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## Research Report

The use of the Eurosystem's monetary policy instruments and its monetary policy implementation framework between the first quarter of 2018 and the fourth quarter of 2019

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EUROPEAN CENTRAL BANK

EUROSYSTEM

## Occasional Paper Series

Julie Sylvestre, Cristina Coutinho (editors)

The use of the Eurosystem's  
monetary policy instruments and  
its monetary policy implementation  
framework between  
the first quarter of 2018 and  
the fourth quarter of 2019

No 245 / June 2020

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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 first quarter of 2018 to the last quarter of 2019. 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 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 Eurosystem's monetary policy instruments are used to implement monetary policy decisions taken by the ECB's Governing Council. Implementing monetary policy is a decentralised activity involving both the ECB and the NCBs of euro area countries. Outright asset purchases and targeted longer-term refinancing operations (TLTROs) have taken on an increasingly important role in Eurosystem monetary policy implementation in addition to their traditional function of steering short-term interest rates. The size and composition of the Eurosystem's balance sheet has continued to act as a monetary policy tool, and the focus of monetary policy implementation continues to extend well beyond money markets. Other areas in which the Eurosystem now operates include the public bond and covered bond sectors, as well as the corporate bond and asset-backed securities markets.

This paper provides a comprehensive overview of the context and use of the Eurosystem's monetary policy instruments from the first quarter of 2018 to the fourth quarter of 2019. This period was characterised by the ongoing implementation and modification of monetary policy instruments, which were first introduced to address the challenges posed by the financial crisis and the subsequent sovereign debt crisis, and then to address the period of low inflation that followed.

The review period initially reflected a slowdown in net monthly purchases under the Asset Purchase Programme (APP), from €30 billion to €15 billion in 2018, which was followed by a period of reinvestments with zero net purchases. In March 2019, a third series of targeted longer-term refinancing operations (TLTRO III) was announced, and these started in September 2019 following the modification of a number of key parameters. In September 2019, the Governing Council announced that APP net purchases would restart at a monthly level of €20 billion as of 1 November 2019. In addition, the rate on the deposit facility was reduced to -0.50% from -0.40%, while the rates on the main refinancing operations (MROs) and the marginal lending facility remained at 0.00% and 0.25% respectively. Finally, the ECB introduced a two-tier system for reserve remuneration, partially exempting excess reserves from remuneration at the rate on the deposit facility.

The implementation of these measures has been smooth, and has been supported by a number of adjustments which safeguard their effectiveness. To ensure that the APP reflects the ECB's monetary policy stance, the parameters of its various constituent programmes have been revised as necessary. Additionally, the availability of securities lending has helped to contain the impact of potential negative side effects on market functioning. 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 TLTROs. There was significant and broad-based recourse to TLTROs – these operations currently account for almost all of the Eurosystem's outstanding lending to its eligible monetary policy counterparties.

During the review period, excess liquidity within the euro area banking system remained broadly stable, standing at €1.8 trillion at the end of December 2019. This excess liquidity was, primarily, a result of the stock of assets purchased under the APP and, to a lesser extent, monetary policy lending through the TLTROs. This high level of excess liquidity continues to have the expected effect on money markets, with unsecured rates closely tracking the rate on the deposit facility, while some repo rates are below the rate on the deposit facility.

In addition to credit operations and asset purchases, this report also examines other aspects of the implementation framework, namely collateral and counterparty frameworks, as well as standing facilities and reserve requirements. It also summarises a number of the changes that took place in these areas over the review period. The report also provides deeper analyses in special “boxes”, covering reference rates for money markets; the relationship between repo market turnover and mobilisation of collateral; the two-tier system; the contribution of TLTRO II to monetary policy transmission; securities trading below the rate on the deposit facility; and a comprehensive review of autonomous factors.

The paper continues the series which includes ECB Occasional Paper No 135 (August 2012), Occasional Paper No 188 (May 2017) and Occasional Paper No 209 (April 2018).<sup>1</sup>

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<sup>1</sup> See Eser, F. et al. (2012), Alvarez, I. et al. (2017) and the Task Force on the use of monetary policy instruments (2018).

# 1 Context and overview of Eurosystem market operations from the first quarter of 2018 to the fourth quarter of 2019

The ECB continued to maintain a highly accommodative monetary policy stance over the review period to sustain the return of inflation to its price stability objective and to mitigate the risk of a prolonged period of low inflation.<sup>2</sup> This stance was supported by a number of standard and non-standard measures, including targeted longer-term refinancing operations (TLTROs), the Asset Purchase Programme (APP) and a negative rate on the deposit facility.

During the review period, the Governing Council decided to alter the existing policy package so it could reach its price stability objective of below, but close to, 2% in the medium term<sup>3</sup>, as follows:<sup>4</sup>

- The rate on the deposit facility was reduced by 10 basis points to -0.50% with effect from September 2019.
- APP monthly purchases were reduced from €30 billion to €15 billion by December 2018. This was followed by a reinvestment period of zero net purchases which continued until net purchases under the APP restarted, at €20 billion per month, in November 2019.
- A new series (TLTRO III) of seven TLTROs, each with a maturity of three years, was launched in September 2019.
- A two-tier system for reserve remuneration was introduced, partially exempting excess reserves from remuneration at the rate on the deposit facility, with effect from late October 2019.

These measures were designed to interact together in response to the continued shortfall of inflation relative to the ECB's target, as well as data indicating more protracted weakness in the euro area economy (see Chart 1). For example, the lowering of the rate on the deposit facility is intended to propagate through the yield curve, particularly in the short and medium-term segments.

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<sup>2</sup> European Central Bank (2019), [press conference](#), 12 September.

<sup>3</sup> For a full definition of price stability, see European Central Bank (2003), "[The definition of price stability](#)".

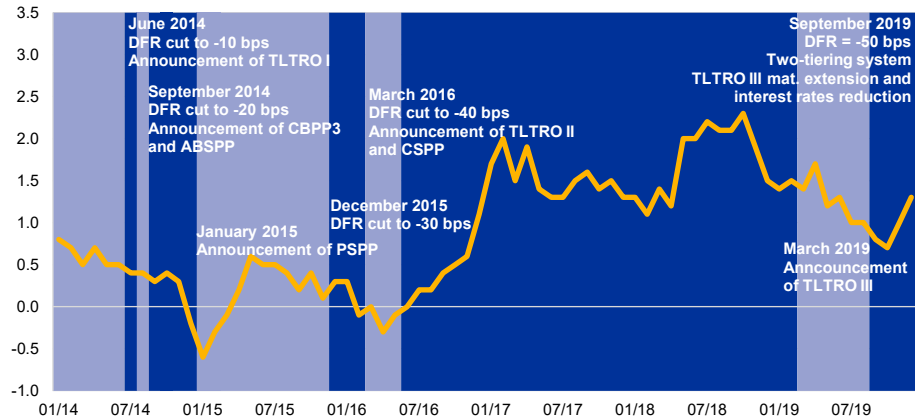
<sup>4</sup> For further details, see European Central Bank (2019), "[Monetary policy decisions](#)", "[ECB announces changes to new targeted longer-term refinancing operations \(TLTRO III\)](#)", and "[ECB introduces two-tier system for remunerating excess liquidity holdings](#)", press release, 12 September.



## Chart 1

### Euro area annual growth in the Harmonised Index of Consumer Prices (HICP)

(percentages)



Source: ECB.

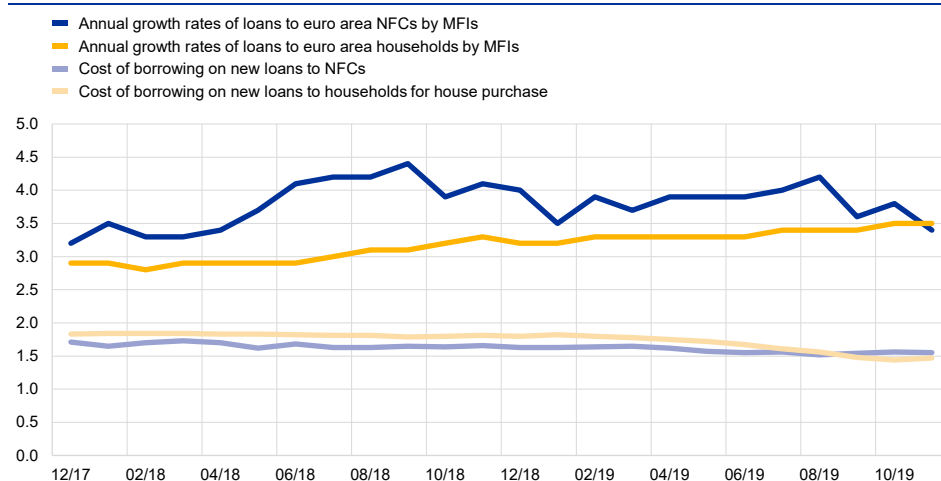
The APP has a greater impact on medium to longer-term rates, which affect the funding decisions of businesses and households over a longer horizon. In addition, the Governing Council's decision to run the programme until just before it starts raising the key ECB interest rates should help limit the rise in medium to longer-term rates and postpone any undue increase in term premia. Moreover, principal reinvestments, which will continue for an extended period of time after the Governing Council starts to raise interest rates, will maintain favourable liquidity conditions and an ample degree of monetary accommodation. The programme also has strong signalling and wealth effects, and is expected to continue as long as necessary to reinforce the impact of accommodative policy rates.<sup>5</sup>

Other measures, such as the TLTROs, were designed to safeguard favourable lending conditions and continue to support access to financing, particularly for small and medium-sized enterprises (see Chart 2). The third programme was initially designed to have maturities of two years, with an interest rate set at 10 basis points above the average MRO rate over the life of the operation (see Section 5 for more details). Those credit institutions that exceed their lending benchmarks would be entitled to rates as low as the rate on the deposit facility prevailing over the life of the operation, plus 10 basis points. In September 2019 the Governing Council revised these key parameters, extending the length of each operation to three years and lowering the interest rate on these operations so that the interest rate was set at the average MRO rate, or as low as the average rate on the deposit facility for banks that exceed their lending benchmarks.

<sup>5</sup> European Central Bank (2019), [press conference](#), 12 September.

## Chart 2

### Euro area annual growth rates and cost of borrowing to non-financial corporations and households



Source: ECB.

These parameters were adjusted in response to the further deterioration in the economic outlook since the first announcement in March 2019, and to better align the maturity of these operations with the type of bank loans used to finance investment projects in the euro area.<sup>6</sup>

Lastly, the two-tier system was implemented to protect the transmission of the ECB's monetary policy through the bank lending channel from the unintended side effects of negative rates, while ensuring the positive contribution of negative rates to the sustained convergence of inflation with the ECB's target (see Section 6 for more details). All credit institutions subject to minimum reserve requirements are eligible for the two-tier system. Under this system, the amount of excess reserve holdings exempt from negative rates is determined as a multiple of reserve requirements, calibrated to ensure that the measure does not have any adverse impact on euro money markets.<sup>7</sup> Since the implementation of these measures, it has been observed that money market rates have not been unduly affected for any sustained period of time.

## Box 1

### Reference rates for money markets

Benchmark rates play an important role in the global financial system, and are used in a wide array of financial contracts such as loans, mortgages, securities and other more complex financial transactions.

In response to attempts at manipulation and declining interbank liquidity, some of the major interest rate benchmarks have undergone significant reforms in recent years. In Europe, benchmark reform gained momentum with the adoption of the EU Benchmarks Regulation (BMR), which was published

<sup>6</sup> European Central Bank (2019), "ECB announces changes to new targeted longer-term refinancing operations (TLTRO III)", 12 September.

<sup>7</sup> European Central Bank (2019), "ECB introduces two-tier system for remunerating excess liquidity holdings", 12 September.

in 2016 and came into force in January 2018. The BMR introduced stricter rules for the use of benchmarks, as well as for their administrators and contributors. These rules aim to ensure that benchmark rates are based on reliable data, clear governance structures and transparent methodologies, and that users pay due consideration to the risks related to the benchmarks.

The most widely used European benchmark rates are the EURIBOR and the EONIA. In November 2019 the European Money Markets Institute (EMMI), the administrator of these benchmarks, completed its revision of EURIBOR by strengthening the governance framework and moving from a quote-based methodology to one that is anchored in real transactions as much as possible (the “hybrid methodology”).<sup>8</sup> Under the new framework, EURIBOR represents the rate at which wholesale funds in euro can be obtained by credit institutions in the unsecured money market. The EMMI received authorisation on 2 July 2019 for the continued use of EURIBOR by European supervised entities in existing and new contracts. Nevertheless, it advised users to carefully consider introducing workable fallback arrangements in all of their EURIBOR contracts to respond to any adverse scenarios.<sup>9</sup>

With regard to EONIA, stalling reform efforts, reduced panel membership, and a significant drop in underlying volumes paired with increased concentration, made it necessary to replace the rate. To address the risk to the financial system stemming from the uncertainties related to EONIA, the ECB announced in 2017 that it would develop a new rate – the euro short-term rate (€STR). The €STR is based on statistical information on money market transactions that is already available to the Eurosystem and collected daily from 50 euro area banks, in accordance with the Money Market Statistical Reporting (MMSR) Regulation.<sup>10</sup> The €STR includes transactions conducted with banks and non-bank financial institutions, so euro area banks’ funding costs are largely represented, thus overcoming the main weakness of EONIA, which was a purely interbank rate. Since 2017 the interbank market has represented, on average, 21% of total turnover volumes in the unsecured market (see Chart A). A large share of transactions have been conducted with non-bank financial counterparties, i.e. with money market and non-money market investment funds (27%), insurance and pension funds (11%) and other financial institutions (41%).

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<sup>8</sup> The hybrid methodology for EURIBOR follows a hierarchical approach consisting of three levels: in the first level, panel banks’ contributions are based on eligible transactions at a defined tenor; in the second level, contributions are based on transactions conducted across the money market maturity spectrum in recent days; in the third level, panel banks’ contributions are based on the use of expert judgment and the observation of transaction data for markets closely related to the unsecured segment.

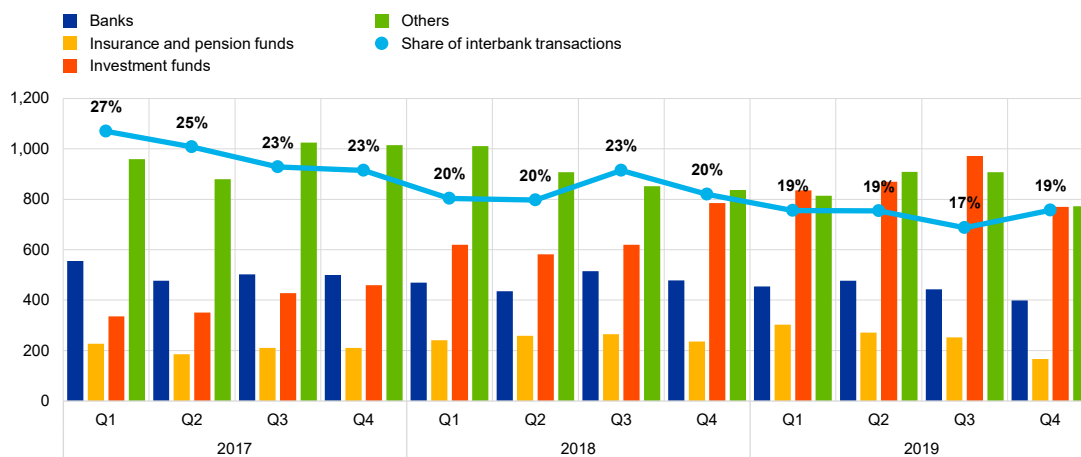
<sup>9</sup> In November 2019 the WG RFR [recommended that market participants incorporate robust fallback arrangements](#) into all their EURIBOR contracts. They were also advised to meet the requirements set out in the BMR.

<sup>10</sup> The list of the current reporting banks can be found in the [Money Market Statistical Reporting dataset](#).

## Chart A

### Turnover volumes in the unsecured overnight market by counterparty sector

(EUR billions)



Source: ECB (MMSR).

In September 2018 the Working Group on Euro Risk Free Rates (WG RFR)<sup>11</sup> recommended the €STR as the new euro risk-free rate and as a replacement for EONIA. In order to ensure an orderly transition from EONIA to the €STR, and following up on the recommendations of the WG RFR, the EMMI has, since 2 October 2019, calculated EONIA as the sum of the €STR and a positive spread of 8.5 basis points, and will continue to do so until its discontinuation on 3 January 2022.<sup>12</sup>

Since its launch, the €STR has traded below the level of the rate on the deposit facility. The main reason for this pattern is that the €STR also reflects the rate at which euro area banks borrow funds from counterparties which do not have access to Eurosystem monetary policy operations, including the deposit facility, in an environment of large excess liquidity (see Chart B).

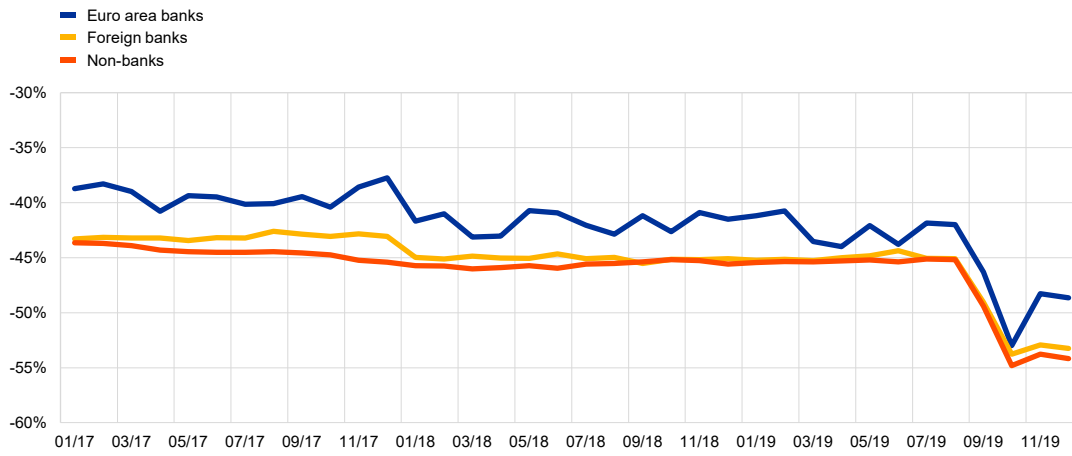
<sup>11</sup> In September 2017 the ECB, the Financial Services and Markets Authority, the European Securities and Markets Authority and the European Commission announced the launch of a new working group tasked with the identification and adoption of risk-free rates to serve as the basis for an alternative to the current benchmarks used in a variety of financial instruments and contracts in the euro area. The group consists of credit institutions representing the main European market.

<sup>12</sup> The ECB calculated the spread on 31 May 2019. It is based on a methodology recommended by the WG RFR and on publicly available pre-€STR data, and is computed as the daily spread between EONIA and the pre-€STR over a 12-month period (from 17 April 2018 to 16 April 2019).

## Chart B

### Unsecured overnight funding rates for counterparties with and without access to the ECB deposit facility

(percentage)



Source: ECB (MMSR).

## 2 Eurosystem counterparty framework

This section reviews developments in the counterparty framework in 2018 and 2019. A brief recap of the relevant eligibility criteria for counterparties and an overview of counterparty participation in Eurosystem monetary policy operations (MPOs) are provided. The section also touches on key areas of interest in the counterparty framework, including a summary of the conditions under which branches of third-country credit institutions can access MPOs.

### 2.1 Eligibility and participation

The monetary policy framework of the Eurosystem is designed to ensure that a broad range of counterparties can participate in Eurosystem MPOs. The purpose of this is to ensure a level playing field for counterparties, while accommodating their specific characteristics in areas including domicile, size, business model and ownership structure.

According to the general eligibility criteria outlined in Article 55 of the General Documentation (GD)<sup>13</sup>, to be eligible to participate in Eurosystem MPOs, institutions must:

1. be subject to the minimum reserve system, i.e. they must be a credit institution or a branch of a credit institution/bank;
2. be subject to at least one form of harmonised EU/EEA supervision by the competent authorities (or a comparable supervisory standard in the case of credit institutions that are subject to non-harmonised supervision);
3. be financially sound;
4. fulfil the operational requirements specified by the NCBs.

The criteria listed above apply to counterparties with access to the standing facilities and open market operations based on standard tenders. For counterparties eligible to participate in outright transactions, the Eurosystem has defined a different set of criteria.

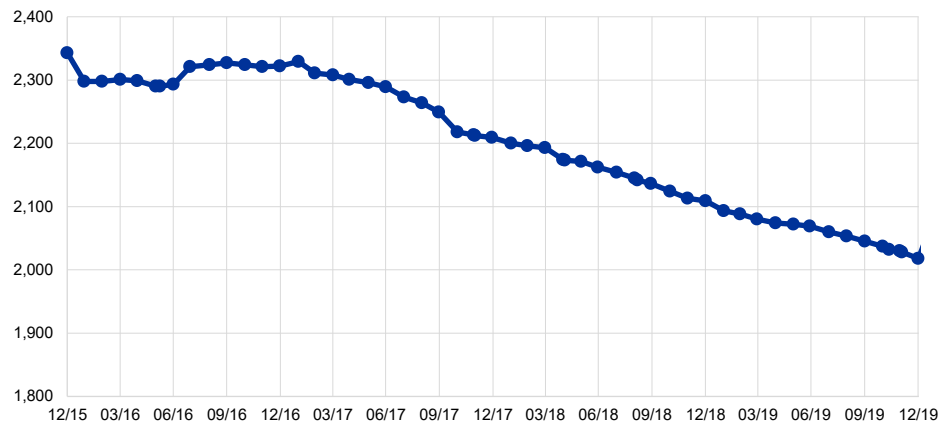
The number of monetary policy-eligible counterparties has decreased over the years, and totalled approximately 2,000 in December 2019. This trend reflects the consolidation activities that have taken place in euro area countries, in which the fragmented banking system has left room for a number of M&As, resulting in a lower number of credit institutions. Other reasons for the declining number include liquidations, licence withdrawals, business closures and the transfer of activities to another entity.

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<sup>13</sup> 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.

**Chart 3**

Number of euro area monetary policy eligible counterparties (MPEC)



## 2.2 Access to monetary policy operations

Access to Eurosystem MPOs is granted by the relevant NCB to counterparties that fulfil the above-mentioned eligibility criteria, in line with the decentralised monetary policy implementation approach in the euro area. However, in specific situations, some exceptions may be considered, as described below.

### 2.2.1 Limited, suspended and excluded counterparties

The Eurosystem may limit, suspend or exclude a counterparty's access to MPOs at any time on the grounds of prudence, if any concerns are raised with regard to the counterparty's financial soundness, or in the event of a default. Discretionary measures apply to the counterparty and its branches, although they do not extend automatically to its subsidiaries or to other counterparties belonging to the same banking group.

The financial soundness of institutions, as defined in Article 55a of the GD, is assessed on the basis of information including certain supervisory data (quarterly information on capital, leverage and liquidity ratios) on both an individual and a consolidated basis. This is in accordance with applicable supervisory requirements.

In a similar vein, once again on the grounds of prudence and without prejudice to any other discretionary measures, the Eurosystem automatically limits access to MPOs for counterparties deemed to be "failing or likely to fail"<sup>14</sup> by the relevant authorities. This limitation corresponds to the level of access to MPOs prevailing at the time such

<sup>14</sup> The concept of "failing or likely to fail" is introduced in recital 40 of Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014 establishing a framework for the recovery and resolution of credit institutions and investment firms.

counterparties are deemed to be “failing or likely to fail”. The Eurosystem may further limit, suspend or exclude these counterparties if this is considered appropriate.

Finally, any decision by the Governing Council to suspend, limit or exclude a counterparty’s access to MPOs obliges the respective NCB to implement that decision in respect to access to intraday credit as well as to auto-collateralisation facilities in TARGET2 Securities, the Eurosystem’s securities settlement platform. Such a decision would not be linked to the counterparty’s suspension and out-of-the-ordinary termination of participation in TARGET2.<sup>15</sup>

If a counterparty has been suspended or excluded from access to MPOs, it must repay its outstanding credit operations (including accrued interest) in full, effective on a date determined by the Eurosystem. Under a limitation, however, the counterparty is not required to repay its outstanding credit operations, although it cannot increase the amount it has borrowed. The Eurosystem might revoke a limitation or suspension, while exclusions are likely to be permanent, based on the information made available after such a decision. In 2018 nine credit institutions were suspended, while in 2019 five credit institutions were limited and one credit institution was excluded.

## 2.2.2 Wind-down entities

Wind-down entities, as defined in the GD<sup>16</sup>, are not eligible to access MPOs, as decided by the Governing Council in March 2017.<sup>17</sup> Moreover, to avoid channelling Eurosystem liquidity to an ineligible wind-down entity, 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.

## 2.2.3 Treatment of branches of third-country credit institutions

Euro area branches of third-country credit institutions can access MPOs as long as they fulfil the eligibility criteria set out in Section 2.2. However, compliance can be more difficult to determine in such cases, particularly with regard to supervisory standards and operational requirements.

For a third-country credit institution, compliance with these provisions implies that:

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<sup>15</sup> This is solely governed by Article 34 of Annex II to Guideline ECB/2012/27 (TARGET2).

<sup>16</sup> A “wind-down” entity is defined in the GD (Article 2, Point 99a) as an entity, whether privately or publicly owned, that:

- i. has as its main purpose the gradual divestment of its assets and the cessation of its business; or
- ii. 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.

<sup>17</sup> If a wind-down entity had been accepted as a counterparty eligible for MPOs by 22 March 2017, the entity concerned will remain eligible, under certain conditions, until 31 December 2021. After December 2021 wind-down entities will no longer be eligible for these operations.



1. the institution is subject to a supervisory standard comparable to EU/EEA supervision, providing that the applicable standards in that third-country are Basel III compliant;
2. the institution meets the requirements set out in the TARGET2 Guideline. These include providing a satisfactory country opinion to maintain direct access to TARGET2 settlement accounts.

The fulfilment of the operational requirements specified by the NCBs typically involves specific contractual arrangements with the counterparty, as well as access to a TARGET2 account to settle MPOs. Any EEA branch of a third-country credit institution may open an account with a Eurosystem NCB and thus access TARGET2 directly, as long as the branch provides a country opinion confirming that TARGET2 rules are enforceable in their jurisdiction. Such branches may also access TARGET2 indirectly, i.e. through an account they hold with a direct TARGET2 participant based in an EU/EEA country.

## 3 Eurosystem collateral framework

This section describes the main developments in the Eurosystem collateral framework<sup>18</sup>, in terms of eligible collateral and collateral mobilised for Eurosystem credit operations.<sup>19</sup> This includes changes in the eligibility criteria for marketable and non-marketable assets and changes in the relevant risk control measures which affect the availability and mobilisation of collateral.

Currently, the Eurosystem's collateral framework comprises both a general framework, reflected in the General Documentation (GD), and a temporary framework, reflected in the additional Guidelines<sup>20</sup> and national frameworks. The temporary framework comprises an additional set of specific measures that were introduced and amended at different stages of the financial crisis.

### 3.1 Changes in the collateral framework

#### Eligibility of unsecured bank bonds (UBBs)

One of the most prominent changes to the collateral framework over the review period relates to amendments to the eligibility criteria for unsecured bank bonds (UBBs). In October 2016 the Governing Council decided to temporarily maintain eligibility of certain UBBs while progress was being made towards defining a common EU approach to the bank creditor hierarchy. In December 2017 the Governing Council subsequently decided that UBBs subject to statutory, contractual or structural subordination would no longer be eligible.<sup>21</sup> At the same time, UBBs issued by agencies eligible for the public sector purchase programme (PSPP), as well as government-guaranteed bank bonds (GGBBs), were partially exempted from these changes. Unless they have been contractually or structurally subordinated, these bonds remain eligible if they were issued before 31 December 2018. Furthermore, UBBs issued by entities established outside the EU also became ineligible. This change in the geographical scope primarily affected entities in European Free Trade Association countries<sup>22</sup> which had been accepted as issuers and guarantors of UBBs under the old rules. In order to allow for a smooth transition to the new eligibility rules for UBBs, the old rules were maintained in parallel until the end of 2018.

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<sup>18</sup> For further details, see Bindseil, U. et al. (2017), "[The Eurosystem collateral framework explained](#)", *Occasional Paper Series*, No 189, ECB, Frankfurt am Main, May.

<sup>19</sup> According to Article 2(31) of the GD, Eurosystem credit operations mean liquidity-providing reverse transactions (i.e. liquidity-providing Eurosystem MPOs excluding foreign exchange swaps for monetary policy purposes and outright purchases) and intraday credit.

<sup>20</sup> Guideline ECB/2014/31, as amended.

<sup>21</sup> For further details, see European Central Bank (2017), "[Changes to collateral eligibility criteria of unsecured bank bonds](#)", press release, 14 December.

<sup>22</sup> Norway, Iceland and Liechtenstein.

## Interest rate structure and minimum

With regard to non-marketable assets, one of the most noteworthy changes concerned the requirements for the coupon interest rate structures of credit claims. These requirements were amended in the 2018 and 2019 GD updates so they would be better aligned with the respective rules for marketable assets. The new rules clarified how credit claims exhibiting negative cash flows should be treated, and specified which reference rates are eligible for credit claim coupons with a floating rate. These reference rates now comprise a specific set of established money market and maturity swap rates, as well as euro area government bond yields.<sup>23</sup> In addition to the clarification on eligible interest rate structures, a Eurosystem-wide minimum size threshold of €25,000 for the domestic mobilisation of credit claims was introduced in the latest GD update. The aim of this was to further align the eligibility treatment of credit claims, thereby promoting a level playing field across jurisdictions.<sup>24</sup>

## Further steps towards harmonising the general framework

In addition to the changed eligibility criteria for credit claims, the last GD<sup>25</sup> update contained several other amendments aimed at increasing transparency and further harmonising the monetary policy implementation framework.

First, the definition of agencies as issuers and guarantors of debt instruments was aligned with the list of agencies eligible for the PSPP. This harmonised list of agencies ensures that the definition of agencies as issuers of debt securities does not differ between the APP and the Eurosystem's credit operations.

Second, the loan-level data reporting requirements for ABSs were adjusted to reflect the new EU Securitisation Regulation's disclosure requirements which came into effect on 1 January 2019. In that context, the Eurosystem will move from its own designation process for loan-level data repositories to relying on the securitisation repositories registered by the European Securities and Markets Authority. These changes aim to support a single set of reporting standards for ABS loan-level data and promote efficiency and standardisation in the euro area securitisation market.<sup>26</sup>

Third, the methodology with which non-marketable assets are valued no longer allows theoretical prices to be assigned by the NCBs of the Eurosystem, i.e. the value of these assets can only be based on their outstanding amount. Finally, third-party rating tools are no longer accepted for credit assessments in the general framework owing to cost-benefit considerations.

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<sup>23</sup> Initially, only euro area government bond yields with a maturity of up to one year were eligible. This maturity requirement was removed as of 5 August 2019.

<sup>24</sup> Or any higher amount that may be laid down by the home NCB. For cross-border use, a minimum size threshold of €500,000 applies.

<sup>25</sup> For further details, see European Central Bank (2019), "[ECB amends monetary policy implementation guidelines](#)", press release, 13 May.

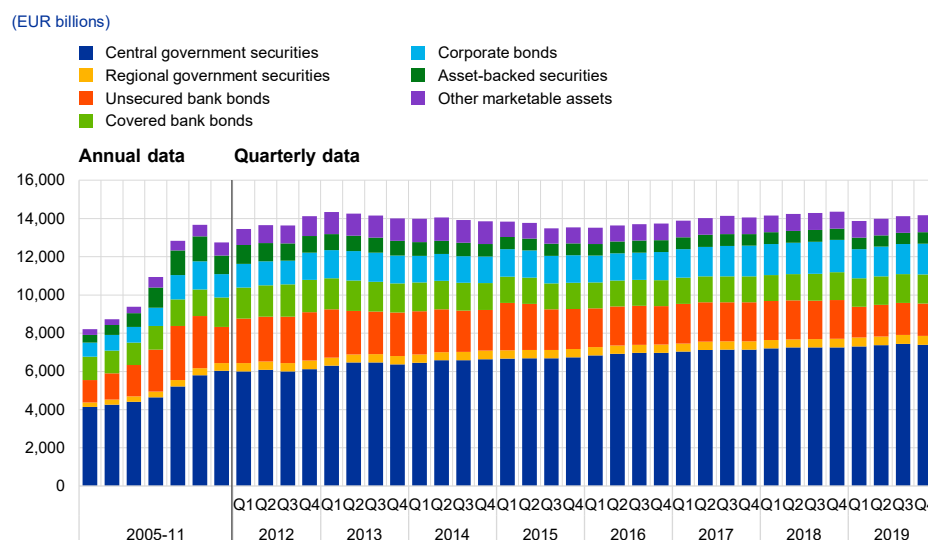
<sup>26</sup> For further details, see European Central Bank (2019), "[Transparency requirements of EU Securitisation Regulation to be incorporated into Eurosystem collateral framework](#)", press release, 22 March.

As of 1 February 2020 covered bonds must have an issue rating from an external credit assessment institution (ECAI) to be eligible for own use. This change was introduced in the latest GD update on 10 May 2019, although it only entered into force in February 2020.

## 3.2 Eligibility and mobilisation of collateral

The most noticeable change in the amount of eligible assets since 2017 reflected the changes in eligibility of UBBs. After the period in which the old rules were maintained in parallel ended in December 2018, the amount of eligible UBBs dropped by more than €400 billion to €1.68 trillion (-20%), and, accordingly, the share of UBBs among all eligible marketable collateral declined from 14.5% to 12.1% between the fourth quarter of 2017 and the fourth quarter of 2019 (see Chart 4). At the same time, the amount of eligible covered bonds increased by €171 billion to €1.5 trillion. As a consequence, the share of covered bonds in the universe of eligible marketable assets increased by more than one percentage point to 11.0%. Similarly, central government securities increased both in absolute terms (€247 billion) and as a share of eligible marketable collateral (from 50.8% to 52.8%). Overall, the amount of total eligible marketable collateral increased from €14.1 trillion to €14.2 trillion (0.8%) between the fourth quarter of 2017 and the fourth quarter of 2019. There are no statistics available for the amount of eligible non-marketable assets given that their eligibility is only noted upon mobilisation.

**Chart 4**  
Eligible marketable assets



Source: European Central Bank.

While the universe of eligible marketable assets has increased (see Chart 4), the amount of mobilised collateral has decreased over the past two years by €105 billion, or -6.4% (see Chart 5). The decline in mobilised collateral reflects a decrease in outstanding credit of a similar magnitude (-€110 billion), and was slightly more pronounced for marketable assets (-7.2%) than for non-marketable assets (-3.8%).

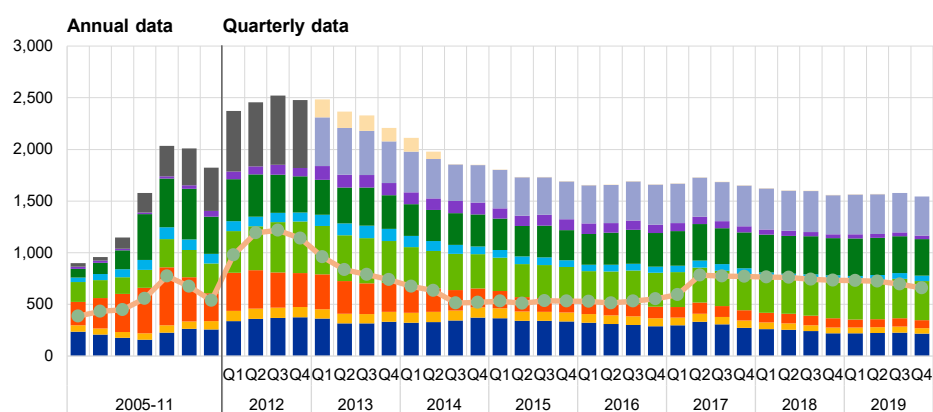
Among all asset classes, central government securities showed the largest decline in absolute terms, falling by €58 billion to €215 billion (-21%). The new eligibility criteria for UBBs, which reduced the eligible universe of these bonds by 17%, also resulted in a proportional decrease in mobilised UBBs of €21 billion to €77 billion. By contrast, counterparties mobilised €34 billion of additional covered bonds, thereby increasing their share in the pool of mobilised collateral by more than 3 percentage points to 24.2%.

### Chart 5

#### Use of collateral and outstanding credit

(EUR billions)

- Central government securities
- Regional government securities
- Uncovered bank bonds
- Covered bank bonds
- Corporate bonds
- Asset-backed securities
- Other marketable assets
- Non-marketable\*
- Credit claims\*
- Fixed term and cash deposits\*
- Average outstanding credit
- Peak outstanding credit

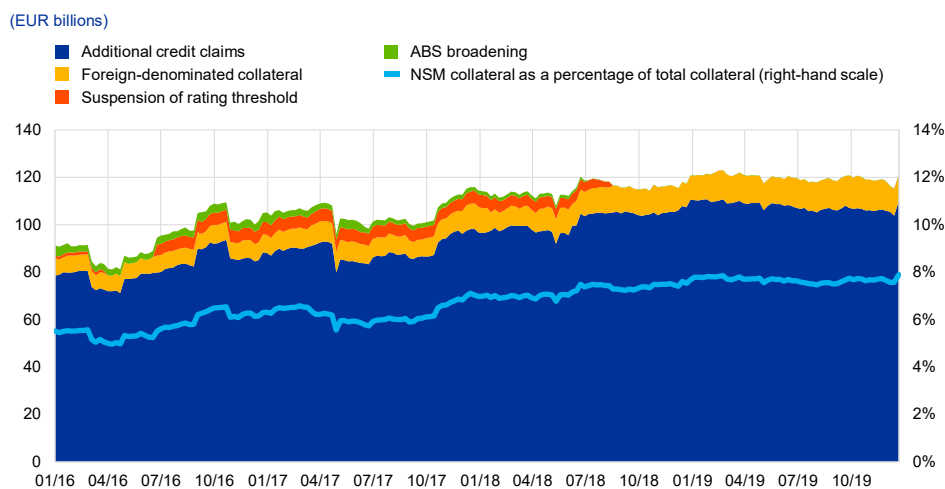


Source: European Central Bank.

Overall, the most significant mobilised asset classes remain covered bonds (24.2%), asset-backed securities (22.5%) and credit claims (24.1%). Central government securities constitute a relatively small fraction of mobilised collateral (13.7%), considering they account for more than half of all eligible collateral.

The share of assets mobilised under the temporary framework increased slightly by 0.9 percentage points to reach 9.7% between the fourth quarter of 2017 and the fourth quarter of 2019. More than 70% of these assets are additional credit claims (ACCs) which have increased by €11 billion (11.8%) over the past two years (see Chart 6). At the same time, the cessation of the sovereign waiver for Greece reduced collateral mobilised under the temporary framework by €5 billion.

**Chart 6**  
Use of temporarily eligible collateral

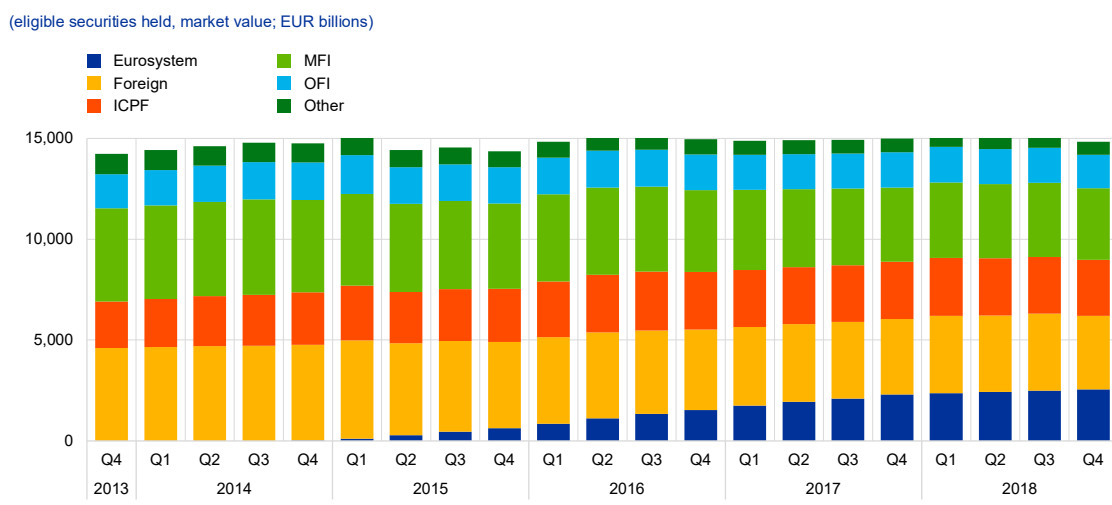


Source: European Central Bank.

**Box 2**  
The relationship between repo market turnover and mobilisation of collateral

Eligible Eurosystem counterparties can access monetary policy credit operations, provided they have mobilised sufficient adequate collateral with their respective national central bank (NCB). The amount of eligible marketable assets has remained fairly stable, at around €15 trillion, since the end of 2013. Since then, the implementation of the Eurosystem’s asset purchase programme (APP) has had a major impact on the breakdown of holdings of eligible assets by sector. At the end of 2018 the Eurosystem held around 18% of all eligible assets, while the shares of assets held by foreign entities and monetary and financial institutions (MFIs) had each decreased by 7 percentage points since 2013 to around a quarter of all eligible assets. In absolute terms, the availability of eligible assets in banks’ balance sheets decreased by around €1 trillion between 2013 and 2018 (Chart A).

**Chart A**  
Eligible marketable assets by holder sector



Sources: Securities Holdings Statistics, Eligible Assets database and Banque de France calculations.

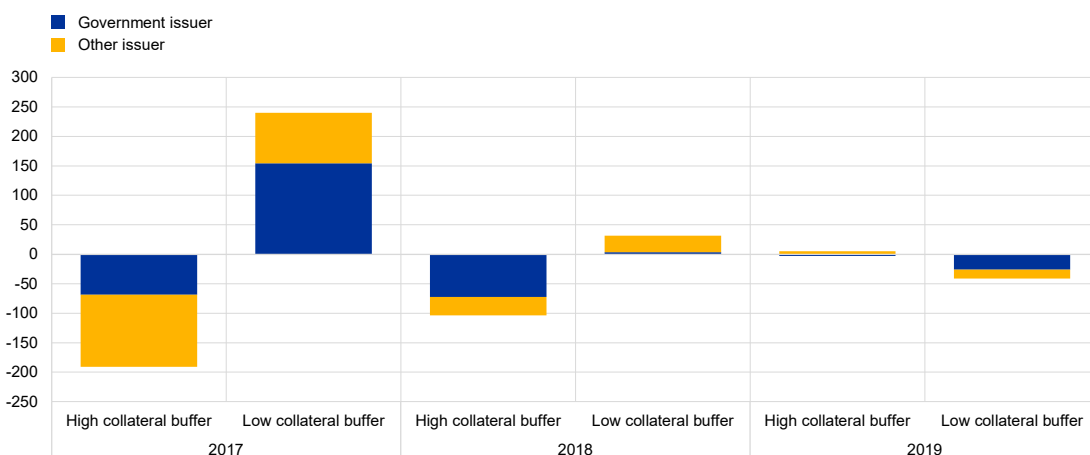
Despite the absorption of assets by the Eurosystem’s balance sheet, collateral buffers for Eurosystem monetary policy credit operations remained ample over the review period for Eurosystem-eligible counterparties as a whole. Indeed, counterparties typically mobilise more assets than are necessary to collateralise a given amount of liquidity – this ensures that collateral is readily available to obtain liquidity (including intraday credit) and caters for fluctuations in collateral valuations. However, in recent years the opportunity cost of keeping high-quality liquid assets (HQLAs) as collateral in Eurosystem accounts has increased. This box reviews the main drivers behind the changes in collateral mobilised with the Eurosystem over the period from January 2017 to December 2019.

The decrease in collateral mobilised with the Eurosystem is largely driven by the withdrawal of euro area government bonds<sup>27</sup> from collateral pools (see Chart 5 above in the main text). In aggregate terms, the collateral buffer has decreased since 2017, albeit with a slight pick-up in the second quarter of 2019, which may be mechanically attributed to the repayment of TLTRO II liquidity.<sup>28</sup> In net terms, the bulk of the decrease took place in 2018, when around 70% of the decrease in collateral buffers observed was explained by the withdrawal of government bonds from the accounts of counterparties with high collateral buffers.<sup>29</sup> This was not the case for some of the largest banks, however, which are active players in the repo market and still retained a sizeable collateral buffer with the Eurosystem during the review period. Interestingly, these dynamics changed in 2019, when counterparties with low collateral buffers also started to reduce their mobilisation of government bonds (see Chart B).

## Chart B

Changes in mobilisation of Eurosystem collateral by level of collateral buffer

(EUR billions)



Sources: ECB and ECB calculations.

Notes: High/low collateral buffer defines counterparties for which at least/less than two-thirds of the collateral mobilised with the Eurosystem is unused. Government issuer includes central and regional governments, as well as supranationals.

<sup>27</sup> In this analysis, we assign to the government category any issuer that can be assimilated to the public sector, notably central and regional governments, public agencies and supranational entities.

<sup>28</sup> In 2017 the net mobilisation of government bonds increased in correspondence with a TLTRO II operation, in particular with counterparties that had lower collateral buffers. Some of the impact on the nominal amounts was due to Italy’s sovereign credit rating downgrade.

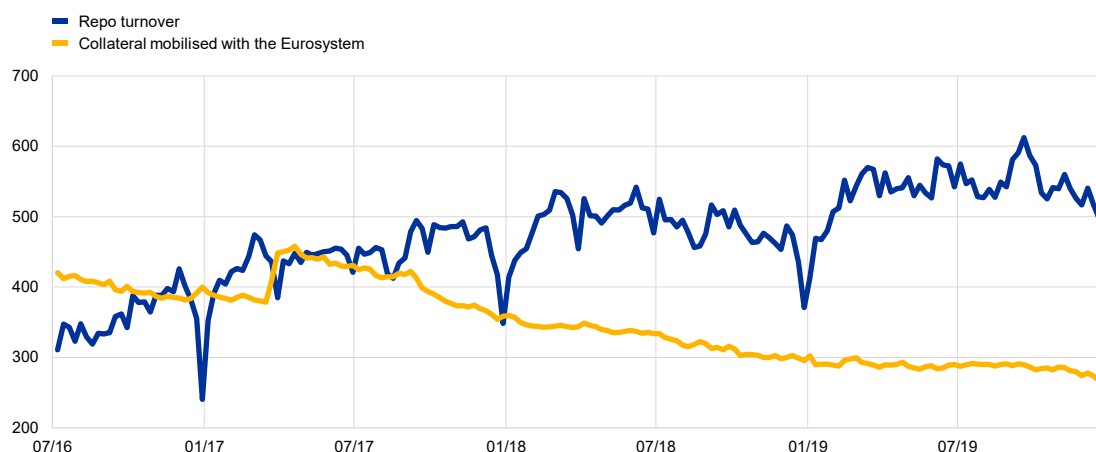
<sup>29</sup> Defined as counterparties for which at least two-thirds of the collateral mobilised with the Eurosystem is unused, i.e. it constitutes collateral buffer.

Why did counterparties withdraw government bonds from their Eurosystem collateral accounts? Euro area government bonds became increasingly “special”<sup>30</sup> in the repo market owing to higher demand linked to, among other things, their HQLA status, which is relevant for regulatory purposes.<sup>31</sup> Repo activity backed by government bonds, especially those used as collateral with the Eurosystem (see Chart C), started to increase in 2017, suggesting a more productive use of those assets in repo transactions or collateral swaps. At the same time, the Eurosystem continued to absorb government bonds on the central bank balance sheet via purchases in the APP, leading to an increase in the size of the central bank balance sheet. To ensure the availability of collateral in the market, the Eurosystem began lending the securities purchased under the APP through its securities lending facilities in April 2015<sup>32</sup>, thereby increasing the availability of HQLAs in the market.

### Chart C

#### Eurosystem collateral and repo market turnover

(EUR billions)



Sources: ECB, ECB calculations and MMSR.

Notes: The sample is limited only to government and supranational bonds that were mobilised as collateral with the Eurosystem and also used in the repo market at least once over the observed period. Repo turnover is calculated as a five-day moving average. Collateral mobilised represents the weekly nominal value outstanding of assets that have been mobilised with the Eurosystem.

The reduction in government bonds in Eurosystem collateral accounts was partially offset by the mobilisation of eligible assets with lower opportunity costs, in particular non-HQLAs including marketable (such as retained ABS and covered bonds) and non-marketable (most notably credit claims) assets (see Chart D). This substitution mainly stems from the difference between the set of eligible collateral in the context of Eurosystem MPOs and the definition of HQLAs for the liquidity coverage ratio (LCR). Moreover, the application of haircuts on Eurosystem collateral represents another incentive for counterparties to mobilise fewer government bonds, since the LCR does not require any haircuts on those securities. Theoretically, the increase in the unit cost of collateral at the Eurosystem owing to higher haircuts may lead a counterparty to employ these assets elsewhere, particularly when the assets trade as “special” collateral on the repo market, i.e. when there is strong, rising demand for a specific asset. However, the counterparty may have limited alternative collateral available, and may therefore opt to use these relatively expensive assets as collateral for the Eurosystem, despite the higher haircut.

<sup>30</sup> Special bonds trade at a premium relative to general collateral.

<sup>31</sup> See European Central Bank (2017), *Financial Stability Review*, box entitled “Recent developments in euro area repo markets, regulatory reforms and their impact on repo market functioning”, November.

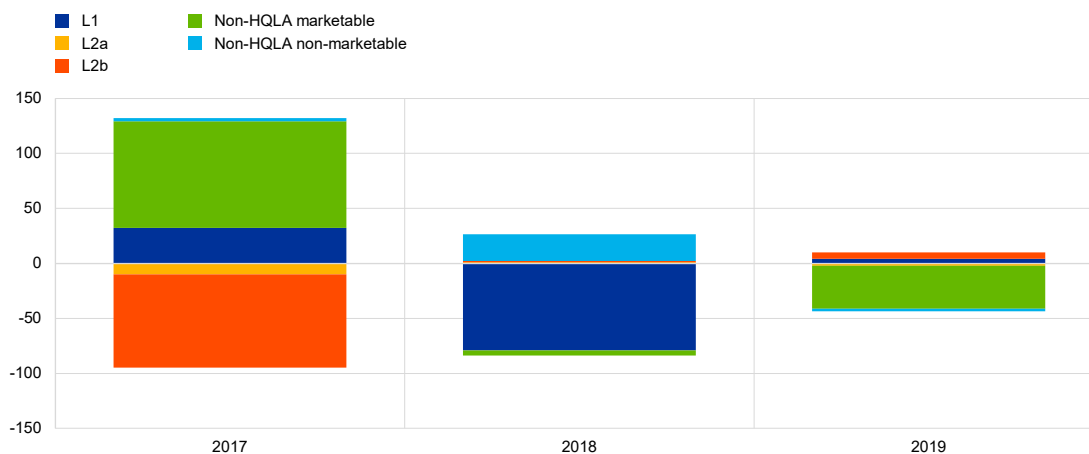
<sup>32</sup> As of December 2016 the Eurosystem also accepts cash as collateral when lending PSPP holdings.



## Chart D

### Change in mobilisation of Eurosystem collateral, by HQLA category

(EUR billions)



Sources: ECB and ECB calculations.

Note: Based on yearly averages and nominal amounts.

To give a specific example, this box considers the case of the credit rating downgrade of Italian sovereign bonds in January 2017, which implied a shift in the Eurosystem harmonised rating scale from credit quality step 2 to credit quality step 3<sup>33</sup>, corresponding to higher haircuts for this asset type.<sup>34</sup> The increased cost of collateral mobilisation with the Eurosystem and some degree of “specialness” of Italian government bonds could have led to the demobilisation of these assets in favour of less liquid assets. However, counterparties did not noticeably adapt their positions with regard to holdings of Italian government bonds, and some even mechanically increased their positions to counteract the lower valuation and the higher haircut applied, at least initially, thereby avoiding undercollateralisation. Some substitution of government bonds with other assets did take place, although this occurred well after the downgrade (see Chart E).<sup>35</sup> This episode confirms that it is difficult to model the relationship between Eurosystem collateral and the repo market, owing to heterogeneity in terms of banks’ balance sheets and collateral mobilisation strategies with the Eurosystem.

<sup>33</sup> The shift was due to the downgrade by DBRS of Italy’s sovereign credit rating from A (low) to BBB (high). Until then, DBRS had been the only accepted external credit assessment institution rating Italy in the “A” range – corresponding to credit quality step 2. The downgrade to the “BBB” range implied a shift to credit quality step 3 which, in turn, implied the application of more conservative haircuts.

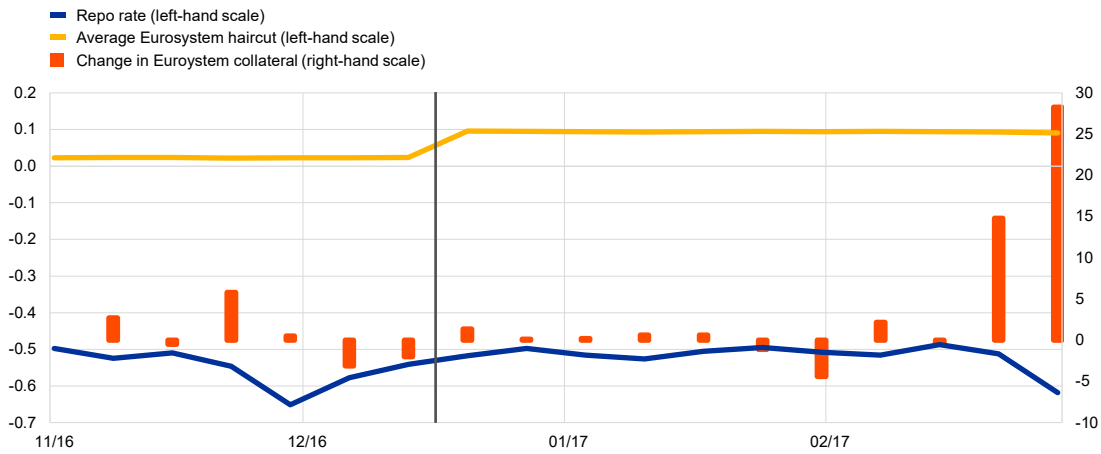
<sup>34</sup> Shift from a haircut of 0.5%-7% to 6%-16%, depending on the type of coupon and the residual maturity of the asset.

<sup>35</sup> The increased mobilisation of collateral towards the end of March 2017 was due to participation in a TLTRO II operation. The simultaneous decline in the repo rate reflects the usual quarter-end effects.

## Chart E

### Relationship between the repo rate and changes in Italian government bonds used as Eurosystem collateral

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



Sources: ECB, ECB calculations, MTS.

Notes: The repo rate is computed as the weighted average of the rates of repo spot-next transactions using specific ISINs (Italian government bonds) – the same ISINs mobilised as collateral with the Eurosystem – during the review period. The haircut is computed as the weighted average of the haircuts applied to the selected bonds (the weight is the amount of collateral before the application of the haircut). Haircut volatility is generally low, with major changes typically due to events (e.g. up/downgrades) or the recalibration of the haircut schedule.

## 4 Minimum reserve requirements

Euro area credit institutions or banks are required to hold a certain amount of funds as reserves (minimum reserves) in their current accounts at their respective NCBs. A bank's minimum reserve requirement is averaged over a six or seven-week maintenance period. The level is calculated on the basis of the bank's balance sheet prior to the start of the maintenance period, and the credit institution must ensure that it meets this level, on average, over the relevant maintenance period. The reserve requirement for each bank is calculated by multiplying specific short-term liabilities by 1%, the reserve ratio.<sup>36</sup> Overnight deposits, deposits issued with an original maturity of up to two years, and debt securities issued with an original maturity of up to two years are classified as short-term debt liabilities.

The Eurosystem's minimum reserve system has two purposes in terms of monetary policy implementation. The first of these is to help stabilise the interest rate banks charge each other for short-term funds, and is achieved using the averaging mechanism for fulfilling requirements. This functions like a valve, allowing banks to react to short-term changes in the money markets, where banks lend to each other, by adding or withdrawing funds from their reserves at the central bank. The second, traditional, 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. Given the structural surplus of liquidity that has prevailed in the system since 2012, both purposes have become less relevant in recent years.

From January 2018 to the end of 2019 reserve requirements continued to show a slight gradual upward trend. In the review period, minimum reserve requirements gradually increased, rising from €123.8 billion in January 2018 to €134.1 billion in December 2019 (see Chart 7), and reflecting an increase in banks' liabilities subject to the reserve requirements. In particular, overnight deposits and deposits issued with an original agreed maturity of up to two years increased by €1.1 trillion, while debt securities issued with an original maturity of up to two years remained unchanged.<sup>37</sup>

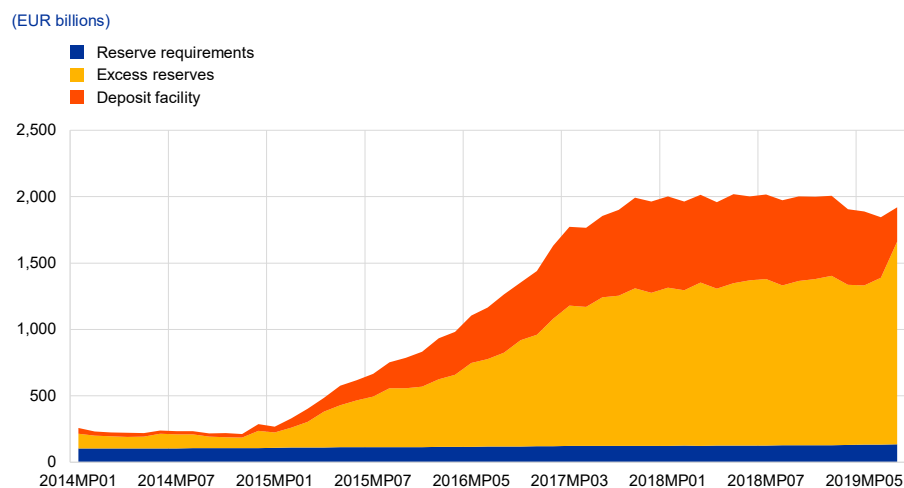
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<sup>36</sup> In January 2012 the reserve ratio was lowered from 2% to 1%.

<sup>37</sup> For further details on 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 distribution of excess liquidity between current account holdings in excess of reserve requirements and deposit facility holdings



Source: ECB.  
Note: Average amount per maintenance period.

The reserve requirement trend does not correlate with excess liquidity, which remained stable overall. The structural liquidity surplus comprises current account holdings in excess of reserve requirements and deposit facility holdings – both holdings together constitute the total level of excess liquidity in the banking system in the euro area. Excess liquidity remained relatively stable over the review period at €1.8 trillion, or a multiple of 13.3 times the reserve requirements.

### Box 3

#### Two-tier system for remunerating excess reserve holdings

In September 2019 the Governing Council decided to introduce a two-tier system for remunerating the excess reserve holdings of banks (i.e. reserve holdings in excess of minimum reserve requirements). The two-tier system exempts a part of credit institutions' excess reserve holdings from negative remuneration at the rate applicable on the deposit facility. Specifically, the interest rate for exempt excess reserve holdings is currently set at 0%, instead of at the rate on the deposit facility, which was -0.5% at the end of the review period. This decision aims to support the bank-based transmission of monetary policy, while preserving the positive contribution of negative rates to the accommodative monetary policy stance within the euro area.<sup>38</sup>

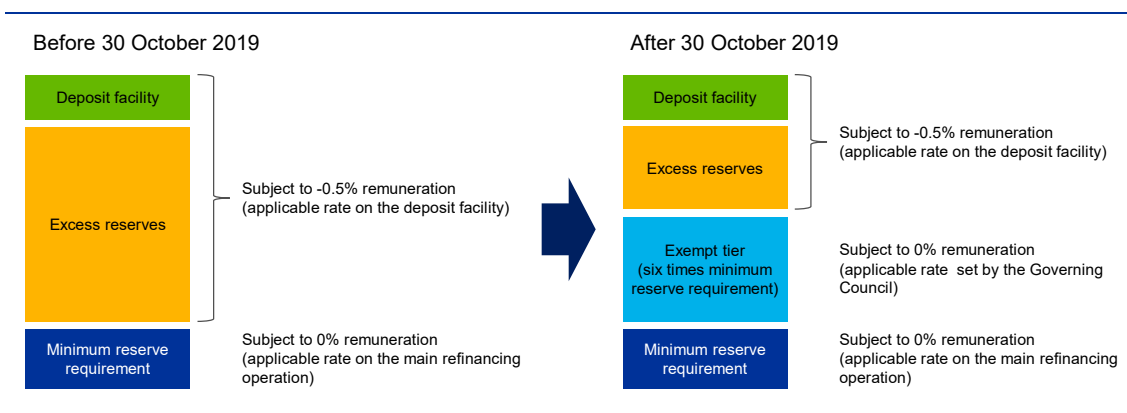
With regard to the amount of the exemption, the Governing Council set the exempt tier at six times a credit institution's minimum reserve requirement (see Figure A). This multiplier level was chosen to support the pass-through of the negative rate on the deposit facility to bank lending rates, while ensuring that euro short-term money market rates remained close to this policy rate. The calibration meant that, in practice, at the start of the scheme about €800 billion of excess liquidity holdings were exempt, while about €1 trillion remained non-exempt. The multiplier and the remuneration rate on exempt excess reserves can be changed by the Governing Council over time, in line with changing

<sup>38</sup> European Central Bank (2019), "ECB introduces two-tier system for remunerating excess liquidity holdings", press release, 12 September.

levels of excess liquidity, to ensure that banks continue to extend loans to their customers at conditions which fully reflect the desired monetary policy stance. With respect to the distribution of the exemption across banks, the use of minimum reserve requirements for the calculation of the exemption tier ensures that the two-tier system focuses on credit institutions or banks whose business models rely on deposit funding, because the reserve requirements are mainly based on bank customers' deposits. Banks with deposit funding are, typically, the main lenders to the real economy in the euro area. In practice, the two-tier system applies to the average end-of-calendar-day excess reserves held in current accounts (also referred to as reserve accounts) with the Eurosystem over the maintenance period, although it does not apply to excess liquidity held at the ECB's deposit facility. The two-tier system came into effect on 30 October 2019.

## Figure A

How does the two-tier system work?



Source: ECB.

During the first months that the two-tier system was in place, net borrowing via the money market played an important role in filling the exempt tier. As excess liquidity holdings are concentrated in the euro area, the introduction of the system meant that banks with excess liquidity holdings below their exempt tier (i.e. with unused exempt tier) needed to accumulate excess reserves to benefit from the system.<sup>39</sup> To this end, banks can adopt various strategies, such as relying on intragroup transfers, substituting certain assets for central bank reserve holdings, or adjusting their funding to attract net reserve inflows, for example by adjusting their money market activity. The evidence suggests that all these strategies played a role and that the money market was an important channel in the initial period of the system, with higher transaction volumes in certain segments at times. The redistribution of central bank reserves across euro area banks also involved cross-border flows that did not appear to be greatly hindered by the remaining market segmentation (via the repo and foreign exchange (FX) market segments in particular).

The introduction of the two-tier system only marginally affected money market rates, which generally remained well aligned with the rate on the deposit facility. After the implementation of the two-tier system, the €STR, which captures unsecured overnight wholesale borrowing conditions for banks, remained close to its average level calculated over the month of October 2019.<sup>40</sup> As the Euro Overnight Index Average (EONIA had equalled the €STR plus 8.5 basis points since 1 October 2019,

<sup>39</sup> For evidence of the distribution of excess liquidity in the euro area see Section 8.3 of this article and Baldo, L. et al. (2017), "The distribution of excess liquidity in the euro area", *Occasional Paper Series*, No 200, ECB, Frankfurt am Main, November.

<sup>40</sup> See Box 1 for more details on reference rates for money markets.

and overnight indexed swaps (OIS) are largely based on the EONIA or the €STR, the transmission of ECB policy rates to OIS rates was unaffected across maturities. Secured rates temporarily increased by up to 6 to 8 basis points for repo against collateral from countries like Italy and Spain, in order to raise cash to fill the exempt tier in the days following the introduction of the two-tier system, although they swiftly reverted to near the levels observed before the system had been implemented. Year-end trading patterns were in line with previous year-ends.

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## 5 Open market operations

This section describes the main developments with regard to the provision of euro and U.S. dollar funding to Eurosystem eligible counterparties against eligible assets as collateral for Eurosystem monetary policy operations (MPOs). It covers participation in all monetary policy operations conducted as tenders in both euro and foreign currency from the first quarter of 2018 to the second quarter of 2019. MPOs conducted as outright asset purchases (i.e. the APP) are covered in Section 7.

On 7 March 2019 the Governing Council decided to launch a new series of targeted longer-term refinancing operations (TLTRO III). This third set of TLTROs, which followed the first series announced in 2014 and the second series announced in 2016, consists of seven operations to be conducted between September 2019 and March 2021.<sup>41</sup>

In the review period, the Governing Council also decided to extend the fixed-rate tender procedure with full allotment (FRFA) for Eurosystem MPOs denominated in euro. On 7 March 2019 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 reserve maintenance period starting in March 2021.

As a result, four types of MPOs were offered to euro area banks in the review period: (i) the weekly main refinancing operations (MROs) providing funds in euro for one week; (ii) the monthly longer-term refinancing operations (3-month LTROs) providing funds in euro for three months; (iii) the quarterly TLTROs providing funds in euro for three years with quarterly early repayment options; and (iv) the weekly non-euro operations, providing US dollar funding for one week against eligible assets, as collateral for Eurosystem MPOs.

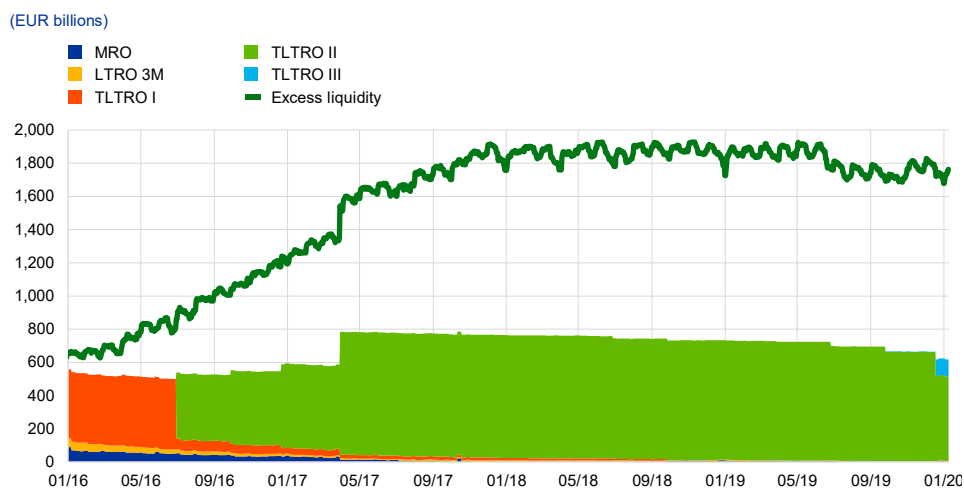
### 5.1 Euro area monetary policy operations

Recourse to Eurosystem funding by the banking system at the end of the fourth quarter of 2019 totalled €624 billion, a decline of 18% from €764 billion in the first quarter of 2018. The provision of regular liquidity through MROs and 3-month LTROs has continued to be very limited, while the outstanding amount of TLTROs has also decreased over the past two years (see Chart 8).

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<sup>41</sup> European Central Bank (2019), “[Monetary policy decisions](#)”, press release, 7 March; European Central Bank (2019), “[ECB announces details of new targeted longer-term refinancing operations \(TLTRO -III\)](#)”, press release, 6 June.

**Chart 8**  
Participation in Eurosystem MPOs



Source: ECB.

Regular liquidity-providing operations (MROs and 3-month LTROs) represent only a small fraction of total Eurosystem funding. In the review period, the average outstanding volumes of MROs and 3-month LTROs stood at only €4.0 billion and €4.9 billion respectively. Given that the total average outstanding amount of Eurosystem funding was €721 billion in the review period, these operations represented only 1.2% of overall funding. The limited use of these operations was not only due to the abundant liquidity injected through the TLTROs and the APP, but also to the historically low levels of money market rates. Market funding for 1-week and 3-month maturities moved close to the rate on the deposit facility (-0.5%)<sup>42</sup>, which was more attractive than the 0% charged by the Eurosystem for the regular MROs and the 3-month LTROs.

Small banks are the main participants in regular MROs and 3-months LTROs, with the main bidders located in Germany, Greece, Italy and Austria (see Chart 9). This factor suggests that, despite their cost, MROs and 3-month LTROs remain important instruments for small banks to manage their liquidity in a flexible manner, as such banks have more difficulty accessing alternative market funding. Recourse to MROs is slightly higher on balance sheet reporting dates (at month and quarter-ends), illustrating how they are used to comply with liquidity regulatory requirements, such as the liquidity coverage ratio (LCR), or in collateral transformation.<sup>43</sup> However, calendar effects have become milder over time owing to the high level of excess liquidity in the banking system.

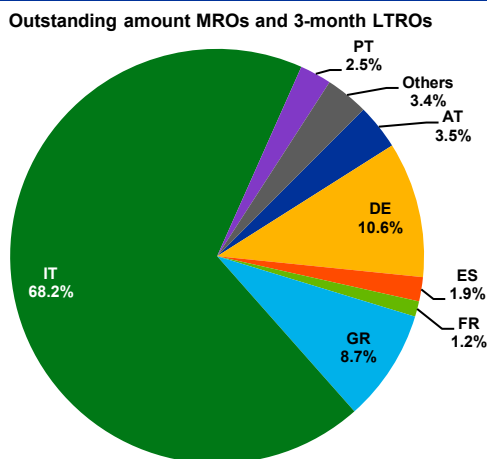
<sup>42</sup> Until September 2019 the rate on the deposit facility was -0.40%.

<sup>43</sup> The Eurosystem monetary policy implementation framework allows banks to borrow central bank liquidity, classified as HQLAs, by pledging non-HQLA collateral (e.g. loans) or assets with a lower "marketability" (e.g. for small banks, refinancing ABSs in the market is more costly).



### Chart 9

Share of average outstanding amount per maintenance period over the reference period in the Eurosystem.



Source: ECB.

Non-standard targeted liquidity-providing operations (TLTRO II and TLTRO III) continue to account for around 98% of total Eurosystem funding, given that their price is competitive compared with alternative market funding. TLTROs offer attractive long-term funding conditions to banks to further ease private sector credit conditions and stimulate bank lending to the real economy. They are defined as “targeted” as both the amount that banks can borrow and the borrowing rate are linked to their loans to non-financial corporations and households (excluding loans for house purchases). The TLTRO II, conducted in 2016 and 2017, offered four-year funding and reached a take-up of €740 billion. While the price was linked to banks’ lending performance, most of the funding (91%) was provided at the rate on the deposit facility, since most of the banks met their lending targets.

In 2019 a new series (TLTRO III) of three-year TLTROs was launched in seven quarterly operations.

On 12 September 2019 the Governing Council modified some of the key parameters of the TLTRO III programme, turning its original backstop character into a stimulus measure supporting the monetary policy stance. First, in terms of the pricing of the TLTRO III programme, the previously announced 10 basis point spread above the average MRO rate and, for counterparties exceeding their benchmark, above the average interest rate on the deposit facility, would no longer be applied. Second, the maturity of TLTRO III operations was extended from two to three years, in order to better align with that of bank loans used to finance investment projects. Third, following the extension of the maturity of TLTRO III operations from two to three years, counterparties have a voluntary repayment option at a quarterly frequency, starting two years after the settlement of each operation. Finally, to facilitate a greater borrowing allowance, this series allows for self-securitised eligible loans to be incorporated into the calculations. These changes were intended to preserve favourable bank lending conditions, ensure the smooth functioning of the transmission

mechanism and further support the accommodative stance of monetary policy (Table 1).<sup>44</sup>

**Table 1**  
TLTRO III parameters

	TLTRO II	TLTRO III
<b>Operations</b>	4 quarterly operations starting from June 2016 to March 2017	7 quarterly operations starting from September 2019 to March 2021
<b>Maturity</b>	4 years	3 years
<b>Eligible loans</b>	Loans to euro area NFCs and households excluding loans for house purchases	
<b>Participation</b>	Group participation possible	
<b>Allowance</b>	30% of the eligible loans	
<b>Bid limit per operation</b>	Allowance less the first two TLTRO I operations outstanding less bids in previous TLTRO II operations	Allowance less TLTRO II outstanding Maximum 1/3 allowance per operation
<b>Interest rate</b>	Between MRO rate and DFR rate	Between indexed MRO rate and indexed DFR
<b>Incentive</b>	Rate down to DFR if benchmark beaten (2-year lending growth of at least 2.5%)	
<b>Benchmark net lending (BNL)</b>	Eligible net lending in the 12-month period to 31 January 2016 (TLTRO II) / 31 March 2019 (TLTRO III):	
	1. positive net lending: BNL= 0	
	2. negative net lending: BNL = eligible net lending in that period	
<b>Voluntary repayment</b>	After two years for each operation, at a quarterly frequency	

Source: ECB.

Note: Changes compared with the TLTRO II are shown in red.

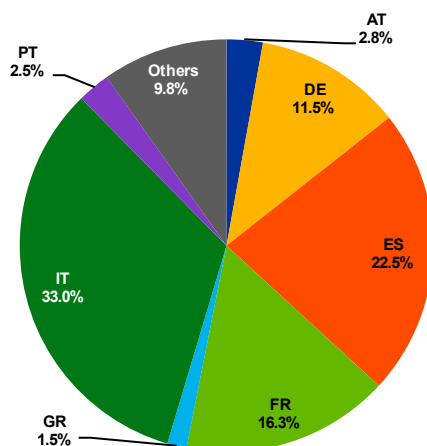
Banks from Italy and Spain have been the main participants in TLTROs. Out of a total TLTRO II allowance of €1.7 trillion, €740 billion was initially taken up by 772 banks, with €511 billion currently still outstanding.<sup>45</sup> There was significant take-up by large banks in Spain, France and Italy, in addition to take-up by multiple small participants in Germany and Italy. The TLTRO II quarterly early repayments coincided with the value date for each of the seven TLTRO III operations, which facilitated the rollover of TLTRO borrowings. In the first two operations of TLTRO III, conducted in September and December 2019, take-up reached €101 billion by 145 banks from 16 jurisdictions. As under TLTRO II, Italian and Spanish counterparties were the main participants, followed by large French banks (see Chart 10). At the end of 2019 repayments of the TLTRO II (€229 billion) were larger than the take-up of the first two operations of TLTRO III (€101 billion), thus resulting in a reduction in the overall outstanding amounts in those operations.

<sup>44</sup> European Central Bank (2019), “Monetary policy decisions”, press release, 7 March.

<sup>45</sup> As a result of restructuring, the number of TLTRO II participants fell to 755.

**Chart 10**

Share of average outstanding amount for all TLTROs over the review period in the Eurosystem



Source: ECB.

## 5.2 Foreign currency monetary policy operations

Since the start of the financial crisis in 2007 the Eurosystem has engaged in foreign currency MPOs with a number of major central banks. In 2011 the Bank of England, the Bank of Canada, the Bank of Japan, the Federal Reserve System, the Swiss National Bank and the ECB established a network of bilateral swap lines to allow each central bank to provide foreign currency to domestic counterparties, as a backstop facility to provide foreign currency to local counterparties should the need arise. In October 2013 the temporary swap lines were turned into a network of standing swap agreements, in recognition of the fact that their existence had helped to ease strains in financial markets.<sup>46</sup> To date, the use of the swap lines has been limited in the case of the ECB to the provision of US dollar and Swiss franc liquidity to Eurosystem banks, and only US dollar operations are still offered on a weekly basis. In addition, in March 2019 the Bank of England and the ECB agreed to activate the standing swap line through which the Bank of England offers euro liquidity-providing operations to UK banks.

Systematic use of the swap arrangements is generally not expected when financial markets are not under stress and wholesale funding markets for foreign currencies are accessible. Thus, the price of the US dollar operation is, for example, set at a premium to the US dollar OIS rate to reflect the fact that the operation is a prudent liquidity backstop facility.<sup>47</sup> If funding market conditions are stressed and other sources of liquidity become scarce, using the swap line becomes more attractive. The US dollar

<sup>46</sup> A detailed account of the Eurosystem experience with central bank swaps that provide liquidity in foreign currency and of the way in which operations provide foreign currency work and their effectiveness, is available at: European Central Bank (2014), “[Experience with Foreign currency liquidity-providing central bank swaps](#)”, *Monthly Bulletin*, August.

<sup>47</sup> This premium was 50 basis points during the review period. See European Central Bank (2011), “[Coordinated central bank action to address pressures in global money markets](#)”, press release, 30 November.

operations continue to serve as a prudent and effective liquidity backstop, as illustrated by the 2018 and 2019 year-end episode of increased US dollar funding costs.

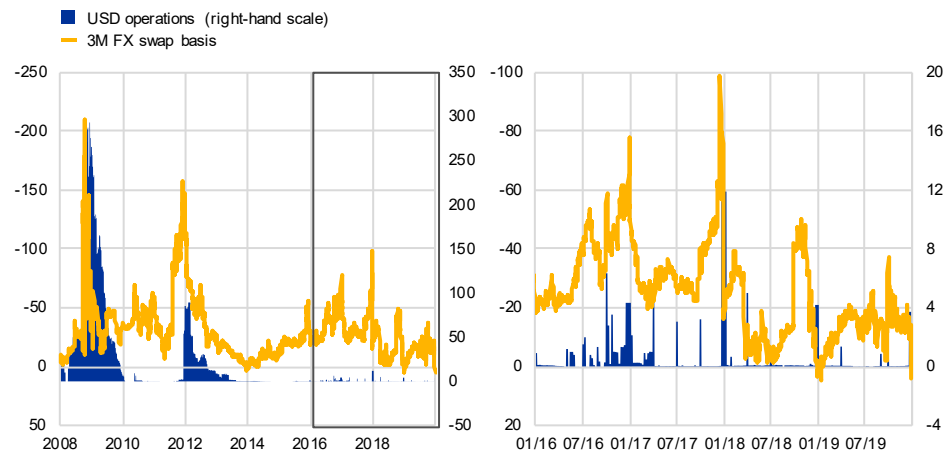
Participation in the Eurosystem’s one-week US dollar operations remains limited, as euro area banks have taken steps to address the vulnerabilities of their US dollar funding sources since 2012. Usage continues to be concentrated over quarter and year-ends, in line with regulatory changes that have made banks more reluctant to lend their US dollar holdings, particularly over key reporting dates. This has pushed up the cost of US dollar funding on these dates. During the review period participation in US dollar operations was limited to a total of 34 credit institutions from ten jurisdictions.

Participation in operations covering quarter and year-ends over the review period averaged USD 2.1 billion from six bidders, compared with an average of USD 80 million from two bidders in intraquarter operations. Demand for ECB US dollar operations is higher on reporting days, especially if the cost of US dollar funding in the FX swap market fluctuates and becomes less attractive relative to the operation. However, this pattern was less prominent in 2018-19 than in 2016-17 (see Chart 11). The lower participation observed at reporting dates over the past two years was probably driven by pre-funding activities to cover reporting dates, which has helped ease US dollar funding premia.

### Chart 11

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

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



Source: ECB.

On 5 March 2019 the Eurosystem announced it was prepared to provide pound sterling liquidity to euro area counterparties.<sup>48</sup> As was the case for US dollar operations, the provision of pound sterling would take place based on the standing swap line agreement with the Bank of England, although no such operations have been activated by the ECB thus far. At the same time, the Bank of England decided to

<sup>48</sup> See European Central Bank (2019), “[ECB and Bank of England activate currency swap arrangement for possible provision of euro to UK banks](#)”, press release, 5 March.

offer euro liquidity to UK banks in weekly operations on the basis of the standing swap line with the ECB, as a prudent and precautionary step to provide additional flexibility and liquidity insurance.<sup>49</sup> Since the announcement, UK banks have participated in just six euro-providing operations, with amounts ranging between €5 million and €10 million each.

## Box 4

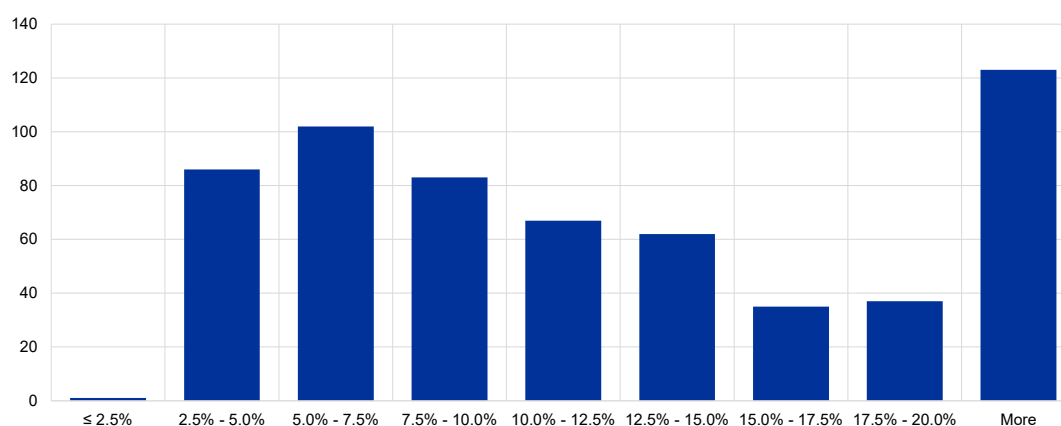
### Assessment of the contribution of TLTRO II to monetary policy transmission

As part of its unconventional or non-standard measures, the Eurosystem announced a second series of targeted longer-term refinancing operations (TLTRO II) in 2016.<sup>50</sup> The objective of TLTRO II was to stimulate bank lending to the real economy.<sup>51</sup> TLTRO II offered attractive funding to banks for periods of up to four years, and created an incentive for credit easing, since the interest rate was linked to a participant's net lending. An increase in net lending over a specific period, compared with a participant-specific benchmark, resulted in the ECB charging a lower interest rate.<sup>52</sup>

## Chart A

### Benchmark deviations for participants receiving the rate on the deposit facility

(number of participants)



Notes: This figure shows the benchmark deviations for participants receiving the interest rate on the central bank's deposit facility (i.e. participants that deviated by more than 2.5% from the TLTRO II benchmark). In total, 596 participants beat the benchmark.

The TLTRO II benchmark was based on a participant's net lending to non-financial corporates and households (with the exception of loans for house purchases) in the first reference period (from February 2015 to January 2016) and the outstanding loans held by a participant on 31 January 2016. The deviation of a participant's amount of outstanding loans from the benchmark at the end of the second reference period (from February 2016 to January 2018) determined the interest rate. The resulting interest rate ranged between the rate on the main refinancing operations (MROs and the

<sup>49</sup> Bank of England (2019), "Further enhancements to the Bank of England's liquidity insurance facilities", press release, 5 March.

<sup>50</sup> This box is based on an analysis by Bats and Hudepohl (2019), "Impact of targeted credit easing by the ECB: bank-level evidence", *Working Papers Series*, No 631, De Nederlandsche Bank, 16 April.

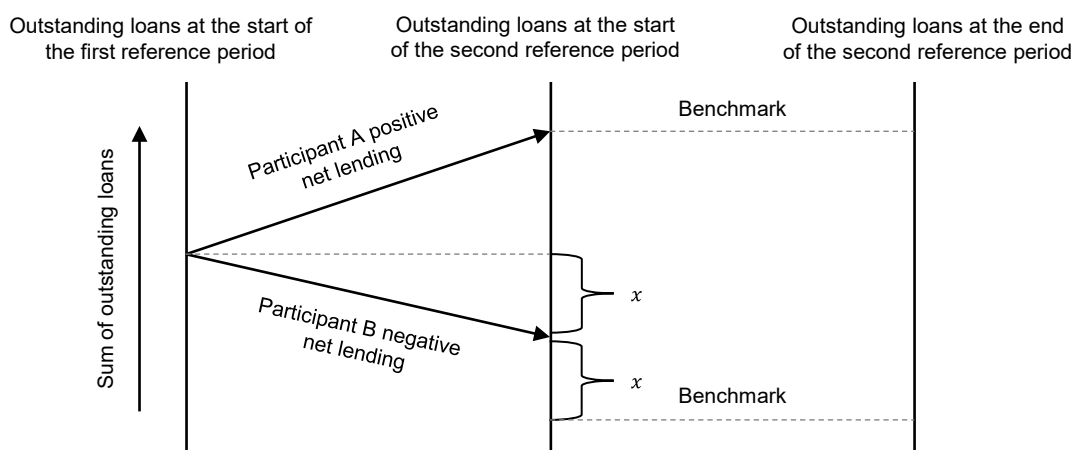
<sup>51</sup> European Central Bank (2016), "Monetary policy decisions", press release, 10 March.

<sup>52</sup> For a more detailed explanation of the calculation of the TLTRO II benchmark, please see the Appendix in Bats and Hudepohl (2019), "Impact of targeted credit easing by the ECB: bank-level evidence", *Working Papers Series*, No 631, De Nederlandsche Bank, 16 April.

rate on the deposit facility (DF), 0.00% and -0.40% respectively at the start of TLTRO II. If the positive deviation (reflecting positive net lending) from the benchmark exceeded 2.5%, the applicable TLTRO II interest rate was equal to the interest rate on the deposit facility. Chart A shows that deviations from the benchmark tended to be much larger than the 2.5% required for participants to receive this rate. This suggests that the benchmark was not a major hurdle for banks seeking to receive the interest rate on the deposit facility.

The restrictiveness of the benchmark differed between institutions, depending on whether they showed positive or negative net lending in the lead up to TLTRO II. To receive the same interest rate discount, some banks were required to increase their net lending by more than others relative to their outstanding loans. The value of the benchmark was equal to the sum of outstanding loans in January 2016 for participants whose net lending was positive or zero, and was equal to the sum of outstanding loans in January 2016 and the net lending amount in the first reference period for participants whose net lending was negative (see Figure A).

**Figure A**  
Participant-specific lending benchmark of TLTRO II



Notes: This figure illustrates the TLTRO II benchmark methodology for participants showing positive and negative net lending in the first reference period. The benchmark is based on a participant's net lending to non-financial corporates and households in the first reference period (from February 2015 to January 2016). The value of the benchmark equals outstanding loans in January 2016 plus the net lending amount for both groups.

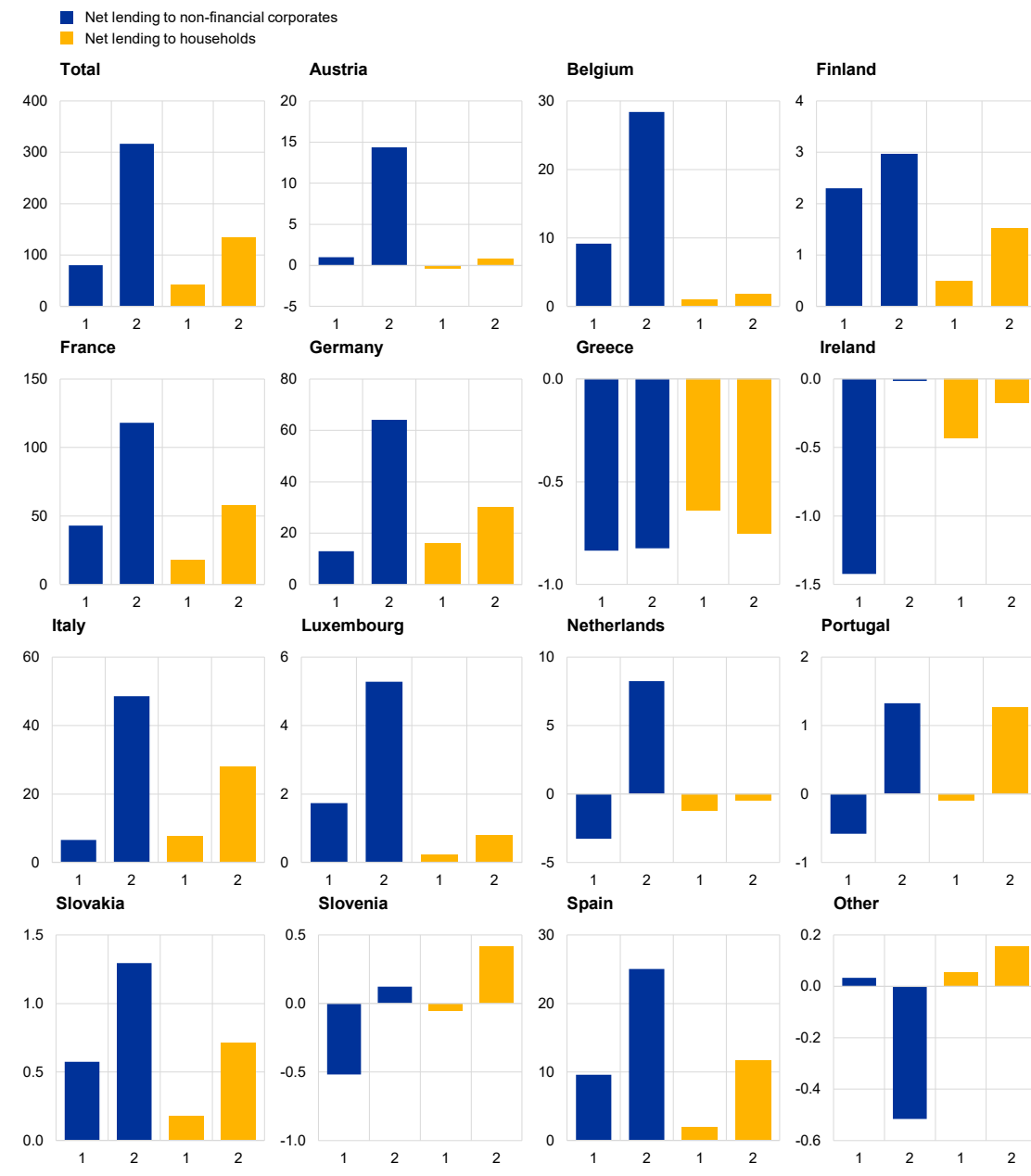
A total of 755 banks participated in TLTRO II, borrowing almost €740 billion. Participation was highly concentrated, as the 50 largest banks (in terms of outstanding loans) made up 57% of participants' outstanding loans in January 2016.

Chart B shows that the net lending of bank credit increased over the course of TLTRO II. The chart shows the sum of all participants' net lending to non-financial corporates and households in the first and second reference periods by country, as well as the sum of net lending for the sample as a whole. Net lending to non-financial corporates and households increased in most countries, with two exceptions. First, the sum of net lending to non-financial corporates decreased in some or all of the countries in the "Other" category and, second, net lending to households decreased in Greece. Of all participants, 530 banks experienced positive net lending in the first reference period and, therefore, faced a more restrictive benchmark, compared with the 225 banks that experienced negative net lending in the first reference period.

## Chart B

### Net lending volumes by country over the review period

(EUR billions; reference period)



Source: De Nederlandsche Bank calculations.

Notes: This figure shows changes in the sum of all participants' net lending to non-financial corporates and households by country, as well as the sum of net lending across the sample as a whole. Due to data confidentiality, the sum of net lending for participants in Estonia, Cyprus, Latvia, Lithuania and Malta are plotted under "Other".

Regression estimations suggest that part of the positive evolution in net lending can be explained by the restrictiveness of the TLTRO II interest rate benchmark.<sup>53</sup> The regressions control for macroeconomic and financial developments, as well as bank-specific trend growth in credit supply. The estimations show that a more restrictive benchmark resulted in additional total net lending to

<sup>53</sup> For more details, see the analysis by Bats and Hudepohl (2019): "Impact of targeted credit easing by the ECB: bank-level evidence", *Working Papers Series*, No 631, De Nederlandsche Bank, 16 April.

non-financial corporations (Table A). Banks that faced the most restrictive benchmark increased their total net lending relative to outstanding loans by 24 percentage points. Despite the positive evolution of net lending to households (as Chart B shows), this was not significantly related to the restrictiveness of the benchmark.

**Table A**

TLTRO II benchmark restrictiveness and bank credit

Borrower group	Non-financial corporations	Households
<b>Benchmark</b>	0.241***	-0.318
<b>Restrictiveness</b>	(0.082)	(0.198)

Notes: The estimations include bank fixed effects. Other control variables included are: the quarterly average of GDP growth, the monthly average of total industrial production index growth (excluding construction, seasonally adjusted), the monthly average of an economic sentiment indicator, and the monthly average for HICP inflation. The results are robust to controlling for negative and positive linear time trends. Significance levels: \* p<0.1, \*\* p<0.05, \*\*\* p<0.01.



## 6 Recourse to standing facilities

Standing facilities allow Eurosystem-eligible counterparties to borrow from, or deposit overnight liquidity at, their NCBs, on their own initiative. The applicable interest rates on these facilities are normally unfavourable in comparison with money market rates and represent the monetary policy implementation “corridor”. The Eurosystem offers two standing facilities: the deposit facility (DF) and the marginal lending facility (MLF). This section discusses these facilities and their usage during the review period.

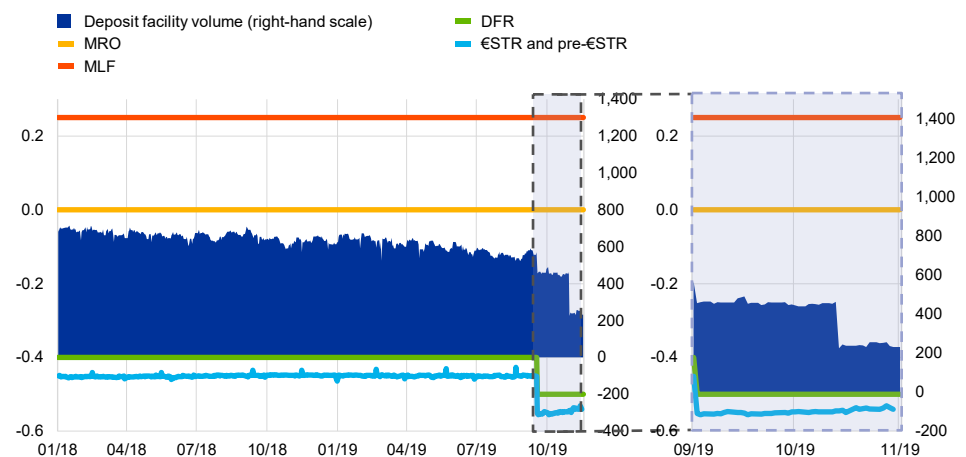
### 6.1 Deposit facility

On a daily basis, Eurosystem-eligible counterparties can place their excess liquidity in their current (or reserve) accounts at the corresponding NCB or in the overnight DF (see Chart 12). Funds deposited in current accounts in excess of the counterparties’ minimum reserve requirements are considered to be excess reserves and are remunerated at 0% or the rate on the DF, whichever is lower. Thus, in a negative interest rate environment, and before the introduction of the two-tier system, counterparties received the same remuneration for excess liquidity whether it was held in their current accounts or in the DF. Nevertheless, counterparties displayed a preference for placing their excess liquidity in current accounts (68% of excess liquidity) rather than in the DF (32%) in 2018 and 2019, as illustrated in Chart 13.

**Chart 12**

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

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

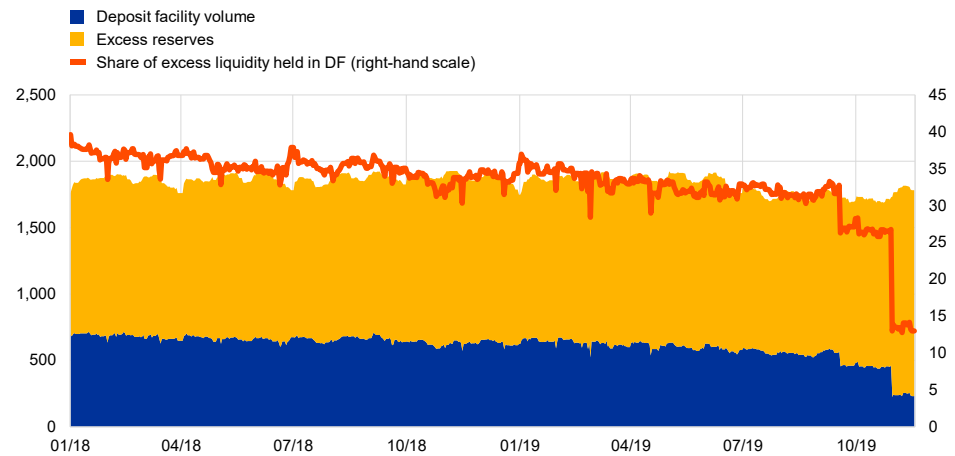


Source: ECB.

**Chart 13**

**Deposit facility and excess reserves**

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



Source: ECB.

Over the review period, daily recourse to the DF averaged €635 billion from January 2018 to mid-September 2019, representing around 30% of total excess liquidity in the system, although the share of excess liquidity placed in the DF gradually decreased from 34% in the first maintenance period of 2018 to 14% in the seventh and final maintenance period of 2019, largely due to the introduction of the two-tier system. Indeed, since the introduction of the two-tier system (see Section 4) on 30 October 2019, the level of excess liquidity held in the DF has decreased by approximately €240 billion – reaching its lowest volume during the review period – while excess reserves held in current accounts have increased by an equivalent amount.

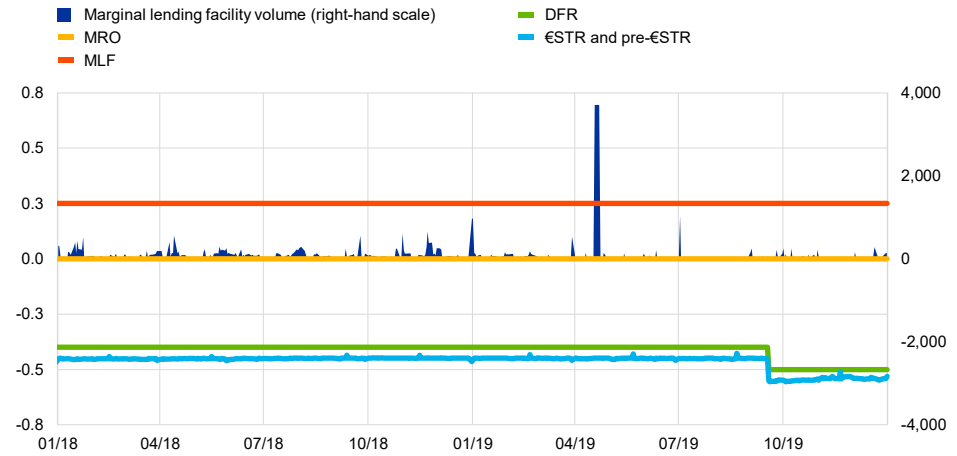
## 6.2 Marginal lending facility

Credit institutions may obtain overnight liquidity, via the marginal lending facility (MLF), from their respective NCBs at a pre-specified interest rate, against adequate eligible collateral. The facility is designed to cover specific liquidity shortfalls caused either by market developments or by technical issues affecting the settlement of payments. Use of the MLF is limited in an environment of large excess liquidity. In the review period, recourse to the MLF averaged just €71 million, given the excess liquidity in the market and the significant premium above comparable market rates.

### Chart 14

#### Recourse to marginal lending facility and changes to key interest rates

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



Source: ECB.

The occasional spikes observed in the use of the MLF did not follow any particular pattern, either on specific dates or for individual counterparties. Recourse to the facility was frequently caused by unexpected payment outflows occurring late in the day or by technical failures impeding the correct settlement of upcoming inflows. Moreover, the facility was, on a few occasions, used by certain counterparties as a bridge in order to switch positions between open market operations that did not exactly match in terms of maturity and settlement dates.

## 7 Outright purchase programmes

The Eurosystem's expanded Asset Purchase Programme (APP) currently comprises four active purchase programmes (CBPP3, ABSPP, PSPP and CSPP). This section covers the main developments in the implementation of the APP over the review period between the first quarter of 2018 and the fourth quarter of 2019.<sup>54</sup>

The monthly net purchase targets for the APP have varied over time (see Table 2), in line with the Governing Council's monetary policy decisions. In addition to the net purchases, the Eurosystem fully reinvests principal payments from maturing securities held in the APP portfolios. During the review period, the APP targeted net purchases of €30 billion per month in the first three quarters of 2018 and €15 billion in the last quarter of 2018, before the programme entered the reinvestment phase (zero net purchases) between January 2019 and October 2019. The actual monthly profile of net investments often diverged somewhat from the average purchase pace set by the Governing Council to reflect seasonal fluctuations in market liquidity. On 12 September 2019 the Governing Council decided that net purchases would restart under the APP at a monthly pace of €20 billion from 1 November 2019 – this is expected to run for as long as needed to reinforce the accommodative impact of the ECB's policy rates, and to end shortly before the Governing Council starts raising the key ECB interest rates.

**Table 2**  
APP net monthly purchase targets

From	To (inclusive)	Monthly target
March 2015	March 2016	€60 billion
April 2016	March 2017	€80 billion
April 2017	December 2017	€60 billion
January 2018	September 2018	€30 billion
October 2018	December 2018	€15 billion
January 2019	October 2019	Reinvestment only
November 2019	Open ended	€20 billion

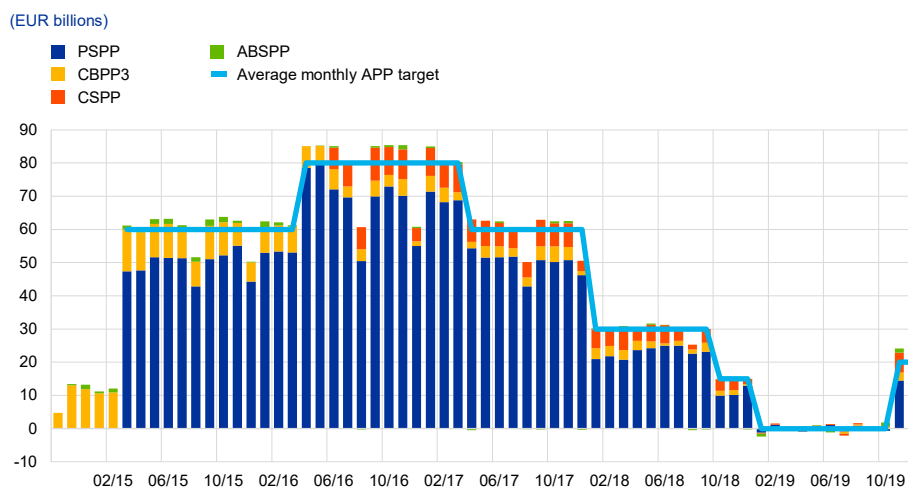
Source: ECB.

On 13 December 2018 the Governing Council decided that reinvestments of the principal payments from maturing securities purchased under the APP will continue, in full, for an extended period of time after the date the Governing Council starts raising the key ECB interest rates and, in any case, for as long as necessary to maintain favourable liquidity conditions and an ample degree of monetary accommodation.

<sup>54</sup> This section may also be read in conjunction with: European Central Bank (2019), "Taking stock of the Eurosystem's asset purchase programme after the end of net asset purchases", *Economic Bulletin*, Frankfurt am Main, 18 March.

### Chart 15

#### Actual and targeted APP net monthly purchases

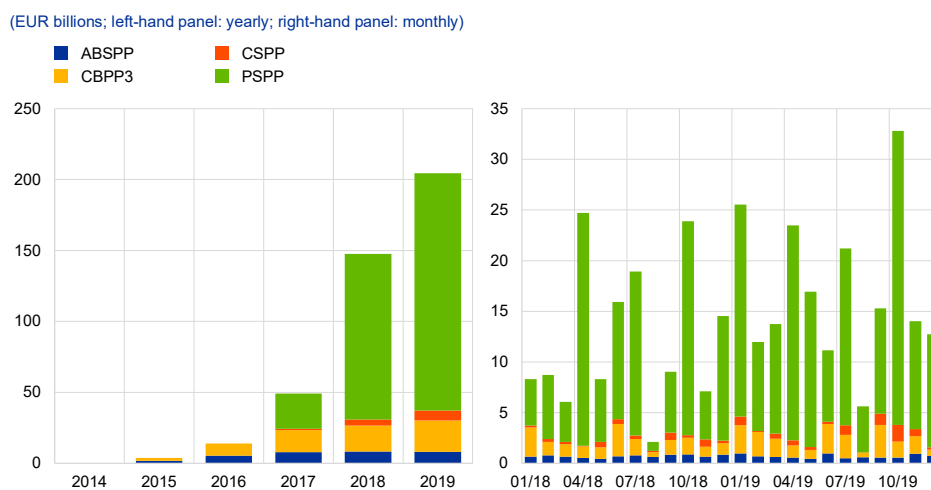


Source: ECB.

Reinvestments of principal redemptions increased significantly over the review period. In 2019, redemptions amounted to €204.5 billion, compared with €147.6 billion in 2018 and €49.3 billion in 2017. In order to adhere to the concept of market neutrality, the reinvestment of principal redemptions is distributed over time to ensure a regular and balanced market presence. Redemptions amounted to €17 billion per month on average for 2019, which is significant when compared with the level of €20 billion per month which was set for the restart of net purchases. Redemptions under the APP amounted to €12 billion per month on average for 2018, and €4 billion per month on average for 2017. Chart 16 illustrates the monthly redemptions since the start of the APP.

### Chart 16

#### Monthly redemptions under the APP



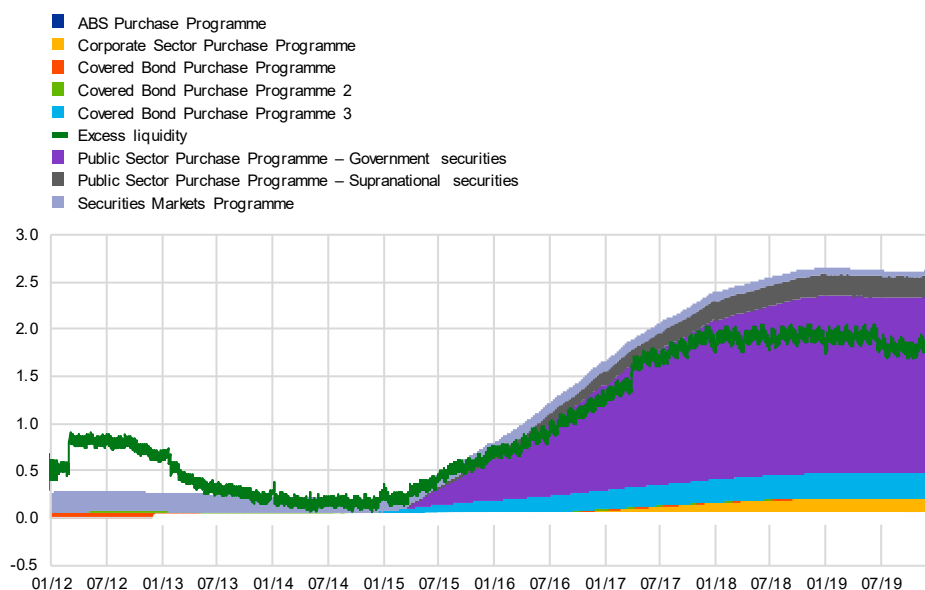
Source: ECB.

Holdings at amortised cost under the APP increased from €2.29 trillion in December 2017 to €2.57 trillion in December 2018 (see Chart 17). Owing to amortisation, they decreased somewhat during the reinvestment phase to €2.55 trillion at the end of October 2019, before increasing again after the November 2019 restart of net purchases to €2.57 trillion in December 2019.

### Chart 17

#### Overall volumes of outright purchase programmes and excess liquidity

(EUR trillions)



Source: ECB.

Note: Holdings at amortised cost.

## 7.1 Covered bond purchase programme 3

Purchases under the third covered bond purchase programme (CBPP3) started in October 2014, with CBPP3 eligibility being broadly aligned with the Eurosystem's collateral eligibility criteria. All CBPP3-eligible covered bonds with a conditional pass-through structure were excluded from purchases as of 1 January 2019.<sup>55</sup> On 12 September 2019 the Governing Council decided that purchases could be made, to the extent necessary, of eligible covered bonds at yields to maturity below the rate on the deposit facility (see also Box 5).<sup>56</sup> Purchases were made by a large number of NCBs and the ECB across a broad range of jurisdictions and in line with a benchmark which reflected, proportionally, all eligible outstanding issues. Details of the aggregate CBPP3 holdings broken down by rating and country of risk are available on the ECB's website, as part of a wider effort to further increase APP transparency. The data were

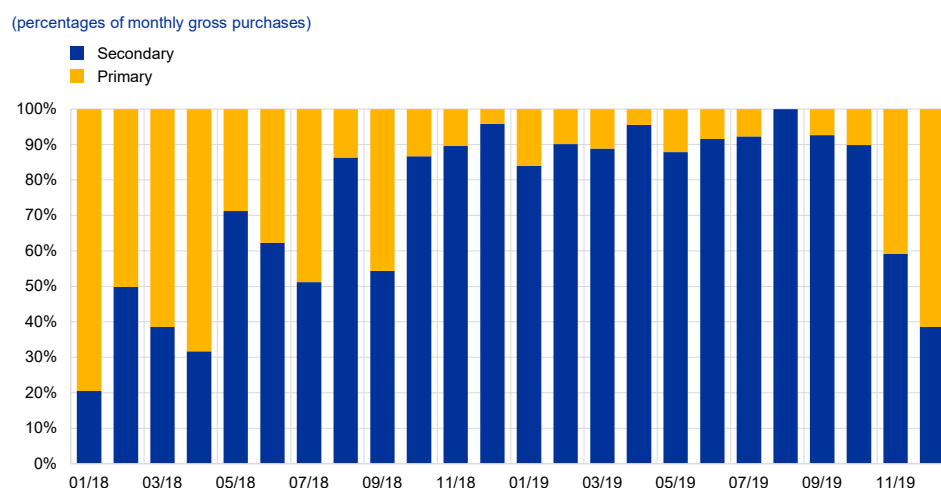
<sup>55</sup> Conditional pass-through covered bonds issued by an entity with a first-best issuer rating below Credit Quality Step 3 were already excluded from purchases under the CBPP3, as of 1 February 2018.

<sup>56</sup> See European Central Bank (2019), [ECB provides additional details on purchases of assets with yields below the deposit facility rate](#), press release, 12 September.

initially published for the first quarter of 2019, and will be updated on a semi-annual basis.<sup>57</sup>

In the day-to-day implementation of the programme, bond purchases are responsive to the availability and liquidity of individual bonds. Purchases are made on both primary and secondary markets (see Chart 18). During the reinvestment phase, redemptions under CBPP3 averaged €1.6 billion per month. For monthly volumes of this magnitude, secondary market purchases offer more flexibility than primary market purchases, so a larger share of purchases were made on the secondary market during the reinvestment phase. After the restart of net purchases, the share of primary market purchases increased significantly again (see Chart 18).

**Chart 18**  
Monthly gross CBPP3 purchases – breakdown by primary and secondary markets



Source: ECB.

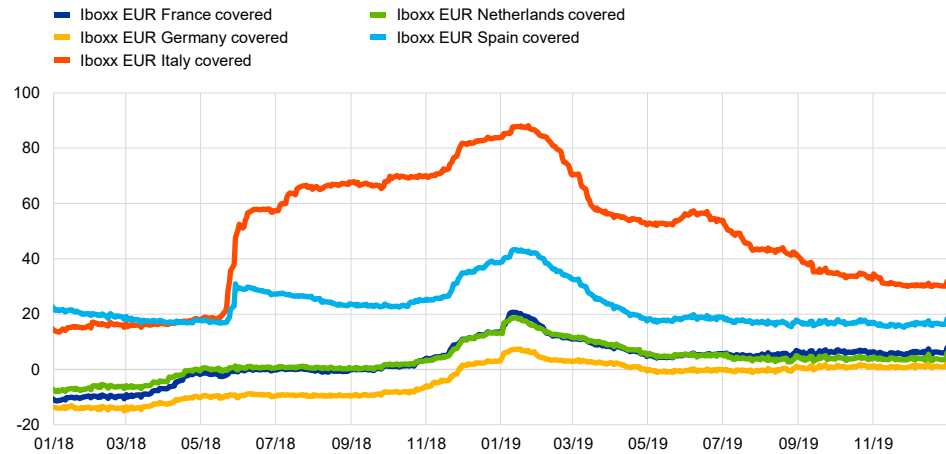
Some widening of the asset swap spread was evident in the latter months of 2018 (see Chart 19). Although some market participants ascribed this phenomenon to the impending end of net purchases, much of the move was reversed in the first quarter of 2019. Spread levels have remained relatively stable since then. Italian spreads widened in May 2018 in relation to concerns over domestic political developments. The impact was largely restricted to the Italian (and to a lesser extent Spanish) covered bond market and only had a negligible impact on other jurisdictions.

<sup>57</sup> See [History of cumulative purchases breakdowns under the CBPP3](#), ECB website.

**Chart 19**

**Covered bond asset swap spreads for selected jurisdictions**

(basis points)



Source: IHS Markit iBoxx indices.

## 7.2 Asset-backed securities purchase programme

The asset-backed securities purchase programme (ABSPP) was launched in late 2014. Purchase decisions under the ABSPP take into account the eligibility of the assets as collateral for the Eurosystem, as well as the outcome of the Eurosystem’s due diligence analysis. The Eurosystem purchases asset-backed securities (ABSs) in the primary and secondary markets from eligible counterparties (see Chart 20). During the review period, this was implemented exclusively through six NCBs acting as internal asset managers and executing purchases on behalf of the ECB.<sup>58</sup> Each of these central banks has been assigned a specific segment of the euro area ABS market.

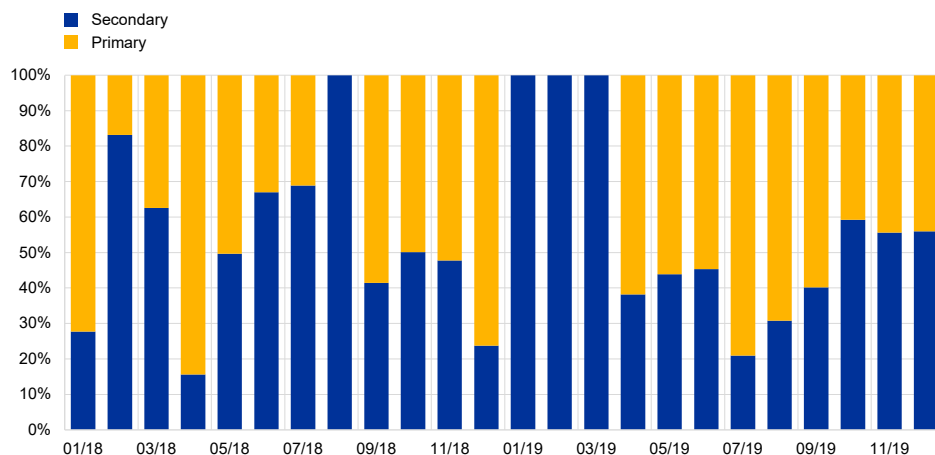
<sup>58</sup> ABSPP purchases were made by the following NCBs: Nationale Bank van België/Banque Nationale de Belgique, Deutsche Bundesbank, Banco de España, Banque de France, Banca d’Italia and De Nederlandsche Bank.



**Chart 20**

**Monthly gross ABSPP purchases by primary and secondary market shares**

(percentages of monthly gross purchases)



Source: ECB.

The pace of redemptions under the ABSPP continued to pick up over the review period, limiting growth in the Eurosystem’s overall net holdings under the ABSPP. On 12 September 2019 the Governing Council extended the possibility of buying securities, and to the extent necessary, at yields below the rate on the deposit facility, to the ABSPP (see also Box 5).

In the day-to-day implementation of the ABSPP, purchases are responsive to the availability and liquidity of individual ABS. During the reinvestment phase, the relatively large share of primary market purchases under the ABSPP was maintained, contrary to the situation for the other private sector programmes, owing to limited liquidity in the secondary market.

A slowdown of primary market issuance was seen during the first quarter of 2019, after the introduction of the new Securitisation Regulation and pending the approval of certain technical standards (RTS/ITS). As a consequence, secondary market liquidity was adversely affected. The new Regulation also established the simple, transparent and standardised (STS) framework, which aims to “strengthen the legislative framework implemented after the financial crisis to address the risks inherent in highly complex, opaque and risky securitisation”.<sup>59</sup> After a slow start to the year, primary market issuance picked up gradually, with STS issuance being widely used across all ABS asset types and euro area jurisdictions. The new STS framework has also been well received by investors, with bid-to-cover ratios up on previous years. The contribution of the ABSPP to overall APP volume increased somewhat as a result of a pick-up in supply and improved secondary market liquidity conditions in the second half of 2019.

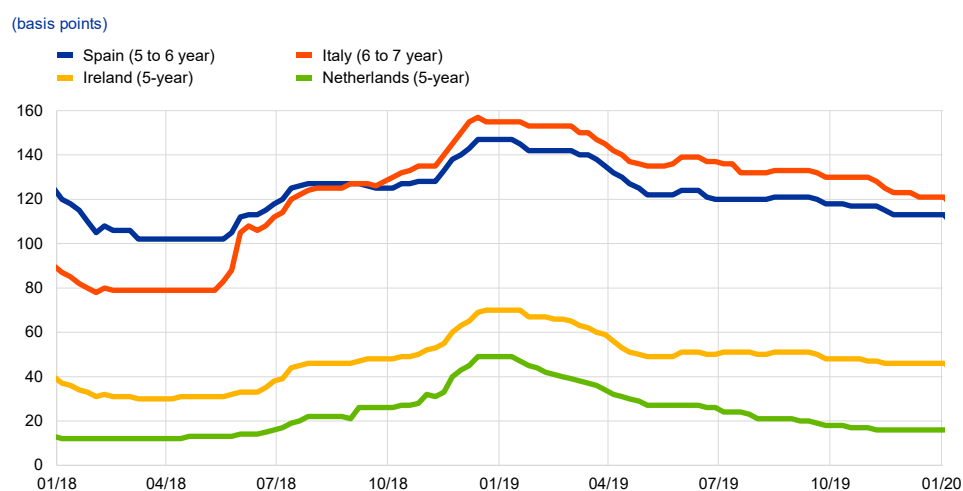
In the first quarter of 2019, the ECB started to publish the breakdown of the ABSPP portfolio by rating, country of risk and collateral type, on a semi-annual basis. The

<sup>59</sup> Regulation (EU) 2017/2402 of the European Parliament and of the Council of 12 December 2017 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation.

latest update in October 2019 shows that gross purchases and holdings were broadly in line with the eligible universe, with broad-based purchases across euro area jurisdictions active in ABS issuance, and across ratings and collateral type.

Secondary market spreads increased somewhat in the course of 2018 (see Chart 21), although they tightened again during 2019, in line with spread developments in corporate and covered bond markets.

**Chart 21**  
Residential mortgage-backed securities (RMBS) with 5-7 year maturity – spreads



Sources: J.P. Morgan Indices, AAA-rated RMBS.  
Note: Asset swap spreads.

### 7.3 Public sector purchase programme

The public sector purchase programme (PSPP) was announced in January 2015. Under the PSPP, purchases are limited to the secondary market. Purchases of securities with a yield to maturity below the rate on the deposit facility have been allowed since 2 January 2017, to the extent necessary, and have been executed in various jurisdictions (see also Box 5).

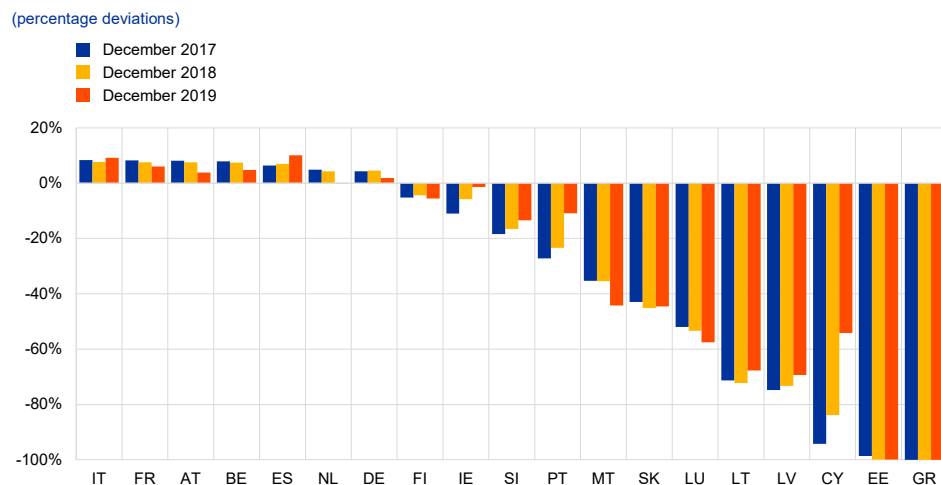
In October 2017 the Governing Council increased the discretion allowed in the timing of the reinvestment of PSPP principal redemptions so that these could be reinvested in the month they fell due, on a best-effort basis, or over the subsequent two months, if warranted by market liquidity conditions.<sup>60</sup> In December 2018 the Governing Council decided that during the reinvestment phase, starting in January 2019, the reinvestment of principal redemptions would be distributed over a full year and across jurisdictions, while maintaining both the capital key allocation of holdings and the stock

<sup>60</sup> See European Central Bank (2017), [Additional information on asset purchase programme](#), press release, 26 October.

of bonds held.<sup>61</sup> Under this policy, redemptions are reinvested in the jurisdiction in which principal repayments are made, but distributed over the entire calendar year to ensure a regular and balanced market presence and to avoid any temporary market dominance. On the contrary, for EU supranational securities, reinvestments take place in the month they fall due on a best-effort basis, or in the surrounding two months if warranted by market liquidity conditions. These reinvestment modalities remained unchanged after the restart of net purchases in November 2019.

The allocation of purchases across eligible jurisdictions under the PSPP is guided, on a stock basis, by the respective NCBs' share of the ECB's capital key, as amended over time. A new capital key came into effect on 1 January 2019.<sup>62</sup> The portfolio allocation of purchases across jurisdictions is continually adjusted to bring the share of the PSPP portfolio into closer alignment with the ECB capital key, subject to issue and issuer limits, the principle of market neutrality, and other programme constraints. Chart 22 shows the end-of-year deviations from the jurisdictions' shares as implied by the Eurosystem capital key. Large deviations for Greece and Estonia reflect the ineligibility and limited availability of securities respectively. Similarly, declining deviations from the capital key over the review period in jurisdictions such as Ireland, Cyprus and Portugal underscore the ECB's commitment to reducing such deviations, whenever conditions allow this.

**Chart 22**  
Deviations from the Eurosystem capital key



Note: Deviations are expressed as a percentage of each jurisdiction's share as implied by the ECB capital key.

Gross purchases were dominated by central government bonds (see Chart 23), while the share of agency bonds, EU supranational securities and local government bonds increased somewhat over the review period.

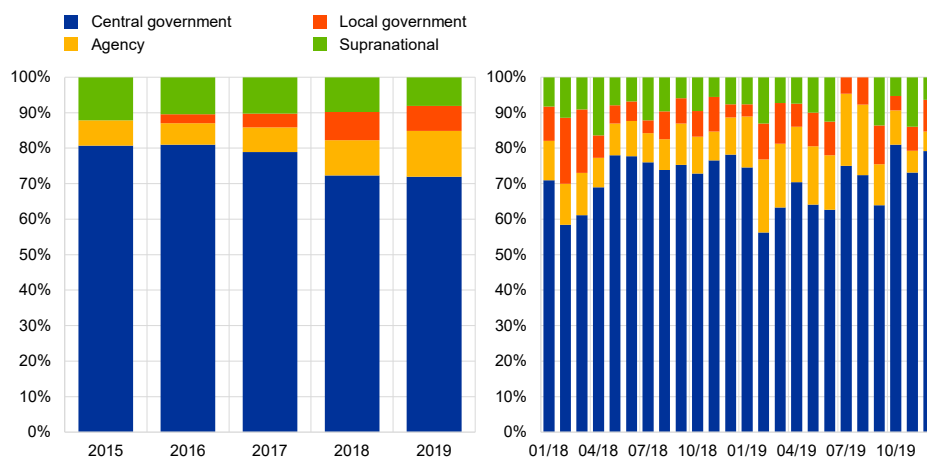
<sup>61</sup> However, portfolio allocation across jurisdictions will continue to be adjusted with a view to bringing the share of the PSPP portfolio into closer alignment with the respective NCB's subscription to the ECB capital key. Any adjustment to the portfolio allocation across jurisdictions will be gradual and will be calibrated as appropriate to maintain orderly market conditions. See European Central Bank (2018), "ECB decides on technical parameters for the reinvestment of its asset purchase programme", press release, 13 December.

<sup>62</sup> See European Central Bank (2018), "ECB adopts new capital key", press release, 3 December.

**Chart 23**

**PSPP gross purchases – breakdown by issuer type**

(percentages of total purchases by book value; left-hand panel: per year; right-hand panel: per month)

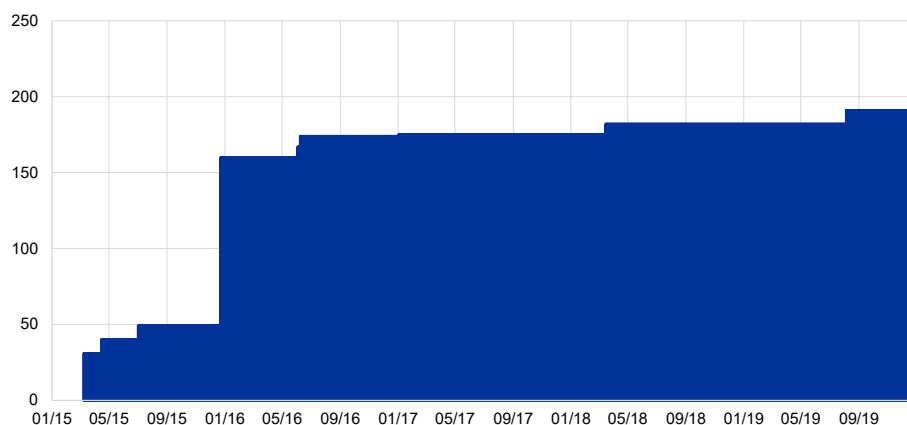


Source: ECB.

The number of PSPP-eligible issuers increased further over the review period (see Chart 24). The main drivers of the change in eligible issuers were the inclusion of regional governments (December 2015), the addition of some regional development banks (April 2018) and, finally, the harmonisation of the agency definition with the publication of the revised Guideline ECB/2019/11.<sup>63</sup>

**Chart 24**

**Number of PSPP-eligible issuers**



Source: ECB.

On 25 October 2019 the Governing Council decided that purchases of marketable debt securities issued by international organisations and multilateral development banks would be made by fewer NCBs in order to simplify implementation and protect market functioning.<sup>64</sup>

<sup>63</sup> See [“Harmonised list of recognised agencies”](#), ECB website.

<sup>64</sup> See European Central Bank (2019), [“Decisions taken by the Governing Council of the ECB \(in addition to decisions setting interest rates\)”](#), 25 October.

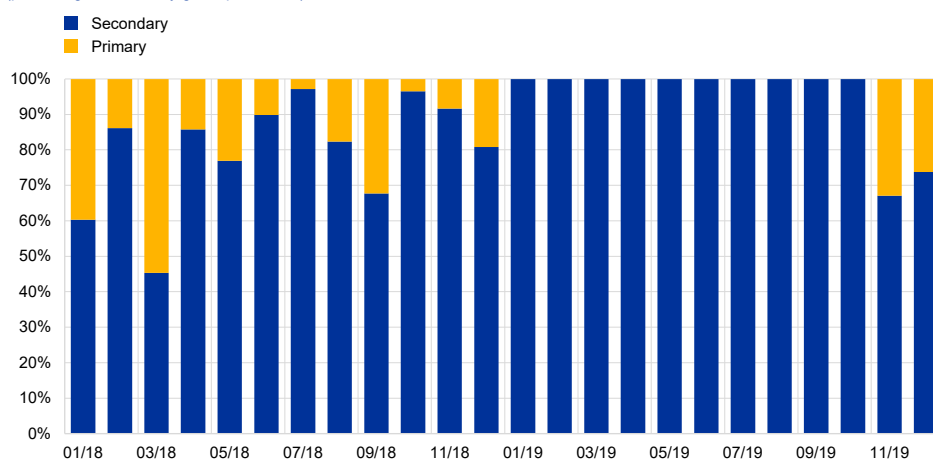
## 7.4 The corporate sector purchase programme

Purchases under the corporate sector purchase programme (CSPP) started in June 2016. Similarly to the CBPP3, CSPP purchases are based on a benchmark which reflects, proportionally, all eligible outstanding issues. The ECB coordinates CSPP purchases, which are carried out by six NCBs acting on behalf of the Eurosystem.<sup>65</sup>

**Chart 25**

Monthly gross CSPP purchases – by primary and secondary market

(percentages of monthly gross purchases)



Source: ECB.

Purchases under the CSPP are made in both the primary and the secondary markets (see Chart 25), with the exception of public sector corporates, which are only bought in the secondary market. During the reinvestment phase, redemptions averaged €325 million per month (see Chart 16), and no primary market purchases took place, given that the secondary market offered more flexibility for monthly volumes of this magnitude.

Since 2017 the ECB has disclosed, on a weekly basis, a full list of all ISINs held under the CSPP. This list includes issuer names, maturity dates, bond coupon rates, and aggregated data on CSPP holdings by country of risk, rating and sector. Aggregated data for CSPP holdings and a list of securities held by the Eurosystem are also available on a weekly basis.

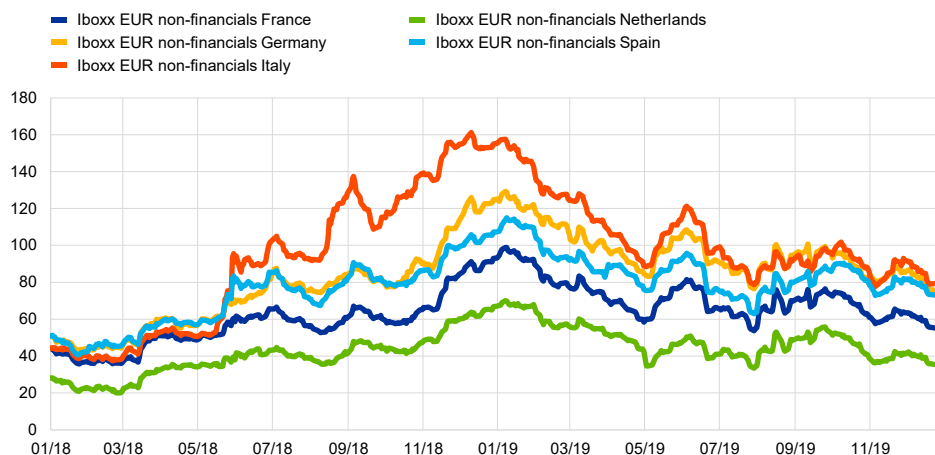
Asset swap spreads for non-financial corporate bonds widened over the course of 2018 towards the end of the first phase of net CSPP purchases. Although some market participants attributed this widening to the impending end of net purchases, much of the move was reversed in the first half of 2019 (see Chart 26).

<sup>65</sup> Nationale Bank van België/Banque Nationale de Belgique, Deutsche Bundesbank, Banco de España, Banque de France, Banca d'Italia, and Suomen Pankki – Finlands Bank.

## Chart 26

### Corporate bond asset swap spreads for selected jurisdictions

(percentages of monthly gross purchases)



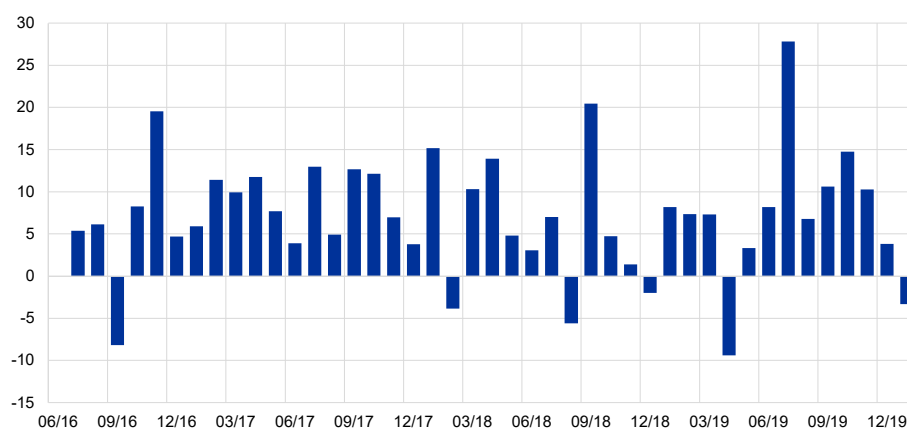
Source: IHS Markit iBoxx indices.

New issuers entered the market during the review period and net issuance volumes were positive over the programme's lifetime (see Chart 27). Net issuance of CSPP-eligible securities decreased from €104 billion in 2017 to €69 billion in 2018, although it increased again to €92 billion in 2019. Purchases of securities with a yield below the rate on the deposit facility were allowed as of 12 September 2019, to the extent necessary, although no such purchases took place under the CSPP during the review period (see also Box 5).

## Chart 27

### Monthly net issuance of CSPP-eligible bonds

(EUR billions)



Source: ECB.

## 7.5 Securities lending programmes

The Eurosystem makes available holdings under the PSPP, CSPP and CBPP1, 2 and 3, as well as the Securities Markets Programme (SMP) available for securities lending on a decentralised basis.<sup>66</sup> The aim of such lending is to support bond and repo market liquidity without unduly curtailing normal repo market activity. The terms of the facilities offered by individual Eurosystem central banks differ to some extent, for reasons including the specific market environment in each jurisdiction, but all follow common principles, including having the nature of a backstop. The central banks have put in place securities lending arrangements through the facilities provided by central securities depositories or agent lenders, or by conducting bilateral repurchase transactions with eligible counterparties. The Eurosystem monitors its securities lending activities closely to ensure that these arrangements remain effective.

The Eurosystem accepts 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 currently subject to an overall limit set at €75 billion for the Eurosystem.<sup>67</sup> The introduction of cash as collateral in the context of PSPP securities lending has effectively increased the supply of bonds available in the repo market and has helped to reduce the share of bonds trading “special”.<sup>68</sup>

The PSPP on-loan balance has been trending downwards since mid-2018, in line with calmer euro area repo market conditions.<sup>69</sup> In 2018 the average monthly PSPP on-loan balance in the Eurosystem was €59.5 billion, of which €10.6 billion had been borrowed against cash collateral. This decreased to an average monthly on-loan balance of €41.4 billion in 2019, of which only €2.6 billion was against cash collateral (see Chart 28, left-hand panel). There is, however, a larger degree of fluctuation in these numbers, with peaks occurring at quarter-ends and ahead of futures delivery dates (see Chart 28, right-hand panel).

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<sup>66</sup> Securities lending of holdings under the ABSPP is, in principle, possible for the ECB, which holds all the ABSs purchased under the ABSPP. However, no requests for securities lending have been received since the start of the ABSPP in October 2014.

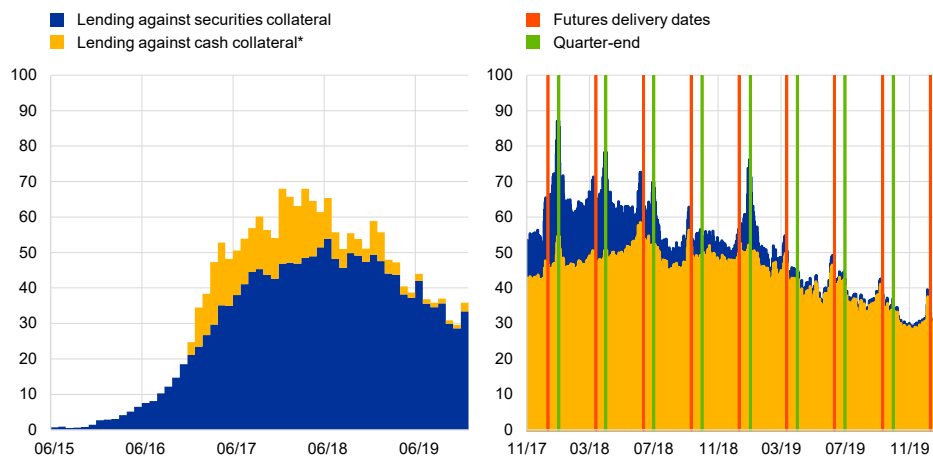
<sup>67</sup> Eligible counterparties may borrow securities against cash as collateral at a rate equal to the lower of the rate on the deposit facility minus 30 basis points and the prevailing market repo rate.

<sup>68</sup> A security trading “special” in the repo market is defined by the International Capital Market Association as an issue of securities that is subject to exceptional demand in the repo and cash markets compared with other highly similar issues.

<sup>69</sup> The ECB publishes the aggregate monthly average on-loan balance for the Eurosystem and the daily on-loan balances, together with breakdowns by collateral type (securities or cash). The data are published on the third Monday of each month, for the previous month.

## Chart 28 PSPP securities lending

(on-loan balances of securities; lending by the Eurosystem; EUR billions)



Source: ECB.

Note: Amounts are at market value and average balance during the month, including securities lending of holdings under the SMP.

### Box 5

#### Securities trading below the rate on the deposit facility

On 12 September 2019 the Governing Council decided to extend the possibility of buying assets with yields below the interest rate on the deposit facility, and to the extent necessary, to each component of the APP, instead of just the PSPP.<sup>70</sup> This box assesses the degree to which certain eligible assets traded below the rate on the deposit facility during the review period.

Purchases of securities with a yield below the rate on the deposit facility were initially not permitted under the APP, although this prohibition was partially lifted by the Governing Council in December 2016.<sup>71</sup> In January 2017 the Governing Council further specified that purchases of assets with yields below the rate on the deposit facility will only take place under the PSPP, while no such purchases were foreseen for the CBPP3, the ABSPP and the CSPP. This policy remained in place until September 2019, when such purchases were extended to all components of the APP. For each jurisdiction, priority was given to PSPP purchases of assets with yields above the rate on the deposit facility.<sup>72</sup> By the end of the review period, purchases of securities with yields below the rate on the deposit facility took place under all programmes except the CSPP, for which this was not deemed necessary.

The share of securities eligible for the PSPP trading below the rate on the deposit facility has changed over time, and reflects market participants' expectations of money market rates and bond market yields. Chart A shows that the share of securities eligible for PSPP<sup>73</sup> trading below the rate on the deposit facility increased substantially during the third quarter of 2019, with about half the eligible

<sup>70</sup> See European Central Bank (2019), "ECB provides additional details on purchases of assets with yields below the deposit facility rate", press release, 12 September.

<sup>71</sup> See European Central Bank (2016), "ECB adjusts parameters of its asset purchase programme (APP)", press release, 8 December.

<sup>72</sup> See European Central Bank (2017), "ECB provides further details on APP purchases of assets with yields below the deposit facility rate", press release, 19 January.

<sup>73</sup> Floating rate notes and inflation-linked bonds were excluded from this analysis.



securities trading below this rate at the beginning of September 2019. Around this time, securities eligible under the private sector programmes also increasingly traded below the rate on the deposit facility. For example, Chart B shows that a considerable number of ABSPP-eligible securities traded below this rate in early September, in particular those issued in Germany and the Netherlands.

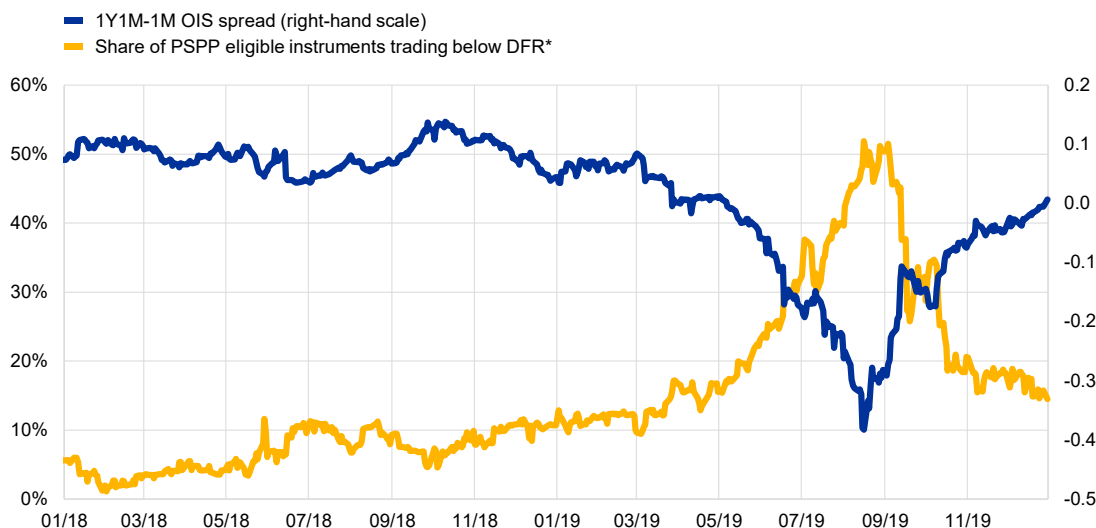
At the same time, market participants' expectations of euro money market rates adjusted downwards over the course of the third quarter of 2019, reflecting the weakness of the euro area economy, the persistence of prominent downside risks and muted inflationary pressures. Expectations of a cut in the rate on the deposit facility also increased in this period, as reflected by surveys of economists and market pricing. This adjustment of expectations is illustrated by the spread between the one-year-one-month EONIA overnight indexed swap forward rate and the one-month EONIA overnight indexed swap rate, which turned negative in May 2019 and decreased further over the course of the third quarter of 2019. This spread may be seen as an indicator of the EONIA rates expected in one year compared with current EONIA rates.

On 12 September 2019 the Governing Council decided to lower the interest rate on the deposit facility by 10 basis points to -0.50%, and also announced a two-tier system for remunerating excess liquidity holdings. These decisions coincided with the decision to allow purchases of assets with yields below the interest rate on the deposit facility, and to the extent necessary, under all components of the APP. Following the cut in the interest rate on the deposit facility, the share of eligible securities trading below the rate on the deposit facility decreased immediately, in a mechanical fashion. For the remainder of 2019 the share of APP-eligible securities trading below the rate on the deposit facility decreased further, reflecting, inter alia, reduced expectations of a global downturn (see Charts A and B).

## Chart A

### Share of PSPP-eligible securities trading below the rate on the deposit facility

(percentages; left-hand scale: weighted by market value; right-hand scale: the spread between the EONIA 1Y1M forward swap and the 1M EONIA overnight indexed swap)



Source: ECB analysis.

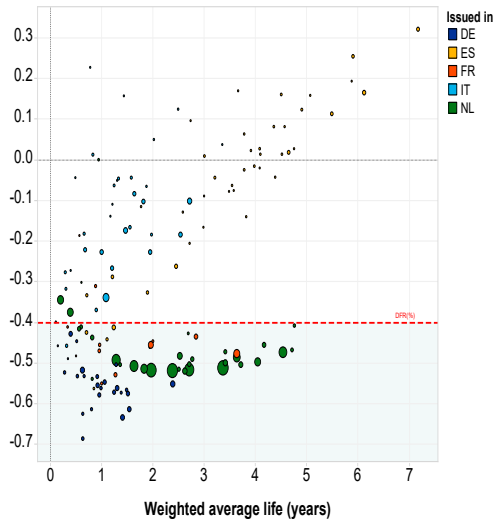
Notes: Calculations exclude floating rate notes (FRNs) and inflation-linked securities. The analysis is based on indicative prices.

## Chart B

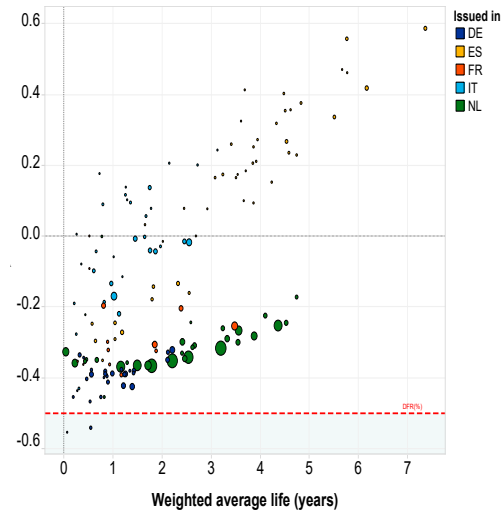
### Yield-to-maturity of ABSPP eligible instruments by weighted average life – selected jurisdictions

(percentages; years)

4 September 2019



6 November 2019



Source: ECB.

Notes: ABSPP instruments for selected issuer locations. Size indicates total outstanding amounts by nominal value. The analysis is based on indicative prices.

## 8 Impact of the Eurosystem’s monetary policy implementation on its balance sheet and liquidity conditions

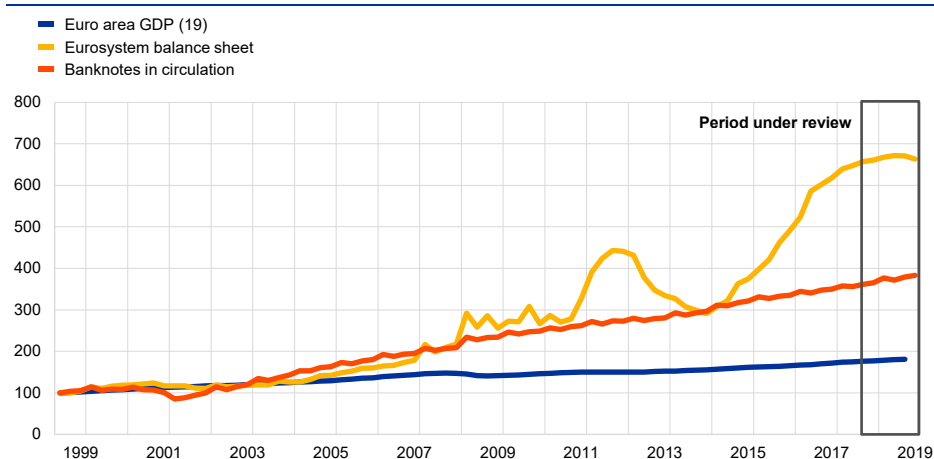
The Eurosystem expanded its balance sheet in the aftermath of the sovereign debt crisis, amid low inflationary pressures. This section provides a brief overview of the effect of Eurosystem monetary policy implementation on the size and the composition of the Eurosystem balance sheet over the review period (Section 8.1). It explains the impact of non-standard monetary policy measures on money market activity (Section 8.2) and describes the distribution of excess liquidity across euro area counterparties and the factors underlying this (Section 8.3).

### 8.1 ECB policies and balance sheet consequences

In response to the global financial and sovereign debt crises, the Eurosystem adopted policies that substantially increased the size of the Eurosystem balance sheet and altered its composition. Chart 29 shows that the expansion of the Eurosystem balance sheet occurred at three different points in time: (i) the financial crisis in 2007-08; (ii) the sovereign debt crisis in 2011-12; and (iii) the persistent environment of low growth and low inflation since mid-2014.

#### Chart 29

Eurosystem balance sheet, banknotes in circulation and euro area GDP (19)  
Q1 1999 – Q3 2019



Source: ECB (SDW).  
Note: Index: Q1 1999 = 100.

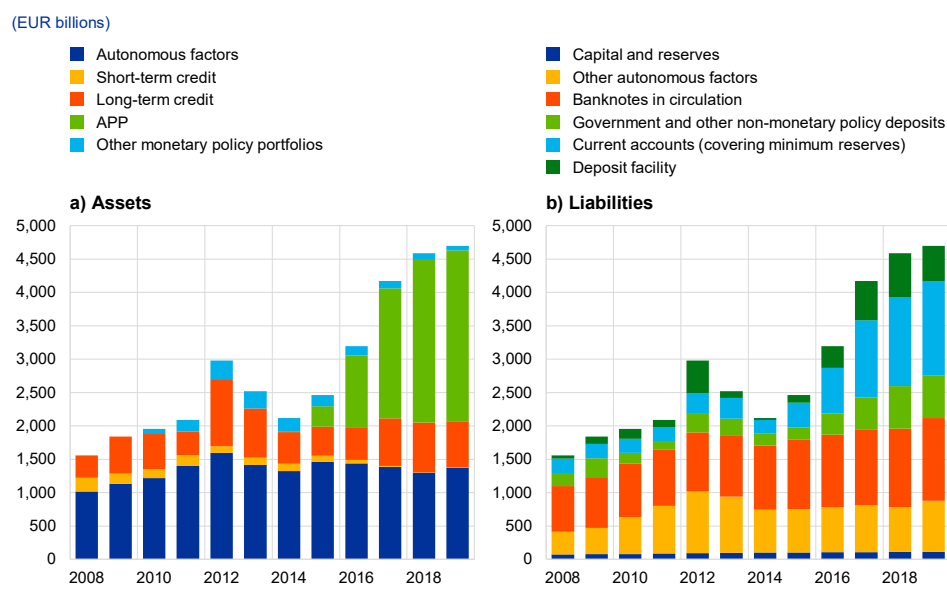
The Eurosystem balance sheet continued to expand during the review period, albeit at a slower pace, through sustained Eurosystem lending via the TLTROs and the APP. In January 2019 the ECB Governing Council ended monthly net asset purchases, although it reintroduced them at a monthly level of €20 billion in November 2019.

While the TLTRO programmes had a greater and more persistent impact on the size of the aggregated Eurosystem balance sheet than conventional lending operations, given their longer multi-year maturities, the TLTROs had a smaller impact on the size of the Eurosystem balance sheet compared with the APPs. During 2019 the size of the Eurosystem balance sheet reached an all-time high of €4.7 trillion, an increase of €0.2 trillion since the fourth quarter of 2017.

The composition of the asset side of the Eurosystem balance sheet was driven by decisions affecting the volume of net securities purchases – Chart 30 shows the evolution of asset composition. At the end of 2019 MPOs accounted for €3.2 trillion, i.e. 70% of the total assets on the Eurosystem balance sheet, unchanged since the fourth quarter of 2017 (see also Table 3). The share of assets held for monetary policy purposes rose from 53% to 56% of total assets on the balance sheet, while the share of refinancing operations declined from 17% to 13%.<sup>74</sup>

The liabilities side of the Eurosystem balance sheet shows that the programmes result in increased reserve holdings by banks. Chart 30 (right-hand side) shows the changes in the composition of liabilities, which are most notable after 2015 when the Eurosystem started the APP. During 2018 and 2019 the share of autonomous factors (i.e. banknotes in circulation and the other non-monetary policy assets and liabilities) rose from 40% to 42% of total liabilities over the review period.

**Chart 30**  
Evolution of the composition of Eurosystem assets and liabilities – annual averages



Source: ECB.

<sup>74</sup> See Sections 5 and 7.

**Table 3**

Stylised composition of the Eurosystem balance sheet at end Q4 2017 and end Q4 2019

(percentages)

Assets	Q4-17	Q4-19	Liabilities	Q4-17	Q4-19
<b>Securities held for monetary policy purposes</b>	53%	56%	<b>Banknotes</b>	26%	28%
<b>Lending to euro area credit institutions</b> (includes refinancing operations and marginal lending facility)	17%	13%	<b>Central Bank reserves</b> (current account incl. required reserves and deposit facility)	42%	39%
<b>Non-monetary policy assets</b> (includes FX, gold, euro-denominated own fund portfolios, ELA and other)	30%	30%	<b>Non-monetary policy liabilities</b>		
			Non-monetary policy deposits	14%	14%
			Capital & Reserves and other	18%	20%

Source: ECB.

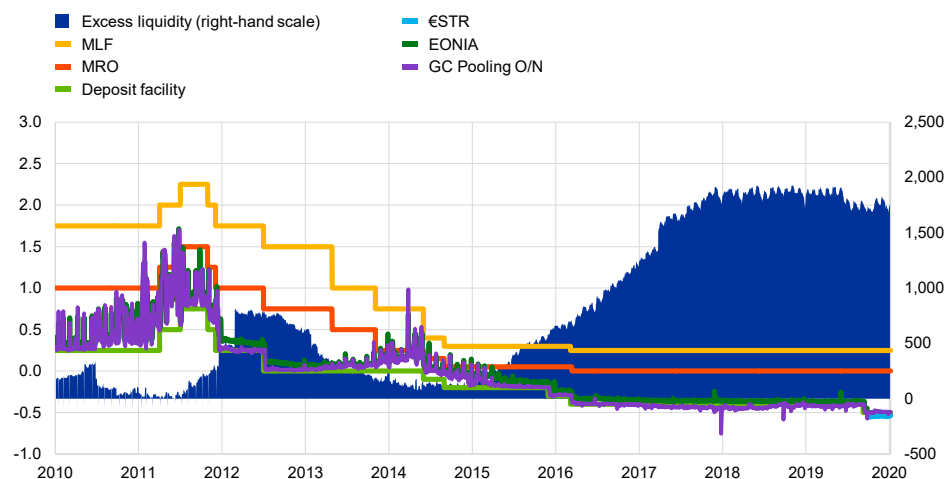
## 8.2 Impacts of excess liquidity on money market activity

A high level of excess liquidity (€1.8 trillion) limits the interbank trading of reserves and keeps money market rates close to the rate on the deposit facility. From January 2018 to June 2019, the amount of excess liquidity remained relatively stable at around €1.86 trillion (see Chart 31). The increased supply of reserves from the Eurosystem had a mixed impact on the functioning of the euro money market. On the one hand, interbank money market activity in the euro area remained subdued owing to the large-scale APP and the TLTROs; on the other hand, the securities lending programme helped to support euro area repo market liquidity and functioning. Looking ahead, the two-tier system may provide some support to interbank activity as it provides incentives for cross-border liquidity distribution.

### Chart 31

#### Excess liquidity and money market rates

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



Source: ECB, Bloomberg (GC-Pooling).

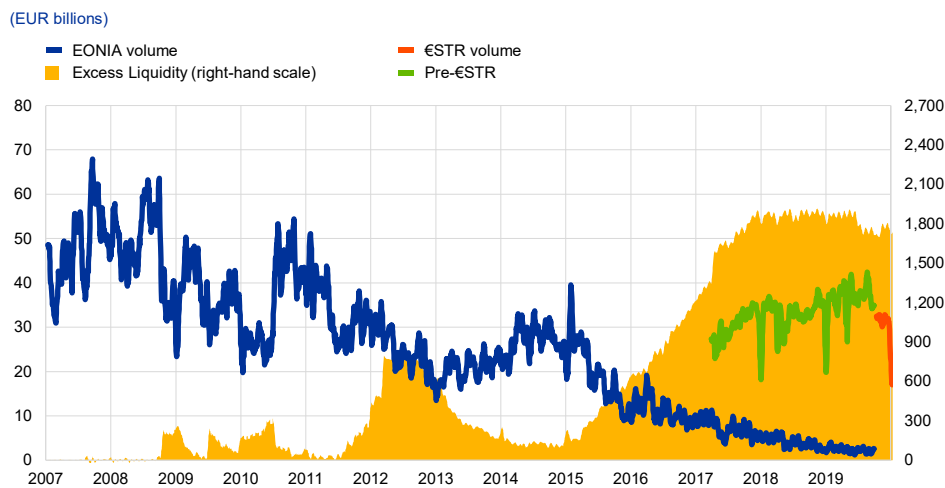
Since the global financial crisis, developments in the unsecured and secured segments have followed diverging paths, in a context of higher risk aversion, a new regulatory environment and non-standard monetary policy. Amid high excess liquidity and negative rates, trading volumes in the unsecured overnight interbank market have declined (see Chart 32) and rates have remained close to, or below, the rate on the deposit facility<sup>75</sup>. With regard to the secured segment, Chart 33 illustrates how a reduced need for short-term funding in an environment of excess liquidity has reduced incentives to conduct General Collateral (GC) repo transactions, which are frequently used for cash management purposes. Simultaneously, demand has grown for high quality liquid assets (HQLA) to meet regulatory requirements, given the more limited availability of marketable HQLAs in the context of the APP. This implies that counterparties seeking a specific security agreed on a repo rate that was below the rate on the deposit facility.<sup>76</sup>

<sup>75</sup> More recently, transactions with non-euro area banks have often been priced at rates below the rate on the deposit facility, as those entities do not have direct access to the facilities of the Eurosystem, and euro area banks need to take into account the regulatory costs associated with the acceptance of callable deposits from financial institutions.

<sup>76</sup> See [Euro Money Market Study 2018](#) for a thorough assessment of developments in unsecured and secured markets.

**Chart 32**

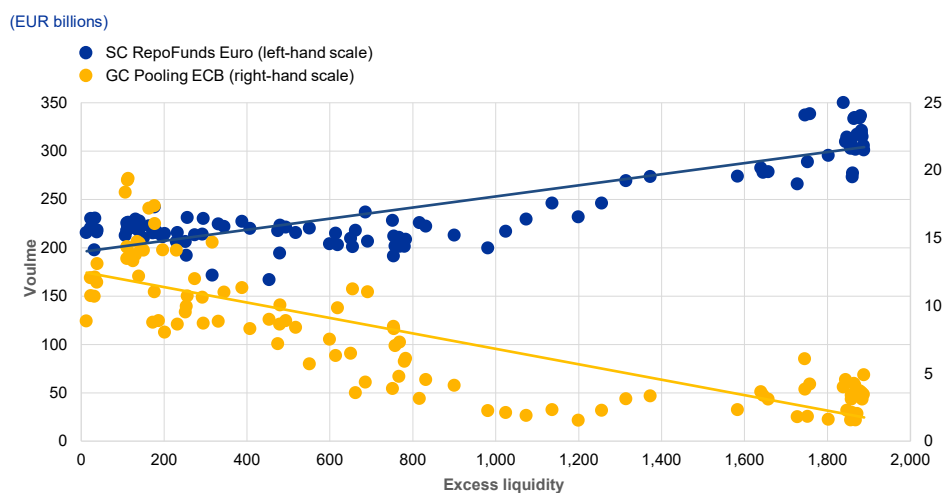
The relationship between excess liquidity and volume in the money market: unsecured volume



Source: ECB, Bloomberg.

**Chart 33**

The relationship between excess liquidity and volume in the money market: secured volume



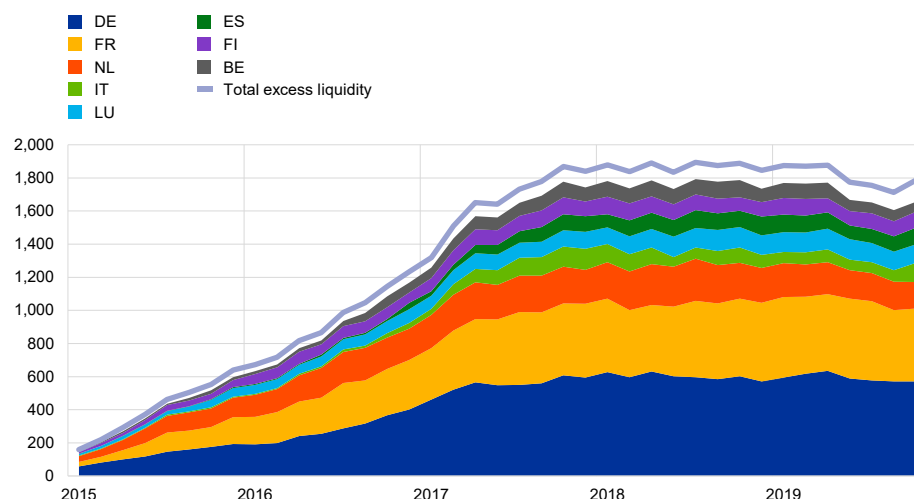
Source: ECB, Bloomberg.

### 8.3 Distribution of excess liquidity within the euro area

Excess liquidity is not homogeneously distributed across euro area countries. A disproportionate share of excess liquidity is currently held in banks located in Germany, France, Luxembourg, the Netherlands and Finland – these five jurisdictions represented 77% of excess liquidity in the euro area at the end of 2019 (see Chart 34).

**Chart 34****Excess liquidity in the euro area by country – average over the maintenance period**

(absolute values in EUR billions)



Source: ECB.

The uneven distribution of liquidity has remained relatively stable in recent years. Between 2015 and 2019, between 77% and 91% of the excess liquidity was concentrated in banks located in the five aforementioned countries. Nevertheless, there have been some significant changes in the distribution of excess liquidity since early 2017. Specifically, excess liquidity has increased for banks located in Spain, while it has declined for banks located in the Netherlands.<sup>77</sup> In the period covered by this report, excess liquidity for banks located in Spain increased from under €79 billion in January 2018 to around €100 billion in December 2019. At the same time, the total excess liquidity in banks located in Germany, France and the Netherlands decreased from €1.29 trillion to €1.17 trillion.

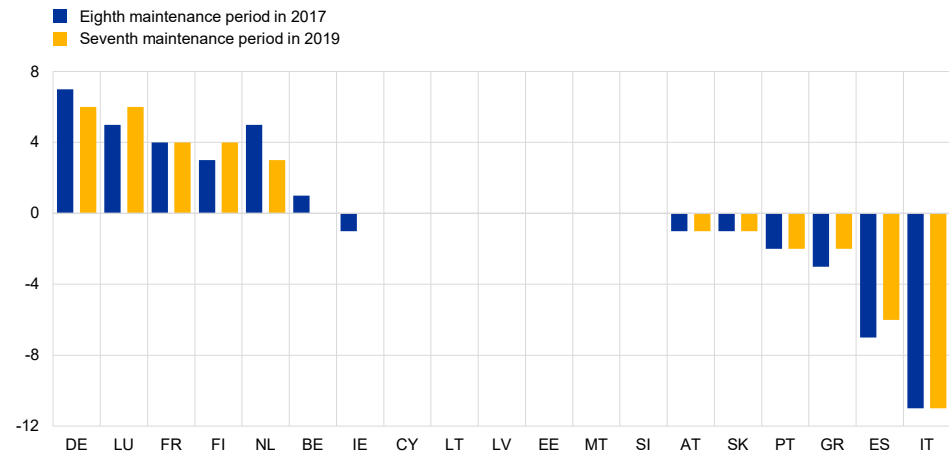
By analysing the differences between the concentration of excess liquidity in banks located in specific euro area countries and their respective capital keys (see Chart 35), it is possible to loosely identify three clusters in the distribution of excess liquidity. These are: one group where excess liquidity represents more than the respective capital keys (Germany, France, Luxembourg, the Netherlands and Finland), another group where excess liquidity is in line with the respective capital keys (Belgium, Estonia, Ireland, Cyprus, Latvia, Lithuania, Malta and Slovenia) and, finally, a group of countries where the concentration of excess liquidity is lower than the respective capital keys (Greece, Spain, Italy, Austria, Portugal and Slovakia).

<sup>77</sup> In January 2015 22% of euro area excess liquidity was concentrated in the Netherlands. By the beginning of 2017 that figure had fallen to 15% and then to 10% by the end of 2019.



**Chart 35****Comparison between countries' shares in the euro area's excess liquidity and their respective capital keys**

(percentage points, average over the maintenance period)



Source: ECB.

The differences in excess liquidity distribution depend on several drivers that have evolved over time.<sup>78</sup> After 2015 one of the drivers was related to the APP, namely the location of APP counterparties or, for those counterparties which are not located in the euro area, the location of the TARGET2 accounts on which APP-related transactions are settled. For example, while the amounts purchased by the NCBs under the PSPP follow the Eurosystem capital key, with the NCBs purchasing domestic bonds, the location of counterparties or TARGET2 accounts implies that the liquidity flows do not necessarily follow the Eurosystem capital key distribution. More recently, there may have been other drivers in play, namely the stringent internal credit limits followed by banks, a search for yield among euro area countries, and a “home bias” in euro area government bond holdings.

Furthermore, following the financial crisis a general increase in risk aversion and more conservative internal risk limits among banks may still be limiting cross-border liquidity flows and the broad-based interbank redistribution of liquidity within the euro area.

A significant development affecting the distribution of excess liquidity across euro area counterparties was the introduction of the two-tier system for remunerating excess reserve holdings.<sup>79</sup> In order to take full advantage of the two-tier system, those banks with excess reserves above the exempt tier could lend to those with unused exempt tier. This took place mainly through money market transactions and intra-group flows.

Excess liquidity levels increased by €74 billion (4.3%) in the first maintenance period after the introduction of the two-tier system. This increase occurred in parallel with a broader distribution of liquidity within the euro area as a result of liquidity flows towards countries with excess liquidity shares below their respective capital keys – Greece,

<sup>78</sup> Baldo, L. et al. (2017), “The distribution of excess liquidity in the euro area”, *Occasional Paper Series*, No 200, ECB, Frankfurt am Main, November.

<sup>79</sup> For more details, see the [Q&A section on the two-tier system for remunerating excess reserve holdings](#) on the ECB website.

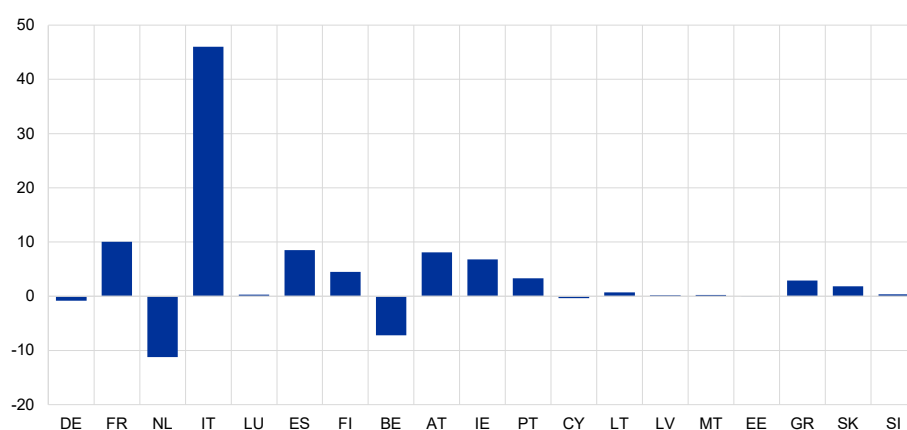
Spain, Italy, Austria, Portugal and Slovakia, (see Chart 35). On aggregate, in the first maintenance period after the introduction of the two-tier system, these countries accounted for almost all of the increase in excess liquidity within the euro area (€70 billion), which represented a rise of 34.1%.

For the remaining countries, with excess liquidity shares in line with or above their respective capital keys, no clear pattern can be identified. However, in these countries there has been a slight overall increase in excess liquidity, although, for most, the changes were relatively small.

### Chart 36

Changes in excess liquidity holdings by country after the introduction of the two-tier system, between the sixth and seventh maintenance period

(EUR billions)

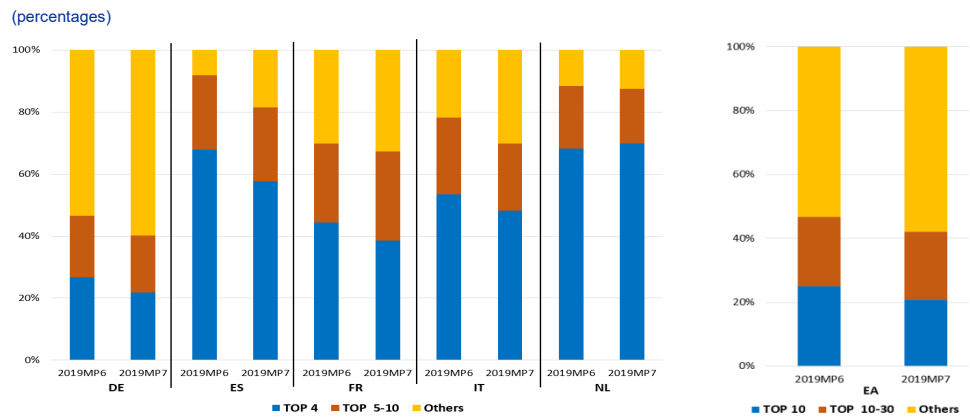


Source: ECB.

Furthermore, although excess liquidity in the euro area is not evenly distributed among individual banks within a jurisdiction, the concentration in individual banks is not so acute as to interfere with monetary policy implementation. Chart 37 shows that the top ten banks in Spain and the Netherlands represented almost 90% of excess liquidity in those countries in the maintenance period which was introduced in September 2019 (MP6). For Italy and France, that number was 78% and 70% respectively. A different scenario occurred in Germany, where the top ten banks represented less than 50% of excess liquidity. In the euro area, the top 30 banks accounted for 47% of the excess liquidity (see Chart 37).

**Chart 37**

Distribution of excess liquidity within selected euro area countries



Source: ECB.

After the introduction of the two-tier system, in the seventh maintenance period excess liquidity was more evenly distributed at bank level. Generally, within the euro area banks with more excess liquidity reduced their share of overall excess liquidity, and such a reduction occurred across jurisdictions.

**Box 6**

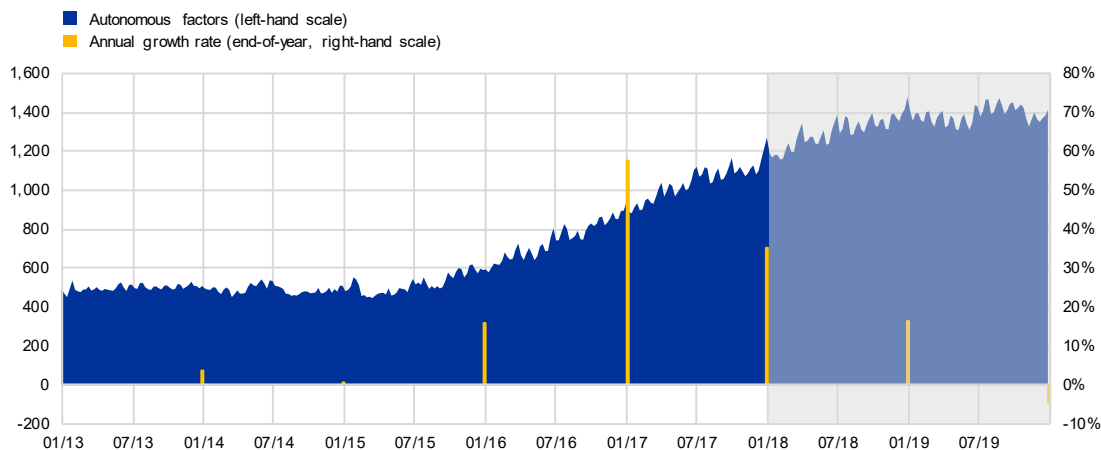
Comprehensive review of three autonomous factors: banknotes, non-monetary policy accounts and government deposits

Autonomous factors are assets and liabilities on the central bank balance sheet that affect the amount of central bank reserves available to the banking system, but are not under the direct control of the central bank's monetary policy implementation function. NCBs in the euro area forecast the evolution of autonomous factors as part of their daily liquidity management activities. The monetary stimulus provided by the Eurosystem in recent years, especially via the APP and the TLTRO, has resulted in a large liquidity injection, which has been partially absorbed by developments in autonomous factors. Currently, autonomous factors contribute to an absorbing effect of €1.4 trillion of liquidity (see Chart A). This box identifies the main trends and drivers that have influenced the evolution of the three main liquidity-absorbing autonomous factors over the review, namely (i) banknotes, (ii) non-monetary policy accounts, and (iii) government deposits. Cumulatively, these had absorbed €1.9 trillion at the end of 2019, while the remaining autonomous factor components partially mitigated the absorbing effect of those analysed in this box by €500 billion.

## Chart A

### Evolution of total autonomous factors: 2013-19

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



Source: ECB.

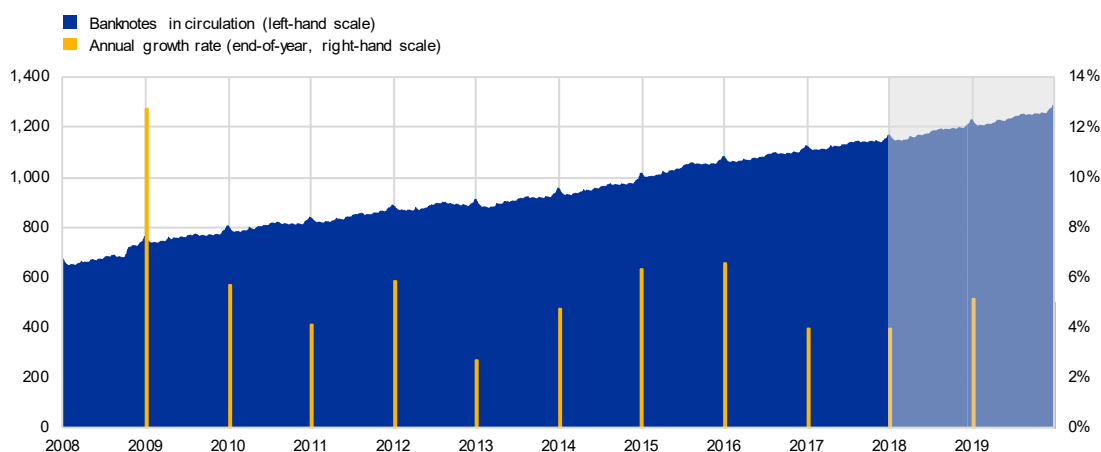
## Banknotes (balance sheet item L.1)

“Banknotes in circulation” is the largest liquidity-absorbing autonomous factor, and its long-term trend significantly affects the size of the Eurosystem balance sheet. Over the review period, the value of outstanding euro banknotes rose from €1.2 trillion to €1.3 trillion, an increase of €122 billion, which was equivalent to an average annual growth rate of 5.1% (Chart B).

## Chart B

### Euro banknotes in circulation and annual growth rate

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



Source: ECB.

Outstanding banknote volumes exhibit seasonal patterns, related mainly to (i) intra-week ATM replenishment strategies of banks, (ii) intra-month pension and salary payment regularities, and (iii) intra-year spending around national holidays.

Longer-term trends in banknotes are related to more structural factors, such as the role of banknotes in the economic system. Factors underpinning the public demand for cash affect the long-run growth

rate for banknotes in circulation and, in turn, the long-run overall size and composition of the Eurosystem balance sheet. For these reasons, an analysis conducted by the Eurosystem estimated the amount of banknotes in circulation to satisfy the following demand factors over time: (i) cash circulating outside the euro area; (ii) cash used as a means of payment; and (iii) cash held as a store of value.<sup>80</sup> This analysis showed that, as of end-2017, about 20% of banknotes in circulation were used as a means of payment, 30% were in circulation outside the euro area and the remaining 50% represented the inactive part of the circulation. This evidence suggests that the main driver of the long-run growth rate for banknotes is the function of cash as a store of value, as this represents the largest share of currency in circulation. The demand for cash for transactional purposes, where the substitution of banknotes by other innovative payment products may occur, plays only a minor role in the long-term demand for banknotes.

### **Non-monetary policy accounts (balance sheet item L5.2 and L6)**

A steady increase has been observed in the amount of liquidity deposited with the Eurosystem on non-monetary policy accounts since the introduction of negative interest rates in 2014. Non-monetary policy accounts are liabilities of the central bank that are not related to monetary policy. They include deposits by residents that are neither domestic banks nor domestic governments, such as international organisations with an office in the euro area, and by non-residents. Most of these deposits are part of the Eurosystem reserve management services (ERMS) that NCBs offer to foreign central banks, international organisations and foreign governments.

The excess liquidity injected through monetary policy operations and monetary policy portfolios pushed short-term rates to levels close to the interest rate on the deposit facility, and the regulatory constraints on receivers of liquidity in the market pushed them down further, to below the rate on the deposit facility. Short-term repo rates fell to even more negative levels around balance sheet reporting dates owing to the balance sheet constraints on credit institutions that either reject deposits around these reporting dates or only accept them at very negative rates (see Chart C). At these costly market prices, the fixed conditions offered by central bank deposits (non-monetary accounts) returned to being a competitive option for certain entities (e.g. foreign central banks), especially on reporting dates when market rates turn particularly volatile and there are limited alternative investment opportunities with credit institutions. Furthermore, money market alternatives cannot guarantee the same level of liquidity and safety as ERMS accounts which can be mobilised within two days for intervention purposes. The strategy of those investors, which is typically based on liquidity and safety considerations, does not incentivise them to place their foreign reserves with credit institutions or banks, and they are therefore willing to accept the low but stable price offered by the Eurosystem.

The steady increase of non-monetary policy accounts over the past four years was retraced in 2019. Since 2014 non-monetary policy accounts had quadrupled from an average of €100 billion in 2014 to €400 billion in 2018. This increase was mainly driven by the deposits of non-euro area residents. The trend for 2019 was, however, different from 2018. Following an annual increase in deposits of non-euro-area residents in 2018 of €100 billion, the trend reverted and deposits by non-euro area residents declined slightly by around €24 billion in 2019. This decline may have been the result of lower overall excess liquidity, which declined, on average, by €62 billion in 2019. Another potential driver could be related to the fact that alternative market instruments, such as repo transactions or

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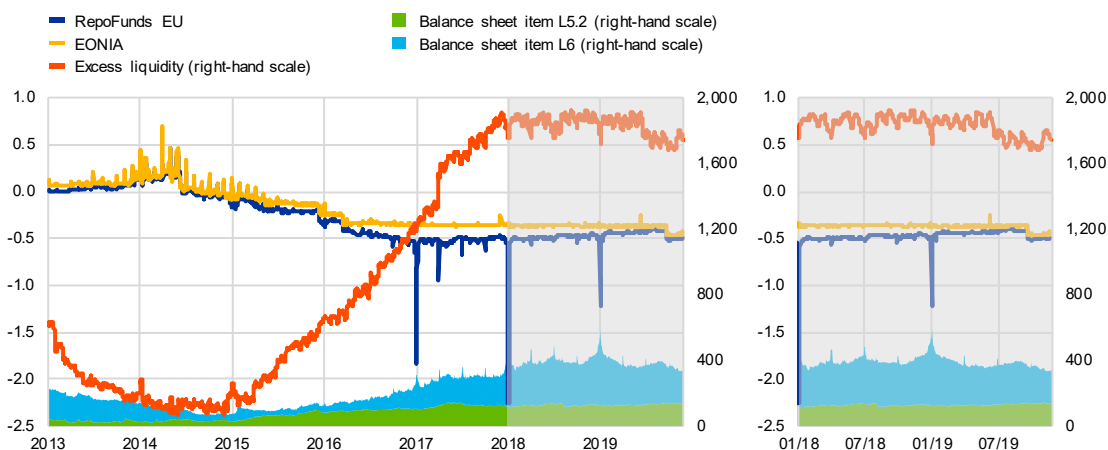
<sup>80</sup> For a more detailed analysis of the different uses of euro banknotes (estimated as of end-2017), see the article entitled "[Trends and developments in the use of euro cash over the past ten years](#)", *Economic Bulletin*, Issue 6, ECB, Frankfurt am Main, 2018.

core euro area government bonds, have become more attractive, and market rates have also been more stable, particularly over the reporting dates (see Chart C).

### Chart C

#### Balance sheet items L6, L5.2, excess liquidity and money market rates

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



Source: ECB.

### Government deposits

Deposits of national treasuries held with the Eurosystem represent the most volatile and unpredictable autonomous factor. Government deposits held at the Eurosystem can be affected by any financial operation conducted by national treasuries, for example debt issuance and redemptions, collection of taxes and payments of pensions. They are generally country-specific, depending on the treasuries' investment frameworks and institutional arrangements with their respective NCBs.

The remuneration of government deposits at the central bank is subject to limitations, in line with the prohibition of monetary financing established in the Treaty on the Functioning of the European Union. Furthermore, in 2019 the ECB refined a specific framework<sup>81</sup> for the remuneration of government deposits held by NCBs, with the aim of providing incentives for government deposits to be placed in the market, so as to facilitate the Eurosystem's liquidity management and monetary policy implementation.

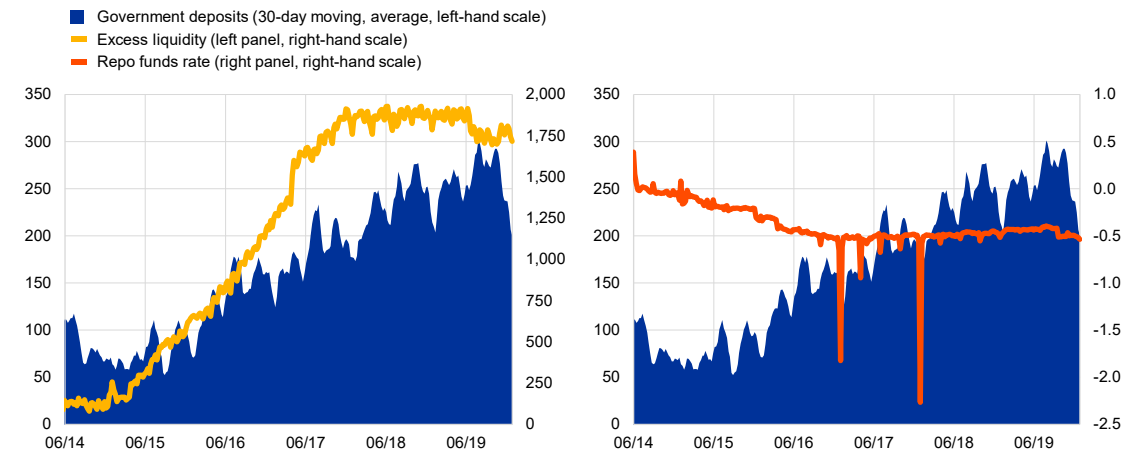
In an environment of negative interest rates, the amount of government deposits is also affected by money market conditions. Indeed, the current environment of negative money market rates and rising excess liquidity resulted in limited investment opportunities between national treasuries and credit institutions. Consequently, government deposits at national central banks increased from an average of €85 billion in 2014 to an average of €260 billion in 2019 (see Chart D).

<sup>81</sup> [Guideline ECB 2019/7](#) on domestic asset and liability management operations by NCBs.

## Chart D

### Euro area government deposits, excess liquidity and EU repo rate

(EUR billions)



Source: ECB.

Notes: This chart displays the EU repo funds rate, a daily euro repo index calculated from trades executed on the BrokerTec and MTS electronic platforms. Eligible repo trades are centrally cleared and use sovereign government bonds issued by any country in the euro area.

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