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The use of the Eurosystem's monetary policy instruments and its monetary policy implementation framework Q2 2016 – Q4 2017

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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 second quarter of 2016 to the last quarter of 2017. It reviews the context of Eurosystem market operations; the design and operation of the Eurosystem’s counterparty and collateral frameworks; the fulfilment of minimum reserve requirements; participation in credit operations and recourse to standing facilities; and the conduct of outright asset purchase programmes. The paper also discusses the impact of monetary policy implementation on the Eurosystem's balance sheet, excess liquidity and money market liquidity conditions.

Keywords: monetary policy implementation, central bank counterparty framework, central bank collateral framework, central bank liquidity management, non-standard monetary policy measures.

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

Non-technical summary

The Eurosystem comprises the European Central Bank (ECB) and the national central banks (NCBs) of the countries that have adopted the euro. The purpose of the Eurosystem's monetary policy instruments is to implement the monetary policy decisions taken by the ECB's Governing Council. The task of implementing monetary policy is decentralised and thus involves both the ECB and the NCBs of the euro area countries. While the main objective of the Eurosystem's monetary policy implementation has traditionally been to steer short-term interest rates, outright asset purchases have become increasingly important in recent years. As the size and composition of the Eurosystem's balance sheet has become a tool for monetary policy, the focus of monetary policy implementation has extended well beyond money markets. Other markets in which the Eurosystem now operates include the public sector, the covered bond sector, as well as corporate bond and asset-backed securities (ABS) markets.

This paper gives a comprehensive, detailed overview of the context and use of the Eurosystem's monetary policy instruments from Q2 2016 to Q4 2017. This period was characterised by the ongoing implementation and modification of monetary policy instruments, which were initially introduced to address challenges posed by the financial crisis, the subsequent sovereign debt crisis and the period of low inflation that followed. The paper continues the series which includes ECB Occasional Paper No 135, published in August 2012,[1] and Occasional Paper No 188, published in May 2017.[2]

Immediately before the period covered by the report, several decisions were taken on monetary policy implementation, including changes to key policy rates; lowering the rate on the main refinancing operations (MROs) from 0.05% to 0.00%, the rate on the deposit facility from -0.30% to -0.40%, and the rate on the marginal lending facility from 0.30% to 0.25%. Additionally, the net monthly purchases under the Asset Purchase Programme (APP) were increased from €60 billion to €80 billion per month, also including corporate bond purchases for the first time. Finally, a second series of targeted longer-term refinancing operations (TLTRO-II) were introduced.

The review period covers the ongoing implementation of the above decisions and of those taken after March 2016.

The implementation of a negative rate on the deposit facility continues to be smooth, with money market rates closely tracking the rate on the deposit facility, albeit with a rather wide spread between certain money market rates, in particular between repo rates and unsecured deposit rates. To ensure the APP is implemented smoothly and reflects the ECB's monetary policy stance, the terms of the various constituent programmes have been revised as necessary along the way. Additionally, the

[1] Eser et al. (2012)

[2] Alvarez et al. (2017)

availability of securities lending (now including the possibility of using cash as collateral) has helped to contain potential negative side-effects on market functioning. As regards monetary policy credit operations, over the review period the Eurosystem continued to provide liquidity in all its liquidity-providing reverse transactions at a fixed rate with full allotment, with the exception of the targeted long-term refinancing operations (TLTROs). Recourse to the second series of TLTROs has been large and broad-based; these operations currently account for almost all of outstanding Eurosystem lending to its monetary policy counterparties.

During the review period, excess liquidity within the euro area banking system increased to nearly €2,000 billion by the end of December 2017. This excess liquidity was primarily a result of the increased stock of assets purchased under the APP, in addition to higher monetary policy lending through the TLTROs. This high level of excess liquidity continues to have the expected effect; transaction volumes are low in the unsecured interbank segment of the money market. In other segments of the money market, including in repo markets, some rates are at levels below the rate on the deposit facility.

In addition to credit operations and asset purchases, the report also looks at other aspects of the implementation framework, namely collateral and counterparty frameworks, as well as standing facilities and reserve requirements. It also recalls a number of changes that took place in the collateral and counterparty frameworks over the review period. The report also provides deeper analyses in special ‘boxes’, on the role of non-banks within money markets in the euro area; the operational design and take-up of the second series of TLTROs; and the substitution of non-standard monetary policy operations for standard ones.

1 Context and overview of Eurosystem market operations, Q2 2016 – Q4 2017

Since June 2014, the ECB has adopted a series of monetary policy measures to ward off the risks of a prolonged period of inflation below its price stability objective of HICP inflation below, but close, to 2% over the medium term, while supporting economic recovery in the euro area. These measures include targeted longer-term refinancing operations (TLTROs), the asset purchase programme (APP), and a negative rate on the deposit facility.

Immediately before the review period, in March 2016, the Governing Council decided to alter the existing policy package.[3] Specifically:

1. key policy rates were lowered, bringing the rate on the deposit facility to -0.40%,[4] a decrease of 10 bps;
2. APP monthly purchases were expanded from €60 billion to €80 billion until at least March 2017, also owing to the introduction of the Corporate Sector Purchase Programme (CSPP); and
3. a new series of four targeted longer-term refinancing operations (TLTRO-II) was launched, each with a maturity of four years, starting in June 2016.

This comprehensive set of measures was designed to support progress towards a sustained adjustment in the path of inflation towards the ECB's inflation aim and to give further impetus to the recovery of the euro area.[5] One of the ways in which the measures, and specifically the APP, have worked, is the direct pass-through of purchases leading to lower funding costs.

To take a concrete example from the period under review, focusing on the APP and, in particular, the CSPP,[6] corporate bond yields fell significantly after the implementation of this purchase programme was announced and again after the start of purchases under the programme (Chart 1). Moreover, yields declined not only for CSPP-eligible bonds, but also for other non-eligible securities, as investors adjusted their portfolios[7] (see Section 7 for more details on CSPP).

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3 For the full list of monetary policy measures during the period in question, see Table A in the Annex.

4 The rate on the main refinancing operations and the rate on the marginal lending facility were lowered by 5 bps to 0.00% and 0.25% respectively.

5 For further details, see European Central Bank (2016), "Monetary policy decisions", "ECB announces new series of targeted long-term refinancing operations (TLTRO II)" and "ECB adds corporate sector purchase programme (CSPP) to the asset purchase programme (APP) and announces changes to APP" Press release, 10 March, and European Central Bank (2016), "Economic and monetary developments", *Economic Bulletin*, Issue 2, pp. 3-6.

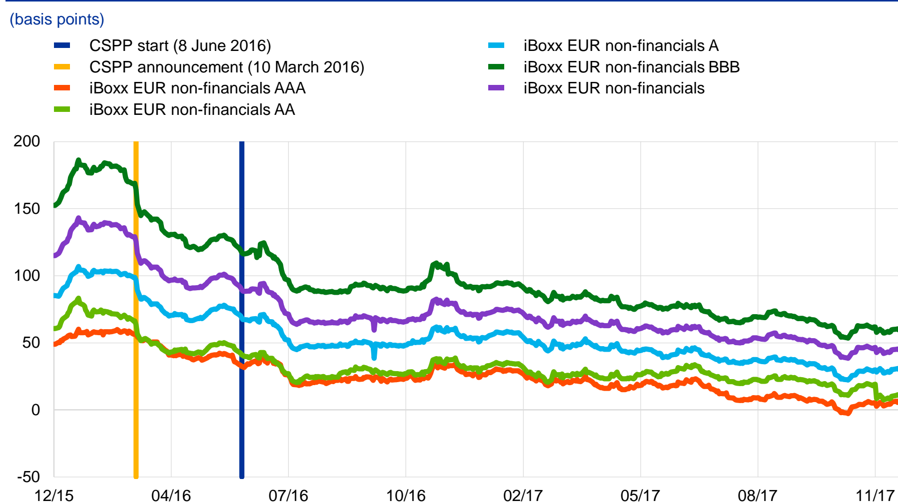
6 Further information about the effects of the CSPP, the other parts of the APP and the other measures taken by the ECB (e.g. the TLTRO-II) can be found in the ECB's Annual Report for 2017.

7 For further details, see European Central Bank (2016), "The corporate bond market and the ECB's corporate sector purchase programme", *Economic Bulletin*, Issue 5, pp. 20-24.

Chart 1

iBoxx spreads for euro-denominated corporate bonds by rating

(basis points)



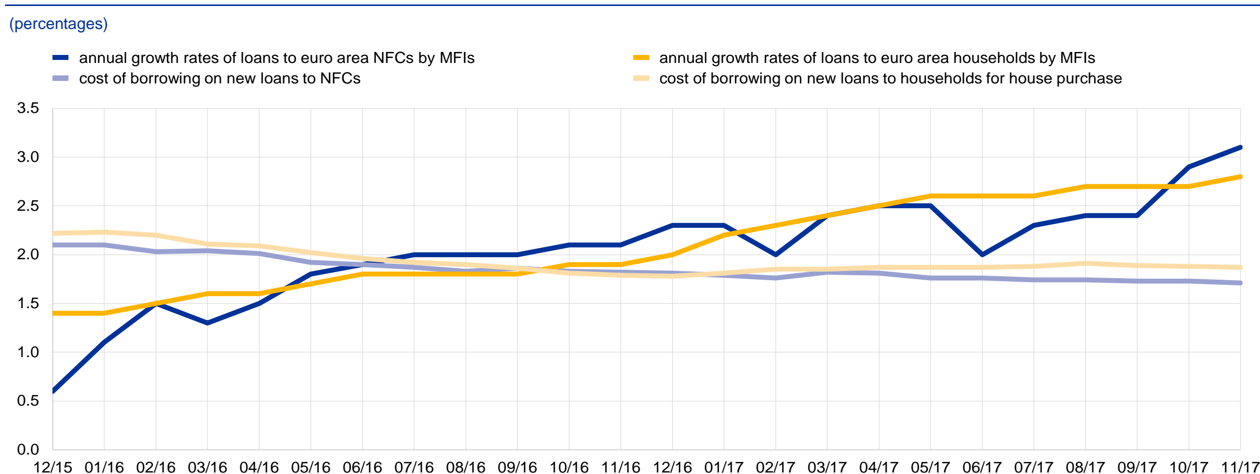
Source: ECB.
Notes: Asset swap spreads in bps. Contains also non-euro area issuers.

Funding conditions also eased for the banking sector over the review period. Covered bank bond yields declined significantly and spreads among euro area countries converged. TLTRO-II pricing conditions (see Section 5 and Box 3 for more details) were particularly favourable for banks, which took advantage of the opportunity to borrow from the Eurosystem for four years at attractive rates.[8] Favourable funding conditions were generally passed on to the real economy, as the cost of borrowing on new loans to non-financial corporations (NFCs) declined across the euro area and the growth of loans to NFCs accelerated (Chart 2).

Chart 2

Euro area annual growth rates on loans and cost of borrowing on new monetary financial institution (MFI) loans to NFCs and households

(percentages)



Source: ECB.

[8] For further details, see European Central Bank (2016), "The second series of targeted longer-term refinancing operations (TLTRO II)", *Economic Bulletin*, Issue 3, pp. 24-29.

In a context of low ECB policy rates and amid increasing excess liquidity, money market rates moved to historically low levels, with declining volumes in the unsecured segment. Turnover in the repo market remained higher, with rates gradually falling to record-low levels, reflecting the fact that this money market segment was gradually moving from collateralised funding more towards a securities lending market. On the demand side, a stronger preference for secured transactions, induced by more conservative risk management practices following the financial crisis and in line with regulatory requirements, boosted the search for high-quality liquid assets (HQLA). High volatility and sharp declines of repo rates (particularly on higher-rated government bonds) were observed on reporting dates (i.e. quarter ends), amid lower trading volumes. On the supply side, the volume of marketable HQLA assets available declined as a result of the implementation of the APP. The 2016 year-end reporting date had a significant impact on the repo market: the noticeable decline in the repo rates and the availability of collateral affected not only the best-rated segment, but also most euro area jurisdictions.

Towards the end of 2016, the Governing Council judged that inflation had made insufficient progress towards a level of below but close to 2% in the medium term and that further monetary policy accommodation was needed. At the December 2016 meeting,[9] it therefore decided to continue its purchases under the APP until at least December 2017, while reducing the monthly amount purchased to €60 billion as of April 2017. This recalibration of the APP was designed to preserve the substantial degree of monetary accommodation necessary to secure a sustained convergence of HICP inflation to the Governing Council's goal of just below 2%. Furthermore, to ensure the smooth implementation of the APP, the scope of eligible securities under the Public Sector Purchase Programme (PSPP) was expanded: the minimum maturity was lowered (from two years to one year), while the limit on the yield to maturity on assets purchased, set at a level equal at least to the rate on the deposit facility, was eliminated (for further details, see Section 7). Moreover, to enhance the effectiveness of the securities lending[10] (SL) under the APP, the use of cash collateral for PSPP securities lending facilities was introduced, thereby further supporting the smooth implementation of the PSPP, the liquidity of the euro area repo market, and the operation of that market.

In October 2017,[11] the Governing Council decided to continue net asset purchases in 2018 at a monthly pace of €30 billion until at least the end of September 2018, and to extend the fixed rate tender procedures with full allotment, for the main refinancing operations and the three-month longer-term refinancing operations, at least until the end of the last reserve maintenance period of 2019.[12]

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[9] For further details, see European Central Bank (2017), Account of the monetary policy meeting of 7-8 December 2016.

[10] For further details on Securities lending, see the ECB website.

[11] For further details, see European Central Bank (2017), Account of the monetary policy meeting of 25-26 October 2017.

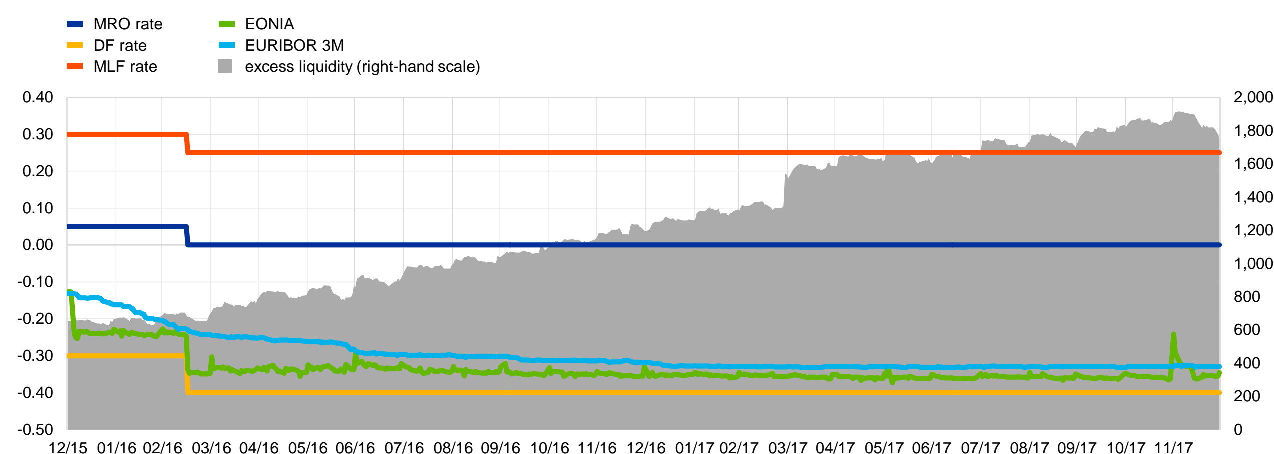
[12] In addition, following the October 2017 meeting of the Governing Council, the ECB started to publish the expected monthly redemption amounts for the APP over a rolling 12-month period. In December 2017, the ECB decided on the new collateral eligibility criteria for unsecured bank bonds (UBBs), excluding UBBs that are subject to statutory, contractual or structural subordination (see Section 3 for further details).

Amid high excess liquidity and negative interest rates, money market developments continued to be influenced mainly by a persistent preference for secured transactions and demand for high-quality collateral. Moreover, non-banks have become more prominent in the money market (see Box 1 for further details). In the unsecured market, the euro over-night index average (EONIA) rate continued to trade in a narrow range slightly above the rate on the deposit facility, averaging -0.355% in 2017, compared with -0.341% in the last three-quarters of 2016; the average daily volumes of the index fell from around €10.5 billion in the last three-quarters of 2016 to about €7 billion in 2017. At times, this resulted in higher volatility for EONIA. Indeed, low trading volumes made EONIA more sensitive to outlier transactions, as could be observed at the end of November 2017, when the EONIA fixing recorded an unusual spike (-0.241%) due to idiosyncratic factors, despite abundant excess liquidity (Chart 3). In addition, structural developments in euro money markets prompted several important steps towards new money market benchmark reforms over the review period.[13]

Chart 3

Excess liquidity, key policy rates and unsecured money market rates

(left-hand scale: percentages; right-hand scale: EUR billions)



Sources: Reuters and ECB. Daily data.

In the secured segment, repo market rates became less volatile as trading volumes increased. The operational enhancements of the Securities Lending Programme introduced in December 2016, together with money market dealers' larger balance sheet capacity, were essential to ease collateral scarcity strains throughout 2017. In particular, banks' tendency towards prefunding collateral positions on the critical balance sheet reporting dates provided some relief to repo markets: 2017 year-end

[13] In August 2016, the European Commission declared Euribor a critical benchmark (for further details see Regulation EU 2016/1368); in May 2017, the European Money Markets Institute (EMMI) published a report on the outcome of the EURIBOR pre-live verification program, concluding that current market conditions are not such as to allow Euribor to make a seamless transition to a fully transaction-based methodology (for further details, see EMMI press release); in June 2017, EONIA was declared a critical benchmark (for further details, see Regulation EU 2017/1147) ; in September 2017, the Governing Council decided to develop a euro unsecured overnight interest rate based on data already available to the Eurosystem (for further details see ECB press release); in November 2017, the ECB started to publish more information on money market activity in the Euro area (for further details see ECB press release).

tensions were slightly less pronounced for repos based on German and French collateral compared with the previous year-end, but higher for repo rates based on Italian and Spanish collateral.

Box 1
The role of non-banks in money market activity

The financial environment, and in particular the money market, has undergone substantial changes over the past few years, including the introduction of negative interest rates and abundant excess liquidity held by the banking sector. This box analyses the development and relevance of non-banks in the various money market segments, such as the FX, OIS, unsecured and secured markets. The analysis is based on MMS[14] dataset from July 2016 to December 2017, capturing both sides of the transactions (e.g. borrowing and lending).

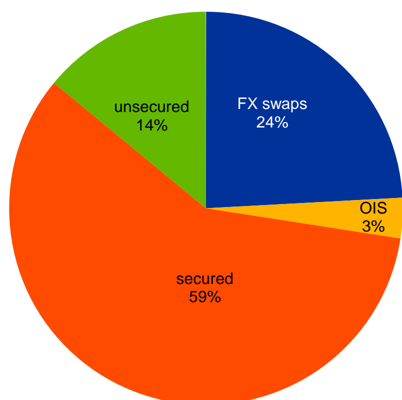
Trading volumes in the euro money market are predominantly concentrated in the secured segment with almost 60% of the overall turnover (Chart A). Considering exclusively the non-banks' activity (Chart C), as defined in this analysis,[15] it is clear that most volume is also concentrated in the secured market (in 57%) followed by the FX swap and unsecured segments. However, looking at the non-banks' contribution to the overall money market activity in each segment (Chart B), their activity is more pronounced in the unsecured and secured markets, accounting for 25% and 17% respectively of the total volume. In the unsecured segment, however, if the definition of non-banks is broadened to include the activity of non-financial corporations (though the transactions concerned are not generally transactions at arm's length), their contribution rises to over 50%.

[14] Money Market Statistical (MMS) dataset encompasses money market transactions conducted by the 52 largest banks of the euro area in terms of banks' total balance sheet assets. See the ECB website for further details.

[15] For the purpose of this analysis, 'non-banks' include the following sectors of financial corporations: insurance companies (ICs), pension funds (PFs), money market funds (MMFs), non-MMF investment funds and other financial intermediaries, except ICPFs and central counterparties (CCPs). Note that CCPs were treated as a different category because of their intermediation activity. In some cases, reference is made to non-financial corporations for the sake of comparison.

Chart A
Total trading volume of the various money market segments

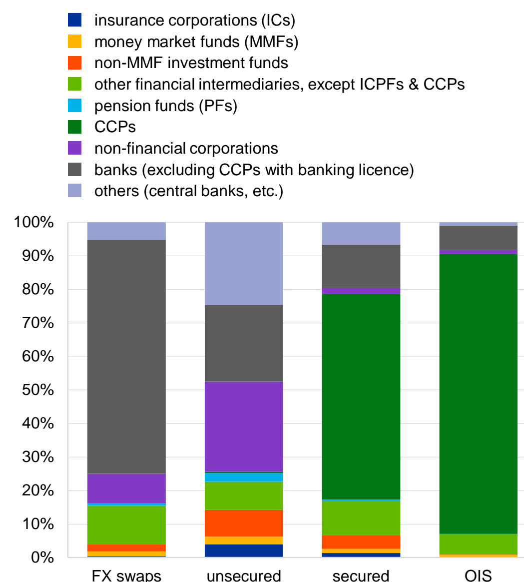
(percentages)



Source: ECB.

Chart B
Share of non-banks' activity (by counterparty sector) in the total average volume of each money market segment

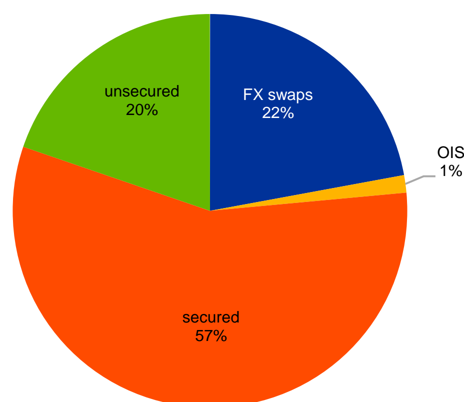
(percentages)



Source: ECB.

Chart C
Non-banks' trading volume per various money market segments

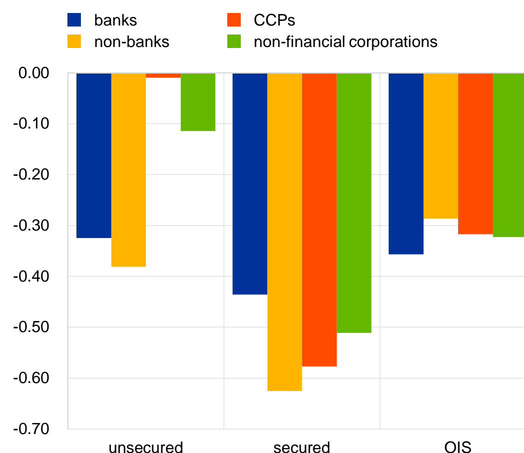
(percentages)



Source: ECB.

Chart D
Weighted average interest rates per various money market segments

(percentages)



Source: ECB.

As regards changes in turnover since July 2016,[16] total volume in the secured segment has increased by a monthly average of 2.2%. In this segment, non-banks' trading volume has also increased, albeit at a slower pace (by only 0.9% on average per month). On the other hand, the

[16] Excluding variations in December, since they fall at the end of the year.

share of central counterparties (CCPs) in this segment, which represents around 60% of the total volume, has grown faster than the average for the segment, at a monthly average of 2.36%. Central counterparties, however, are not fully comparable to other market players, as their sole activity is to act as intermediaries for transactions. In the unsecured market, the volume of non-banks' activity has grown faster than the average for the segment (by 1.3%, as opposed to an overall average of 0.3%).This was mostly within the "other financial intermediaries" and "non-MMF investment fund" sectors.

As regards the impact of non-banks on the level of interest rates in the various money markets, it is noticeable that – irrespective of the segment – non-banks consistently have lower rates than the average level in the interbank market (Chart D). This is because entities without a banking licence or those which do not meet the "general" eligibility criteria laid down in Article 55 of the General Documentation (see Section 2 for more details), generally[17] lack access to the Eurosystem deposit facility. Consequently, the interest rate "floor" in the form of the ECB deposit facility does not apply to these entities. The result is downward pressure on money market rates, in some cases pushing them below the rate on the deposit facility. However, the pressure is not homogeneous within the various non-bank sectors, and its impact is more concentrated in certain money market segments.

This is particularly visible in the secured market, in which non-banks' activity contributes with a weighted average rate of -0.63% against a rate of around -0.44% in the interbank activity. The activity of the "other financial intermediaries" and "non-MMF investment fund" sectors, which make a major contribution to the volume and level of interest rates of non-banks in the secured market, contribute with a weighted average rate of around -0.62% and -0.60% respectively. Apart from the seasonal decline around year-end, non-banks' rates in the secured market have declined fairly gradually (becoming more negative) since July 2016, moving within a 10 bps range during the period under analysis, which is more or less in line with developments in the segment as a whole. As regards the unsecured market, non-banks' average interest rate is -0.38%, as compared with an average rate of -0.32% in the interbank sector. Interbank rates in the unsecured market have mostly remained stable. This contrasts with non-banks' rates in this segment, which have declined in a manner similar to that observed in the secured market.

Looking ahead, and taking into account (i) the contribution of non-banks' transactions to overall money market activity, and (ii) the slightly higher pace of turnover increase, declines in the level of rates in some segments are significant and will require continuous monitoring and analysis.

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[17] Entities which are not eligible counterparties may, in some cases, have a TARGET2 account or another account with the Eurosystem. These accounts, possibly subject to a limit and under certain conditions, are remunerated at 0% or the rate on the deposit facility, whichever is lower.

2 Counterparty framework

This section reviews developments in the counterparty framework since Q2 2016. The relevant eligibility criteria for counterparties are recapped briefly, with an overview of counterparty participation in Eurosystem monetary policy operations (MPOs) included. The section also summarises the operationalisation of the financial soundness criterion and the regular quarterly process of collecting supervisory data, and briefly recaps two of the main improvements in the counterparty framework over the review period.

2.1 Eligibility and participation

The monetary policy framework of the Eurosystem is designed to ensure the participation of a broad range of counterparties in Eurosystem MPOs. The aim is to guarantee, as far as possible, a level playing field for counterparties, accommodating differences in areas including their domicile, size, business model and ownership structure.

According to the "general" eligibility criteria laid down in Article 55 of the General Documentation (GD),[18] [19] institutions are eligible as Eurosystem counterparties only if they fulfil the following criteria. To qualify they must be:

(a) subject to the minimum reserve system, i.e. a credit institution or a branch of a credit institution/bank;

(b) subject to at least one form of harmonised EU/EEA supervision by competent authorities (or a comparable supervisory standard in the case of branches of institutions that are subject to non-harmonised supervision);

(c) financially sound, and

(d) fulfil the operational requirements specified by the NCBs.

2.2 Access to monetary policy operations

The Eurosystem can limit or suspend access to MPOs for any of its monetary policy counterparties at any time on the grounds of prudence, because of concerns about the counterparty's financial soundness, or because of other justified concerns. The application of such measures reflects the way in which the rules set out in the GD are applied, and may involve discretionary elements, to take account of particular

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

[19] Amending Guideline (EU) 2015/510 of the European Central Bank on the implementation of the Eurosystem monetary policy framework (ECB/2015/27), OJ L 282, 28.10.2015, p. 3.

circumstances, as also described in the GD. Limitations or suspensions apply to the counterparty and its branches. They do not extend automatically to its subsidiaries or other counterparties belonging to the same banking group.

Measures carried out on the grounds of prudence are taken in a proportionate and non-discriminatory manner. They must therefore be based on a detailed assessment of the counterparty's situation, which takes into account all relevant information.

The financial soundness of institutions, as defined in Article 55a of the GD, is assessed on the basis of aspects including certain prudential data, namely quarterly information on capital, leverage and liquidity ratios – both on an individual and consolidated basis – in accordance with the applicable supervisory requirements. Data on the levels of regulatory capital, leverage and liquidity are to be provided to the Eurosystem by either the relevant supervisor[20] or directly from the counterparty. In the latter case, the data submission needs to be accompanied by a certification of correctness from the relevant supervisor. In addition, the Eurosystem may ask for confirmation from an external auditor. The relevant data are collected for all counterparties that have access to Eurosystem monetary policy operations. In the case of branches, the information on capital, leverage and liquidity ratios must be reported with respect to the institution to which the branch belongs.

In a similar vein, also on the grounds of prudence, and without prejudice to any other discretionary measures, the Eurosystem limits access to Eurosystem monetary policy operations for counterparties deemed to be "failing or likely to fail" by the relevant authorities, 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. Arguably, there will also be concerns about the financial soundness of these institutions. The limitation will correspond to the level of access to Eurosystem monetary policy operations prevailing at the time when such counterparties are deemed to be "failing or likely to fail".

If a counterparty is suspended or excluded from access to Eurosystem monetary policy operations, it must repay the outstanding credit operations (including accrued interest) in full, with effect from a date decided by the Eurosystem, while under a limitation the counterparty does not have to repay its outstanding credit operations (but cannot increase its borrowed amount). The Eurosystem might revoke the limitation or suspension, while exclusions are expected to be permanent based on the information made available after the decision.

2.3 Ongoing developments

The counterparty framework is constantly being improved and refined to take account of changes in regulatory requirements and the banking union, and to

[20] For institutions under SSM supervision, this information is provided directly from the supervisory function of the ECB to the monetary policy function, for the use of this assessment only.

strengthen the Eurosystem’s risk management framework, while maintaining the principle of equal treatment among counterparties.

The most important improvements to the counterparty framework since Q2 2016 are summarised in this section.

2.3.1 Treatment of wind-down entities

The Governing Council decided on 22 March 2017 to further refine the rules applicable to ‘wind-down entities’ in the context of the Eurosystem's monetary policy counterparty framework, to ensure that such entities are treated consistently as regards accessing Eurosystem MPOs. In particular, the Governing Council decided not to allow “wind-down entities”, as defined in the GD, access to MPOs.

A “wind-down” entity is newly defined in the GD (Article 2, Point 99a) as an entity, whether privately or publicly owned, that

1. has as its main purpose the gradual divestment of its assets and the cessation of its business; or
2. is an asset management or divestment entity established to support financial sector restructuring and/or resolution, including asset management vehicles resulting from a resolution action in the form of the application of an asset separation tool pursuant to Article 26 of Regulation (EU) No 806/2014 of the European Parliament and of the Council or national legislation implementing Article 42 of Directive 2014/59/EU of the European Parliament and of the Council.

This ensures equal treatment of functionally equivalent entities, as asset management vehicles (AMVs) resulting from resolutions under the Bank Recovery and Resolution Directive (BRRD) have already been ineligible to access MPOs since the GD amendment of 27 August 2015, and the new definition of wind-down entities now captures all entities with an equivalent function, including those resulting from pre-BRRD resolutions and those which have not gone through a resolution process.

A wind-down entity, as defined above, is not eligible to access Eurosystem MPOs unless it had been accepted as an eligible counterparty to participate in Eurosystem MPOs by 22 March 2017. In that case, the entity concerned is to remain eligible until 31 December 2021. However, its access to Eurosystem credit operations is capped at the average level of its recourse to Eurosystem credit operations during the 12-month period preceding 22 March 2017. After 31 December 2021, wind-down entities will no longer be eligible to access Eurosystem MPOs. As regards wind-down entities that are not considered to be eligible under Article 55a(5), the Eurosystem may suspend, limit or exclude, on the grounds of prudence, access to MPOs by counterparties belonging to the same group as the wind-down entity that channel Eurosystem liquidity to an ineligible wind-down entity.

2.3.2 Comparability of non-EU supervisory standards

As mentioned above, one of the eligibility criteria for participation in MPOs outlined in Article 55 of the GD states that counterparties must either be subject to (i) harmonised EU/EEA supervision by competent authorities in accordance with Directive 2013/36/EU (CRD IV) and Regulation (EU) No 575/2013 (CRR), or (ii) to non-harmonised supervision by competent authorities of a standard comparable to (i). In this context, the question arose of which non-EU/EEA countries' standards qualify as "comparable". This is relevant for counterparties that are branches from non-EU/EEA countries because, in contrast to subsidiaries, branches have no legal personality of their own. Hence, their supervision is an integral part of the supervision of the entity to which a branch belongs (head entity) and is carried out by the head entity's home country supervisor.

Over the period under review, the Eurosystem has further operationalised the latter definition of comparability with respect to non-EU/EEA countries, also bearing in mind that supervisory standards change over time. This means that for a foreign branch to be eligible as a Eurosystem counterparty, Basel III standards must be applicable in the home country of the head entity. The main responsibility for assessing whether a jurisdiction remains compliant with Basel III standards lies with the respective NCB, although there is also cooperation with the ECB on such matters. Banks or banking groups from jurisdictions that are not yet compliant with Basel III standards may potentially access MPOs, if they establish a counterparty in the form of a subsidiary within the euro area. This makes the subsidiary subject to SSM supervision and thus eligible for access to MPOs.

To ensure that the approach to comparability continues to be implemented in a prudent way, it was decided that any additional information obtained that indicates non-comparability (e.g. obtained from a national competent authority (NCA) in the euro area, or apparent from the data gathered through the regular supervisory data collection exercises, or from statements published on, for example, the respective supervisor's website) may be taken into account. Such additional information can thus be used, in line with the rules described above, to potentially overrule an incorrect or outdated positive assessment of comparability.

3 Collateral framework

This section describes the main developments in the collateral framework[21] and in the mobilisation of collateral for Eurosystem credit operations. This includes changes in the eligibility criteria for marketable and non-marketable assets and changes in the relevant risk control measures which affect availability and the mobilisation of collateral.

Currently, the Eurosystem's collateral framework comprises both a permanent framework (reflected in the GD) and a temporary one (reflected in the additional Guidelines and NCB's norms). The temporary framework comprises an additional set of specific measures introduced (and amended) at different stages of the financial crisis.

3.1 Changes in the collateral framework

Most of the temporary rules introduced in the collateral framework remained in effect during the period covered by this report, Q2 2016 – Q4 2017 to continue supporting broad access by a wide range of counterparties to MPOs. Moreover, the collateral framework was amended further over the period, to address issues arising from the very low interest rate environment.

In Q1 2016, the suspension of the application of the Eurosystem's minimum credit quality threshold of BBB- (waiver) was lifted for marketable debt instruments issued or fully guaranteed by Cyprus,[22] following the conclusion of the European Union/International Monetary Fund programme. In June 2016, the waiver for marketable debt instruments issued or guaranteed by Greece was reinstated,[23] thus suspending the application of the minimum credit rating threshold in the collateral framework for marketable instruments issued or guaranteed by the Hellenic Republic.

On 1 January 2017, a recast GD entered into force, implementing the decisions taken by the Governing Council in 2016.

Unsecured bank bonds (UBBs) were among the assets most affected by the revision of the framework. In the light of the implementation of the BRRD and the creation of statutorily subordinated UBBs in some jurisdictions, it was considered necessary to carry out a general overhaul of the eligibility requirements for UBBs, since subordinated debt is generally not eligible as Eurosystem collateral. As a first step,

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[21] For further details, see Bindseil et al. (2017).

[22] For further details, see European Central Bank (2016), "Decisions taken by the Governing Council of the ECB (in addition to decisions setting interest rates)", Press release, 18 March 2016. The waiver was initially granted on 5 July 2013.

[23] For further details, see European Central Bank (2016), "ECB reinstates waiver affecting the eligibility of Greek bonds used as collateral in Eurosystem, monetary policy operations", press release, 22 June 2016. The waiver was initially granted on 5 July 2013.

the Governing Council decided on 5 October 2016 to maintain the eligibility of statutorily subordinated UBBs that are not contractually subordinated. In this context, the usage/concentration limit for unsecured bank bonds of the same issuer group was reduced from 5% to 2.5%. The exemption amount of €50 million remained unchanged. Unsecured bank bonds with a government guarantee (GGBBs) also remained eligible. It was agreed that the decision would be reviewed in the course of 2017, taking into account the progress made in the effort to harmonise EU insolvency regulations in terms of the hierarchy of creditors in bank insolvency and resolution. The review was finalised in December 2017. The decision regarding UBBs that followed the review process is explained further below.

Another adaptation of the framework concerned the acceptable coupon structures and reflected the negative interest rate environment on financial markets. From January 2017 on, marketable assets and non-marketable debt instruments backed by eligible credit claims (DECCs) with potentially negative cash flows became eligible. Until the revision of the framework, assets of this kind that actually exhibit negative cash flows had not been eligible as collateral. It was considered necessary to review the situation, to reflect the market conditions at the time. To ensure that collateral prices reflect the expected negative cash flows, the valuation methodology was adapted. Furthermore, risk-mitigation measures were put in place to ensure that counterparties are fully liable for negative cash flows that may materialise when such assets are mobilised as collateral.

To improve transparency, the updated framework provided further clarification of the criteria that external third-party providers must apply to become a designated loan-level data repository for the purpose of assessing Eurosystem eligibility. Moreover, the Eurosystem improved transparency further by adding a more detailed explanation of the acceptance criteria for external credit assessment institutions (ECAIs) in the Eurosystem credit assessment framework (ECAF). Further clarity was also provided as regards minimum coverage requirements, eligible issuers and assets and additional details on how coverage is calculated, which came into effect as of 1 January 2017. As of the same date another ECAI related measure took effect, namely that ECAI assessments for programme or issuance ratings can only be taken into account if they apply to the particular asset in question and are matched with the asset`s ISIN code[24] by the ECAI.

As regards risk control measures, updated haircut schedules for marketable and non-marketable assets came into force on 1 January 2017. A new haircut schedule also introduced graduated haircuts for eligible ABS based on the weighted average life, calculated from expected cash flows of the underlying assets in the cover pool. Moreover, adjusted risk control measures for own-used covered bonds with extendible maturities were announced to ensure that the additional risk arising from the use of such securities by the issuer or a closely linked entity is adequately reflected, and to maintain a level playing field between securities with comparable risk profiles.

24 The International Securities Identifier Number (ISIN) is the security’s unique identifier.

To ensure up-to-date credit ratings for covered bonds, and to further improve transparency, minimum disclosure requirements have been in place since 1 July 2017. Credit rating agencies accepted in the ECAF are required to publish both new issue reports and quarterly surveillance reports for rated covered bond programmes. These reports must meet certain criteria. If these requirements are not met, the credit rating may not be used to establish the credit quality requirements.

3.2 Upcoming changes in the collateral framework

The Eurosystem's collateral framework is regularly reviewed and has to reflect ongoing developments in financial markets. There are three additional changes recapped within this section.

With the GD update announced in November 2016[25] and specified in the GD taking effect in 2017, a new requirement with regard to set-off risk and credit claims came into force as of 1 January 2018. Accordingly, the set-off risk must be excluded or significantly mitigated as a prerequisite to credit claim mobilisation. However, credit claims originating from before 1 January 2018 may still be used until 31 December 2019 in order to smoothen the implementation of this requirement.

Moreover, for floating-rate assets a new haircut scheme will be implemented, to introduce graduated haircuts, which are dependent on the remaining maturity of the assets. The new haircuts, which were announced in November 2016, entered into force with the publication of the 2018 update of the GD.[26]

Finally, on 14 December 2017 the ECB published changes regarding the eligibility of UBBs, which also entered into force with the publication of the 2018 update of the GD. UBBs that are subject to statutory, contractual or structural subordination are no longer eligible. UBBs issued by credit institutions or investment firms located outside the EU also became ineligible. However, statutorily subordinated UBBs issued by agencies eligible for the PSPP and statutorily subordinated GGBBs will remain eligible until maturity, provided that they have been issued before 31 December 2018. Additionally, senior (preferred) UBBs that are not subject to any subordination remain eligible as collateral. To smoothen the impact of these changes, all UBBs that are currently eligible but do not meet the new criteria for eligibility will remain eligible as collateral until 31 December 2018.

3.3 Use of collateral

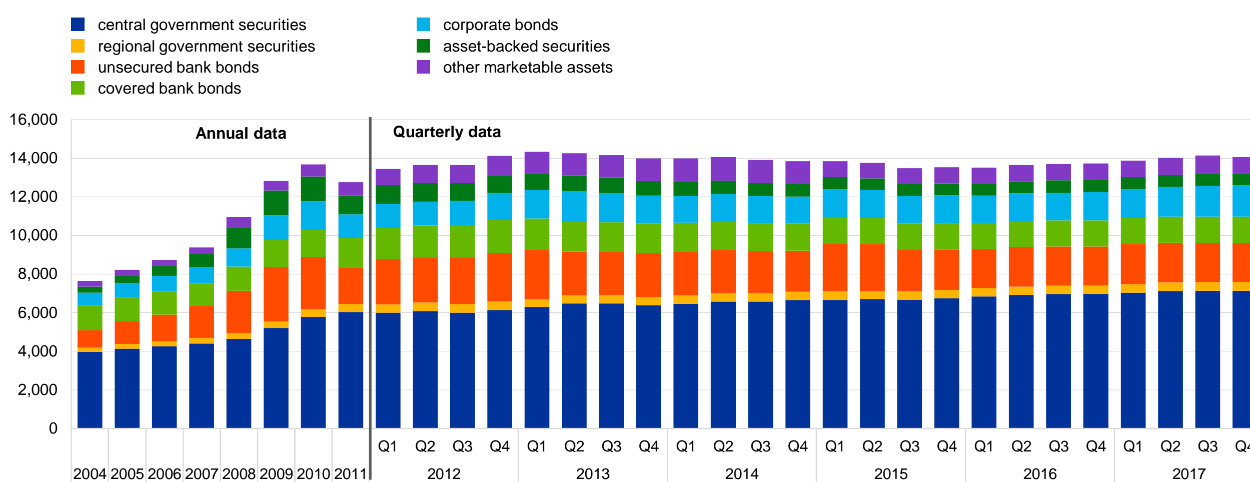
Between Q2 2016 and Q4 2017, the universe of eligible marketable assets increased from around €13,600 billion to around €14,100 billion (Chart 4). The rise of

[25] For further details, see European Central Bank (2016), "ECB amends Guidelines relating to the Eurosystem's monetary policy implementation", press release, 3 November 2016.

[26] For further details, see European Central Bank (2016), "ECB reviews its risk control framework for collateral assets", press release, 3 November 2016.

approximately €500 billion is mainly attributable to two asset classes. The outstanding amount of central government securities and corporate bonds increased over the reviewed period by roughly €200 billion each. As a consequence, the relative share of corporate bonds in the universe of eligible marketable assets increased noticeably by 100 bps to 11.4%. Given the already large relative share of central government securities, the increase in absolute terms did not trigger any perceptible rise in the relative share, which thus remained broadly stable at 50.7%. There are no statistics available on eligible but non-marketable assets, as the eligibility of a non-marketable asset is not noted until mobilisation.

Chart 4
Eligible marketable assets



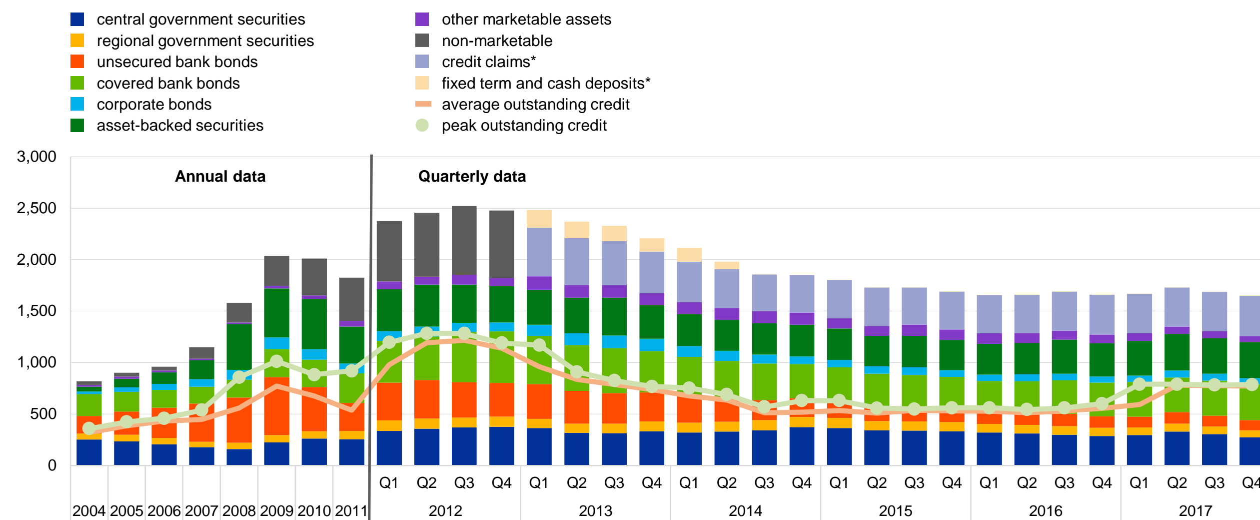
Source: ECB.
Notes: nominal amounts, averages of end-of-month data over each time period shown, 2017 Q4 data preliminary.

During the same period, the total collateral in use remained relatively stable at around €1,650 billion, with a temporary peak of around €1,730 billion in Q2 2017 (Chart 5). The slight increase in the use of collateral starting at the end of the first quarter of 2017 can be explained by widespread participation in the last TLTRO-II at the end of March 2017. In terms of asset types, the highest share in the mobilisation of marketable collateral can be attributed to government bonds, i.e. central government securities and regional government securities, with a stable share of around 23%, followed by covered bonds with around 20% and ABS with around 20%. Non-marketable assets accounted for about 22% of the overall collateral posted during the review period. Among those, the major share can be attributed to credit claims. The use of unsecured bank bonds decreased slightly from a share of around 7% to around 6%. However, during Q4 2017 some minor changes were identified. The share of government bonds fell slightly to roughly 21%, while at the same time the share of non-marketable assets increased to approximately 24%. Besides these minor developments, it can be noted that overall the universe of eligible marketable assets and the use of collateral remained very stable during the reporting period. The share of the overall collateral posted which is generated by the rules laid down in the temporary framework stands at around 8% to 9% (Chart 6). This share has remained stable throughout the entire period reviewed.

Chart 5

Use of collateral and outstanding credit

(EUR billions, after valuation and haircuts)

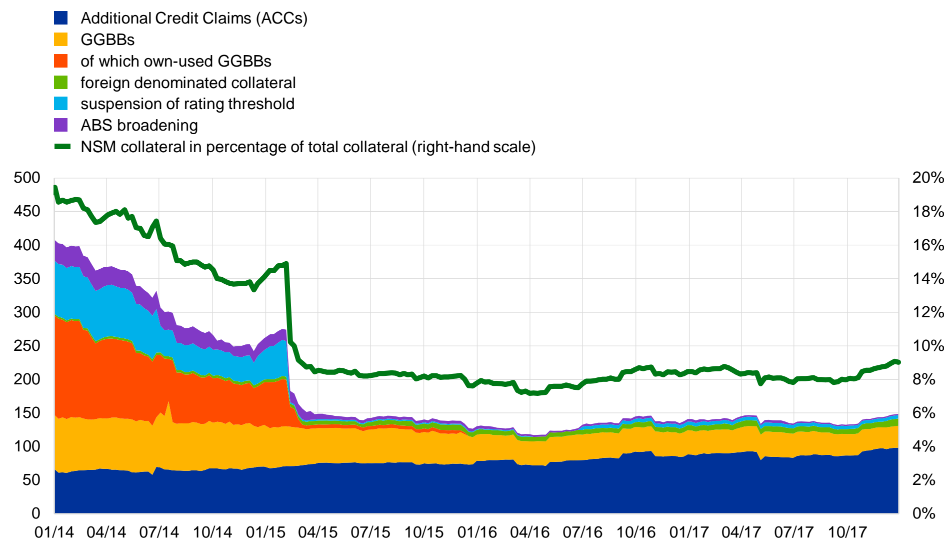


Source: ECB.
Notes: averages of end-of-month data over each time period shown; credit: based on daily data; since Q1 2013, the category "Non-marketable assets" has been split into two categories: "Fixed term and cash deposits" and "Credit claims", 2017 Q4 data preliminary.

Chart 6

Use of temporarily eligible collateral

(EUR billions, after valuation and haircuts)



Source: ECB.

4 Minimum reserve requirements

The ECB requires credit institutions to hold minimum amounts of reserves, meaning balances on their current accounts at their respective NCBs, for periods usually averaging six or seven weeks, known as maintenance periods (MPs). The Eurosystem's minimum reserve system has two purposes in terms of monetary policy implementation. The first is to help stabilise money market interest rates. This is done through the averaging mechanism, which means that reserve requirements apply not on any single day, but, on average, for the maintenance period as a whole. The second purpose is to create or enlarge a structural liquidity deficit, i.e. a need for credit institutions, in aggregate across the euro area, to regularly borrow reserves from the Eurosystem. The banking system's total excess liquidity comprises current account holdings in excess of reserve requirements and deposit facility holdings.

The reserve requirement of each bank is calculated by multiplying short-term liabilities by the reserve ratio. Overnight deposits, deposits with an agreed maturity of up to two years and debt securities issued with a maturity of up to two years are classed as short-term debt liabilities. The reserve ratio is 1%.

During the review period, there was a slight upward trend in the required reserves, whilst the trend in the current account holdings was much more pronounced, reflecting the implementation of the APP, jointly with the second series of TLTROs. There was thus a steady increase in current account holdings in excess of reserve requirements.

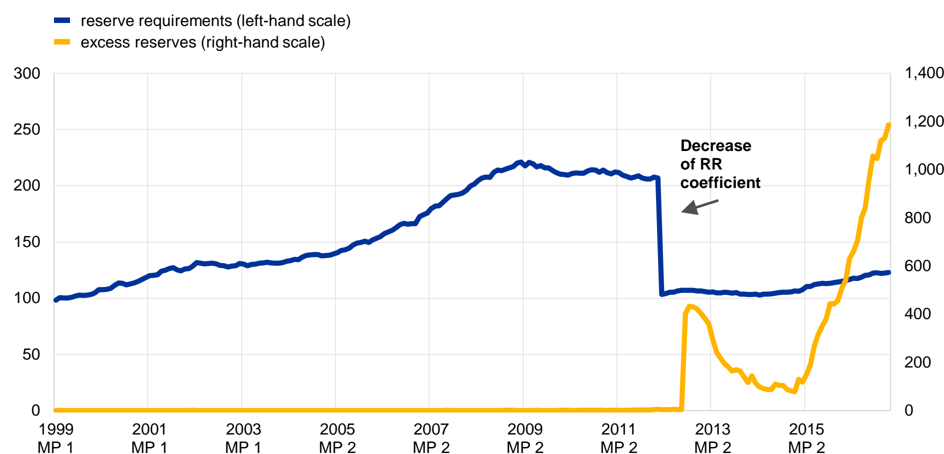
In the period under review, the minimum reserve requirements have gradually increased from €114.3 billion in April 2016 to €122.8 billion in December 2017 (Chart 7), denoting an increase in banks' liabilities subject to the reserve requirements. In particular, overnight deposits and deposits with an agreed maturity of up to two years have increased by €740 billion, while debt securities issued with a maturity of up to two years have increased by €110 billion.[27] Monetary policy measures have increased current account holdings in excess of reserve requirements from €456 billion in MP2 2016 to an historical high of €1,187 billion in MP7 2017, representing a multiple of 9.7 times the reserve requirements, not taking into account recourse to the deposit facility.

[27] For further details about the reserve base of credit institutions subject to reserve requirements, see the ECB Statistics Bulletin, "Minimum reserves and liquidity statistics".

Chart 7

Reserve requirements and current account holdings in excess of reserve requirements over time

(EUR billions)



Source: ECB
Notes: average amount per MP.

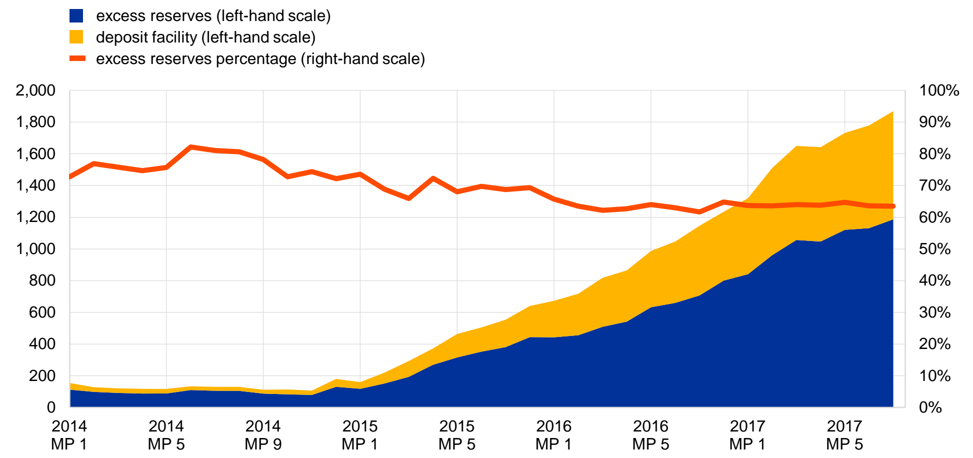
At an aggregate level, in MP12 2014, total current account holdings covered the total reserve requirements on the 22nd day of the MP. As excess liquidity has grown, the numbers of days to cover the total required amount have fallen to about five since MP3 2017. The stabilisation of the decreasing trend could be explained by a higher use of the deposit facility for depositing excess liquidity.

As of July 2012, deposit facility holdings and current accounts holdings in excess of required reserves have effectively become substitutes, as both have the same remuneration rate. Chart 8 shows the counterparties' choice between keeping the extra liquidity on their accounts and transferring it to the deposit facility. On aggregate, counterparties maintained around 64% of excess liquidity on their current accounts in 2016 and 2017 (a slightly lower percentage than that in 2015, 70%). Although counterparties still keep more excess liquidity on their current accounts, the higher relative use of the deposit facility may be explained by certain counterparties' interest in clearly reflecting their excess liquidity on their own balance sheets. Another possible reason could be a greater preference for linear remuneration. While the rate on the deposit facility is paid every day, the remuneration on excess reserves is only paid at the end of the maintenance period.

Chart 8

Distribution of excess liquidity between current accounts holdings in excess of reserve requirements and deposit facility holdings

(left-hand scale: EUR billions; right-hand scale: percentages)



Source: ECB.
Notes: average amount per MP.

5 Credit operations

This section discusses participation, from Q2 2016 to Q4 2017, in monetary policy operations (MPOs) that were conducted as tenders and were not related to the expanded asset purchase programme (APP). The period included the second series of targeted longer-term refinancing operations (TLTRO-II), which started in June 2016. Other shorter-term operations providing liquidity were still on offer, but participation was limited.

During the review period, the only new Governing Council decision on Eurosystem credit operations was another extension of the fixed rate tender procedure with full allotment (FRFA) in the Eurosystem's euro credit operations. On 26 October 2017, the Governing Council announced that it would continue to conduct the main refinancing operations (MROs) and three-month longer-term refinancing operations (LTROs) as fixed rate tender procedures with full allotment for as long as necessary, and at least until the end of the last reserve maintenance period of 2019.

The section is divided into euro and foreign currency (US dollar) operations.

5.1 Euro credit operations

The Eurosystem continued to offer liquidity by means of the FRFA procedure in its regular refinancing operations, i.e. the MROs and 3-month LTROs. Consequently, as observed since 2008, the size of outstanding refinancing operations was determined primarily by counterparties' demand for Eurosystem liquidity (see also Box 3 for further details about the substitution of non-standard open market operations for standard ones).

Participation in Eurosystem refinancing operations rose by €239.1 billion to €764.2 billion between Q1 2016 and Q4 2017. This was driven by the rise in TLTRO participation, which more than offset the decline in participation in other refinancing operations. In particular, the total outstanding amount of TLTROs rose by €327.6 billion to €752.9 billion over the period, while the total outstanding amount of other operations fell by €88.5 billion to €11.3 billion .

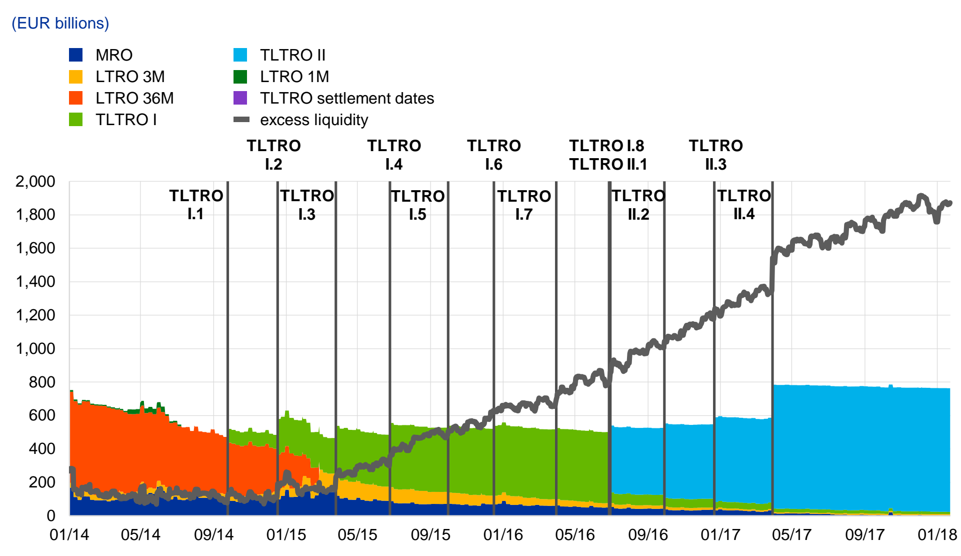
Participation in TLTRO-II was significant and more widespread than in TLTRO-I. In the TLTROs, a borrowing limit is calculated for each credit institution taking part, which depends on the amount it lends to the real economy. Some of the credit institutions participating in the TLTRO-II switched from TLTRO-I to TLTRO-II in order to take advantage of the latter's attractive price and maturity conditions. A total of €6.7 billion was allotted in the last TLTRO-I operation in June 2016, bringing the total amount allotted in the TLTRO-I series to €432 billion, while €740.2 billion was allotted via the four operations of the TLTRO-II series. Chart 9 illustrates how a large share of TLTRO-I funds was repaid in June 2016 and replaced by the take-up in the first operation of the TLTRO-II series when the Eurosystem offered a voluntary early

repayment option for funds borrowed through the first series of TLTROs. Also, on the occasion of the allotment of the next three TLTRO-II operations, it was possible for certain TLTRO-I operations to be repaid, thereby providing banks with additional opportunities to switch into TLTRO-II during the period. The take-up in TLTRO-II operations was typically larger than TLTRO-I repayments, allowing for a total net liquidity injection of €327.6 billion.

Chart 9

Excess liquidity and participation in refinancing operations

(EUR billions)



Source: 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.

Recourse to the weekly MRO and three-month LTRO decreased during the review period amid large and rising levels of excess liquidity (see Box 3 for further details). Excess liquidity followed a strong upward trend in line with ongoing Eurosystem asset purchases and rose sharply, particularly at the time of the relatively large take-up in the last TLTRO-II operation in March 2017 (Chart 9). The large supply of excess liquidity and the fact that most counterparties have access to short-term funding at market rates below the MRO rate led to a further declining demand in regular standard refinancing operations. Participation in the MRO stood at €62.3 billion at the end of Q1 2016, and by the end of 2017 the allotment amount had decreased to €3.4 billion. The number of bidders in the MRO also fell from 111 to 42 over that period. The outstanding amount in the three-month LTROs fell from €37.5 billion at the end of Q1 2016 to €7.9 billion by the end of 2017. The number of bidders in the three-month LTROs fell from 142 to 31.

Box 2
TLTRO-II operational design and take-up

On 10 March 2016, the Governing Council announced a second series of targeted longer-term refinancing operations (TLTRO-II).[28] The measure, which was part of a broader set of measures, was designed to strengthen the transmission of monetary policy by further incentivising bank lending. These operations offered more attractive long-term funding rates for banks (in comparison with TLTRO-I), to help further ease private sector credit conditions and to stimulate credit creation, in conjunction with the other non-standard measures.

Participating banks could reduce the interest rate from the initial level of the MRO rate to the level of the rate on the deposit facility, if they could exhibit positive developments in their lending volume to the private sector, compared with a pre-set lending benchmark. Eligible counterparties could participate either individually or as part of a “TLTRO group” through a “lead institution” subject to specific conditions and criteria. In contrast to TLTRO-I, each TLTRO-II operation has a fixed four-year maturity. TLTRO-II also offers early quarterly repayment options to banks, starting 24 months after the value date of each operation.

A total of four open market tender operations were conducted between June 2016 and March 2017, one each quarter. In these operations, credit institutions could borrow up to a take-up allowance defined as 30% of their outstanding eligible loans,[29] less any outstanding amounts from the first two TLTROs from the first series (TLTRO-I).

The total allotment in the TLTRO-II series amounted to €740.2 billion from 772 participants, thus exceeding the €432 billion total allotment from the first series. On average, credit institutions that entered the TLTRO-II utilised 62% of their take-up allowance. Participation was broad-based throughout the euro area.

Participation in the TLTRO-II was focused largely on the first and last operations. The first TLTRO-II in June 2016 constituted a special case, as the Governing Council offered an additional repayment possibility for all TLTRO-I operations conducted until then, allowing counterparties to switch into the second series. At this time, banks repaid €357.9 billion, or 87% of outstanding TLTRO-I. The attractiveness of the new series with regard to pricing along with the longer maturity, the absence of penalising mandatory repayments and lower auditing and reporting burdens, led to a take-up of €399.3 billion by 514 bidders, implying a net liquidity effect of €35.3 billion from the first operation. The second and third operations confirmed the appeal of the series with €35.9 billion and €48 billion net liquidity effects respectively. The demand for the last TLTRO-II in March 2017 far exceeded market expectations, with an uptake of €233.5 billion by 474 counterparties. Repayments of €16.7 billion from the first series still left a net liquidity effect of €216.7 billion. Combined with the remaining €13.4 billion from the TLTRO-I, the two TLTRO-programmes amounted to €753.6 billion of outstanding central bank liquidity at year-end 2017.

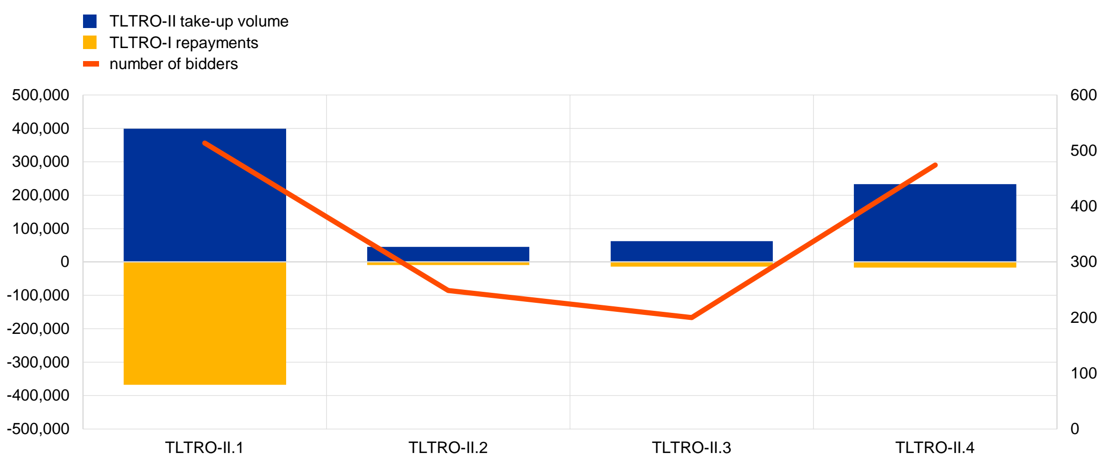
[28] See Decision ECB/2016/10 of 28 April 2016 on a second series of targeted longer-term refinancing operations.

[29] As in the first TLTRO series, eligible loans are defined as loans to euro area non-financial corporations and households, excluding household loans for house purchases.

Chart A

Participation in TLTRO-II and synchronised TLTRO-I repayments

(EUR millions)



Source: ECB.

Evidence from the euro area bank lending survey suggests that participation in the TLTRO-II was driven mainly by profitability motives, followed by the replacement of other funding sources; and – to a lesser extent – by precautionary motives and the need to meet regulatory liquidity requirements.[30]

The TLTROs have positively affected participants' financial situations: 41% of banks participating in TLTRO-II reported that the TLTROs had beneficial effects on general market financing conditions for banks, while 75% experienced improved profitability. TLTRO-II participants state that the TLTROs had a positive impact on terms and conditions for enterprise loans and consumer credits. Additionally, the decline in lending rates for non-financial corporations is particularly strong in vulnerable euro area countries, contributing to a stronger convergence of rates in the euro area.[31] The findings on the TLTRO-II thus suggest that the incentives embedded in the TLTRO-II have helped the smooth transmission of the reduction in bank funding costs to corporations' and households' lending rates and helped to stimulate the credit supply.

5.2 Foreign currency credit operations

Since the onset of the financial crisis in 2007, the Eurosystem has engaged in foreign currency credit 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. The design and calibration of the operations used by the ECB to provide foreign currency liquidity to domestic banks helped to achieve the key

[30] For further details, see European Central Bank (2017), "Analysing the ECB's targeted long-term refinancing operations", The euro area bank lending survey, July 2017, pp. 26-30.

[31] For further details, see European Central Bank (2017), "Money and credit", *Economic Bulletin*, Issue 3, pp. 20-24.

objectives of the swap lines and calmed markets and funding concerns during the crisis, while taking account of moral hazard considerations.[32]

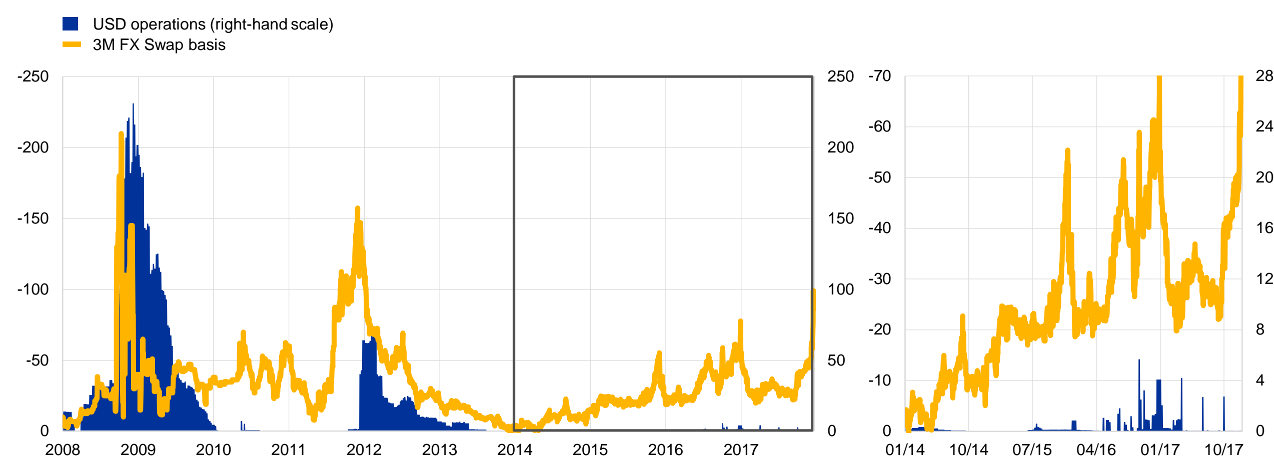
Action taken by euro area banks' to address the vulnerabilities of their US dollar funding sources after the US dollar funding tensions abated towards the end of 2012 resulted in very limited demand in USD liquidity providing operations other than those covering quarter ends (Chart 10). However, regulatory changes in more recent times have made banks reluctant to part with their USD holdings over the quarter-end, in particular over the year-end and this has pushed up the cost of US dollar funding. USD operations covering the quarter- and year-ends thus continue to see higher demand.

Chart 11 shows the average demand in terms of bid amounts and number of bidders in the 7-day USD operations in which US dollars have been provided against Eurosystem eligible collateral since the second quarter of 2016. It differentiates between operations covering the quarter- and year-ends and regular intra-quarter operations. The chart shows the difference in demand during the quarter (around $400 million from two bidders on average) and significantly higher demand (around $5 billion from around ten bidders) for quarter- or year-end operations.

Chart 10

USD-providing operations (all maturities) and three-month FX swap basis

(left-hand scale; swap points; right-hand scale: USD billions)



Source: ECB.

The USD operations continue to serve as a prudent and effective liquidity backstop, as illustrated by the end-2017 episode of increased US dollar funding costs. The reduced liquidity in the FX swap market covering the year-end led to a wider FX swap basis, while the ECB's USD operation covering the year-end allotted $11.9 billion to 21 bidders and provided some relief to the market. As a liquidity backstop, systematic usage of the swap arrangements is generally not expected

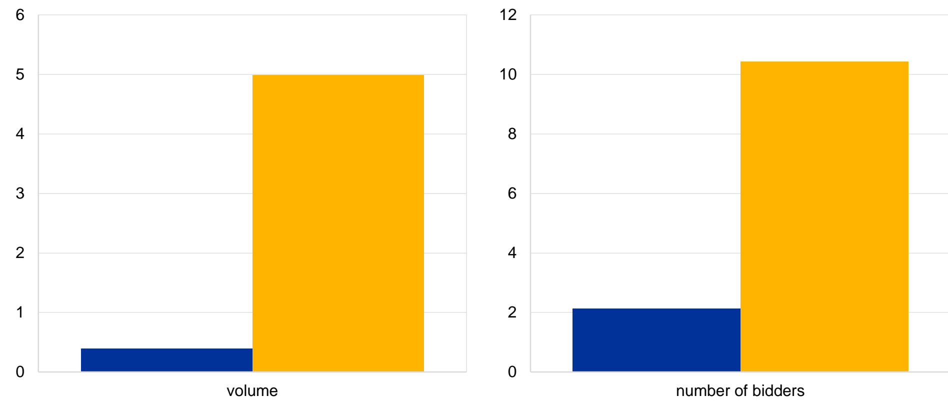
[32] A detailed account of the Eurosystem experience with central bank swaps that provide liquidity in foreign currency, the way in which operations to provide foreign currency work, and their effectiveness, is provided here: European Central Bank (2014), "Experience with Foreign currency liquidity-providing central bank swaps", *Monthly Bulletin*, August 2014, pp. 65-82.

when financial markets are not under stress and wholesale funding markets for foreign currency are accessible. If funding market conditions are stressed and other sources of liquidity become scarce, one would expect to see increased usage of the swap lines.

Chart 11

Demand in the Eurosystem's USD operations

(USD billions)



Source: ECB.
Notes: Average amounts and number of bidders over the period.

6 Recourse to standing facilities

Standing facilities allow eligible counterparties to borrow money or deposit funds from their NCBs on their own initiative. The rates on these facilities are normally unfavourable in comparison with the money market rates and represent the monetary policy implementation “corridor”. Standing facilities are overnight operations with uniform terms and conditions throughout the euro area. This section looks at the use of the two standing facilities in place: the deposit facility and the marginal lending facility.

6.1 Deposit facility

On a daily basis, counterparties can opt either to leave the excess liquidity they hold in their current accounts, or to place it in the deposit facility. Funds deposited in current accounts that exceed counterparties’ reserve requirements are remunerated at 0% or the rate on the deposit facility, whichever is lower. This implies that 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 (see Section 8 for further details on distribution of excess liquidity between current account holdings in excess of reserve requirements and deposit facility holdings).

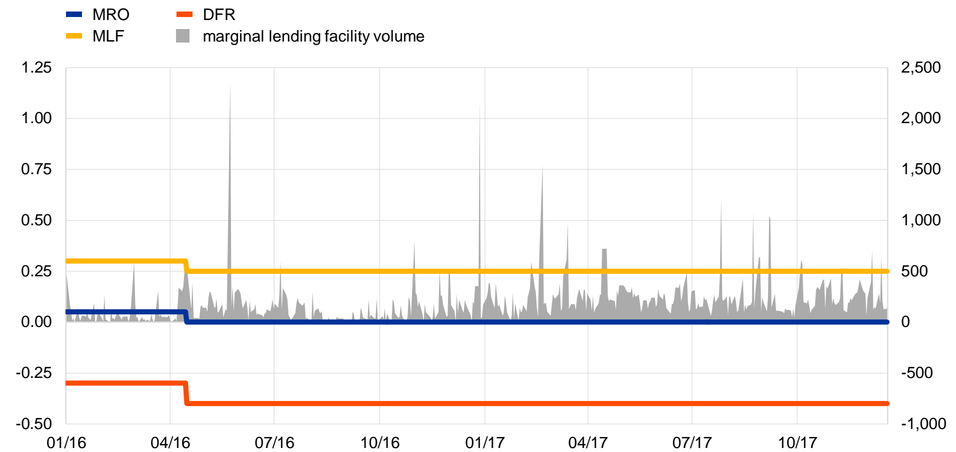
6.2 Marginal lending facility

The use of the marginal lending facility has been heterogeneous across maintenance periods in the period under consideration. This facility is designed to cover specific liquidity shortfalls caused either by market developments or by technicalities in the settlement of refinancing operations. Sporadic recourse to the facility is therefore not seen as raising concern about the counterparty’s liquidity risk management. Chart 12 shows that use of the marginal lending facility tends to be independent from any other underlying market factors.

Chart 12

Recourse to marginal lending facility and changes to key interest rates

(left-hand scale: percentages, right-hand scale: EUR millions)



Source: ECB.

In an excess liquidity environment, particularly with the current narrow width of the monetary policy corridor, recourse to the marginal lending facility is significantly more expensive than market financing. The reason for this is that money market rates are at levels close to the rate on the deposit facility instead of the MRO rate, as they would be under balanced liquidity conditions.

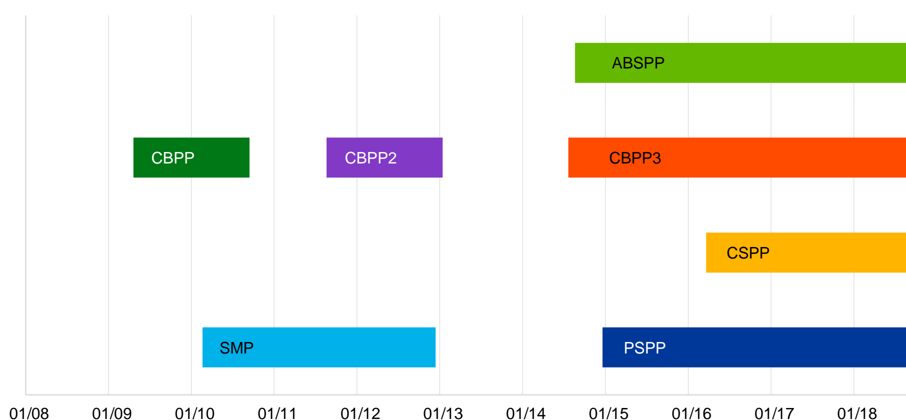
During the period, several spikes in the use of the marginal lending facility were caused by unexpected outflows faced by individual banks at the end of day. In addition, the facility was used as a bridge to switch outstanding positions in refinancing operations that did not exactly match in terms of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

7 Outright purchase programmes

Several asset purchase programmes have been introduced over the past decade to complement the regular operations of the Eurosystem. These asset purchase programmes are conducted for monetary policy purposes in accordance with the General Documentation (Guideline ECB/2014/60).[33]

Chart 13

Timeline of asset purchase programmes



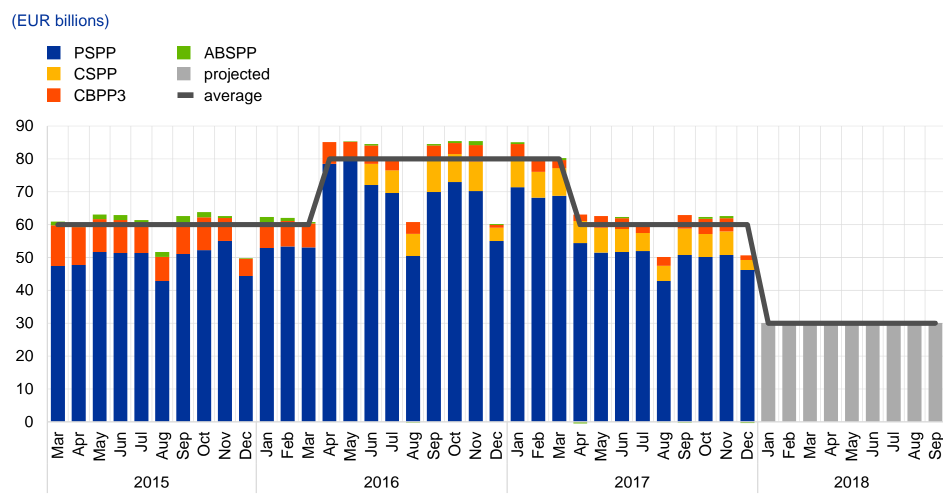
Source: ECB.
Notes: The lines refer to the beginning of purchases under each programme. For this reason, Outright Monetary Transactions (OMT) are not included.

The four active asset purchase programmes (CBPP3, ABSPP, PSPP, and CSPP) comprise the Eurosystem's expanded asset purchase programme (APP). Following the Governing Council decisions, the monthly net purchase targets for the APP have changed over time. At its inception, the APP targeted €60 billion net purchases per month (March 2015 to March 2016) before increasing to €80 billion (April 2016 to March 2017) following a deterioration in the growth and inflation outlook. The programme was then cut back to €60 billion of net purchases per month, beginning in April 2017, and reduced further to €30 billion in January 2018. It is scheduled to continue until the end of September 2018, or beyond, if necessary. Chart 14 shows the actual purchase amounts for each component of the APP and aggregate projected purchase targets.

[33] For additional detail on programmes introduced before Q2 2016, see Alvarez et al. (2017).

Chart 14

Actual and targeted APP net monthly purchases



Source: ECB.

The remainder of this section reviews the APP's four individual asset purchase programmes. Each subsection first reviews the general characteristics of the respective programme and then highlights any major parameter changes that have occurred during the review period.

7.1 Covered Bond Purchase Programme 3

The CBPP3 was announced on 4 September 2014 and purchases started on 20 October 2014. The aim of this programme is to improve the functioning of the monetary policy transmission mechanism, support financing conditions in the euro area, facilitate the provision of credit to the real economy and generate positive spill-overs to other markets, i.e. to induce portfolio rebalancing.

As in the previous CBPP programmes, CBPP3 eligibility was roughly aligned with Eurosystem collateral eligibility criteria. However, in contrast to previous CBPP programmes, there are no limitations to maturity or issuance size. The combined holdings of all covered bond purchase programmes and other holdings of Eurosystem central banks are limited to 70% per ISIN.

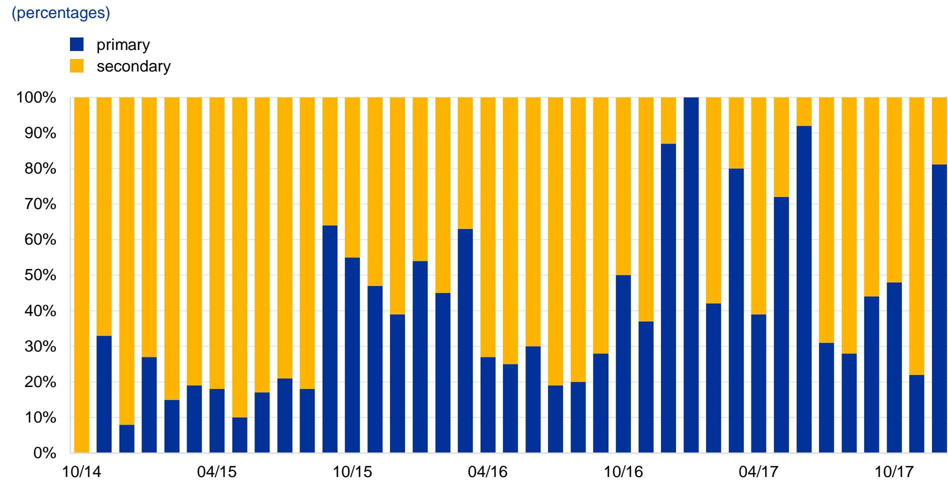
Purchases have been made in a broad range of countries and in line with a benchmark which reflects proportionally all eligible outstanding issues. Purchases are made on both primary and secondary markets, as shown by Chart 15. This chart also demonstrates that CBPP3 has become increasingly reliant on the primary market as the programme has progressed. In the day-to-day implementation of the programme, bond purchases are responsive to the availability and liquidity of individual bonds. The purchasable universe is regularly subject to credit risk mitigation and due diligence procedures. On 4 October 2017, the Governing Council decided to exclude covered bonds with conditional pass-through structures from

purchases under the CBPP3, if they are issued by an entity with a first-best issuer rating below Credit Quality Step 3, as of 1 February 2018.

Chart 15

Distribution of primary and secondary market CBPP3 purchases

(percentages)



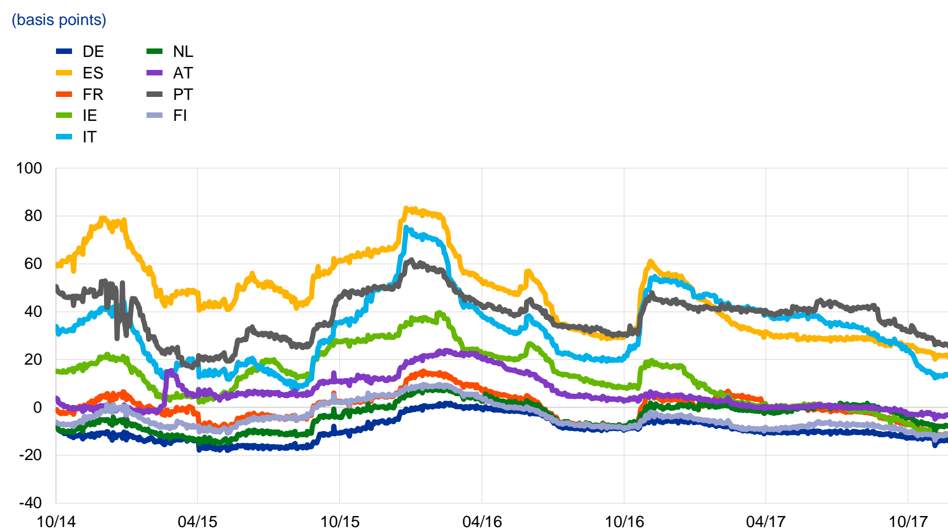
Source: ECB.

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 16). There have been periods of increasing spreads during CBPP3 implementation; however, the overall trend of declining spreads has persisted, and they are currently trading at historically tight levels, even though liquidity in covered bond markets has decreased.

Chart 16

Covered bond asset swap spreads for selected jurisdictions

(basis points)



Source: Markit iBoxx indices.

7.2 ABS Purchase Programme

The ABSPP, launched in late 2014, is designed to improve the transmission of monetary policy, diversifying banks' funding sources and facilitating credit provision to the real economy. The ECB initially implemented ABS purchases in a uniform, manner, instructing its external agents to purchase eligible ABS on its behalf in the primary and secondary markets from eligible counterparties. Since 1 April 2017, implementation has been fully insourced and purchases have been conducted exclusively through six NCBs[34] acting as internal asset managers and executing purchases on behalf of the Eurosystem. Each of these central banks has been assigned a specific segment of the euro area ABS market.

Cumulative gross purchases since the start of the programme reached €40.4 billion at the end of 2017, with €15.3 billion of cumulative redemptions. Over the review period, primary market issuance remained at low levels, although it was broad-based in terms of jurisdictions and type of ABS. Analysis of the underlying portfolios and originators revealed a number of trends that were particularly noteworthy in 2017: (i) increased issuance by specialised lenders and smaller originators with limited access to alternative funding sources (ii) emergence of more credit-intensive transactions, such as non-performing (NPL) or re-performing mortgage portfolios, and (iii) remarketing of previously retained deals and some repeated issuance by originators returning to the market for the first time since the financial crisis.

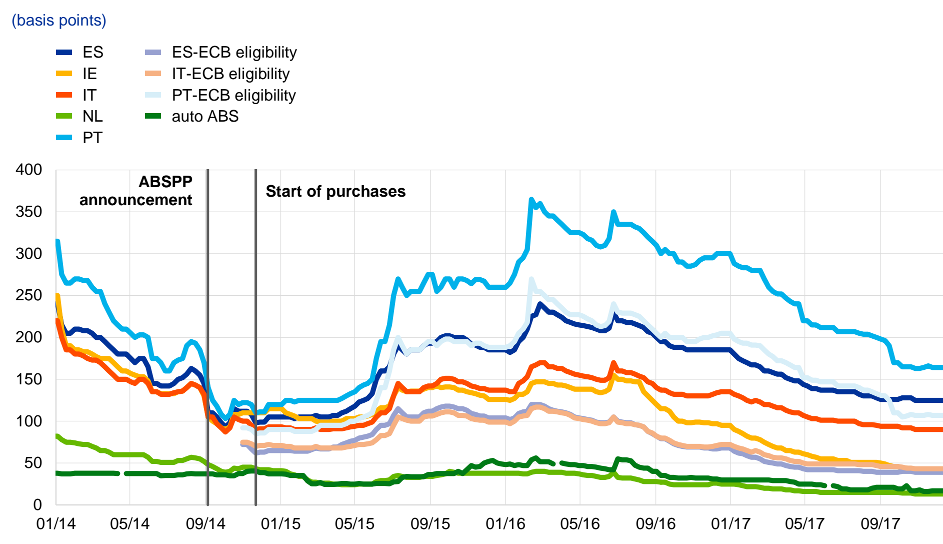
Secondary market spreads continued to become gradually tighter over the review period, with many jurisdictions experiencing their lowest spread levels since the ABSPP's inception (Chart 17). Secondary market liquidity remained subdued. The pace of redemptions continued to pick up as a whole, limiting growth in the Eurosystem's overall net holdings.

[34] Banque Nationale de Belgique/De Nationale Bank van België, Deutsche Bundesbank, Banco de España, Banque de France, Banca d'Italia and De Nederlandsche Bank.

Chart 17

Senior floating-rate Residential Mortgage-Backed Securities (RMBS) with 5-7 year maturity and Auto ABS spreads

(basis points)



Source: ECB.
Notes: average amount per MP. Most spreads are over 3-month Euribor. Rating at issuance.

The support that the ABSPP provides to market functioning remains limited, yet the programme continues to reduce the stigma and lowers originators' funding costs. Progress on the regulatory front and some broadening of the investor base were positive market developments during the review period. On 20 November 2017, the European Council adopted the new securitisation regulation – including a framework for simple, transparent and standardised securitisation (STS) – which is expected to enter into force on 1 January 2019. A high-quality framework for EU securitisation can promote further integration of EU financial markets, help to diversify funding sources and unlock capital, making it easier for credit institutions and lenders to lend to households and businesses.

Overall, the programme's contribution to the APP volume continued to decline as a result of a persistent supply/demand asymmetry, with continued net negative supply, low levels of public primary market issuance and reduced secondary market liquidity.

7.3 Public Sector Purchase Programme

The PSPP, initially announced on 22 January 2015[35], includes purchases of bonds issued by euro area central, regional and local governments; agencies; and international or supranational institutions located in the euro area. Inflation-linked and floating-rate securities are also eligible under the PSPP. The Programme is intended to ease monetary and financial conditions, in particular by compressing

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

yield curve term premia, when the policy interest rates at the front end of the yield curve are constrained by their effective lower bound.

Government bonds and agencies are bought by the Eurosystem proportionally according to the capital key. However, capital key shares are not strictly targeted each month, providing some flexibility to support the smooth implementation of the programme, including reinvestment of maturing holdings. Bonds issued by EU supranational institutions are bought under a specialisation scheme by certain NCBs in addition to their regular purchases of domestic government bonds and agencies. Other NCBs also conduct substitute purchases of supranational bonds as a complement to purchases of government and agencies bonds to fulfil the targeted net purchase amounts, where a shortage of such bonds is detected in a specific jurisdiction.

A 10% share of EU supranational institutions[36] is targeted 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 issue share limit for EU supranational bonds is currently set at 50% per individual security (ISIN), while the limits for government and agency bonds are set at 25% and 33%[37] respectively, depending on their collective action clauses (CACs). The limits are intended to avoid undue concentration that could undermine market liquidity and create a blocking minority in relation to CACs. Due to the prohibition of monetary financing, the PSPP issue share limits (33%) are lower than for private sector securities, and purchases under the PSPP are conducted only in the secondary market.

Additionally, there are issuer limits in place for each of the programmes, which refer to the maximum share of an issuer's outstanding securities that the ECB is prepared to buy. For the PSPP, the issuer limit is 33%. This limit ensures that market functioning and price formation are not unduly affected, as well as mitigates the risk of the ECB becoming a dominant creditor of euro area governments.

At its meeting on 8 December 2016, the Governing Council adjusted the parameters of the APP "in order to ensure its continued smooth implementation".[38] First, the minimum remaining maturity range for eligible securities in the PSPP was reduced from two years to one year, thus expanding the overall range to target bonds with maturities between 1 and 30 years. Second, the Governing Council approved the purchase of securities under the APP, to the extent necessary, to include those with yields trading below the rate on the ECB's deposit facility. On 19 January 2017, the

[36] This 10% share of supranationals (and also the ECB's share of purchases) which amounts to another 10% share of purchases) are risk shared, meaning any income or losses arising from the programme are shared amongst each of the euro area central banks.

[37] A different issue share limit is applied to bonds issued by a euro area central government whose credit assessment, provided by an accepted External Credit Assessment Institutions (ECAI), does not comply with at least Credit Quality Step 3 in the Eurosystem's harmonised rating scale, assuming that the central government is under a financial assistance programme and that the application of the Eurosystem's credit quality threshold has been suspended by the Governing Council under Article 8 of Guideline ECB/2014/31.

[38] See European Central Bank (2016), "ECB adjusts parameters of its asset purchase programme (APP)", press release, 8 December 2016.

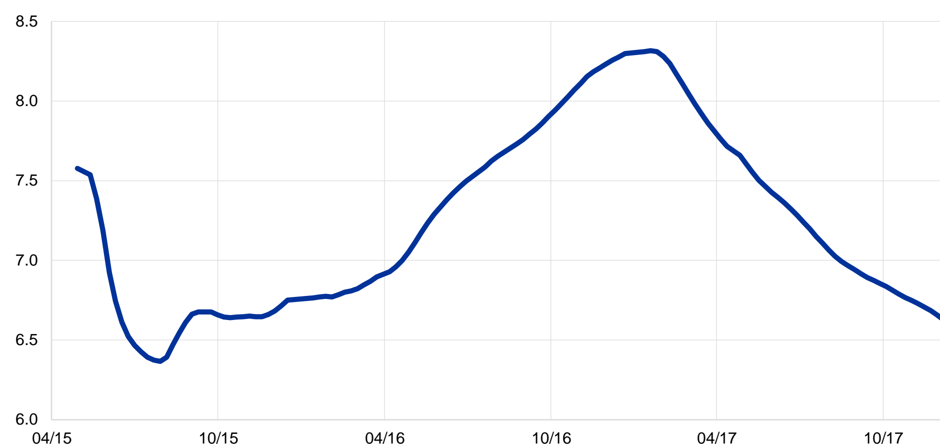
Governing Council decided that purchases of assets with a yield to maturity below the deposit facility rate are only permissible under the PSPP, confirming that no such purchases are planned for the CBPP3, ABSPP and CSPP.

The impact of these changes was most evident on the weighted average maturity (WAM) of PSPP portfolio holdings for Germany. The WAM increased from an average of roughly seven years from May 2015 through March 2016 to a peak of just over eight years in January 2017, as yields on German sovereign bonds with maturities as long as eight years fell below the rate on the deposit facility. This trend reversed with the introduction of the adjusted APP parameters, with Germany's WAM steadily declining to below seven years by the end of 2017. Chart 18 displays the WAM of German PSPP holdings.

Chart 18

Weighted average maturity of the German-originated PSPP holdings

(4-week moving average)



Source: ECB.

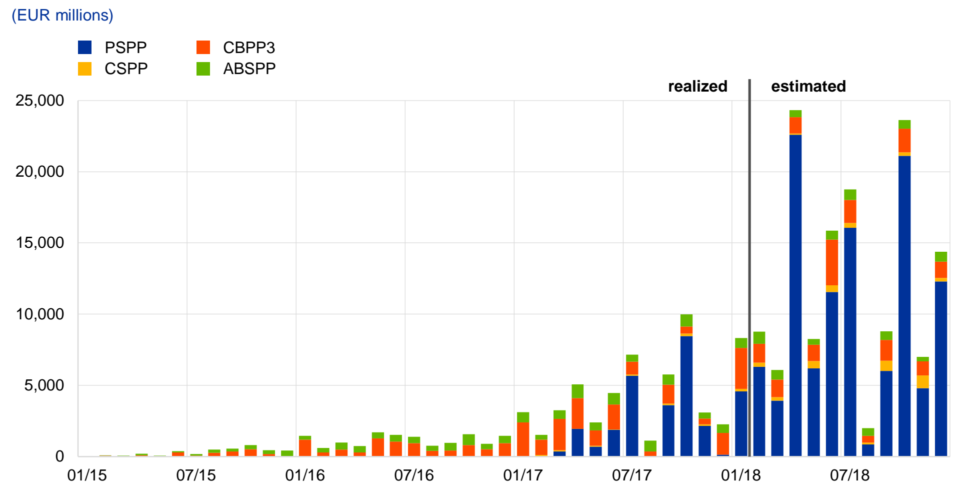
Another notable aspect of the PSPP during the review period has been how the redemption profile of PSPP holdings has changed. While redemptions are not a new aspect of the APP under the private purchase programmes, they have only recently become a source of reinvestment for the PSPP. The first PSPP principal redemptions occurred in March 2017. As a rule, redemptions are reinvested alongside the Eurosystem's net asset purchases in the jurisdiction where the maturing bond was issued, while allowing for flexibility as regards the asset class (sovereign, agency or regional government bonds). The Eurosystem reinvests redemptions in a flexible and timely manner in the month they fall due or in the next two months, depending on market liquidity conditions. This approach to reinvestment can result in fluctuations in the published monthly net purchase volumes per jurisdiction and subsequent short-term deviations from capital key.

Given the higher redemption amounts expected in 2018 and their increased relevance to the implementation of the APP, the Governing Council decided in October 2017 to publish the monthly redemption profile of the APP over a rolling

12-month period, along with the historical data series since the start of the APP.[39] The redemption dataset includes the estimated cumulative monthly redemptions for each of the four individual components of the APP. Chart 19 illustrates the APP redemption profile.

Chart 19

Redemption profiles of the individual purchase programmes



Source: ECB.

7.4 Corporate Sector Purchase Programme

In March 2016 the scope of APP 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).[40] Purchases under the new programme started in June 2016. The CSPP further strengthens the pass-through effect of the Eurosystem's asset purchases to ease financing conditions for the real economy.[41]

In line with the other purchase programmes, to be eligible for CSPP purchases, debt instruments first have to be eligible as collateral for the Eurosystem's credit operations. In particular, they must have a minimum first-best credit assessment of at least credit quality step 3, (investment grade under the Eurosystem credit assessment framework) from an external credit assessment institution. In addition, the securities must be denominated in euro; the eligible maturity spectrum ranges from a minimum remaining maturity of six months to a maximum remaining maturity of 30 years at the time of the purchase; the securities must be issued by a

[39] See European Central Bank (2017), "Additional information on asset purchase programme", press release, 26 October 2017.

[40] 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 2016.

[41] 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.

corporation established in the euro area; and securities issued by credit institutions are not eligible for purchases. In line with the other private sector purchase programmes, a maximum issue share limit of 70% per security applies for corporate bond purchases.[42]

Purchases under the CSPP are conducted in both the primary and the secondary markets (only on the secondary market for public corporates). At the end of 2017, the total CSPP portfolio consisted of €131.5 billion. Around 15% of securities were purchased in the primary market, the remaining 85% in the secondary market. Six national central banks[43] carry out the purchases in all jurisdictions on behalf of the Eurosystem.

Similar to the CBPP3, CSPP purchases are conducted based on a benchmark which reflects proportionally all eligible outstanding issues. The universe of CSPP-eligible bonds is deliberately broad and its composition is guided primarily by monetary policy and risk management considerations.[44] If a security purchased under the CSPP (or any of the other purchase programmes) loses eligibility, e.g. in the event of a downgrade below the credit quality rating requirement, the Eurosystem may choose, but is not required, to sell its holdings.

The CSPP has had an effect on both corporate bond yields and issuance volumes since it was announced in March 2016. In the euro area, investment-grade non-financial corporate bond yield spreads have tightened substantially. Chart 20 shows the asset swap spread for non-financial corporate bonds. The "portfolio rebalancing" channel led to favourable spill-overs to the yield spreads of bank bonds and sub-investment grade corporate bonds, which are not eligible for purchase under the CSPP. In addition, new issuers have entered the market during the period and issuance volumes have picked up. Between April 2016 and October 2017, euro area NFCs issued a net €152 billion in debt securities, which compares favourably to the €60 billion of net issuance in the preceding 19 months (September 2014 to March 2016).

[42] However, in specific cases a lower issue share limit applies. For example, securities issued by public undertakings are purchased in a manner consistent with their treatment under the PSPP. Primary market purchases of public sector issuer securities under the CSPP are also excluded to comply with the monetary financing prohibition laid down 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.

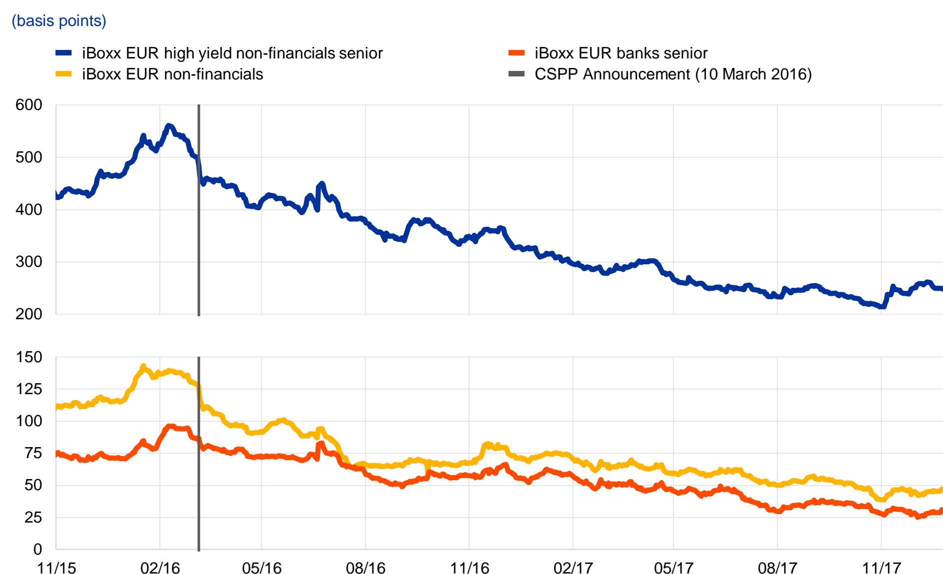
[43] Nationale Bank van België / Banque Nationale de Belgique, Deutsche Bundesbank, Banco de España, Banque de France, Banca d'Italia, and Suomen Pankki/Finlands Bank.

[44] For further details, see European Central Bank (2017), "The ECB's corporate sector purchase programme: its implementation and impact", *Economic Bulletin*, Issue 4, p.p. 40-45

Chart 20

Asset swap spreads for non-financial corporate bond index

(basis points)



Source: ECB.

Every week, the ECB publishes aggregated data on the CSPP holdings and the list of securities held by the Eurosystem. In 2017, to increase transparency, the ECB started disclosing, on a semi-annual frequency, a full list of all ISINs held under the CSPP. This included issuers' names, maturity dates, the bond coupon rates, and aggregated data on CSPP holdings by country of risk, rating and sector. Additionally, in November 2017 and commensurate with the other purchase programmes, the ECB began publishing the monthly redemption profile of CSPP holdings over a rolling 12-month period, along with the historical data series since the start of the APP.

7.5 Securities Lending Programmes

Since April 2015, the Eurosystem has made securities purchased under the PSPP available for securities lending[45] on a decentralised basis. The aim of such lending is to support bond and repo market liquidity without unduly curtailing normal repo market activity. For example, market participants with market-making obligations can occasionally make use of the Eurosystem's securities lending.

The Eurosystem monitors its securities lending activities closely, mainly to ensure that the arrangements remain effective. Almost all Eurosystem central banks (including the ECB) have put in place securities lending arrangements through the facilities provided by central securities depositories or agents, or through bilateral repurchase transactions with eligible counterparties.

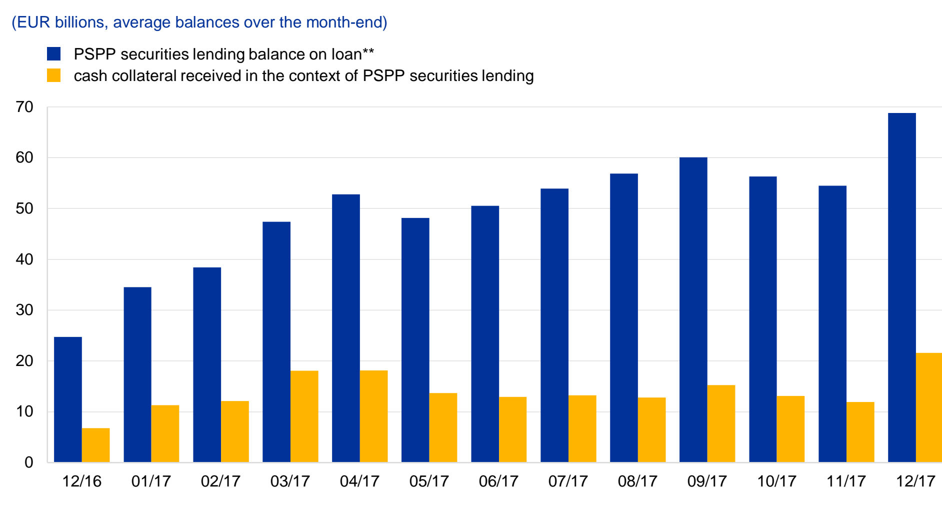
[45] For further details, see the ECB website on "Securities lending of holdings under the expanded asset purchase programme (APP)".

In addition to the PSPP portfolios, the portfolios of the covered bond purchase programmes (CBPP1, 2 and 3) and the CSPP are also available for securities lending. CSPP holdings are lent out by the NCBs conducting the purchases. The terms of the facilities offered by the NCBs and the ECB differ to some extent, for reasons including the specific market environment in each jurisdiction.

Since December 2016, the Eurosystem has also accepted cash as collateral in its PSPP securities lending facilities, without having to reinvest it in a cash-neutral manner. This variant of securities lending is subject to an overall limit set at €50 billion for the Eurosystem. The introduction of cash as collateral in the context of PSPP securities lending is intended to support the smooth implementation of the PSPP and the functioning of the euro area repo market by further supporting liquidity, thereby improving the effectiveness of the securities lending framework.

In May 2017, the ECB started publishing some aggregated monthly statistics for its PSPP securities lending (Chart 21). In 2017, the average monthly on-loan PSPP balance in the Eurosystem as a whole was €52.5 billion, while the average monthly cash collateral received was €14.5 billion.

Chart 21
Eurosystem PSPP securities lending



Source: ECB.
Notes: ** includes average on-loan balance of SMP holdings. In December 2016, the cash collateral received in the context of PSPP securities lending reflects the average balance when the option was introduced on 15 December 2016.

While securities lending activity under all purchase programmes has remained relatively limited in terms of amounts compared to the APP holdings, it has been able to mitigate the consequences of reductions in market liquidity in the euro area bond markets induced by the APP and in supporting the proper functioning of the euro area repo market.

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

Monetary policy operations (MPOs) are reflected on the balance sheet of the Eurosystem (Chart 22). Asset purchases or lending to counterparties through MPOs increase the size of the balance sheet and show up on its asset side, while the corresponding liquidity creation is reflected mainly in an increase in central bank reserves, i.e. deposits made by counterparties at the central bank. Counterparties can influence the amount of liquidity they hold individually, but at an aggregate level the amount of liquidity in the banking system is determined solely by the size and composition of the central bank balance sheet. In addition, the number of banknotes in circulation and the size of non-monetary policy assets and liabilities are relevant to monetary policy implementation, given their impact on the liquidity in the banking system (Table 1 shows a breakdown in percent of the shares of each of these factors).

The Eurosystem measures introduced in 2016 and 2017 have had a profound effect on both the size and composition of the Eurosystem balance sheet and thus also on liquidity conditions and money market rates.

Table 1

Stylised composition of the Eurosystem balance sheet at end Q1-2016 and end Q4-2017

(percentages)

Assets	Q1-16	Q4-17	Liabilities	Q1-16	Q4-17
Securities held for monetary policy purposes	33%	53%	**Banknotes**	36%	26%
Lending to euro area credit institutions	18%	17%	**Central bank reserves**	28%	42%
(includes refinancing operations and marginal lending facility)			(current account incl. required reserves, and deposit facility)		
Non-monetary policy assets	49%	30%	**Non-monetary policy liabilities**		
(includes FX, gold, euro-denominated own fund portfolios, ELA and other)			Non-monetary policy deposits	10%	15%
			Capital & reserves and other	25%	17%

Source: ECB.

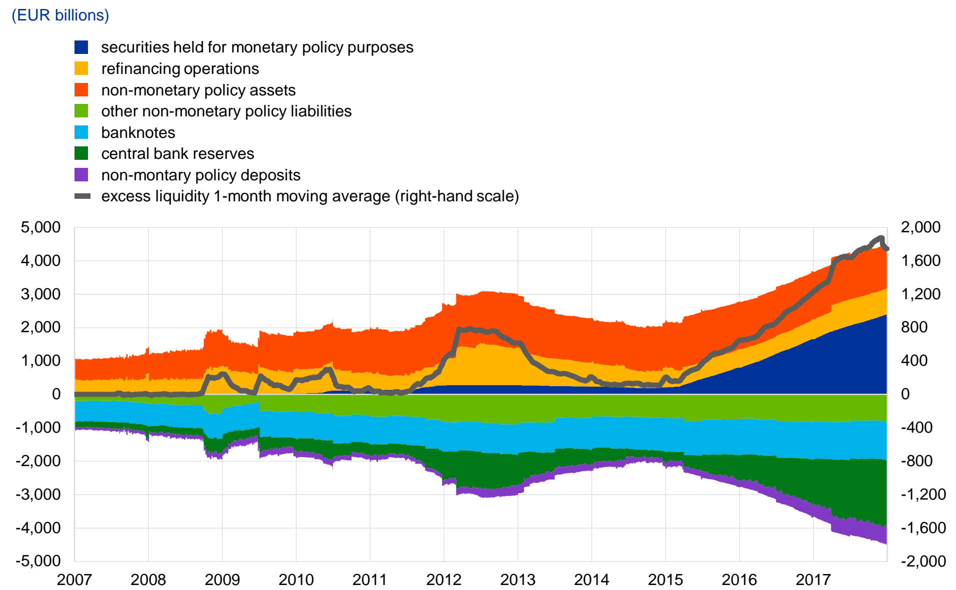
From mid-2014, the Eurosystem moved towards managing its balance sheet more actively, by making asset purchases while keeping the fixed-rate full allotment policy in place with regard to refinancing operations. On account of the APP (for further details, see Section 7), the Eurosystem was no longer relying on counterparties to participate in the lending operations in order to increase excess liquidity and expand its balance sheet. The Eurosystem's measures in the period covered by this report also include additional collateralised operations (TLTRO-II) with an initial maturity of

four years (for further details, see Box 3). On the back of the asset purchases and targeted longer-term refinancing operations, the Eurosystem balance sheet increased to a historic high of €4.5 trillion by year-end 2017, growing by €1.5 trillion compared with the first quarter of 2016 (Chart 23).

Chart 22

Trends in the Eurosystem balance sheet since 2006

(EUR billions)

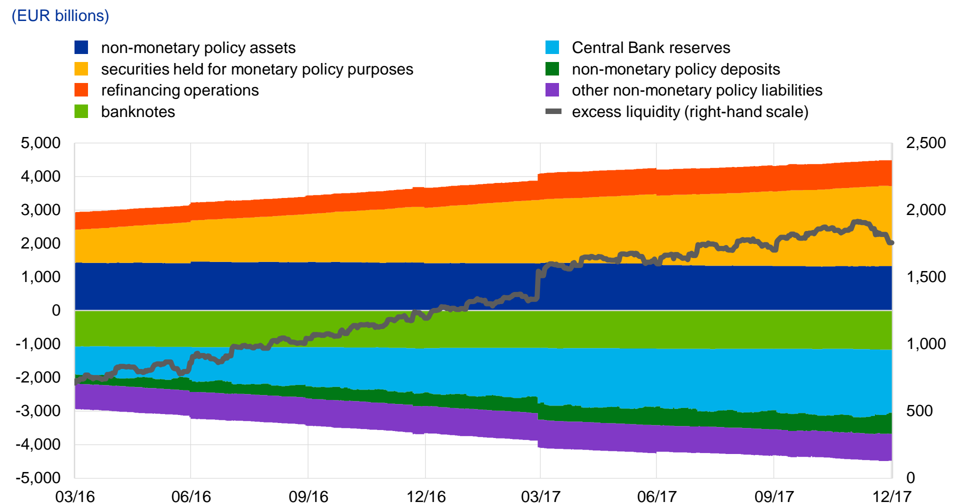


Source: ECB.
Notes: Positive figures refer to assets and negative figures to liabilities.

Chart 23

Trends in the Eurosystem balance sheet, Q2 2016 to Q4 2017

(EUR billions)



Source: ECB.
Notes: Positive figures refer to assets and negative figures to liabilities.

The composition of the balance sheet changed considerably as a result of the APP and the TLTRO-II and the corresponding liquidity injection. At the end of 2017, MPOs on the asset side accounted for €3.1 trillion or 70% of the total assets on the

Eurosystem balance sheet, up from 51% at the end of the first quarter of 2016 (Chart 23). This increase can be attributed to the increase in the share of outright holdings for monetary policy purposes, which rose from 33% to 53% of total assets on the balance sheet. On the other hand, the share of refinancing operations was relatively stable. The increase of €239 billion in monetary policy-related lending operations was offset by a similar percentage increase in total assets of the balance sheet. Finally, non-monetary policy assets[46] decreased markedly, both as a share of total assets and in absolute terms.

The structure of the liability side of the balance sheet also changed considerably. The main impact observed was the increase in central bank reserve holdings of the banking sector (consisting of current account holdings and recourse to the deposit facility) to €1.9 trillion or 42% of the total liabilities of the balance sheet on account of the continued accommodative monetary policy in 2016 and 2017. The increase in central bank reserves mirrors the increase in excess liquidity, given that the only other element included is required reserves, which were relatively stable.

The level of excess liquidity (and consequently central bank reserves) has been growing rather more slowly over the reported period (€1.05 trillion) than the amount of liquidity injected through the APP and refinancing operations (€1.65 trillion). This can be explained by an increase in other liabilities, notably banknotes in circulation and non-monetary policy deposits (e.g. deposits from governments, supranational institutions and foreign central banks). Although banknotes in circulation declined in relative terms to 26% of the total liabilities on the balance sheet (compared with 36% at the end of the first quarter of 2016), in absolute terms they grew in line with the historical growth trend. Non-monetary policy deposits increased both in absolute and relative terms, covering 15% of the liability side of the balance sheet at year-end 2017.[47] This increase reflects more favourable incentives to deposit at the central bank for non-monetary policy counterparties in an environment with excess liquidity and negative rates.

8.1 Impact of excess liquidity on money market rates

Since 2015, the increase in excess liquidity has pushed some money market rates down to levels below the rate of the deposit facility (Chart 24). Two factors are relevant here. First, not all economic actors holding euro liquidity have access to the ECB deposit facility (see Box 1 for a more detailed illustration). Second, regulation has contributed to the downward trend in money market rates, as it discourages large balance sheets in commercial banks, especially on reporting days. In particular,

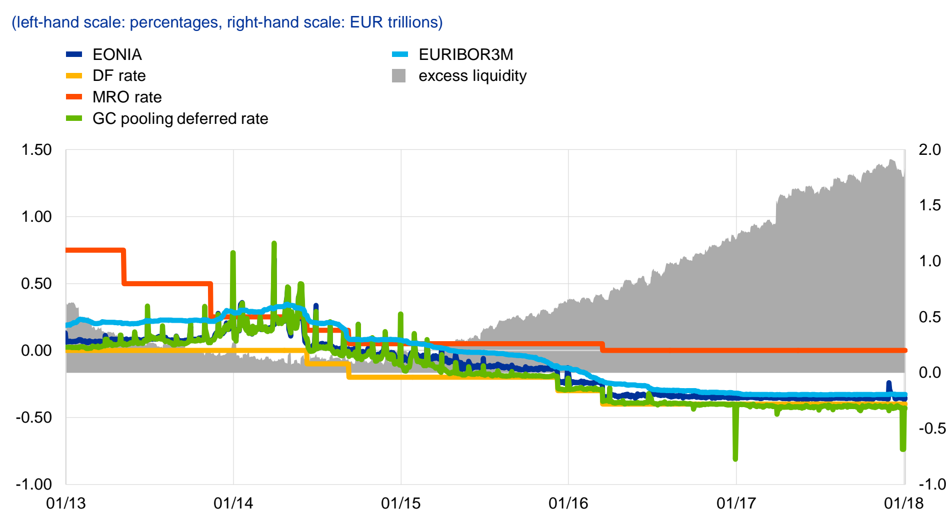
[46] Non-monetary policy assets comprised mainly: (i) foreign currency and gold held by the Eurosystem; (ii) euro-denominated non-monetary policy portfolios; and (iii) emergency liquidity assistance provided by some Eurosystem national central banks (NCBs) to solvent financial institutions facing temporary liquidity problems. The non-monetary policy assets are subject to internal Eurosystem reporting requirements and restrictions arising in particular from the prohibition on monetary financing and the requirement that these assets should not interfere with monetary policy, which are set out in various legal texts.

[47] This percentage is somewhat larger than the 12% share of non-monetary policy deposits in total liabilities over the last quarter of 2017.

on balance sheet reporting days, high-quality liquid assets (HQLA) that can be converted easily and immediately into cash in private markets, are in high demand. This intensifies the downward pressure on repo rates with underlying collateral from core jurisdictions including Germany and France.

Chart 24

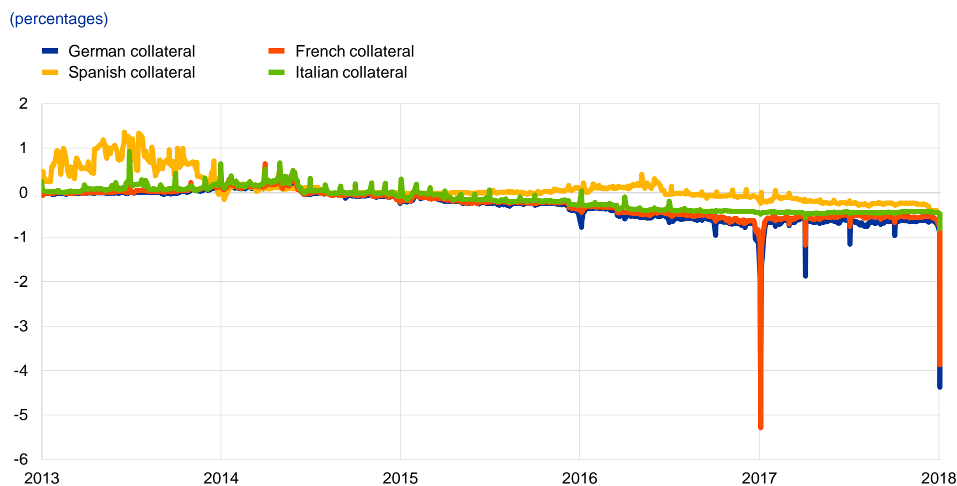
Excess liquidity and money market rates



Sources: Bloomberg, ECB.
Notes: GC pooling refers to a pool of general collateral against which repos are conducted (as opposed to a repo against a specific security).

On key reporting dates (quarter and year-ends), market participants aim to reduce their balance sheet size and are less willing to accept deposits or to engage in repo transactions. As a consequence, euro repo rates fall substantially, especially on key reporting days (see Chart 25). However, the decline was smaller over year-end 2017 than over year-end 2016. Furthermore, the dispersion of repo rates within the euro area also decreased, owing both to less negative general collateral (GC) repo rates with German and French collateral, and to lower repo rates with underlying Spanish and Italian GC, which traded below the rate on the ECB's deposit facility. The impact of the Eurosystem's securities lending programme (as outlined in section 7.5) may also have had a positive effect in stabilising repo rates over the year-end period.

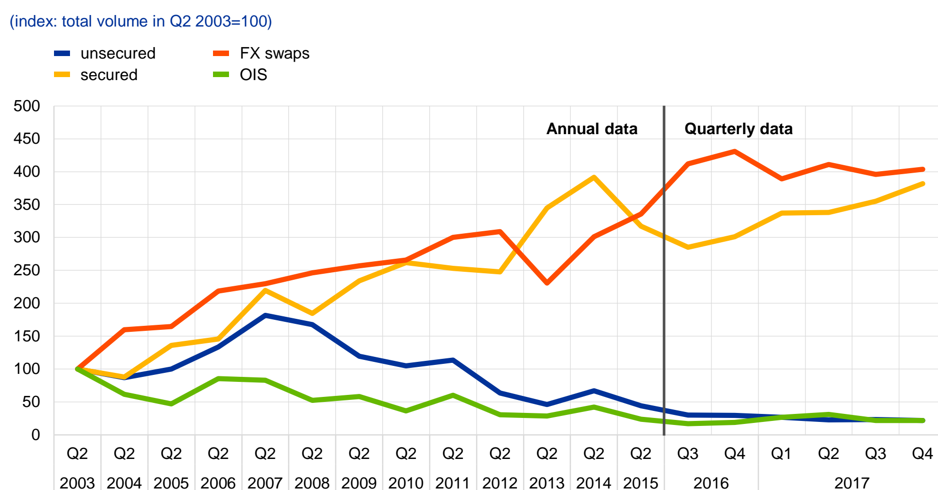
Chart 25
Rates for general collateral repo transactions by collateral



Source: BrokerTec.

While the large amount of liquidity provided by the Eurosystem made it less necessary and attractive for banks to operate in the interbank market, the effect is not homogeneous across money market sectors. The downward trend for unsecured turnover, which had started with the financial crisis amid increased risk aversion, is still continuing, though more slowly (Chart 26). In the secured market, turnover remained robust. In particular, repo transactions with specific collateral, used predominantly to source specific bonds, remain in high demand. Volumes for general collateral repo, commonly used to fine-tune daily liquidity requirements, have declined in line with reduced funding needs.

Chart 26
Turnover in various money market segments



Sources: Euro money market survey 2015 and MMSR data as of Q3 2016.
Notes: Based on a constant sample of 38 banks participating in both data collections.

8.2 Distribution of excess liquidity within the euro area

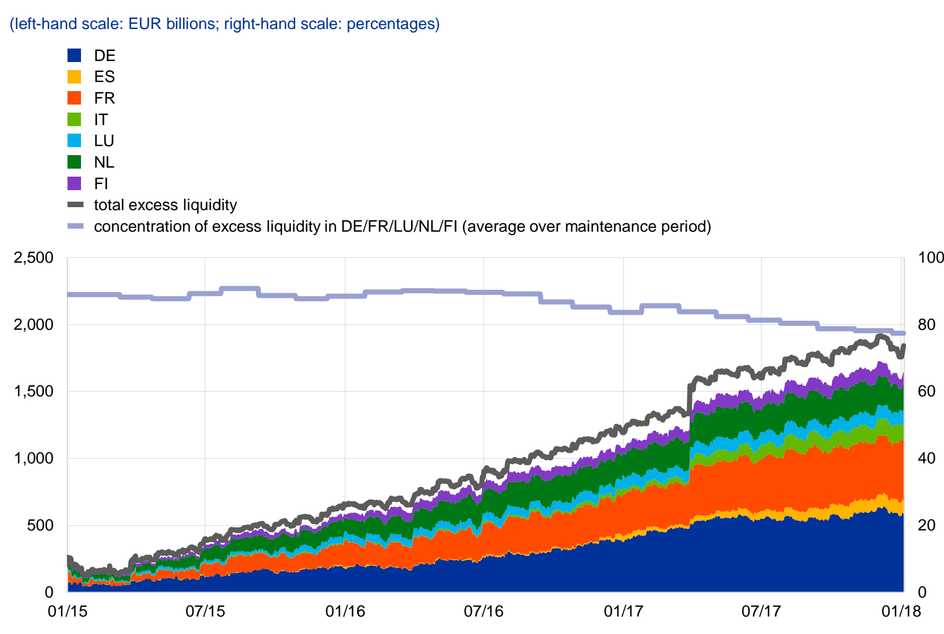
Excess liquidity is not distributed homogeneously across the euro area (Chart 27), since a disproportionate part of the excess liquidity is held in Germany, France, the Netherlands, Finland and Luxembourg. The distribution of liquidity has been relatively stable in recent years, with 80 – 90% of the excess liquidity between 2015 and 2017 concentrated in these five jurisdictions. Since early 2017, however, there have been signs of a less heterogeneous distribution of excess liquidity on the back of increased levels of excess liquidity in, for instance Belgium and Austria, and more recently, Italy and Spain. In the period covered by this report, excess liquidity in Spain and Italy increased from under €15 billion to over €220 billion (Chart 27). Consequently, at year-end 2017 the share of excess liquidity held (on average in a maintenance period) in Germany, France, the Netherlands, Finland and Luxembourg was 78%. This was the lowest share since 2010, with the exception of a brief period in 2013 and 2014, when excess liquidity was below €200 billion on average.

One of the factors behind the distribution of excess liquidity is the investment incentive created by yield differences across the euro area (versus the rate on the deposit facility, which is the remuneration rate of excess reserves) and the “home bias” in euro area government bond holdings and repo transactions with domestic collateral.[48] Given the further decline in yields in lower-rated countries, banks in these countries might also find it more attractive to deposit liquidity inflows (or part of them) at the central bank, instead of investing them in domestic bonds or in repos against domestic collateral.

Chart 27

Concentration of excess liquidity at specific national banks – absolute amounts

(left-hand scale: EUR billions; right-hand scale: percentages)



Source: ECB.

[48] See Baldo et al. (2017).

Box 3
The substitution of non-standard open market operations for standard ones

Since the onset of the global financial crisis, the ECB has introduced a wide array of non-standard MPOs (for further details, please see Chapter 3). Although they differed in their features and objectives, all non-standard operations affected liquidity (i.e. the level and the distribution of central bank reserves among euro area countries) and the funding conditions of the euro area banking system. Broadly speaking, non-standard operations can be labelled as 'demand-driven' (i.e. refinancing operations, such as the three-year LTROs and the TLTROs) or 'supply-driven' (i.e. asset purchases), depending on whether the liquidity generated is determined by counterparties' demand for funds or by the central bank. This box examines the pattern of the replacement of standard refinancing operations (MROs and three-month LTROs) by non-standard operations (three-year LTROs, TLTROs and APP) and the extent to which this is happening. It also looks at the possible replacement of demand-driven operations by supply-driven ones. The review period is the last four years.

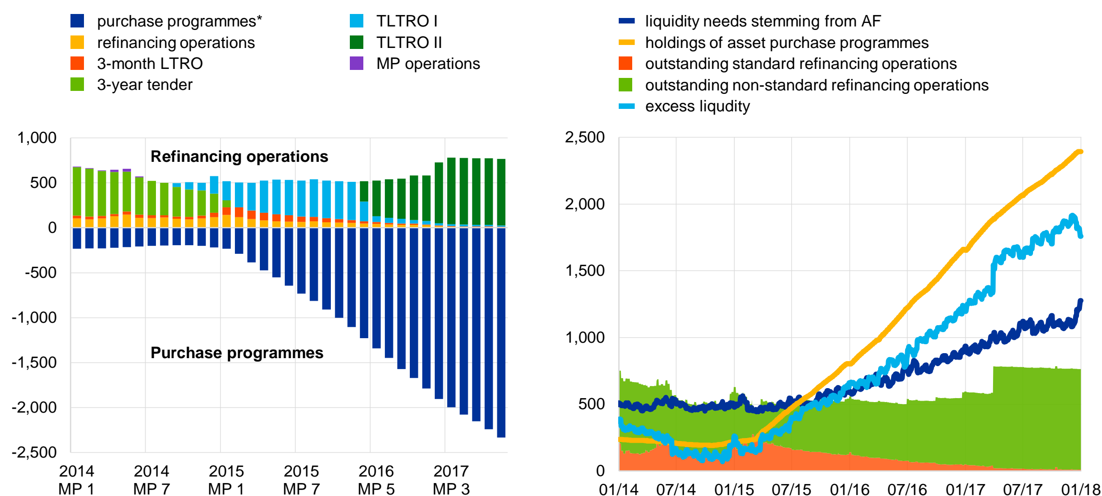
The outstanding amount and the mix of open market operations changed significantly between the beginning of 2014 and the end of 2017, as Chart A shows. In particular, recourse to standard refinancing operations (which increased until Q1 2015) started to fall at the start of the PSPP in March 2015, as standard operations became rather expensive in relation to market conditions. The liquidity injected through the APP has pushed up excess liquidity to record-high levels, driving shorter-term money market rates close to – and even below – the rate on the deposit facility. As a consequence, banks' demand for central bank shorter-term funding declined as the opportunity cost of participating in the ECB's standard operations rose. However, standard refinancing operations continued to attract some bidders, at least until the settlement of the last TLTRO-II in late March 2017. There were several reasons for this, including lack of market access at better conditions, preference for using collateral outside repo baskets, and limited money market activity for very small bidders.

Despite the increasing excess liquidity in the banking system generated by the APP, the overall recourse to refinancing operations was resilient in the review period, even increasing with the allotment of the last TLTRO-II. TLTROs played a leading role owing to their favourable conditions in terms of rate and tenor (see Box 2): indeed, they offset the decline in standard refinancing operations, although to varying extents and with different timing in different countries. At the end of 2017, non-standard refinancing operations came to about €753 billion, roughly 98% of total refinancing operations (as compared with 79% in early 2014). This means that the supply-driven liquidity injected through the APP did not entirely crowd out the demand-driven liquidity. However, autonomous factors – which normally drive banks' demand for central bank reserves – have increased since late 2015 (Chart B). One cannot, therefore, rule out the possibility that the take-up in the TLTROs might have been even larger[49] without the excess liquidity generated through the APP.

[49] However, it is worth noting that part of the increase in the autonomous factors is linked with the effects of the liquidity injected through the APP.

Charts A and B

Trends in open market operations



Source: ECB.
Notes: Purchase programme figures are on the negative side of the y axis for illustrative purposes only: actual figures are x (-1). Data are averages for maintenance periods. Since January 2015, the length of each maintenance period has been extended from 4 to 6 weeks.

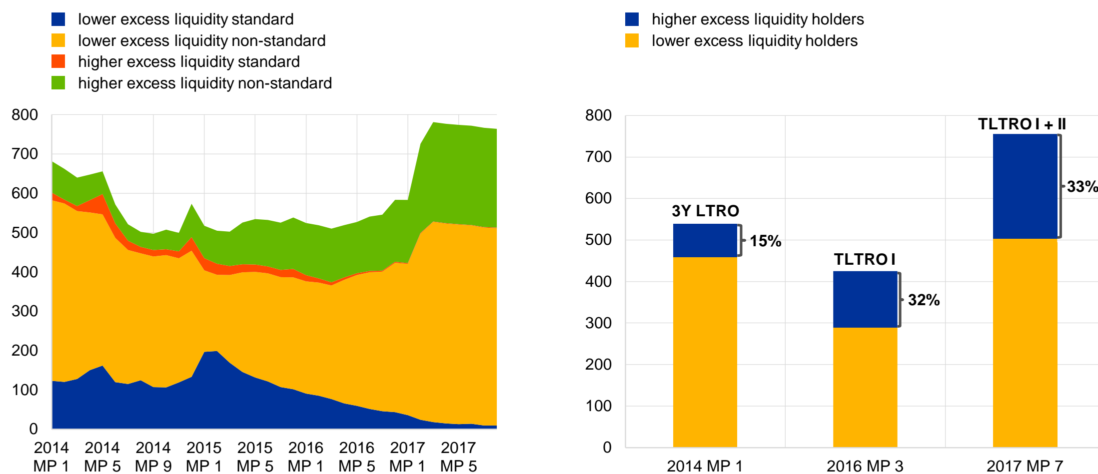
As excess liquidity is not evenly distributed across euro area countries,[50] it is worth analysing whether or not reliance on refinancing operations has been affected by the amount of excess liquidity. To do this, we must distinguish countries with comparatively high excess liquidity holdings from those whose excess liquidity holdings are relatively low (Chart C). It turned out that the decline in standard refinancing operations has been mainly driven by banks in countries with lower excess liquidity, while there has also been a significant increase in non-standard refinancing operations in countries with higher excess liquidity, although the former still remain the largest Eurosystem borrowers (roughly 67% of the total outstanding of non-standard refinancing). In fact, as Chart D shows, participation in non-standard refinancing operations of banks operating in countries with higher excess liquidity rose by €173 billion, from 15% in early 2014 (when non-standard operations consisted of three-year LTROs) to 33% in late 2017 (when non-standard operations consisted of TLTROs).

[50] See Baldo et al. (2017).

Charts C and D

Eurosystem: breakdown of standard and non-standard operations

(EUR billions)



Source: ECB.
Notes: data are averages for maintenance periods (MP). Since January 2015, the length of each MP was extended from 4 to 6 weeks.

This analysis provides the following main findings. First, participation in standard refinancing operations declined as these operations became more costly in comparison with money market rates, amid high excess liquidity owing to the APP and the TLTROs. Second, the outstanding amount of total refinancing increased following the introduction of TLTRO-II, the conditions for which were attractive, in terms of rates and tenors. This is also true for jurisdictions with higher excess liquidity holdings. In fact, supply-driven liquidity tends to reduce take-up in refinancing operations unless the latter are intentionally rendered more attractive in terms of rates and tenors.

Annex

Table A.1

Chronological table of monetary policy measures, Q2 2016 – Q4 2017

Monetary policy decisions	Announcement
CSPP remaining details specified	June 2016
UBB usage limit reduced from 5% to 2.5%	October 2016
General Documentation Guideline on the implementation of the Eurosystem's monetary policy and Guideline on Valuation Haircuts update	November 2016
Extension of APP until at least December 2017. From April 2017, net asset purchases are to continue at €60 billion a month.	December 2016
PSPP minimum remaining maturity decreased from two years to one year	
APP purchases with yields below the DFR allowed (to the extent necessary)	
Introduction of cash collateral for PSPP securities lending facilities	
Extension of APP until at least September 2018. From January 2018, net asset purchases are to continue at €30 billion a month.	October 2017
The principal payments from maturing securities purchased under the APP will be reinvested for an extended period of time after the end of net asset purchases.	
Extending fixed-rate full allotment (FRFA) policy until at least the last MP of 2019	
Unsecured bank bonds (UBBs) subject to statutory, contractual or structural subordination will become ineligible as collateral for MPOs.	December 2017

References

Alvarez, I. et al. (2016), “The use of the Eurosystem’s monetary policy instruments and operational framework since 2012”, ECB Occasional Paper, No 188, August 2016.

Bindseil, U. et al. (2017), “The Eurosystem collateral framework explained”, ECB Occasional Paper, No 189, May 2017.

Baldo, L. et al. (2017), “The distribution of excess liquidity in the euro area”. ECB Occasional Paper, No 200, November 2017.

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 2012.

European Central Bank (2014), “Experience with foreign currency liquidity-providing central bank swaps”, *Monthly Bulletin*, August 2014, pp. 65-82.

European Central Bank (2015), "ECB announces expanded asset purchase programme", press release, 22 January 2015.

European Central Bank (2015), “Treatment of central bank reserves with regard to the Liquidity Coverage Ratio (LCR)”, Letters to banks, 30 September 2015.

European Central Bank (2016), “ECB adds corporate sector purchase programme (CSPP) to the asset purchase programme (APP) and announces changes to APP”, press release, 10 March 2016.

European Central Bank (2016), “ECB amends Guidelines relating to the Eurosystem’s monetary policy implementation”, press release, 3 November 2016.

European Central Bank (2016), “ECB announces details of the CSPP”, press release, 21 April 2016.

European Central Bank (2016), “ECB announces new series of targeted long-term refinancing operations (TLTRO-II)”, press release, 10 March 2016.

European Central Bank (2016), “ECB announces remaining details of the CSPP”, press release, 2 June 2016.

European Central Bank (2016), “ECB reinstates waiver affecting the eligibility of Greek bonds used as collateral in Eurosystem, monetary policy operations”, press release, 22 June 2016.

European Central Bank (2016), “ECB reviews its risk control framework for collateral assets”, press release, 3 November 2016.

European Central Bank (2016), “Economic and monetary developments”, *Economic Bulletin*, Issue 2 2016, pp. 3-6.

European Central Bank (2016), “Decisions taken by the Governing Council of the ECB (in addition to decisions setting interest rates”, press release, 18 March 2016.

European Central Bank (2016), “Monetary policy decisions”, press release, 10 March 2016.

European Central Bank (2016), “The corporate bond market and the ECB’s corporate sector purchase programme”, *Economic Bulletin*, Issue 5 2016, pp. 20-24.

European Central Bank (2016), “The second series of targeted long-term refinancing operations (TLTRO-II)”, *Economic Bulletin*, Issue 3 2016, pp. 24-29.

European Central Bank (2017), Account of the monetary policy meeting held on 25-26 October 2017, Frankfurt am Main.

European Central Bank (2017), Account of the monetary policy meeting held on 7-8 December 2016, Frankfurt am Main.

European Central Bank (2017), “Additional information on asset purchase programmes”, press release, 26 October 2017.

European Central Bank (2017) “Analysing the ECB’s targeted long-term refinancing “operations”, The euro area bank lending survey, July 2017, pp. 26-30.

European Central Bank (2017), *Annual Report*, Frankfurt am Main.

European Central Bank (2017), “Changes to collateral eligibility for unsecured bank bonds”, press release, 14 December 2017.

European Central Bank (2017), “ECB releases new money market statistics”, press release, 21 November 2017.

European Central Bank (2017), “ECB to publish new unsecured overnight interest rate”, press release, 21 September 2017.

European Central Bank (2017), “Financial developments”, *Economic Bulletin*, Issue 8 2017, pp. 11-16.

European Central Bank (2017), “Money and credit”, *Economic Bulletin*, Issue 3 2017, pp. 20-24.

European Central Bank (2017), “The ECB’s corporate sector purchase programme: its implementation and impact”, *Economic Bulletin*, Issue 4 2017, pp. 40-45

European Money Market Institute (2017), “EONIA designated critical”, press release, 29 June 2017.

European Money Market Institute (2017), “Euribor pre-live verification programme outcome”, press release, 4 May 2017.

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