular operations. Indeed, participation in the TLTROs was partly used to substitute for participation in regular operations and maturing three-year LTROs, with the result that excess liquidity and the total outstanding amount of refinancing received only a temporary boost each time a TLTRO was settled.

However, despite excess liquidity reaching €700 bn in Q1 2016, total demand in regular operations, i.e. MRO and three-month LTROs, showed limited tendency to decrease below a certain threshold. Indeed, while total take-up in regular operations declined to €100 bn by end-March 2016, a large part of this decline appears to have come from banks that shifted their participation to the TLTRO. Chart 9 presents an estimate of this persistent demand as the minimum outstanding volume in regular operations over the past six months at the level of individual banks. The upper chart displays how persistent participation in regular operations dropped in 2012 after the allotment of 3-year LTROs but rarely fell below the €50 bn mark. When excess liquidity declined in 2013-2014, persistent demand tended to increase again towards €100 bn with the exception of two temporary drops in 2013 and 2014. As total take-up did not change significantly (see Chart 8), the two drops suggest that shifts in the participation among banks took place at those points in time. The lower chart shows how persistent bidding declined gradually from a high level if three year LTRO holdings were seen as a kind of persistent bidding, converging to the red line in the upper chart by Q3 2015.

Chart 9

Excess liquidity and persistent demand in regular Eurosystem refinancing operations

(EUR billions; upper chart right-hand scale: minimum participation)



Sources: ECB.

Notes: A proxy for persistent demand in regular operations is estimated in three steps by 1) taking the total participation in MRO, LTRO 1M and LTRO 3M for each individual bank; 2) taking the minimum of that total over the past six months for each individual bank; and 3) taking the sum of those minima. In the lower panel participation in LTRO 3Y is also taken into account.

According to this evidence, persistent demand in regular operations declined gradually to about €61 bn by the end of the time span under review.

While the gradual decline in regular operations points to improved market access and deleveraging by banks, the slow trend and the substantial amount still outstanding also reflect continued reliance on Eurosystem funding by some institutions. As excess liquidity rose, part of the liquidity might have reached more banks such that their reliance on the Eurosystem declined. Other banks still lack sufficient market access or could obtain it only at conditions that are less attractive than the Eurosystem operations. Another, albeit smaller, share of banks participate in the operations on a regular basis because of operational convenience, implying their demand is inelastic to excess liquidity and the total bid amount in regular operations may well have a lower bound substantially above zero.

4.1.3 Liquidity-absorbing open market operations

In the period between May 2010 and June 2014³⁷, regular one-week Fine Tuning Operations (FTO) were conducted to absorb the liquidity effect of the SMP initiated on 10 May 2010.³⁸ The liquidity absorption took place by means of one week FTOs, i.e. fixed term deposits with a one week maturity. These operations were conducted as variable rate tenders with a pre-announced offered amount and a maximum bid rate equal to the fixed rate of the main refinancing operations. The intended allotment amount was set at the level of the outstanding book value of purchases settled on the preceding Friday, the relevant figure being published in the weekly financial statement every Tuesday. The fixed-term deposits were eligible as collateral for Eurosystem refinancing operations.

From May 2010 until the discontinuation of the SMP liquidity absorbing FTOs in June 2014, 213 operations were conducted with 545 different bidders participating in at least one operation. The first tender on 18 May 2010 was the most popular with 223 bidders. Subsequent tenders had fewer bidders and overall, only 65 bidders came to at least half of all FTOs. Mirroring the volume of securities purchased under the SMP, the intended absorption amount increased from €16.5 bn in the first tender up to €219.5 bn in mid-2012, with €162.5 bn offered in the last tender.³⁹ Bid amounts fluctuated between a minimum of €31 bn to a maximum of €468 bn reached on 18 September 2012 (Chart 10) and started rising in mid-2011 in line not only with the increase in the amount of the outstanding SMP-portfolio but also with the increase in the amount of excess liquidity generated by the two three-year LTROs conducted on December 2011 and February 2012.

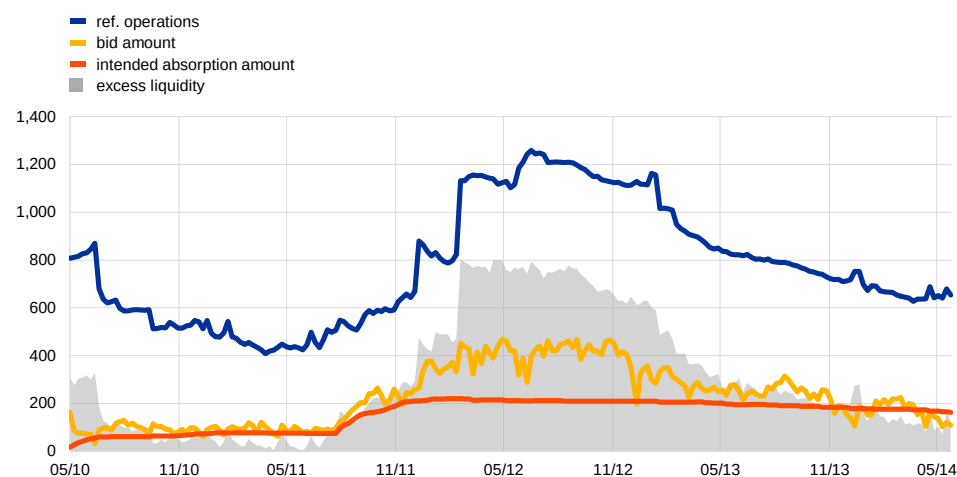
³⁷ As the operations were carried out before the review period but ended during it, the analysis here aims to take a comprehensive look at the absorbing operations tool and therefore deviates from the review period generally applied in the report.

³⁸ For further details, see the [Securities Markets Programme](#).

³⁹ The offered amount always corresponded to the SMP-amount recorded on the balance sheet. The amount therefore started to decrease once purchases were discontinued and redemptions started to occur.

Chart 10**Excess liquidity and participation in the one-week SMP liquidity absorbing operations**

(EUR billions)



Sources: ECB.

The evolution of the bid amount seems indeed to be highly correlated with the level of excess liquidity in the banking system, as shown above. Excess liquidity started to increase significantly in the second half of 2011, peaking at €800 bn in March 2012 as a consequence of the second three-year LTRO. Afterwards, excess liquidity progressively decreased – falling to about €100 bn in 2014 – in line with the reduction of Eurosystem outstanding refinancing operations, mainly as a consequence of improved financial market conditions and the early repayments of the three-year LTROs.

In general, the SMP absorbing operations were successful in absorbing the intended amounts. During the life of these operations, 22 cases of underbidding – i.e. when the demand fell short of the intended absorption amount – occurred. Underbidding cases were concentrated in the periods of rather low levels of excess liquidity of around €100/€150 bn or even lower. For the period before 2014, most cases of underbidding coincided with month and quarter-ends, when banks usually demand greater liquidity and prefer to hold overnight deposits as opposed to one-week deposits. However, starting at the end of 2013 – when excess liquidity started to decrease progressively – underbidding cases became more frequent and significant in amount. During that time, a rise in the volatility of money market rates was also observed amid persistently fragmented markets.

Between May 2010 and September 2011, the turnover rate⁴⁰ associated with SMP absorbing operations was rather high, remaining between 20 and 60% (with some peaks above 60%) and very volatile. That may be explained by the large volatility in money market rates experienced at that time. That volatility implied more arbitraging opportunities for banks, between lending to the private counterparties and

⁴⁰ Defined as $(\text{entry rate} + \text{exit rate})/2$. The entry rate is the percentage of counterparties that did not take part in operation t-1 but that took part in operation t; the exit rate is the percentage of counterparties that took part in operation t-1 but not in operation t.

participating in SMP absorbing operations. Afterwards, the turnover rate declined substantially and stabilised between 10 and 20%. The decline in the turnover rate may be related to the large increase in the level of excess liquidity that reduced money market rate volatility. It should be noted that the reduction in excess liquidity from end-2012 onwards did not have a substantial impact on the turnover rate, even during the end-2013 period, when market volatility rose.

The evolution in the participation of individual counterparties in the operations and the respective bid amounts were strongly correlated with both aggregate excess liquidity in the banking system and individual counterparty excess liquidity. In addition, counterparties were less likely to participate and placed lower bid amounts as well as higher bid rates (indicating less aggressive bidding) on the operation the higher the opportunity costs, i.e. the higher the alternative money market rates. This relationship is less pronounced on the aggregate level than on the counterparty level. At the same time, higher levels of autonomous factors, i.e. liquidity needs, in the system reduce the bid amount by bank. A high level of fragmentation and market stress makes counterparties less likely to participate in the operation.

4.2 Foreign currency operations

Since the onset of the financial crisis in 2007, the Eurosystem engaged in foreign currency operations in cooperation with a number of major central banks. In order to have a backstop facility in place allowing for the provision of foreign currency to local counterparties, the Eurosystem relied on bilateral central bank swap lines, which were instrumental for central bank international cooperation to prevent systemic risk and limit contagion across major currencies. The design and calibration of the operations used by the Eurosystem to provide foreign currency liquidity to domestic banks helped to achieve the key objectives of the swap lines and calmed markets and funding concerns during the crisis while taking into account moral hazard considerations.⁴¹

As detailed in the previous report published in 2012⁴², recourse to the foreign currency operations provided by the Eurosystem peaked after the bankruptcy of Lehman Brothers in 2008 and reached elevated levels during the period of the escalation of the euro area sovereign debt crisis in late 2011 and early 2012 (Chart 11).

⁴¹ A detailed account of the Eurosystem experience with foreign currency liquidity-providing central bank swaps, modalities of the foreign currency providing operations and their effectiveness is provided in European Central Bank (2014), "[Experience with foreign currency liquidity-providing central bank swaps](#)", Monthly Bulletin, May.

⁴² Eser, F. et al, (2012), "[The use of the Eurosystem's monetary policy instruments and operational framework since 2009](#)". ECB Occasional Paper No 135, August.

Chart 11

US dollar providing operations (all maturities) and 3-month FX basis swap

(left-hand scale: percentage points, right-hand scale: USD billions allotted)



Sources: Bloomberg, ECB.

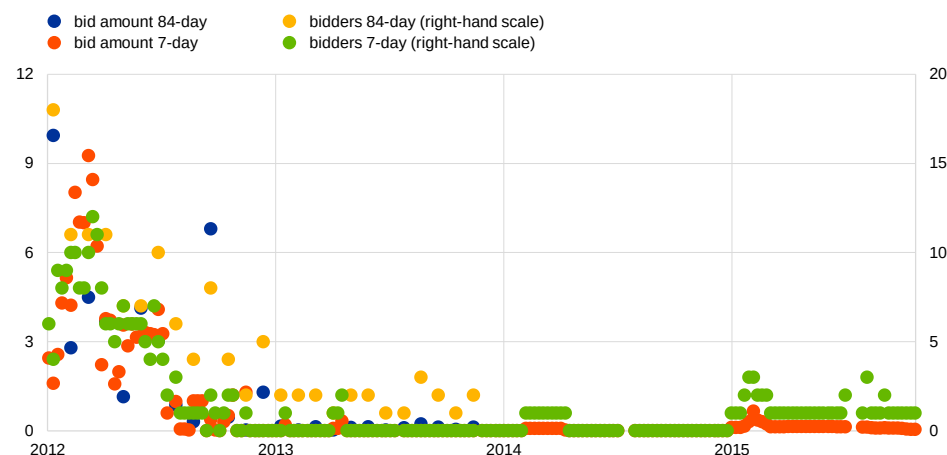
The subsequent improvement in US dollar funding conditions, as reflected in the narrowing of the three-month FX swap basis, which is often used as an indicator of US dollar funding tensions, and banks' actions to address vulnerabilities of their US dollar funding sources resulted in very limited demand in the US dollar liquidity-providing operations by euro area banks after the US dollar funding tensions abated towards mid-2013.

In view of the low demand, on 24 January 2014 the Governing Council in coordination with the other central banks participating in the FX swap network decided to gradually reduce its offering of US dollar liquidity-providing operations and announced that the 84-day operations would be discontinued as of April 2014. It was decided that the 7-day US dollar-providing operations would continue to be offered until further notice, but that the need for the regular provision of the operations would be re-assessed in due course taking into consideration the low demand and normalising US dollar funding conditions for euro area banks.

Chart 12 shows demand in terms of bid amounts and number of bidders in 7-day and 84-day US dollar operations in which US dollars have been provided against Eurosystem eligible collateral. As of 2009, all US dollar liquidity provision by the Eurosystem has been conducted via the US dollar repo-type operation against the Eurosystem eligible collateral. From the perspective of Eurosystem liquidity management, these operations are liquidity-neutral and have no impact on the level of euro liquidity provision. The use of the foreign exchange swaps for the provision of US dollars was introduced only temporarily in 2008 and, in view of its limited use, was quickly terminated.

Chart 12**Demand in Eurosystem foreign currency operations**

(left-hand scale: USD billions; right-hand scale: number of participants)



Sources: ECB.

As illustrated in Chart 12, there was limited demand in 84-day US dollar-providing operations since Q2 2013 until their discontinuation in April 2014. Demand in the 7-day US dollar-providing operations remained relatively high at around \$4 bn in 2012 but subsequently declined. In fact, there was no demand in the US dollar-providing operations during the period from end-September 2014 until early June 2015 and it remained subdued thereafter, at around \$0.15 bn on average over the period from June 2015 to end-March 2016. Contrary to the systemic nature of the banks' recourse to those operations in the previous episodes of market tension, the drivers of demand in the US dollar-providing operations since 2013 have been of an idiosyncratic nature. This is also illustrated by the limited number of bidders in those operations, as shown in Chart 12, and the absence of funding pressures as illustrated by the level of the 3-month EUR/USD FX swap basis (Chart 11).

Box 1**Assessment of TLTROs**

On 5 June 2014, the Governing Council, in order to support lending to the non-financial private sector and to enhance the monetary policy transmission mechanism, decided to conduct an initial series of targeted longer-term refinancing operations (TLTRO-I)⁴³.

The first TLTRO programme consisted of a series of eight open market operations, conducted between September 2014 and June 2016 with a three-month frequency and a fixed interest rate.⁴⁴ Eligible counterparties could participate either on an individual basis or as part of a 'TLTRO group' through a 'lead institution', subject to specific conditions and criteria. The targeted nature of these

⁴³ See Decision ECB/2014/34 of 29 July 2014 (as amended) on measures relating to targeted longer-term refinancing operations and European Central Bank, (2014), "[Targeted longer-term refinancing operations: updated modalities](#)".

⁴⁴ The rate was originally fixed at the prevailing rate for the MROs at the time of take-up, plus a fixed spread of 10 bps. However, in January 2015 (after the first two operations) the Governing Council decided to abolish the spread following the downward movements of money market rates.

operations relates to the link between borrowing limits and the amount of eligible loans reported by banks. Eligible loans are defined as loans to euro area private non-financial corporations and households, excluding loans to households for house purchases.

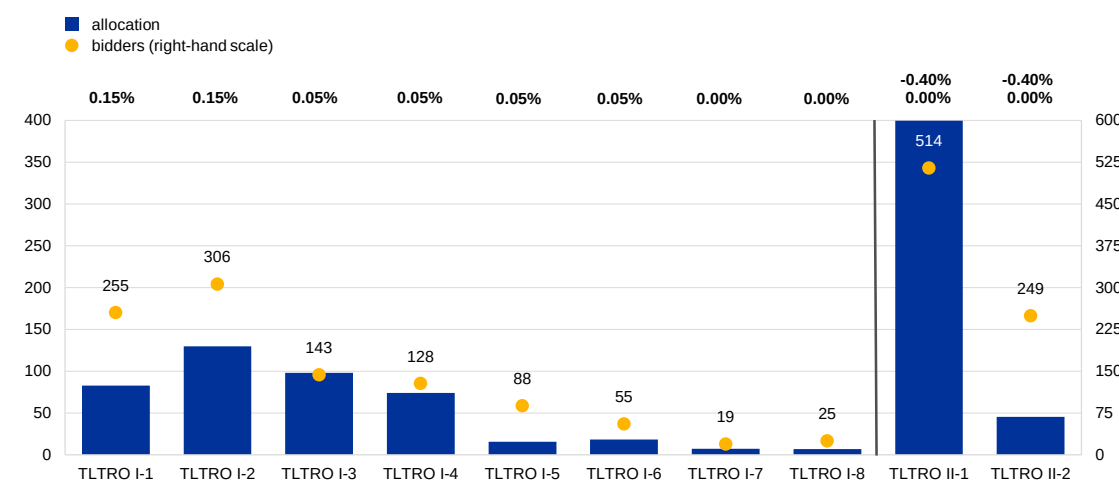
All the operations will mature in September 2018. In September 2016, banks that did not meet their target of eligible net lending were subject to full or partial mandatory early repayment of the amount borrowed under the TLTRO-Is⁴⁵. Banks are also able to opt for voluntary early repayment as of 24 months after each TLTRO-I (with a six-month frequency), in addition to the first repayment window which opened in June 2016 on the occasion of the first TLTRO-II (see below).

In total, 1194 individual institutions were involved in participating via a group in the first series of TLTROs. The 65 groups involved comprised 29 cross-border groups, representing 220 institutions, and 36 domestic groups with a total of 974 institutions. Additionally, 491 counterparties participated directly on an individual basis. Overall, a total of €432 bn was allotted in the TLTRO-Is. Participation was broad across the euro area.

Chart A

Demand and participation in the TLTROs

(left-hand scale: EUR billions; right-hand scale: number of participants; the top line shows the effective rates at time of take-up; for TLTRO-II operations the initial rate and the deposit facility rate are shown)



Sources: ECB.

There was a high level of counterparty participation in the first two TLTRO-Is, both in terms of volume and number of participants, with a total of €213 bn allotted (see Chart A). The allotted amount was still significant in the following two operations (€98 bn and €74 bn respectively). Participation appeared to be mainly driven by attractive funding conditions, followed by the replacement of other funding sources and, to a lesser extent, by precautionary motives and the fulfilment of regulatory liquidity requirements.

The incentives embedded in the TLTRO-Is helped to stimulate the supply of credit by banks that submitted bids. Banks used the liquidity taken in TLTRO-Is to grant loans, in particular loans to enterprises and consumer credit. The reductions in bank funding costs have increasingly been

⁴⁵ The relevance of this feature was mitigated with the introduction of the TLTRO-II programme. In the context of that programme a new early repayment date for TLTRO-I funds was introduced for June 2016.

passed on to borrowers allowing easier credit terms and financing conditions for the private sector, rather than a change in credit standards. These operations contributed to improvements in money and credit dynamics.⁴⁶

Despite the reduced rates of the borrowed funds, the last four operations were used by the counterparties (€48 bn on aggregate) to a more limited extent due to the absence of funding constraints and an increasingly active liquidity provision of the Eurosystem via asset purchases in the APP.⁴⁷

Evolution of allowances across different TLTRO-Is

In the first two TLTRO-Is of 2014, counterparties could borrow on aggregate up to 7% of the stock of eligible loans on their balance sheet as of April 2014 (Initial Allowance - IA). On aggregate, banks that applied to participate in the TLTRO-Is reported a total stock of eligible loans that led to an IA of €266 bn.

Starting with the operation of March 2015 (third TLTRO-I), the calculation of borrowing allowances became a function of the dynamics of eligible loans reported by banks (Additional Allowance – AA).⁴⁸ Chart B below shows the evolution of the AA across the different TLTRO-Is which have taken place since March 2015. The AA started from a level of €404 bn in March 2015, and constantly rose in the following TLTRO-Is, reaching an amount of €928 bn for the last TLTRO-I, which took place in June 2016.

The increase in the AA observed from the third to the fourth TLTRO-I is partly due to a technical feature of the TLTROs. In fact, counterparties that recorded negative net lending in the year to 30 April 2014 have a benchmark which decreased along the same path until June 2015, and then remained stable.⁴⁹ Part of this increase is therefore due to the decreasing benchmark. Starting from the fourth TLTRO-I, the benchmark was fixed for all counterparties. Therefore, any further movement in the individual AA is the result of a variation in eligible net lending. Chart B shows that, in general, counterparties that borrowed under the TLTRO-Is tended to increase their eligible net lending.⁵⁰

⁴⁶ See Section 5 on Money and credit in European Central Bank, (2016), [Economic Bulletin](#), Issue 2, pp. 25-29.

⁴⁷ See Section 3.3 of European Central Bank, (2016), "[Analysing the ECB's targeted longer-term refinancing operations](#)", Euro area bank lending survey, January, pp. 23-25.

⁴⁸ Banks were entitled to borrow, on a cumulative basis, up to three times the difference between their eligible net lending provided from 1 May 2014 and their specific benchmark. AAs were recalculated ahead of each operation taking into account the most recent data available.

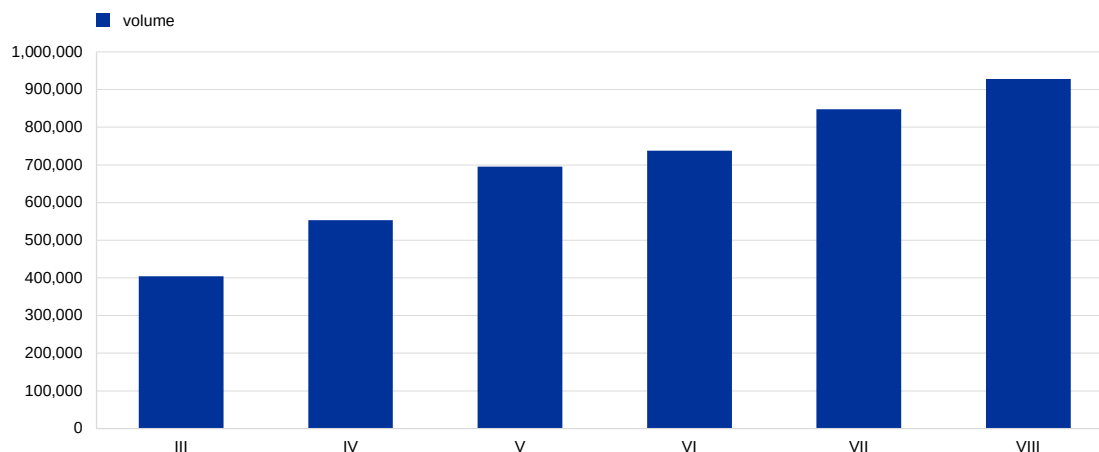
⁴⁹ The idea behind the decreasing benchmark was to balance the need to allow participation for banks involved in deleveraging processes, while not creating strong incentives to keep deleveraging, if not strictly necessary.

⁵⁰ It should be noted that the aggregation of different AAs induces a small selection bias. Given that the AA is defined as $AA = \max(0, 3 * (\text{Eligible net lending} - \text{Benchmark}))$, then the summation implicitly excludes banks whose net lending is below the benchmark.

Chart B

Evolution of additional allowance from the third TLTRO-I to the eighth TLTRO-I

(EUR millions)



Sources: ECB.

Notes: The inclusion of a few new institutions in the TLTRO-Is also contributes to increasing AAs marginally.

Effect on the Eurosystem balance sheet

Another important step in order to assess the relevance of TLTRO-Is is to evaluate the effect on the Eurosystem balance sheet. Table A shows the breakdown of the total amount outstanding for open market operations for different types of operations, recorded in the same month in three consecutive years.

Table A

Breakdown of the total outstanding for open market operations for different types of operations

(EUR millions)

Operation type	May 2014		May 2015		May 2016	
	outstanding	% of tot.	outstanding	% of tot.	outstanding	% of tot.
MRO	174,002	26%	100,104	20%	60,203	12%
LTRO 3M	35,760	5%	85,078	17%	25,913	5%
LTRO MP	32,335	5%	-	0%	-	0%
LTRO 3Y	437,588	64%	-	0%	-	0%
TLTRO	-	0%	310,290	63%	425,273	83%
TOTAL	679,684	100%	495,471	100%	511,389	100%

Sources: ECB.

Notes: The table does not consider the last TLTRO, as TLTRO 8 was conducted in June 2016 in parallel with the first TLTRO-II.

While TLTRO-Is played a role in the expansion of the Eurosystem balance sheet prior to the implementation of the APP, Table A shows clearly that TLTRO-Is, taken over a longer period of time, mostly substituted other refinancing operations. As a result, the average duration of the Eurosystem exposure for open market operations rose substantially.

TLTRO-II – Common features and differences from the first series of TLTROs

On 10 March 2016, the Governing Council, as part of a broader set of measures, announced the implementation of a second series of TLTROs (TLTRO-II).⁵¹ The general framework is similar to the first series. However, adjustments have been made to the design of the new programme in order to make it more attractive for counterparties:

1. **Maturity** - Each of the four operations set out in the TLTRO-II framework has a maturity of four years, whereas all operations from the first series will mature at the same time. This variation should make the four operations equally attractive in terms of duration – also in view of fulfilling the Net Stable Funding Ratio regulation – and should avoid a maturity cliff that was inherent to the first series.
2. **Targeted nature** - Banks whose stock of eligible loans exceeds their benchmark stock in 2018 will gain a reward in terms of a lower interest rate to be paid at maturity with a floor at the level of the rate on the deposit facility at the time of allotment. This interest rate incentive replaces the mandatory repayments, which are not part of the TLTRO-II scheme.
3. **Early repayment** - Voluntary repayment will be possible starting two years following allotment and is intended to be conducted at a three-month instead of a six-month frequency. Moreover, one additional voluntary repayment date for the first series of TLTROs was provided to coincide with the settlement of the first TLTRO-II, allowing counterparties to shift from the first series of TLTROs to the TLTRO-II programme.
4. **Reporting obligations** - Banks that participate in TLTRO-II will only have to submit data twice for all operations, as opposed to every quarter in the case of the first series of TLTROs, significantly reducing the operational burden for participants.
5. **Audit** - Banks that participate in TLTRO-II will have to submit the results of an auditor's evaluation on the two sets of reported data. Auditing costs may be reduced as TLTRO-II participants are allowed to submit their annual certification of accuracy of TLTRO reporting on a single date for both reports.

631 institutions participated either on an individual or on a group basis in the first two operations of TLTRO-II which took place in June and September 2016. Similar to TLTRO-I, participation was widespread across the euro area with a total of €444.6 bn being allotted on a gross basis. Taking into account reimbursements from the first series of TLTROs (€378.9 bn), the residual stock of all TLTROs amounted to €497.2 bn at the end of September 2016 (Chart A). So far, 43% of TLTRO-II cumulated borrowing allowances have been drawn.

Participation in TLTRO-II was boosted by the attractive terms of the new operations, while several considerations dampened the take-up in TLTRO-II operations at the same time. These factors included in particular (1) the abundant liquidity resulting from the previous TLTRO-I and the APP, (2) the ample market funding opportunities and (3) the possibility of bidding in the remaining TLTRO-II operations, allowing counterparties to spread out the maturity profile of their financing sources. A large part of the take-up in the first TLTRO-II operation reflected roll-over from borrowing

⁵¹ See Decision ECB/2016/10 of 28 April 2016 on a second series of targeted longer-term refinancing operations.

in the first series of TLTROs. This implied a significant reduction in the cost of this borrowing, together with a sizeable extension of the remaining maturity.

5 Recourse to standing facilities

Standing facilities allow eligible counterparties to borrow money from their NCBs or deposit funds with their NCBs at their own initiative. The rates on these facilities are penalised and represent the normal 'corridor' where money market rates are expected to be. They are conducted using overnight operations and the terms and conditions are uniform throughout the euro area. This section looks at the use of the two standing facilities i.e. the deposit facility and the marginal lending facility.

5.1 Deposit facility

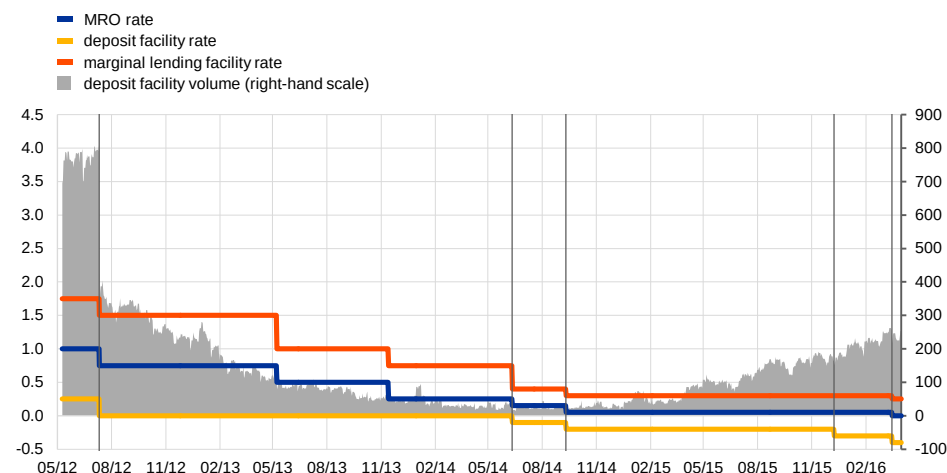
On a daily basis, counterparties have the option of placing their excess liquidity in current accounts held at their respective NCB, or leaving it in the deposit facility of the Eurosystem. Funds deposited in current accounts above counterparties' reserve requirements are considered excess reserves and remunerated at 0% or the rate on the deposit facility, whichever is lower. This implies that, in normal circumstances, i.e. when rates are above zero, placing excess liquidity in the deposit facility offers a better choice for counterparties than leaving the funds in their current accounts, as the former, in normal circumstances, has a positive remuneration whilst the latter is not remunerated. Excess liquidity conditions and low or negative levels of interest rates in money markets were observed in the period considered in this report.

Since the rate on the deposit facility was set at zero in July 2012, counterparties no longer had an explicit incentive to use the deposit facility as the remuneration on leaving funds as excess reserves and placing them in the deposit facility was the same. As a result, since then, the evolution of the use of the deposit facility (see Chart 13) has not reflected the evolution of excess liquidity. The proportion between the use of the deposit facility and excess reserves has not been constant over the period but suggests a stronger preference to place end-of-day liquidity balances in counterparties' current accounts (see Chart 14).

Chart 13

Recourse to deposit facility and changes to the rate on the deposit facility

(left-hand scale: percentage points, right-hand scale: EUR billions)

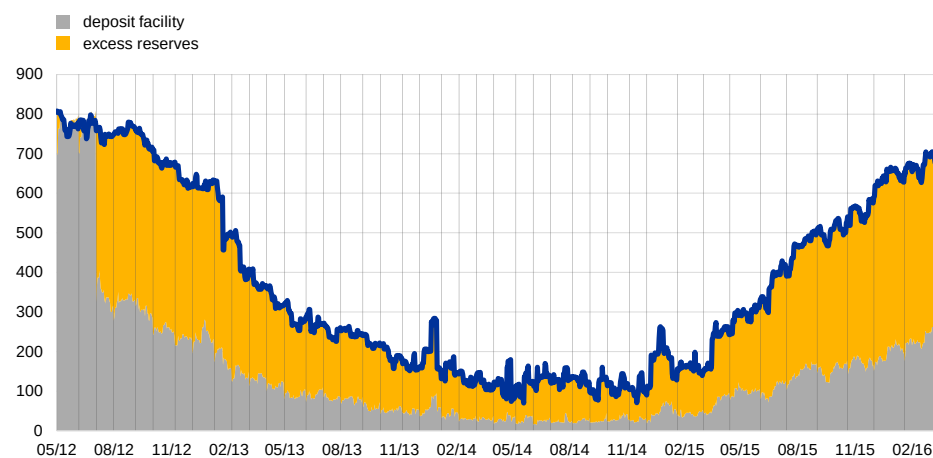


Sources: ECB.

Chart 14

Deposit facility and excess reserves

(EUR billions)



Sources: ECB.

The average share of funds placed in the deposit facility drastically dropped in July 2012 as soon as its rate was lowered to zero. As of June 2014, the rate on the deposit facility (and by extension the remuneration on excess reserves) became negative. Box 2 at the end of this section looks at the operational and other implications of negative policy interest rates.

Data shows the remarkable reduction in excess liquidity that occurred from the beginning of 2013 until the end of 2014. This decline affected both the level of excess reserves and the recourse to the deposit facility. Since then, the balance sheet expansion pursued by the Eurosystem has increased the level of excess liquidity to the highest records ever observed.

The proportion of excess liquidity deposited using the deposit facility was volatile and fluctuated in the period under review reaching a minimum share of 18% in the sixth Maintenance Period (MP) of 2014 and a maximum of 46% in the seventh MP of 2012. A number of banks made use of the deposit facility at the end of each month to clearly distinguish liquid assets on their balance sheet.

The preference to frontload reserve requirements was reinforced in this period. As a normal pattern, counterparties leave their liquidity in current accounts at the beginning of the MP in order to fulfil their obligation as soon as possible and typically place more funds in the deposit facility towards the end of the maintenance period.

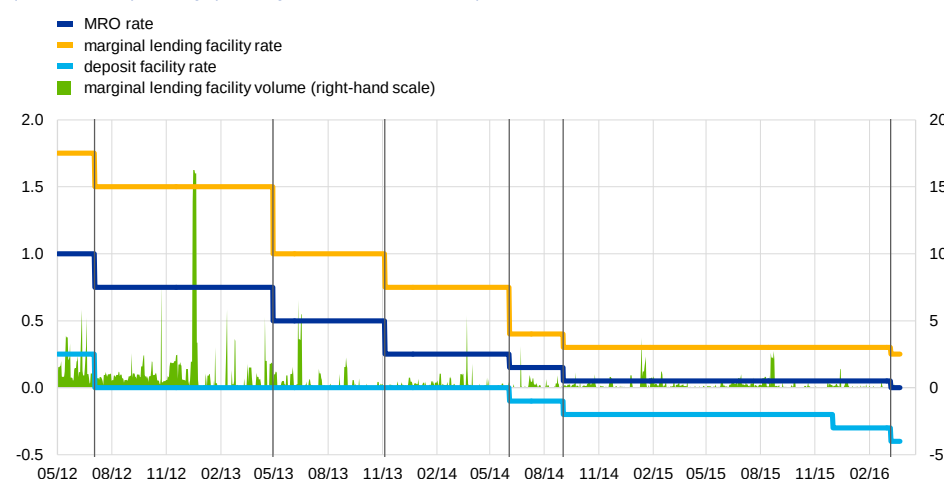
5.2 Marginal lending facility

The use of the marginal lending facility has been residual and homogenous by MP in the period under consideration. This facility aims to cover specific liquidity shortfalls either provoked by market developments or by technicalities in the settlement of refinancing operations. It provides liquidity against the same set of collateral as accepted in other Eurosystem credit operations. Sporadic recourse to the facility is therefore not seen as raising concerns about the creditworthiness of the counterparty having recourse to it. Chart 15 shows that use of the marginal lending facility is independent from the level of excess liquidity.

Chart 15

Recourse to marginal lending facility and changes to the rate on the marginal lending facility

(left-hand scale: percentage points, right-hand scale: EUR billions)



Sources: ECB.

Some spikes in the use of the marginal lending facility were caused by unexpected outflows faced by banks at the end of the day. On other occasions, the facility was used as a bridge to switch outstanding positions in refinancing operations that did not exactly match in terms of maturity and value dates.

In an excess liquidity environment, recourse to the marginal lending facility is more expensive compared to the cost of market financing as money market rates are at levels close to the rate on the deposit facility instead of the main refinancing rate, as they would be under balanced liquidity conditions.

Box 2

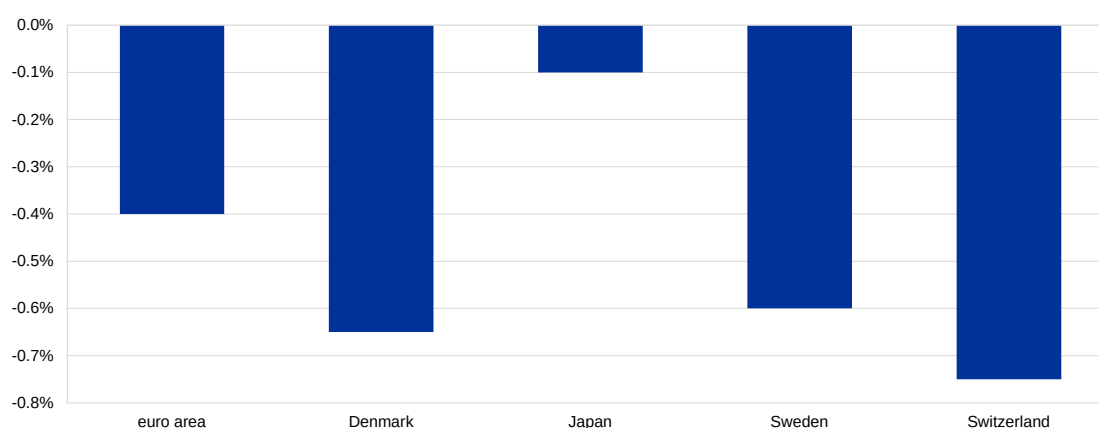
(Operational) implications of negative policy interest rates

The Governing Council first lowered the rate on the deposit facility to negative territory in June 2014 (-0.10%). Since then, the Governing Council further lowered the rate to -0.20% in September 2014, to -0.30% in December 2015 and to -0.40% in March 2016. This shift towards negative rates was embedded in a comprehensive package undertaken by the Eurosystem (see Section 1). Negative policy rates are now widely used across the central bank universe, namely in Denmark, Japan, Sweden and Switzerland (Chart A).

Chart A

Negative rates on excess reserve as of June 2016

(percentage points)



Sources: Bloomberg, ECB.

Notes: The euro area rate is the deposit facility rate. The reference rate for Sweden is the daily fine-tuning rate for deposits of repo rate minus 10 bps, for Denmark the one-week certificates of deposit rate, for Japan the policy rate on account balances and for Switzerland the sight deposit rate.

Negative policy rates are expected to have an overall positive effect on the economy by reducing financing costs of the real sector and providing incentives for banks to lend on their liquidity, thereby supporting aggregate demand. However, the negative rate environment also raises several issues regarding 'search for yield' behaviour, the functioning of money markets, as well as the structure and profitability of financial institutions.⁵²

Legal uncertainty arose as to whether or not creditors are obliged to make payments to debtors if contractually agreed reference rates plus spreads (i.e. all-in rate) turned negative. This issue surfaced particularly in southern euro area countries where variable rate loans are more common. In the event of explicit or implicit zero interest floors in variable rate contracts, in economic terms, lenders may be protected from making payments to borrowers. However, since interest rate swaps

⁵² For further details, see Cœuré, B. (2016), "Assessing the implications of negative interest rates", speech given at the Yale Financial Crisis Forum, 28 July.

and forward agreements are not affected by such floors, hedging interest rate risk may become challenging for financial institutions.

Low and negative rates have short-term effects, which may be one-off, and longer-term effects, which may be more permanent. Lower interest rates, and the resulting lower yields, imply capital gains on a bank's fixed-income portfolio. Such capital gains, however, are a one-off. In the short-run lower interest rates can also boost net interest margins, as short-term funding costs fall while fixed-rate loans may take some time to re-price. However, over the longer term, lower rates could decrease net interest income. This would be the case if the lower rates come with a flatter yield curve, which can result from lower expected future short-term rates and a compression of term premia. Even for a given yield curve slope, negative rates could compress interest rate margins, as banks are reluctant to charge negative interest rates in particular to households while they have been passed on to institutional investors. Further positive effects on bank income, however, result from the fact that lower interest rates are associated with lower borrower default rates. More generally, a more accommodative monetary policy should improve the macroeconomic environment, which tends to be associated with stronger bank profits and a better financial situation for bank borrowers.

Since the introduction of negative rates, the amount of banknotes in circulation followed a generally unchanged upward trend notwithstanding seasonal effects. There is therefore no evidence that a substitution of central bank liquidity for banknotes is taking place.

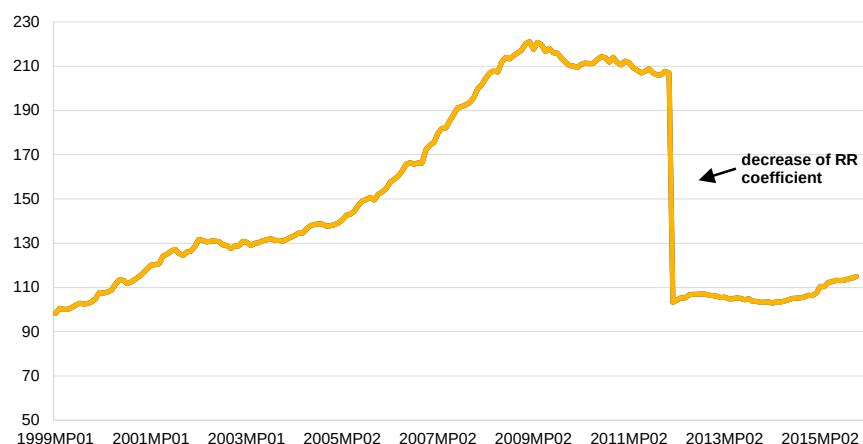
6 Minimum reserve requirements

The objective of the minimum reserve system is to stabilise money market interest rates and create (or enlarge) a structural liquidity deficit. The reserve requirement coefficient was lowered from 2% to 1% of the reserve base from the MP starting in 18 January 2012. The Governing Council decided to lower the amount of reserves placed with the Eurosystem on 8 December 2011 to support bank lending and liquidity in the euro area money market, together with the launch of three-year LTROs, the ACC framework and the discontinuation of liquidity-absorbing fine-tuning operations. The start of quantitative easing with the decision to purchase covered bonds and ABS in conjunction with the introduction of a negative rate on the deposit facility and the start of TLTROs further downplayed the role of reserve requirements in the Eurosystem monetary policy implementation framework. The APP as well as the start of the second series of TLTROs have further decreased the role of reserve requirements by increasing the amount of liquidity in the banking system.

Chart 16

Evolution of reserve requirements over time

(amount at the end of MP, EUR billions)



Sources: ECB.

Counterparties only have to fulfil their reserve requirement over the course of the MP on average and not on a daily basis. This allows counterparties to buffer short-term liquidity shocks. This buffering function was enhanced by the longer MPs. Indeed, the ECB announced on 17 July 2014 that MPs would span from 28 January 2015 on average over six weeks rather than four as before. This decision was taken to allow for the timely publication of accounts of monetary policy rate-setting meetings, as is the case in other leading central banks.

The maintenance of reserves in a negative rate environment changed its perspective as minimum reserves are remunerated at the interest rate on the MRO while excess reserves are remunerated at 0% or at the rate on the deposit facility, whichever is lower. Amounts placed in the deposit facility or in excess of reserve requirements

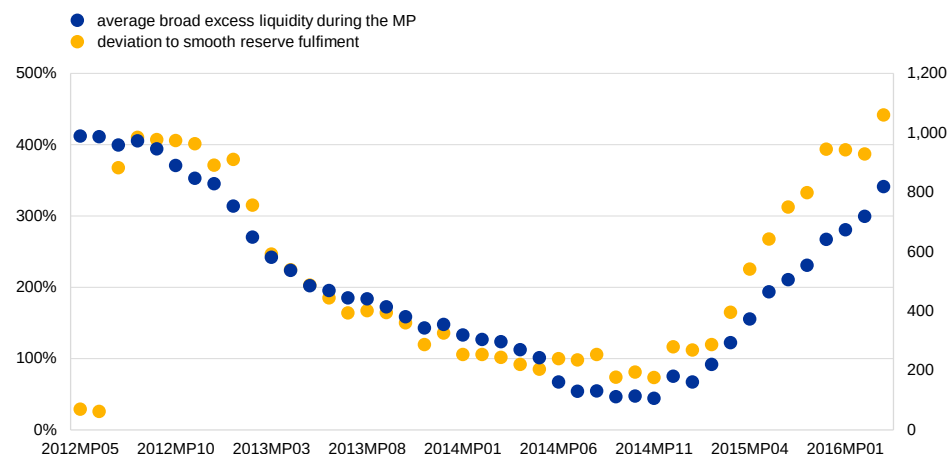
have been subject to a negative rate from 11 June 2014. Consequently, minimum reserve holdings mitigate on the margin the impact of negative rates.

Chart 17 measures the reserve fulfilment pattern by bank and shows that excess liquidity and frontloading of reserve requirements go hand-in-hand. A value of zero in the deviation from smooth reserve fulfilment over the MP represents a neutral path. A positive value would indicate a frontloading of reserve fulfilment, whereas negative values indicate backloading. Compared to the previous analysis⁵³, the level of frontloading of reserve requirements jumped considerably, tracking the increase of excess liquidity during the period under review. A possible explanation of the strong correlation would be that counterparties do not need to undertake actions for forming excess reserves while recourse to the deposit facility needs to be requested. Since July 2012, the remuneration on excess reserves on the current account and in the deposit facility has been fully aligned due to zero and later negative rates. Therefore, by default, the excess reserves would follow the evolution of excess liquidity as the fulfilment of the reserve requirement is frontloaded, as shown in Chart 17. Maximum frontloading took place in MP8 2012 (410%) and MP3 2016 (441%) around which excess liquidity peaked. The aggregate figure conceals divergent national patterns as excess liquidity was heavily concentrated in a few jurisdictions (see Box 4).

Chart 17

Relation between frontloading and broad excess liquidity

(x-axis: the number of the MP as of 2012 MP5; y-axis: left-hand scale: deviation from smooth reserve fulfilment in percentage points; right-hand scale: amount of excess liquidity EUR billions)



Sources: ECB.

Notes: The deviation from smooth reserve fulfilment in percent is calculated as $100 \times (\text{MP average of the daily reserve fulfilment ratio} - 1)$, where the daily reserve fulfilment ratio on a given day is the sum of all current accounts up to and including that day divided by the sum of the daily reserve requirement up to and including that day.

⁵³ See Eser, F. et al, (2012), "The use of the Eurosystem's monetary policy instruments and operational framework since 2009". ECB Occasional Paper No 135, August.

7 Outright asset purchase programmes

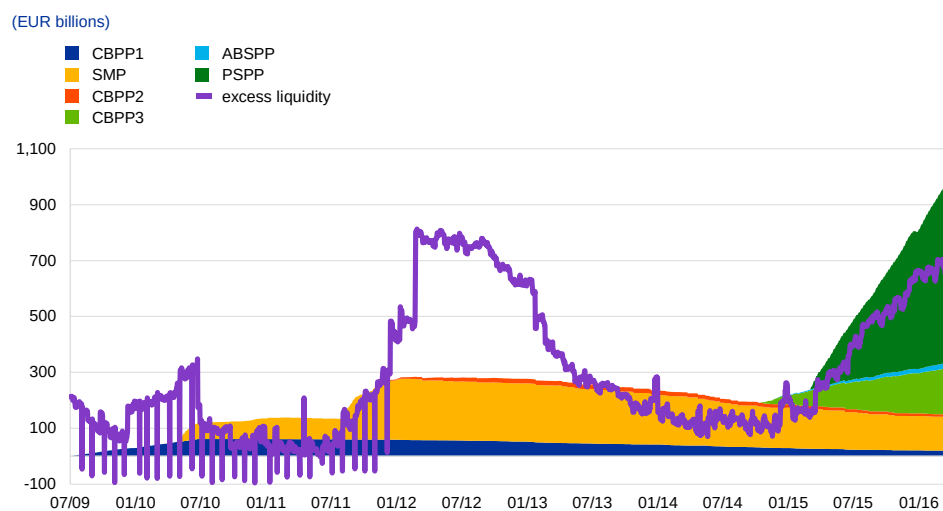
The Eurosystem can conduct outright transactions for monetary policy purposes. According to the General Documentation (Guideline ECB/2014/60), the outright purchase and sale of securities on the market (outright transactions) are considered standard open market operations within the Eurosystem's monetary policy framework.

This section reviews the different asset purchase programmes conducted by the Eurosystem for monetary policy purposes during the review period.⁵⁴ It first reviews each measure in the order in which they were introduced and then explains some general features applicable to the programmes on aspects such as securities lending, organisation and profit and loss sharing. Chart 18 displays the outstanding amounts of each programme.

Past purchase programmes were used to improve monetary policy transmission in dedicated asset markets such as the covered bond or specific public sector bond markets. In particular, past purchase programmes aimed to improve market functioning and reduce risk premia in specific market segments.

However, as policy rates approached the effective lower bound, the ECB initiated the Asset Purchase Programme (APP) to address the risks of an overly prolonged period of low inflation. Such large-scale asset purchase programmes had been used by other central banks in the past. These programmes lower long-term bond yields by increasing the demand of such securities and removing interest rate risk from the market, thus incentivising market participants to rebalance their portfolios towards riskier assets. They also increase the amount of central bank liquidity in the banking system pushing short-term money market rates close to the deposit rate floor, which contributes to lowering the term premium on money market rates and increases incentives for portfolio rebalancing. Via the portfolio rebalancing channel, banks have incentives to increase lending to the real economy. Due to portfolio rebalancing there are also spill-overs into markets that are not directly covered by the purchase programmes. Furthermore, the calendar-based guidance on how long the purchases are conducted contributes to strengthening the ECB's forward guidance.

⁵⁴ For an in-depth review of the first covered bond purchase programme and the securities markets programme, see Eser, F. et al, (2012), "[The use of the Eurosystem's monetary policy instruments and operational framework since 2009](#)". ECB Occasional Paper No 135, August.

Chart 18**Overall volumes of the different outright asset purchase programmes**

Sources: ECB.

Notes: The downward spikes in excess liquidity are of a technical nature and are related to the fine-tuning operations conducted on the last day of the maintenance period until the end of 2011.

7.1 Covered bond purchase programmes

The CBPP2 programme was launched with a view to easing funding conditions for banks and companies and encouraging banks to maintain or expand lending to their customers. Under the CBPP2, purchases were conducted in both the primary and secondary markets from November 2011 until the end of October 2012. Purchases totalled €16.4 bn (37% from primary markets), which was below the intended nominal amount of €40 bn owing to the lack of primary market covered bond issuance, along with the positive effects of the three-year LTROs. It is intended that the purchased bonds will be held until maturity.

The CBPP3 was announced on 4 September 2014 and purchases started on 20 October 2014. The aim is to enhance the functioning of the monetary policy transmission mechanism, support financing conditions in the euro area, facilitate credit provision to the real economy and generate positive spill-overs to other markets, i.e. induce portfolio rebalancing. Therefore, the last objective was different compared to the previous covered bond purchase programmes. With the introduction of the APP, the CBPP3 was rolled into the APP envelope, which has the additional objective of providing quantitative easing and generating positive spill-overs to other markets via the portfolio rebalancing channel. As in the previous CBPP programmes, CBPP3 eligibility was roughly aligned with Eurosystem collateral eligibility criteria. In contrast to previous CBPP programmes, there are no limitations to maturity or issuance size. Eurosystem combined holdings of all covered bond purchase

programmes and other holdings of Eurosystem central banks are limited to 70% per ISIN.

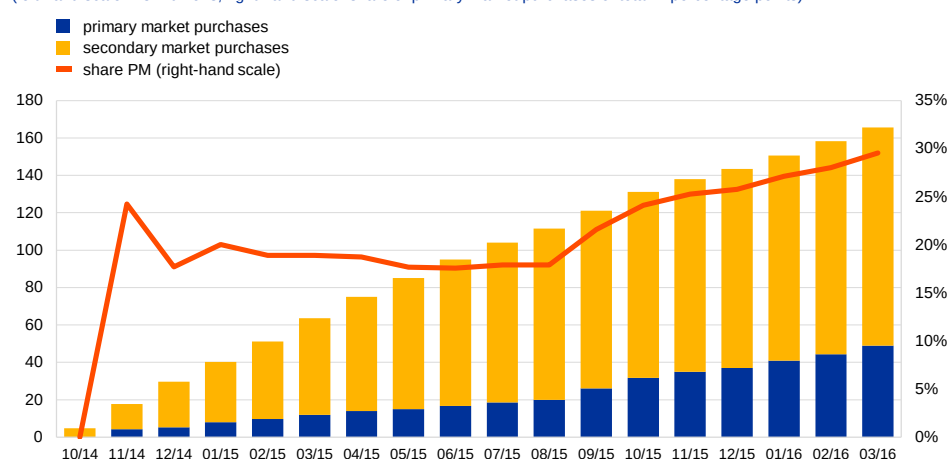
Purchases have been made in a broad range of countries and in line with the targeted amounts. Purchases are made both on primary and secondary markets as can be seen in Chart 19. In the day-to-day implementation of the programme, bond purchases are responsive to the availability of individual bonds and offers from counterparties. The purchasable universe is subject to credit risk and due diligence procedures on an ongoing basis.

The announcement of the CBPP3 and its implementation led to a visible decline in spreads in particular around the introduction of the programme and in lower-rated jurisdictions (Chart 2).

Chart 19

Eurosystem holdings of covered bonds split into primary and secondary market acquisitions for CBPP3

(left-hand scale: EUR billions; right-hand scale: share of primary market purchases of total in percentage points)



Sources: ECB.
Notes: Book values.

7.2 Outright Monetary Transactions

OMTs are contingent operations aimed at safeguarding appropriate monetary policy transmission and the singleness of the monetary policy in the euro area, including acting as an insurance device against redenomination risk. The decision to potentially buy sovereign bonds was announced on 2 August 2012 and modalities were introduced on 6 September 2012.⁵⁵

⁵⁵ For an assessment of the first year of experience with the OMT, see Cœuré, B. (2013), “[Outright Monetary Transactions, one year on](#)”, speech given at the at the conference “The ECB and its OMT programme”, organised by Centre for Economic Policy Research, German Institute for Economic Research and KfW Bankengruppe, 2 September.

A necessary condition for OMTs is strict and effective conditionality attached to an appropriate European Financial Stability Facility/European Stability Mechanism (EFSF/ESM) programme. Such programmes can take the form of a full EFSF/ESM macroeconomic adjustment programme or a precautionary programme (Enhanced Conditions Credit Line), provided that they include the possibility of EFSF/ESM primary market purchases. The Governing Council will consider OMTs to the extent that they are warranted from a monetary policy perspective, as long as programme conditionality is fully respected, and will terminate them once their objectives are achieved or when there is non-compliance with the macroeconomic adjustment or precautionary programme.

OMT purchases would be focused on sovereign bonds in the shorter part of the yield curve, i.e. with a maturity of between one and three years. Under OMTs the ECB accepts the same (*pari passu*) treatment as private or other creditors for the bonds purchased. The liquidity created by OMT purchases would be absorbed. The conditionality attached to the purchases ensures that they comply with the prohibition of monetary financing as confirmed by the Court of Justice of the European Union (ECJ).⁵⁶⁵⁷ To date the programme has not been activated.

The SMP was terminated following the decision on the OMTs although no new purchases had occurred since February 2012. The objective of the temporary SMP programme was to address the malfunctioning of certain euro area debt securities market segments and to restore an appropriate monetary policy transmission mechanism. The SMP purchased bonds issued by Greece, Portugal, Ireland, Italy and Spain. The securities purchased under the SMP are held to maturity, which means the portfolio will continue to steadily decrease over time. Section 4.1.3 covers the liquidity absorbing operations conducted to sterilise the liquidity of the SMP purchases until June 2014.

7.3 ABS Purchase Programme

The ABSPP further enhances the transmission of monetary policy, facilitates credit provision to the euro area economy and generates positive spill overs to other markets. The ABSPP also helps banks to diversify funding sources and stimulates the issuance of new securities. Asset-backed securities can help banks to fulfil their main role: providing credit to the real economy. For instance, securitising loans and selling them can provide banks with the necessary funds to provide new lending to the real economy. The ABSPP was announced on 4 September 2014 and purchases started on 21 November 2014. The ABSPP is part of the APP but the main focus of the programme is to support the market and provide incentives to issue simple and transparent ABSs with a straightforward and robust structure to foster the sound development of the euro area securitisation market.

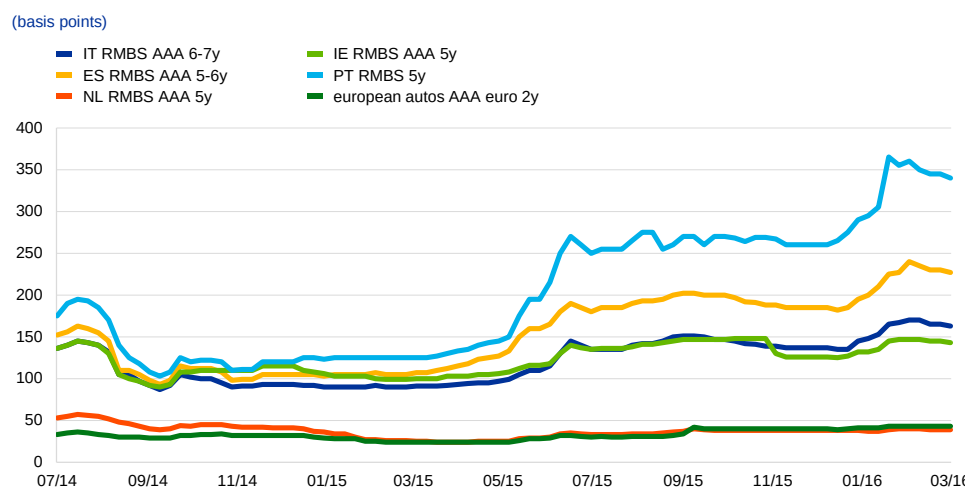
⁵⁶ In June 2015, the ECJ confirmed that the OMT programme is compatible with EU law and within the ECB's competences. See European Central Bank (2015), "[ECB Governing Council takes note of ruling on OMT](#)", Press Release, 18 June.

⁵⁷ See Box 1 of European Central Bank (2012), "[Compliance of outright monetary transactions with the prohibition on monetary financing](#)", Monthly Bulletin, October.

In principle, eligibility is roughly aligned with collateral eligibility criteria. There are no limitations to maturity or issuance size. Eurosystem holdings of ABSs are limited to 70% per ISIN. Due to the small market size and sporadic issuance, the programme does not follow a specific benchmark but rather functions in a reactive way. Prior to the purchase of any ABS fulfilling the eligibility criteria, a credit risk assessment and due diligence are conducted in relation to the relevant ABS.

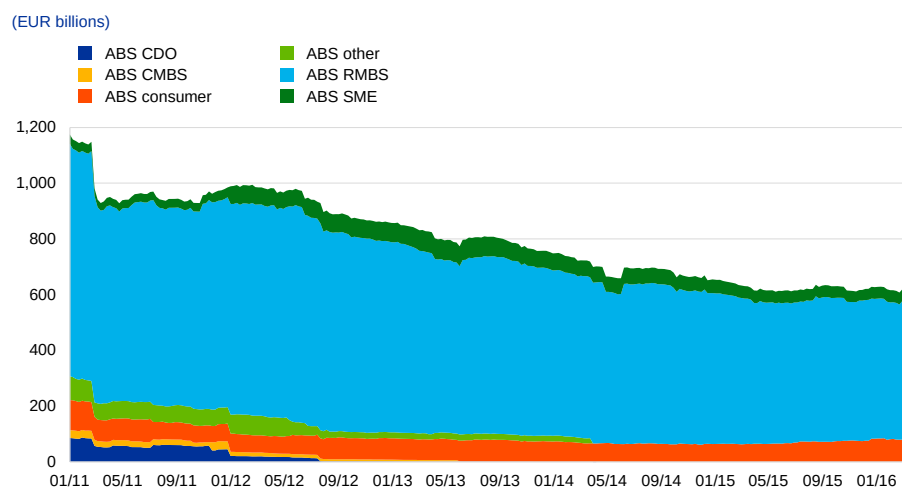
The announcement of the ABSPP and its implementation initially led to a visible decline in ABS spreads, with price adjustments particularly pronounced in those market segments where the Eurosystem intervened directly. However, since then other market drivers such as deteriorating risk sentiment led to a reversal in certain spreads (Chart 20). The amount of ABS outstanding appears to have stopped falling (Chart 21).

Chart 20
Selected ABS spreads



Sources: J.P. Morgan International ABS Research.

Notes: Asset swap spreads. AAA-Rating indicates rating at issuance and does not necessarily reflect current ratings.

Chart 21**Eligible ABS for collateral**

Sources: ECB.

Notes: Nominal value outstanding by main types.

7.4 Public Sector Purchase Programme

On 22 January 2015, the ECB announced the APP consisting of a new Public Sector Purchase Programme (PSPP) and the already existing ABSPP and CBPP3.⁵⁸ The PSPP included purchases of bonds issued by euro area central governments, agencies and international or supranational institutions located in the euro area with a maturity of between 2 and 30 years. Inflation-linked and floating-rate securities are eligible under the PSPP. Government bonds and agencies are bought by the Eurosystem proportionally according to the capital key. Capital key shares are not strictly targeted every month, providing some flexibility to support the smooth implementation of the programme. Bonds of EU supranationals are bought under a specialisation scheme by certain NCBs in addition to their regular purchases of domestic government bonds and agencies and by some other NCBs as substitute purchases. Substitute purchases complement the purchase of bonds issued by the government and agencies to fulfil the intended purchase amounts during the duration of the APP, where a shortage of such bonds is detected in a specific jurisdiction. Once such a need is identified for a given country, the share of substitute purchases is calibrated in order to allow the Eurosystem to continue buying bonds issued by that country's government and agencies until the end of the APP.

The share of EU supranational institutions was originally 12% but was lowered to 10% in March 2016 in order to support the continued smooth and market-neutral implementation of the PSPP in view of the outstanding eligible securities and applicable limits under the programme. The bonds of EU supranational institutions play a key role as they are used for substitute purchases. For this reason, in March

⁵⁸ See European Central Bank (2015), "[ECB announces expanded asset purchase programme](#)", Press Release, 22 January.

2016 the issue share limit for EU supranational bonds was increased from 33% to 50% per individual security (ISIN).

To enhance the flexibility of the programme and support the continued smooth implementation of purchases, the ECB decided on 3 December 2015 to include euro-denominated marketable debt instruments issued by regional and local governments for regular PSPP purchases by the respective national central banks.

The Eurosystem expanded the list of agencies whose securities are eligible for purchase under the PSPP twice during 2015, in April and July, from seven agencies to 30 agencies to facilitate the programme's implementation. The changes to the list took into account monetary policy as well as risk management considerations. With the introduction of the CSPP (see Section 7.5), some agencies which comply with both the PSPP and the CSPP eligibility criteria were reassigned to the CSPP after a systematic review of all public undertakings.

The PSPP's design – and in general the APP's design - allows for flexibility in its implementation to limit bond purchases' interference with the market's price formation mechanism and to preserve market liquidity. The pattern of monthly purchases has reflected this flexibility. For instance, in view of expected lower market liquidity in the summer and towards the year-end, the Eurosystem frontloaded APP purchases, raising them above the target for a number of months, while reducing them below target in August and December.

In the day-to-day implementation of the programme, bond purchases are also responsive to signs of scarcity of individual bonds. To the extent possible, the Eurosystem avoids purchasing bonds that are cheapest to deliver under futures contracts, bonds with special features in the repo market, or bonds displaying relatively limited liquidity for other reasons. Due to the prohibition on monetary financing, purchases under the PSPP are conducted only in the secondary market as opposed to the private sector purchase programs where primary market purchases constitute an important share of purchases. In order to avoid interference with primary market price formation, a blackout period around the issuance of new securities on the primary market is applied in the PSPP.

Aside from targeting a capital key allocation in terms of nominal amounts per country, the programme also aims to be market neutral with respect to the average duration removed from the market. However, in some cases the limit framework, which stipulates that Eurosystem holdings are limited to 33% per ISIN, results in different average maturity of purchases due to past holdings in particular under the SMP. The Eurosystem also takes into account the relative values of bonds and the liquidity of the different maturity segments, which might result in deviations from the outstanding market as can be seen in Chart 22.

The individual ISIN limit was raised from 25% to 33% on 3 September 2015. Lifting the limit allows for a significant increase in the purchasable amount, which was particularly important after the increase in the purchase volume and the increase in intended duration. The limits are intended to avoid undue concentration that could undermine market liquidity and create a blocking minority in relation to collective

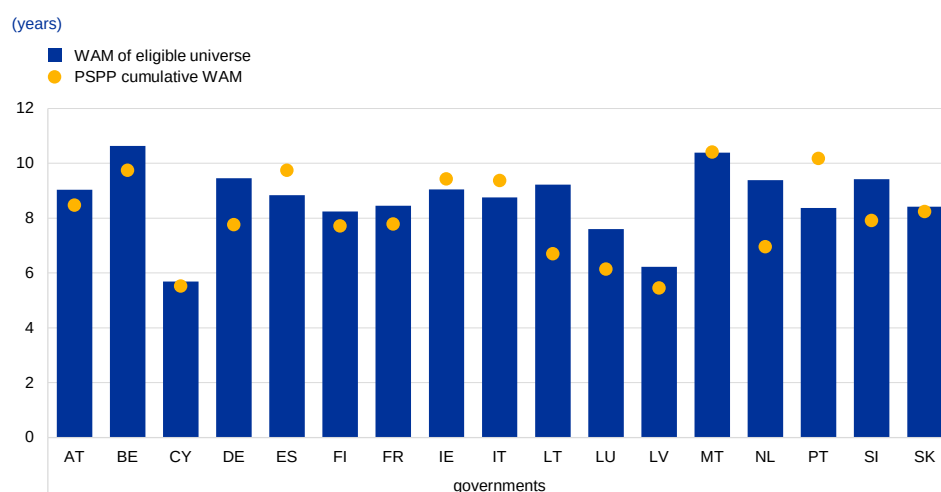
action clauses. Due to the prohibition on monetary financing, the PSPP limits are lower than for private sector securities.

A significant share of PSPP-eligible bonds in highly rated countries traded at yields below the level of the rate on the deposit facility. This reduced the amount of bonds available for purchase under the PSPP, as purchases were not made at yields below the rate on the deposit facility. For example, in late November 2015 and February 2016 this reflected – among other things – market expectations that the ECB would further lower the rate on the deposit facility. The share of bonds unavailable for purchase owing to their low yield declined sharply after the Governing Council decided to lower the rate on the deposit facility in December 2015 and March 2016. However, in the course of 2016, the constraint imposed by the deposit facility rate on the purchasable universe became again more restrictive.

The PSPP has made a substantial contribution to the extraordinarily low government bond yields by reducing term premia and increasing excess liquidity, thereby anchoring money market rates and expectations thereof close to the rate on the deposit facility. ECB purchases under the PSPP have also supported the decreasing of cross-country fragmentation leading to lower spreads between higher-rated and lower-rated countries. During the PSPP, the yields on other financial assets have in general also been reduced and bank lending conditions have improved.⁵⁹

Chart 22

Weighted average maturity of PSPP-holdings versus eligible universe per country at end of Q1 2016



Sources: ECB.

⁵⁹ For a more thorough review of the APP see Andrade, P. et al, (2016), "The ECB's asset purchase programme: an early assessment", ECB Working Paper No 1956, September.

7.5 Corporate sector purchase programme

When the APP was expanded to €80 bn per month in March 2016 the scope of purchases was broadened to include investment-grade euro-denominated bonds issued by non-bank corporations established in the euro area under a new corporate sector purchase programme (CSPP).⁶⁰ Purchases began in June 2016. The CSPP is intended to strengthen the pass-through of the Eurosystem's asset purchases to the financing conditions of the real economy.⁶¹

To be eligible for the CSPP, bonds must fall under the Eurosystem's collateral framework. The eligibility criteria are deliberately broad, among other things to support smaller issuers as much as possible. The eligible maturity spectrum ranges from a minimum remaining maturity of six months to a maximum remaining maturity of 30 years. There is no minimum issuance volume. Securities issued by credit institutions and by entities with a parent company that belongs to a banking group are not eligible. Insurance corporations are allowed. Purchases are conducted in both the primary and the secondary market. Similar to the CBPP and ABSPP, a maximum issue share limit of 70% per security generally applies.⁶²

The distribution of purchases is well diversified across corporations in many economic sectors and across the euro area countries where bonds are outstanding following a market-capitalisation based benchmark. The riskiness of bonds purchased broadly mirrors the rating distribution of the universe of eligible bonds. The purchasable universe is subject to credit risk and due diligence procedures on an ongoing basis. Similar to CBPP3, bond purchases are responsive to the availability of individual bonds and offers from counterparties.

7.6 Securities lending programmes⁶³

To mitigate any possible distortions to the functioning of the euro area government bond market from the PSPP, most Eurosystem central banks (including the ECB) have put in place securities lending arrangements through securities lending facilities offered by central securities depositories or agents or via matched repurchase transactions with eligible counterparties.

⁶⁰ For further details see European Central Bank (2016), "[ECB announces details of the CSPP](#)", Press Release, 21 April and European Central Bank (2016), "[ECB announces remaining details of the CSPP](#)", Press Release, 2 June.

⁶¹ See also Box 2 in European Central Bank (2016), "[The corporate bond market and the ECB's corporate sector purchase programme](#)", Economic Bulletin, Issue 5.

⁶² However, in specific cases a lower issue share limit applies, e.g. for securities issued by public undertakings, which are dealt with in a manner consistent with their treatment under the PSPP. Primary market purchase of public sector issuers under the CSPP are also excluded to comply with the monetary financing prohibition laid out in Article 123 of the Treaty on the Functioning of the European Union (TFEU). For the same reason, instruments issued by entities that qualify as public undertakings are not purchased on the primary market and a blackout period applies in the same way as for the PSPP.

⁶³ For further details, see the ECB [website on securities lending](#).

In addition, the portfolios of the covered bond purchase programmes and the CSPP are available for securities lending. CSPP holdings are lent out via the NCBs conducting the purchases. The terms of the facilities offered by the NCBs and the ECB differ to some extent owing to the specific market environment in each jurisdiction.

While lending activity under all purchase programmes has remained limited in terms of amounts, it is considered useful for proper market functioning that the securities held under the programmes are in principle available for lending. Lending of APP securities holdings takes place on a cash-neutral basis.

7.7 Organisation of purchases

Apart from the ABSPP and the CSPP, all purchase programmes are implemented in a decentralised manner by the NCBs and the ECB. The ECB oversees the purchases of portfolio managers in the NCBs in broad terms but within the home market there is some flexibility for the NCB portfolio managers to choose the asset selection to leverage on local market knowledge. This facilitates the smooth and flexible implementation of the programmes to minimise market distortions. The vast majority of purchases are conducted bilaterally with counterparties after having acquired sufficient price references in order to conduct the purchases at the best possible market prices. For some EU-supranational bonds (via the Banque de France) and government bond jurisdictions (via De Nederlandsche Bank and the Lietuvos bankas), auctions are used to complement the bilateral transactions.

For risk management and co-ordination purposes, all purchases are entered into a central front-office application, to which all NCBs and the ECB have access. The purchases are settled on the NCBs' and the ECB's balance sheets.

The counterparties qualified to participate in the programmes are those eligible for the Eurosystem's monetary policy operations, together with any other counterparties that are used by NCBs and the ECB for the investment of their own euro-denominated portfolios.

The ABSPP is conducted by external and internal asset managers under the instructions and supervision of the Eurosystem. The Nationale Bank van België/Banque Nationale de Belgique (September 2015) and the Banque de France (December 2014) have joined the external asset managers as internal asset managers in conducting the purchases. Each of these asset managers has been assigned a specific segment of the euro area ABS market. The asset managers make recommendations and provide due diligence assessments of the securities for the Eurosystem to evaluate them. For this purpose the Eurosystem established a transaction committee, which conducts independent due diligence and pricing of the ABSs recommended for purchase by the asset managers. For primary market issuances and re-offerings of fully retained ABSs the evaluation can take up to five business days. Once the Eurosystem has analysed a given ABS, additional purchase decisions are generally taken within one business day. The transaction

committee then instructs the asset managers to conduct the purchases in the primary or secondary market. In contrast to other programmes, the ABSs are settled on the ECB's balance sheet instead of that of the NCBs.

The CSPP is conducted by a subset of NCBs (the central banks of Belgium, Germany, Spain, France, Italy and Finland) that have expertise in the corporate bond markets. The purchasing responsibilities among these NCBs are divided according to country of risk⁶⁴. The ECB coordinates the purchases.

7.8 Profit and loss sharing

As a rule, income and losses from decentralised monetary policy operations conducted by the Eurosystem are shared. This is the case for all currently active programmes⁶⁵ apart from the PSPP for which only profits and losses on ECB holdings and EU supranationals are shared. These amount to 20% of total PSPP purchases. Therefore, the remaining 80% of purchases of domestic jurisdiction government bonds and agencies come under the profit and loss of each NCB.

Box 3

Conducting asset purchases for monetary policy purposes

The implementation of asset purchases for monetary policy purposes broadly follows the decentralised structure of other Eurosystem operations. However, in the ABSPP, the Eurosystem partially relies on the services of two external asset managers with long-standing expertise in the ABS market. In addition, in the ABSPP, as in the CBPP3 and the CSPP, not all NCBs participate to the same extent in the execution of the programmes. In all programmes the ECB assumes the coordinating role inside the Eurosystem.

Large-scale outright purchases of assets in the securities markets for the purpose of creating large amounts of excess liquidity in the banking system represent a departure from the conventional monetary policy framework of the Eurosystem. Before the start of the APP, there was a so-called “structural liquidity deficit” among euro area banks, which the Eurosystem filled by lending money to these banks. The counterparties of such lending operations are a large number of banks with an active role in the real economy in the euro area. In the APP, however, the direct counterparties of monetary policy operations are often also securities dealers which may not be commercial lenders. The liquidity effect of these purchases therefore occurs only indirectly, namely when such dealers deposit the proceeds for the bonds they sell to the Eurosystem with their respective depository institutions. Monetary policy therefore makes use of intermediaries for the purpose of injecting liquidity. It is clear that securities dealers have a profit motive in providing market-making services and it would not be possible to conduct purchases over the long-run without providing some economic rents to the aggregate dealer community. On the other hand, such rents must not be

⁶⁴ The “country of risk” concept is that of the International Organization for Standardization's country code of the issuer's country of risk. This methodology consists of four factors: management location, country of primary listing, country of revenue and reporting currency of the issuer.

⁶⁵ In the case of CBPP1 and CBPP2 income and losses are not shared.

excessively large, which is why the Eurosystem applies strict best-price execution rules and ex-post price checks.

The technical implementation of purchases by the Eurosystem differs from the approach to implementation chosen by other central banks with similar purchase programmes in an important aspect that is crucial for the preservation of market functioning in the rather fragmented capital market environment of the euro area. Instead of conducting a comparatively small number of large-scale reverse auctions, the Eurosystem as a whole mostly approaches the market through a large number of small-scale purchases on standard electronic platforms and through voice trading. Reverse auctions are also being conducted, but only by three NCBs and therefore do not form a large part of overall purchases.

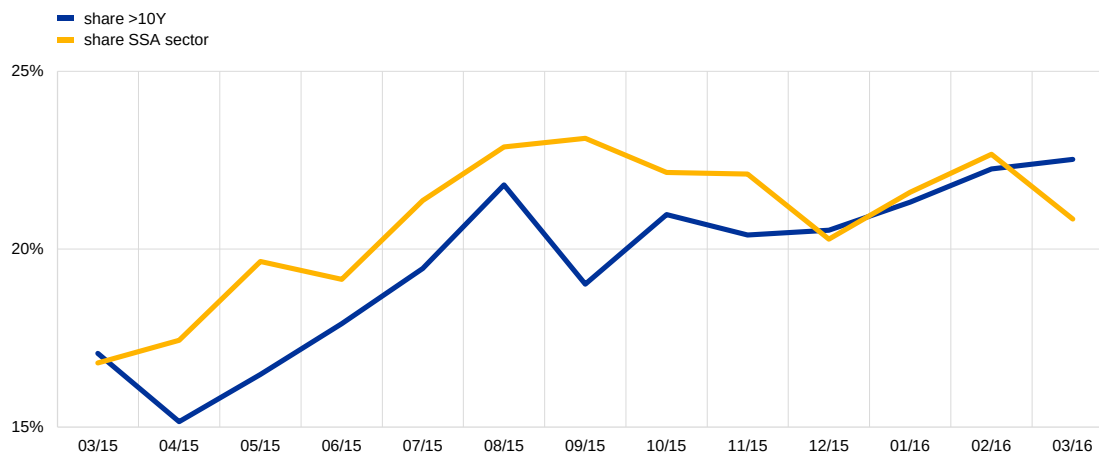
The use of small-scale purchases on the one hand means that the market does not attach a large informational value to the outcome of any one purchase operation and, on the other hand, smooths the profile of duration risk transfer between the market and the Eurosystem through time. In addition, the Eurosystem does not run the reputational risk of 'failed auctions', while it can flexibly adjust purchases to the market environment pertaining at the time, and thereby contribute to dampening short-term volatility.

The guiding principle for portfolio managers in this respect is that of market neutrality. Rather than the strict observance of a pre-defined benchmark, market neutrality implies more broadly a purchase strategy that respects both structural and transitory differences in liquidity between different market segments, subject to the overall quantitative constraints of the respective programme. In the case of PSPP, for instance, there are currently about 800 eligible bonds for portfolio managers to choose from, subject to a large number of quantitative constraints arising from the overall purchase pace, split between sovereign and substitute purchases, and the capital key allocation of purchases. Portfolio managers are largely free to use the remaining parameters to reflect their judgement of liquidity conditions instead of just passively reflecting the market capitalisation of individual securities. As such, the planning of securities purchases is a constrained optimisation process with the multiple aims of ensuring the successful fulfilment of the overall programme target and preserving market functioning. As a result, the share of various market segments in the flow of purchases fluctuates over time. Examples of this are shown in Chart A below.

Chart A

Share of non-sovereign and longer dated bonds in total PSPP monthly purchases over time

(share of longer dated bonds and SSA bonds in percentage points)



Sources: ECB.

Notes: SSA refers to agencies and international or supranational institutions.

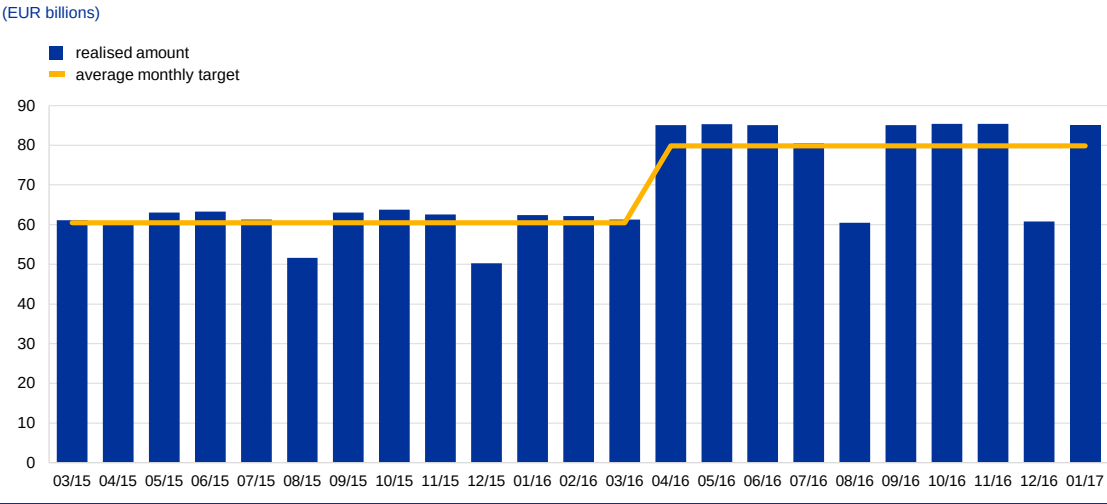
The market neutrality principle outlined above aims to protect market functioning and is taken into account when planning the execution of APP transactions. In addition, securities lending programmes complement the purchase programmes, adding a post-trade layer of protection. Lists of the securities held in PSPP portfolios that are available for lending to the market are published by the NCBs and the ECB via their websites. Owing to the decentralised implementation of the APP, securities lending is also implemented in a decentralised way. It aims at limiting the scarcity of assets resulting from the purchases conducted by the Eurosystem. The ECB deliberately prices its own lending more expensively than the NCBs to reflect the structurally smaller inventory held by the ECB in individual securities.

Market liquidity developments are monitored in real time by the portfolio managers and information is shared across the Eurosystem. It is therefore likely that emerging threats to market functioning would be detected relatively early and would be communicated to decision-making bodies, which would factor this information into their overall considerations.

While the Governing Council decisions have set the overall envelope for average monthly purchase amounts across all programmes, the amounts purchased by each programme on a monthly and daily basis are dependent on several factors, including both the anticipated and the actual trading liquidity and primary market activity in the relevant markets. Accordingly, the monthly APP-targets are broken down across programmes by establishing realistic targets for ABSPP, CBPP3 and CSPP and assigning the remaining target volume to PSPP. In the process of steering towards the targeted monthly APP purchase volume, the PSPP volume is adjusted over the course of the month. This reflects the fact that the PSPP operates in the most liquid market, so it can most easily act as a buffer for liquidity fluctuations in the other programme markets. Monthly APP purchase targets are decided based on ex-ante judgements of the likely overall market liquidity situation, subject to achieving the average target chosen by the Governing Council over the horizon of the APP. These monthly targets are lower during the summer and year end, and correspondingly higher in other months as shown in Chart B below. Monthly targets translate into daily target amounts based on the number of trading days and individual NCB adjustments reflecting national holidays. During the month, the daily targets are recalculated based on the actual progress of purchases. In practice,

this means that the pace of PSPP purchases can change substantially towards the end of each trading month.

Chart B
Realised purchase volumes under APP



Sources: ECB.

8 Impact of the ECB's monetary policy implementation on the Eurosystem balance sheet and liquidity conditions

Monetary policy implementation is reflected on the central bank balance sheet. The deposits of counterparties at the central bank are commonly referred to as central bank liquidity and exist in electronic form only. New asset purchases or lending to counterparties will result in corresponding liquidity creation and therefore in an expansion of the central bank's balance sheet.

The amount of liquidity affects the level of short-term money market rates. In cases of large amounts of excess liquidity, money market rates converge towards the rate on the deposit facility as the amount of liquidity exceeds the demand for it in the money market. Counterparties can influence the amount of liquidity they hold at individual level but at an aggregate level the amount of liquidity is determined solely by the composition of the central bank balance sheet.

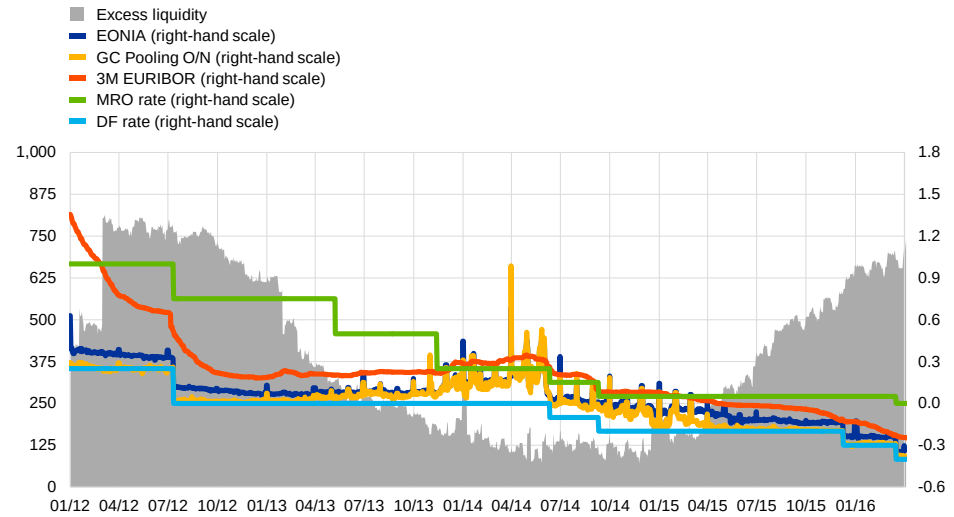
The ECB measures introduced during the period covered by this paper to address various financial market and macroeconomic risks to price stability, as described in the earlier sections, have had a profound effect on the Eurosystem balance sheet and therefore on liquidity conditions and money market rates.

In mid-2012, excess liquidity in the banking system was around €700 bn, mainly as a result of the funds borrowed by banks in the three-year LTRO. In the course of 2013, led by the early repayments of funds raised through the three-year LTROs, excess liquidity decreased and fell below €200 bn, reflecting a lower demand for Eurosystem refinancing (Chart 23). Simultaneously, money market activity increased, both in the secured and unsecured segments (Chart 24) as well as cross-border (Chart 25).

Chart 23

Excess liquidity and money market rates

(left-hand scale: EUR billions; right-hand scale: percentage points)



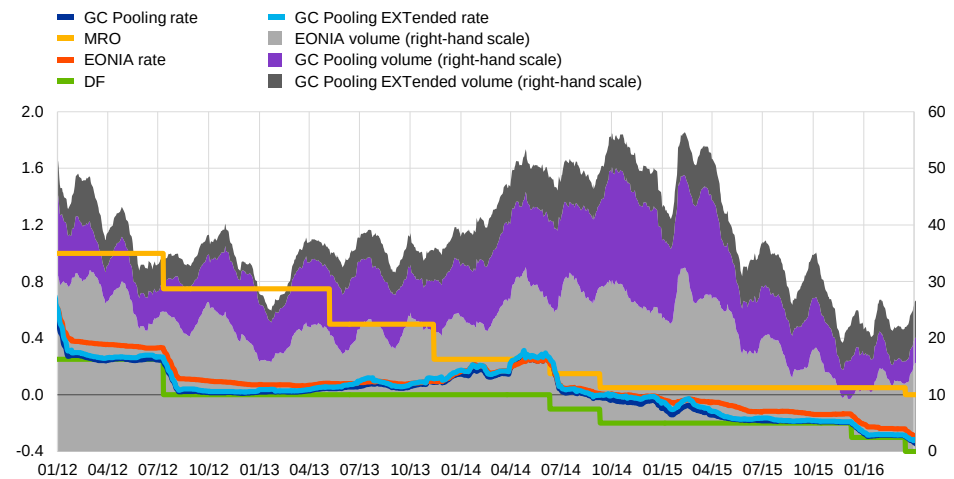
Sources: Bloomberg, ECB.

Notes: GC pooling refers to a pool of general collateral against which repos are conducted. This is opposed to a repo against a specific security.

Chart 24

Overnight money market rates and volumes

(left-hand scale: percentage points; right-hand scale: EUR billions)



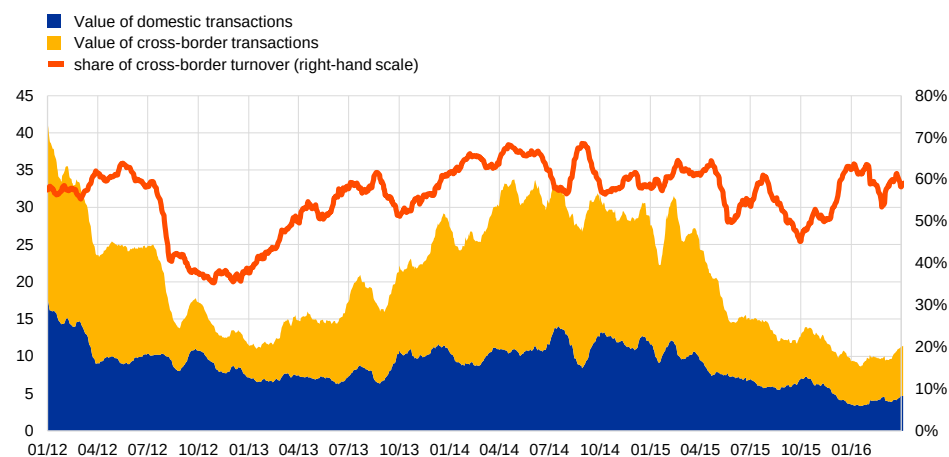
Sources: Reuters, ECB.

Notes: 20-day moving averages, except for MRO and DF.

Chart 25

Turnover of overnight money market transactions

(left-hand scale: EUR billions; right-hand scale: percentage points)



Sources: ECB TARGET2 data.

Notes: Intra-group transactions are excluded, matching and consolidation based on ordering and beneficiary institutions (full payment data), 20-day moving averages. Methodology based on De Frutos et al. (2015).

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By the second quarter of 2014, excess liquidity had declined to around €100 bn. This reduction on the one hand reflected improving market conditions and on the other hand led to volatility in short-term money market rates which fluctuated around levels that were not consistent with the Eurosystem monetary policy stance (Chart 23 and Chart 24).

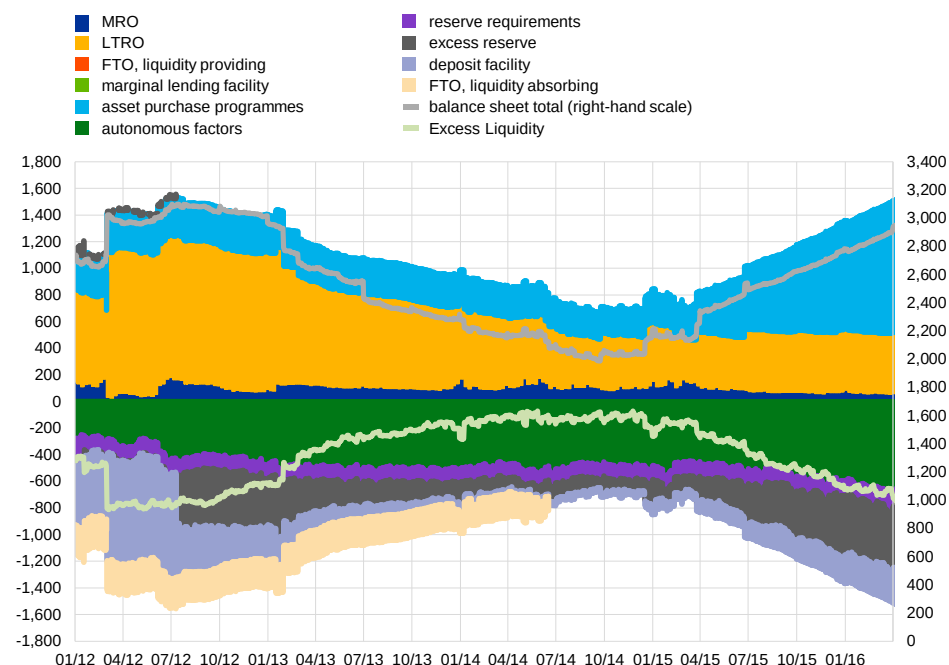
In view of this reduction in excess liquidity and the resulting developments in money markets, the Eurosystem moved in mid-2014 towards a more active steering of its balance sheet through asset purchases while keeping the full allotment policy in place.⁶⁶ In conjunction with the TLTROs, these asset purchase programmes aimed to have a sizeable impact on the Eurosystem's balance sheet, with the intention of increasing it to the size recorded at the beginning of 2012. On account of the asset purchases, the Eurosystem was no longer relying on counterparties to participate in the lending operations in order to increase the amount of excess liquidity and expand its balance sheet. The Eurosystem balance sheet increased to €2 900 bn by the end of March 2016 towards all-time highs as observed in 2012 (Chart 26).

⁶⁶ European Central Bank (2015), "The role of the central bank balance sheet in monetary policy", Economic Bulletin, Issue 4, pp. 61-77.

Chart 26

Size and composition of the consolidated Eurosystem balance sheet

(EUR billions, balance sheet total on right-hand scale)



Sources: ECB.

Notes: Positive numbers reflect asset items while negative numbers reflect liability items on the balance sheet.

While the intended effects of the monetary policy measures broadly began to be felt on financial market segments, the large amount of liquidity provided by the Eurosystem lowered the need and incentives for banks to operate in the interbank market. Indeed, transactions in the money market started declining notably from the start of the APP (Chart 24). However, other factors such as tightened regulatory requirements – especially relating to liquidity ratios – may have dampened money market activity and pushed investors towards the long end of the money market curve. Similarly, a narrower interest rate corridor can also contribute to reducing money market activity. At the same time, excess liquidity remained heterogeneously distributed among Eurosystem countries and highly concentrated in a few higher-rated jurisdictions, such as Germany, the Netherlands, France, Finland and Luxembourg (see also Box 4).

Box 4

Considerations on excess liquidity and factors driving its distribution

Excess liquidity – defined as the sum of liquidity held by euro area credit institutions (1) on their central bank accounts exceeding their reserve requirements (excess reserves) and (2) in the deposit facility – is a consequence of the non-standard monetary policy measures implemented by the Eurosystem. Already during the sovereign debt crisis in 2012 the Eurosystem's fixed rate full allotment policy enabled the level of excess liquidity to increase to new highs. Excess liquidity contracted again in the period of financial market stabilisation observed in 2013 and 2014. In the

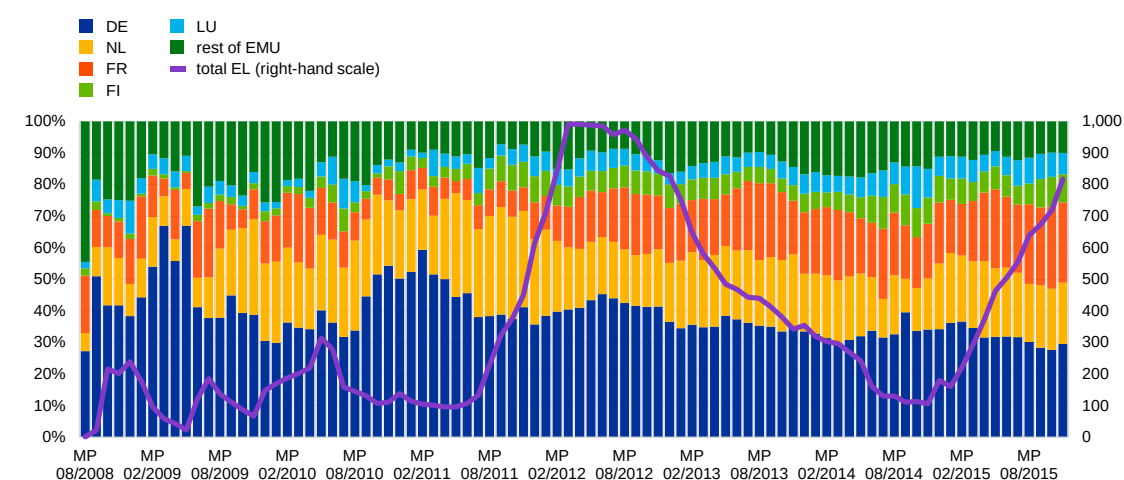
second half of 2014, the Eurosystem began moving towards a more active expansion of its balance sheet and excess liquidity has been rising progressively ever since (see Chart A).

Neither the amount of excess liquidity nor the way it was provided by the Eurosystem has influenced its distribution across jurisdictions over time. Excess liquidity has been persistently concentrated within a group of banks located in a limited number of higher-rated countries, i.e. around 80-90 % of excess liquidity is being held in Germany, France, the Netherlands, Finland and Luxembourg (see Chart 1) and even their country shares have been fairly stable across time.

Chart A

Excess liquidity held with NCBs (averages of reserve maintenance periods)

(left-hand scale: percentage points; right-hand scale: EUR billions)



Sources: ECB.

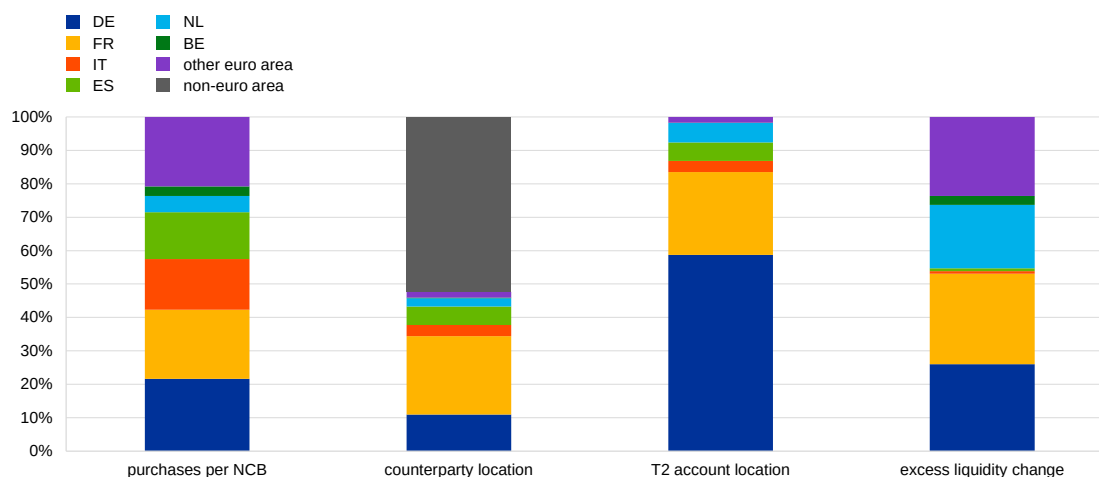
Notes: For MP 05/2010 to MP 06/2014 SMP liquidity absorbing fine tuning operations are included in the calculation of excess liquidity.

While the APP was the main driver behind the rise in excess liquidity since 2015, the distribution of the change of excess liquidity held at NCBs (Chart B, right bar) differs from the distribution of asset purchase volumes among NCBs. The amounts purchased by NCBs via the PSPP, which represents the main part of the APP, are determined by the Eurosystem capital key, with NCBs purchasing domestic bonds, such that the liquidity created should in theory be distributed across jurisdictions broadly in line with the capital key (Chart B, left bar). An important reason behind the distributional difference between the purchased volumes and the changes in excess liquidity at the NCB level is the location of APP counterparties or, for those which are not located in the euro area, the location of the TARGET2 (T2) accounts on which their sales are settled.

Chart B

NCB shares of APP purchases and excess liquidity effects at NCBs related to counterparty and TARGET2 account locations (MP1 2015 – MP3 2016)

(percentage points)



Sources: ECB.

Under a scenario where the injected liquidity is assumed to get swept to the T2 account of the APP counterparty at the end of the day, a majority of the liquidity would be destined to go to Germany (but also to France and the Netherlands), primarily because around 50% of the purchase volume is conducted via UK-based banks (Chart B, second bar from the left, where the UK is included in the “Non-euro area” category) which hold their T2 accounts mainly in Germany, but also in other euro area countries with large financial centres.⁶⁷ Overall, the evidence shows how the destination of the liquidity flows was driven by the specificities of the European financial (infra-) structure. Reflecting the integrated structure of European financial markets, where the sale and settlement of securities is not confined to national borders, direct cross-border liquidity flows can occur due to asset purchases, as the location through which counterparties participate in T2 largely determines the distribution of excess liquidity immediately after APP purchases.⁶⁸

Looking beyond the effects at the country level, the correlation between APP sales on the one hand and excess liquidity holdings on the other hand is low at individual bank level. While the Eurosystem’s asset purchases are a driving factor for the accumulation of excess liquidity on aggregate and help to explain its distribution at country level, asset sales alone cannot explain the accumulation of excess liquidity at individual credit institutions. Feedback from banks and further analysis suggest that regulatory requirements and banks’ business models strongly influence the level of excess liquidity held at the individual bank level.

As for the impact of prudential regulation, holding excess liquidity is treated favourably by the new liquidity regulation (Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR)) as excess liquidity is a high quality liquid asset (HQLA). Since banks usually have a bias towards

⁶⁷ The locations of participation in TARGET by non-euro area banks typically reflect historical relationships with euro area branches or correspondent banks, and have remained largely unchanged since the TARGET2 payment system was set up in 2007/08.

⁶⁸ For additional details on how the implementation of the APP affects T2 balances, see European Central Bank (2016), “TARGET balances and the asset purchase programme”, Economic Bulletin, Issue 7, Box 2.

holding domestic government bonds, banks from euro area countries whose bonds are trading close to or below the rate of the deposit facility might now consider holding excess liquidity as an attractive HQLA alternative. Additionally, a key constraint for short-term (below one month) lending of excess liquidity is the cost related to capital requirements. Together with the liquidity regulation, this could reduce the incentives for redistributing excess liquidity via money markets. Interestingly, the incoming Leverage Ratio (LR) regulation is a force working in the opposite direction in that it might set an incentive to avoid excess liquidity in order to reduce banks' leverage. Concerning the liquidity creation via the APP and TLTROs, banks might be incentivised by the liquidity regulation to participate in those operations in order to upgrade non-HQLA into excess liquidity either by selling or pledging them as collateral. However, again the LR provides a potential disincentive as participation would lengthen the banks' balance sheets. Selling assets in the APP on behalf of clients can also have a negative impact on the LR due to increasing customer deposits in cases where the generated liquidity is not subsequently transferred to other banks by the customers.

Regarding the impact of business models, empirical analyses were conducted on a sample of counterparties (see Chart C). On average, excess liquidity accumulates to a large extent with investment banks, custodians, and clearing and depository institutions. This may be due to the nature of their operations, where liquid assets are essential, e.g. for market-making, and clients have to hold cash margins with their partner banks. Universal banks that conduct business in many areas (investment, retail, and wholesale business) have high absolute levels of excess liquidity. Yet, to put this into perspective, their excess liquidity relative to minimum reserve requirements (MRR) is low compared to the aforementioned business models. Similarly, retail banks hold a comparatively high amount of excess liquidity at aggregate level but have low holdings of excess liquidity at the individual bank level and relative to MRR. This could be due to the fact that retail deposits are seen as stable in terms of the LCR and NSFR and therefore the need for HQLA such as excess liquidity is smaller.

Chart C

Figures illustrating excess liquidity according to business model (2015 averages)

(numbers refer to the 341 banks in the sample)

Business model	Excess Liquidity (€ mn)	Number of banks	Average Excess Liquidity per bank (€ mn)	Average MRR per bank (€ mn)	Average EL/MRR
Retail banks	83,353	106	786	232	3.4
Universal banks	117,478	100	1,175	492	2.4
Custodians	32,197	19	1,695	141	12.0
Wholesale banks	18,432	17	1,084	246	4.4
Investment banks	51,465	16	3,217	135	23.8
Others	80,256	83	967	118	8.2
Total	383,181	341	1,124	272	4.1

Sources: ECB.

Notes: MRR means minimum reserve requirement.

Aside from business model specifics, more in-depth analysis and feedback from counterparties finds several factors affecting a bank's level of excess liquidity: (i) high solvency drives excess liquidity as it attracts liquidity inflows, e.g. through customer deposit inflows; (ii) individual banks significantly diminish excess liquidity either through unfavourable conditions on customer deposits (mostly corporates) or by redeploying liquidity on repo markets or, in a few cases, via currency swaps, though many counterparties flag unattractive market rates and internal risk limits as major

reasons for limited redistribution; (iii) some international banks are subject to cross-border intra-group flow limits and try to over-comply with liquidity ratios, thus driving up liquidity holdings.

Overall, the distribution of excess liquidity appears to be influenced by a large array of interlinked factors. However, irrespective of the level of excess liquidity provided and the way in which the liquidity is injected by the Eurosystem, excess liquidity is concentrated in a small number of euro area countries. Beyond factors related to the euro area financial (infra-) structure and regulatory and business model reasons, it seems that, following the financial crisis, a general increase in risk aversion and more conservative internal risk limits among banks may still be limiting factors for cross-border liquidity flows and the broad-based interbank redistribution of liquidity within the euro area.

Annex

Table A

Chronological table of monetary policy measures (Q3 2012 - Q1 2016; excluding collateral measures)

Monetary policy decisions	Announcement
Decrease in key interest rates by 25 bps each: MRO rate to 0.75 %, deposit rate to 0.00%, rate on marginal lending facility to 1.50%	July 2012
Announcement of OMTs	August 2012
Announcement of technical features of OMTs	September 2012
Termination of SMP	
Extension of fixed rate full allotment (FRFA) policy until at least July 2013	December 2012
Decrease in key interest rates: MRO rate lowered by 25 bps to 0.50%, deposit rate remained unchanged, rate on marginal lending facility lowered by 50 bps to 1.00%. Further narrowing of interest rate corridor to +/- 50 bps	May 2013
Extension of FRFA policy until at least July 2014	
Introduction of forward guidance: interest rates to remain at present or lower levels for an extended period of time	July 2013
Extension of FRFA policy until at least July 2015	November 2013
Decrease in key interest rates: MRO rate decreased by 25 bps to 0.25%, deposit rate remained unchanged, rate on marginal lending facility decreased by 25 bps to 0.75%. Further narrowed, now asymmetric interest rate corridor around the MRO rate	
Reinforced forward guidance accompanying the introduction of lower key interest rates	
Decrease in key interest rates: MRO rate decreased by 10 bps to 0.15%, negative deposit facility rate at -0.10%, rate on marginal lending facility decreased by 35 bps to 0.40%. Further narrowed, but symmetric interest rate corridor	June 2014
Extension of FRFA policy until at least December 2016	
Suspension of the weekly fine-tuning operations sterilising the liquidity injected under SMP	
Announcement of eight TLTROs, each maturing in September 2018	
Decrease in key interest rate: MRO rate decreased by 10 bps to 0.05%, deposit facility rate lowered by 10 bps to -0.20%, rate on marginal lending facility lowered by 10 bps to 0.30 %	September 2014
Announcement of CBPP3 and ABSPP	
Balance sheet intended to move towards the dimensions recorded at the beginning of 2012 (roughly €3 trn)	December 2014
Announcement of APP encompassing CBPP3 and ABSPP and introduction of a PSPP until at least September 2015, or beyond, if necessary	January 2015
Decrease in deposit facility rate by 10 bps to -0.30%, MRO rate and rate on marginal lending facility remain unchanged	December 2015
Prolongation of APP until at least March 2017	
Principal payments on securities purchased under APP to be reinvested as they mature, for as long as necessary	
Euro-denominated marketable debt instruments issued by regional and local governments located within the euro area now included in PSPP purchases	
Prolongation of FRFA for MRO and LTRO for as long as necessary, and at least until the end of the last reserve maintenance period of 2017	
Decrease in key interest rates: MRO rate decreased by 5 bps to 0.00%, deposit facility rate lowered by 10 bps to -0.40%, rate on marginal lending facility decreased by 5 bps to 0.25%. Interest rate corridor becomes asymmetric	March 2016
Increase of monthly purchases of the APP from €60 bn to €80 bn until at least March 2017	
Issue and issuer share limits for the purchase of securities issued by eligible international organisations and multilateral development banks for the PSPP increased from 33% to 50%. Share of these securities within the PSPP reduced from 12% to 10%	
CSPP complements the APP by purchases of investment-grade euro-denominated bonds issued by non-bank corporations established in the euro area	

Announcement of a second series of four targeted longer-term refinancing operations (TLTRO-II) with a maturity of four years each to be conducted from June 2016 until March 2017 at a quarterly frequency

Confirmation of forward guidance: key interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of the net asset purchases

Table B
Main changes in the collateral framework (Q3 2012 - Q1 2016)

Period	Area	Main framework changes
2012	Q3	GGBB Adoption of a ceiling for the own-use GGBBs
		GOVT Ineligibility for debt instrument issued/guaranteed by Hellenic Republic
	Q4	GOVT Suspended minimum credit rating for government debt under OMT or EU-IMF programme
		MRK Acceptance of collateral in USD, GBP, JPY
		ALL Update of General Documentation
		MKT Permission of certain foreign market reference rates for FX assets
2013	Q1	GOVT Acceptance for debt instrument issued/guaranteed by Hellenic Republic
		ACC Setting up of an ACC framework in SI
		MKT Annual review of the list of non-regulated market and of agencies
		ACC Change in ACC framework in Italy, minimum size from euro 300.000 to 100.000
		GGBB Phasing out until 28 February 2015. No more accepted own-use GGBBs as of 1 March 2015
		GOVT Rating waivers for marketable issued/guaranteed by central govt. under EU/IMF programme (IE, PT, GR)
		GOVT Eligibility provision for debt instruments issuer or fully guaranteed by the Republic of Cyprus
	Q2	GOVT Reacceptance, followed by another suspension, of debt instrument issued/guar by the Republic of Cyprus
	Q3	GOVT Reacceptance of debt instrument issued/guar by the Republic of Cyprus
		ALL Review of the Eurosystem' s risk control framework
		ECAF Acceptance of Cerved Group rating tool for ECAF purposes
		ABS Introduction of the "comply or explain" approach for RMBS and ABS backed by SME
		ABS Enlargement of the Eurosystem ABS loan level initiative for ABS backed by credit cards
	Q4	ECAF Acceptance of credit assessment system of Banque Nationale de Belgique for ECAF purposes
		MKT Annual review of the list of non-regulated market and of agencies
		CC Extension of the interim period before the minimum size threshold of EUR 500,000 for domestic credit claims
2014	Q1	ABS Clarification on rating rules for ABS
		CCBM Removal of repatriation requirement and introduction of cross-border triparty
		ECAF Mapping of credit rating to ECAF in the harmonised scale
		ACC Change in ACC framework in Italy, minimum size from EUR 100,000 to 30,000
	Q2	ACC Extension of eligibility of additional credit claims framework at least until September 2018
		ALL Definition of "multilateral development banks or international organizations"
		ACC Introduction of certain short-term debt instruments issued by non-financial corporation as ACC
	Q3	ECAF Introduction of rule defining priority of rating
		ABS Modification of loan-level data requirements for some type of ABS
	Q4	GOVT Revision haircut for marketable debt issued/guar by the Hellenic Republic

2015	Q1	MKT	Annual review of the list of non-regulated market and of agencies
		GOVT	Lifting of the waiver for minimum credit threshold for marketable debt issued/guar by the Hellenic Republic
		CC	Further postponed the interim period for the minimum size threshold of EUR 500.000 for CC to September 2018
		GGBB	End of grandfathering period for own-use of GGBBs
		ALL	Entry into force of Guideline ECB/2014/60 (recast of General Documentation)
	Q2	MKT	Changes to the acceptable coupon structures for marketable assets (non-negative cash flows)
		ABS	Enhancement of transparency requirements for ABS
	Q3	DECC	Introduction of the "non-marketable debt instruments backed by eligible credit claims (DECCs)
	Q4	ALL	Valuation haircuts moved to a new separated Guideline
		CBB	Rules refined for valuation haircuts applicable to own-used covered bonds
		DECC	Cross-border use via standard CCBM procedure
		CC	Revised definition of "leasing receivables"
2016	Q1	ECAF	Clarification of the acceptance criteria for ECAF
		DECC	Dedicated loan-level template for public sector DECCs
		GOVT	Lifted the minimum credit quality thresholds for debt instrument issued/guar. By the Republic of Cyprus

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