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July 2018

TECHNICAL NOTE—SYSTEMIC LIQUIDITY MANAGEMENT

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SYSTEMIC LIQUIDITY MANAGEMENT

Prepared By
Monetary and Capital Markets Department

This Technical Note was prepared by Diarmuid Murphy (IMF) and Paul Fisher (external expert) in the context of the Financial Sector Assessment Program in the euro area. It contains technical analysis and detailed information underpinning the FSAP's findings and recommendations. Further information on the FSAP can be found at http://www.imf.org/external/np/fsap/fssa.aspx

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ABS	Asset-backed Securities
APP	Expanded Asset Purchase Program
BoE	Bank of England
CCP	Central Counterparty
EA	Euro Area
ECB	European Central Bank
ELA	Emergency Liquidity Assistance
EONIA	Euro Overnight Index Average
ESCB	European System of Central Banks
EUR	Euro
EURIBOR	Euro Interbank Offered Rate
EU	European Union
FSAP	Financial Sector Assessment Program
FX	Foreign Exchange
GD	General Documentation Guideline
GFC	Global Financial Crisis
GGBB	Government Guaranteed Bank Bond
G-SIB	Global Systemically Important Bank
HQLA	High Quality Liquid Assets
IMF	International Monetary Fund
LCR	Liquidity Coverage Ratio
LTRO	Long-term Refinancing Operation
MOU	Memorandum of Understanding
NCA	National Competent Authority
NCB	National Central Bank
NSFR	Net Stable Funding Ratio
OIS	Overnight Index Swaps
PSPP	Public Sector Purchase Program
SRB	Single Resolution Board
SRF	Single Resolution Fund
SSM	Single Supervisory Mechanism
TFEU	Treaty on the Functioning of the European Union
TLTRO	Targeted Longer-term Refinancing Operations
USD	U.S. Dollar
VM	Variation Margin
WAM	Weighted Average Maturity

EXECUTIVE SUMMARY

The flexibility shown by the ECB/Eurosystem in adapting its framework, as required by circumstances, has helped improve funding and liquidity conditions. Compared to the situation pre-crisis, the ECB/Eurosystem has provided liquidity against a broader range of collateral and for as long as four years in terms of maturity; extended liquidity in foreign currency; conducted outright purchases of public and private sector assets (now tapering off); and reduced interest rates into negative territory. In these arrangements, policy is directed from the center, but is implemented mostly by the National Central Banks (NCBs); risks are largely shared. Market participants are complimentary about the role the ECB/Eurosystem has played in backstopping the financial system and its forward guidance on monetary policy.

Funding markets are functioning well most of the time, and the level of overall liquidity is adequate, as corroborated by the liquidity stress tests. Secured markets are deep, though liquidity in the unsecured interbank market has declined. Market players are reportedly adapting to new regulations, notably the leverage ratio, net stable funding ratio (NSFR) and liquidity coverage ratio (LCR), but the adaptation may have had unforeseen consequences. Window-dressing behavior by banks globally appears to be adding to market volatility at the end of reporting periods. Modifications to the asset purchase program (APP) securities lending facilities, notably the introduction of cash collateral, have helped support bond and repo market liquidity. Moving end-period reporting of regulatory ratios to a period-average would also help.

The ECB/Eurosystem is in the initial stages of thinking about the shape of its steady state operational framework. A key consideration will be how much of the current liquidity is likely to be excess and how much structural, for example reflecting new regulatory requirements for high quality liquid assets (HQLA) and term funding. Choices need to be made around the calibration of instruments and collateral policy in that context. Dealing with these issues would benefit from advanced planning and communication, for example through the publication of normalization principles and dialogue with market participants.

The review of certain liquidity-providing operations and of their collateralization, seems warranted now that conditions are generally stable. To the extent that the ECB/Eurosystem retains a broad collateral framework, it should seek to avoid undue incentives for banks to deliver less liquid assets to the ECB/Eurosystem which would potentially make banks reliant on the ECB/Eurosystem's collateral transformation role to meet their regulatory metrics, rather than on markets, even in normal times. Specifically, the FSAP recommends that the ECB/Eurosystem consider mechanisms such as different charges (e.g., interest rate add-ons) for collateral classes with differing liquidity characteristics. That differentiation should be in addition to the existing use of collateral haircuts that are already calibrated for risk equivalence. Such mechanisms could be a significant change to the ECB/Eurosystem's approach to collateral policy taken thus far but would be justified by the changes in incentives created by new liquidity regulations. Furthermore, although total usage is generally relatively small, the ECB/Eurosystem should nonetheless review its U.S. dollar swap facility to prevent opportunities for arbitrage whilst retaining it as an effective market backstop.

Some current arrangements should be further updated with the aim of better supporting monetary and capital markets union. For example, securities lending arrangements for APP purchased assets, which were successful in alleviating market strains, are still conducted on a different basis in each jurisdiction, which could entrench market fragmentation. Greater harmonization would reinforce greater financial market integration.

Certain operational changes would allow a clearer delineation between ECB/Eurosystem monetary policy operations and emergency liquidity assistance. The ECB/Eurosystem should remove the possibility to give derogations for banks to use self-issued government guaranteed bank bonds as collateral in ECB/Eurosystem monetary policy operations.

Careful planning will be needed for the phase-out of exceptional measures over the medium term. The introduction of targeted longer-term refinancing operations (TLTROs), combined with APP purchases, have effectively squeezed out some use of term funding markets, making the careful sequencing of exit from these TLTROs crucial, particularly for banks with limited access to wholesale markets. Currently, the market has a clear interpretation of the exit plan, but should events require a deviation, this could result in some volatility in markets. More generally, as monetary policy normalizes, the ECB/Eurosystem might need to intervene in systemically important markets to maintain liquidity and price discovery, which could be done other than by large scale purchases or lending operations.

The ECB/Eurosystem is fully aware of the pivotal role of reference interest rates and is actively supporting industry reforms. A smooth transition to new reference rates, including the possible replacement of Euribor, is not yet assured, and could lead to significant market stresses. Hence, this work remains of important for financial stability.

The emergency liquidity assistance (ELA) framework has evolved in the course of the crisis and its aftermath. The ECB/Eurosystem has taken a positive step in publishing its ELA Agreement. The provision of ELA is currently a national responsibility; the main criteria for the provision of ELA is that the relevant credit institution is solvent (i.e. complies with harmonized minimum regulatory capital levels) or has a credible recapitalization plan, and that it makes available sufficient collateral acceptable to the respective NCB. At the discretion of the respective NCB, ELA may, once financial stability is threatened and under the above-mentioned conditions, be provided also to a credit institution in resolution (but not to an institution in liquidation).

Looking forward, greater harmonization and ultimately centralization of ELA arrangements would bring benefits to the banking and monetary unions. The ECB is best placed to coordinate ELA preparations for cross-border banking groups and central counterparties (CCPs), monitor (from the center) institutions for emerging liquidity strains, and the Governing Council to judge whether all criteria are met when ELA may be necessary. Coordination and harmonization of ELA arrangements, would be best achieved, in the long-term, if the ECB had stronger overall ownership, with central decisions taken on grounds other than interference with monetary policy implementation. However, some legal and operational considerations would need to be clarified to enable a shift in that direction, which need not involve a reduction in the operational role of NCBs.

In the design of the ECB/Eurosystem's future monetary policy implementation framework (and ELA), it would be helpful for the ECB/Eurosystem and the European authorities generally to articulate more explicitly what is understood to be its financial stability mandate. This clarity would have benefits in operational design and emergency support situations, and in signaling and accountability. For example, such clarity would enable the ECB/Eurosystem to structure market support actions without the attendant monetary expansion and allow the ECB/Eurosystem to consider ELA actions (including the status of preparations and collateral arrangements) from a wider financial stability perspective.

Devoting more effort to the early detection of emerging strains, and enhanced coordination with supervisory action would be worthwhile, even in calm times. The ECB/Eurosystem was able to track individual banks' liquidity flows once strains materialized. However, the ECB/Eurosystem "horizon scanning" procedures for identifying emerging collateral shortages were not fully effective; the authorities should be better able to anticipate an escalation of liquidity needs before formal action is required. Such liquidity and collateral-related "horizon scanning" procedures would require further active and formalized engagement between supervisory and monetary policy implementation and risk management areas, within the ECB, within the national level, and between the two. Earlier preparation and sharing of information (as part of "horizon scanning") would allow, for example, for the development of a shared watchlist for banks and CCPs, and jointly agreed ELA funding plans to be prepared earlier (i.e. closer to when the ELA is provided rather than within the current two-month timeline). A further benefit of "horizon scanning" is that it would allow for pre-verification of collateral availability before mobilization to allow for legal or other barriers to be identified. Such "pre-positioning" does not seem to be part of existing procedures. For this enhanced framework to work at a national level, harmonized arrangements should apply.

In addition, a more explicit and forward-looking business model assessment, as part of ELA processes, would help ensure that an institution is likely to remain viable, and thereby help set clear boundaries on the extent of liquidity support. In addition, for a bank that is using its capital buffers, a forward-looking solvency assessment does not need to wait, as now according to ELA guidance, for formal data to show that these buffers have become exhausted. ELA preparations can be started in anticipation.

Supervisory actions should start before buffers are exhausted and even before ELA is deemed necessary. Evidence that an entity's buffers are deteriorating, should be taken as a strong signal of deficiencies in liquidity management by the bank in question, which deserve supervisory attention and, typically, timely corrective action. Potential providers of ELA should be alerted through the joint watch list. Once a bank has reached the stage of ELA, then the supervisors and providers of ELA need to work hand in hand in order to help restore the bank's liquidity position and strengthen its liquidity management.

Arrangements for the availability of liquidity in the immediate aftermath of resolution measures should be clarified among stakeholders. A bank emerging from resolution that is experiencing liquidity strains could have access to standard ECB/Eurosystem monetary policy operations; if not, it would need to seek ELA. All concerned authorities (ECB Supervision and Central Banking (monetary policy implementation and risk management) areas, and the Single Resolution Board (SRB) need to clarify the ECB/Eurosystem's approach to credit operations and ELA, along with required safeguards, boundaries of support, and discussion of scenarios where monetary policy or ELA collateral may not be immediately available. It would help if a related MOU was agreed between all concerned authorities. In this connection, consideration should be given to paring back procedures for state aid oversight for state indemnities provided to support ELA provision (at least in resolution, when predetermined open and fair procedures are followed, and given that the relevant bank meets the required eligibility criteria, including the FSAP's recommended viability criterion); such indemnities may be needed to support effective resolution measures and overall financial stability in emergency situations.

Emergency liquidity support to euro area CCPs should be further harmonized. Euro or foreign exchange (FX) support should be formalized within a centralized framework. Under the TARGET2 Guideline, euro area CCPs may be provided with access to the marginal lending facility at the discretion of the Governing Council. While this possibility provides a safety net in terms of euro liquidity provision, the arrangement should have the safeguards (e.g., increased supervisory intrusion, preparation of funding plans, and possibly reporting obligations) equivalent to an ELA framework. The arrangement would require the close cooperation and coordination between the ECB/Eurosystem and supervisors of CCPs.

The authorities should review the routine disclosure of balance sheets, to minimize the risk of premature ELA disclosure. As noted in the recent national FSAPs, financial stability considerations justify flexibility in both content and timing around disclosure of the provision of ELA.

No obvious and necessary changes to the operational framework are needed to deal with Brexit-related risks. The European System of Central Banks (ESCB) (including the non-euro members of the European Union) need to stand ready however to deal with any liquidity shortages or market disruptions that may occur, and some of the recommendations to specific operations discussed above could help in this regard.

Table 1. Main Recommendations

#	System-wide Liquidity	Responsibility	Priority*	Timeline**
1	Articulate clearly the ECB/Eurosystem's financial stability mandate, so that it can have confidence when planning and conducting operations for financial stability purposes (¶34)	ECB Central Banking, ECB Legal	M	Medium-term
2	Develop the future operational framework, including balance sheet size, to reflect regulatory developments and support capital markets union (¶35)	ECB Central Banking	H	Medium-term
3	Assess the introduction of mechanisms (e.g., interest rate add-ons) to address the incentives for supplying illiquid collateral for ECB/Eurosystem repurchase operations, to encourage the build-up of HQLA in private markets (¶37)	ECB Central Banking	H	Short-term
4	Harmonize NCB securities lending arrangements to support financial market integration (¶38)	ECB Central Banking, NCBs	M	Medium-term
5	Clarify the boundaries in terms of currently available derogations around monetary policy operations to minimize the potential for their use as surrogate emergency liquidity assistance (¶39)	ECB Central Banking	H	Short-term
6	Manage the transition from crisis related policy settings with appropriate signaling to minimize possible market disruption. For example, develop and announce normalization principles to anchor market expectations, and establish solutions to avoid a TLTRO "cliff-edge" (¶41, ¶42)	ECB Central Banking	H	Short-term
7	Formalize tools and overall framework for dealing with potential dysfunction in systemically important securities markets (¶43)	ECB Central Banking	M	Medium-term
8	Revisit the USD swap facility to ensure that it remains an effective market backstop whilst preventing opportunities for arbitrage in normal times, and assess structural demand for USD going forward (¶45)	ECB Central Banking	H	Immediate
9	Introduce averaging as opposed to end-period reporting for measures such as leverage ratios, SRF contributions etc., to help minimize market volatility (¶47)	ECB Banking Supervision/SRF	M	Medium-term
10	Assess the merits of introducing measures, such as ECB/Eurosystem deposit facility remuneration limits, for CCPs to minimize escalation of liquidity strains in a crisis (¶49)	ECB Central Banking	L	Medium-term

#	Emergency Liquidity Assistance (ELA)	Responsibility*	Priority	Timeline**
11	Further harmonize, before ultimately centralizing, ELA arrangements, (¶51)	ECB Central Banking, NCBs	H	Short-term/ Long-term
12	Expand the liquidity "horizon scanning" framework, by means of further active and formalized engagement between supervisory and monetary policy implementation and risk management areas, to facilitate the better detection of emerging liquidity strains, by: • greater (and harmonized) operational and supervisory information exchange and engagement requirements to fully exploit working synergies; requiring funding plans sooner (¶53) • developing a central/shared watch list for banks and CCPs with emerging liquidity issues and applying scenario analysis (¶53) • developing and harmonizing collateral "pre-positioning" or verification arrangements, in particular for ELA (¶55)	ECB Central Banking, ECB Banking Supervision, NCBs, NCAs	H	Immediate
13	Formalize central bank cooperation agreements (¶56)	ECB Central Banking, NCBs	M	Short-term
14	Perform ELA testing to enhance operational readiness (¶57)	ECB Central Banking, NCBs	M	Short-term
15	Pare back procedures for application of state aid rules to indemnities given by governments to NCBs for ELA operations (at least in resolution) (¶61)	EC	H	Short-term
16	Complement resolution arrangements by: • establishing an MOU with the authorities clarifying the availability of central bank liquidity for resolution cases (¶59) • adding a forward-looking solvency and viability test to the assessment (¶60)	ECB Central Banking, SRB	H	Short-term
17	Refine the approach to emergency liquidity support to euro area CCPs in euro and FX, apply ELA safeguards to TARGET2 emergency euro facility to CCPs, and improve information gathering regarding CCPs for "horizon scanning" purposes (¶62, ¶63)	ECB Central Banking	L	Medium-term
18	Ensure ELA is not prematurely disclosed through routine ECB/Eurosystem balance sheet publications (¶64)	ECB Central Banking, ECB Banking Supervision	M	Short-term

* In this table ECB Central Banking refers to DG-Market Operations and DG-Risk Management, while EC refers to the European Commission.
** Immediate: within one year; Short-term: in 1 to 2 years; Medium-term: in 2 to 5 years, Long-term: 5 years.

INTRODUCTION

1. **A number of factors have affected and are affecting systemic liquidity management in the EA, including new liquidity and capital regulations.** ECB/Eurosystem monetary policy operations influence bank behavior and impact money markets, whose functioning is critical for the efficient distribution and pricing of liquidity. New liquidity regulations require participants to hold larger liquidity buffers and have more term funding. Also, the introduction of the leverage ratio as well as bank levy and contribution to resolution funds affect bank's incentives to provide intermediation capacity, especially around reporting dates.

2. **Changing conditions require the policy framework to adjust; this note elaborates on the issues that arise and possible responses.** Given past and prospective changes, the ECB/Eurosystem needs to decide how much of those needs it should meet through its monetary policy operations and how much should be left to the market, both in normal times and in crisis. This requires an assessment of interbank, foreign exchange, and securities market functioning to understand the extent to which participants should internalize the cost of liquidity without over-reliance on the ECB/Eurosystem. An evaluation of liquidity safety nets is also needed, including the circumstances around and the conditions necessary for the provision of ELA to individual entities, the system, or to specific markets, should stresses arise.

THE CURRENT OPERATIONAL FRAMEWORK

A. Main Principles and Institutional Design

3. **The ECB/Eurosystem's monetary policy objectives and high-level implementation framework are guided by the Treaty on the Functioning of the European Union ('TFEU') and the Statute of the European System of Central Banks and the ECB ('ESCB Statute').** Article 127(1) of the TFEU establishes that the primary objective of the ESCB is to maintain price stability. Article 12.1 of the ESCB Statute charges the Governing Council with formulating monetary policy. The Executive Board implements such decisions, and to the extent deemed possible, the ECB has recourse to the national central banks to carry out operations which form part of the tasks of the ESCB.[1] The TFEU is less clear on the financial stability mandate of the ECB/Eurosystem compared to the mandate for monetary policy, but it is clear that the ECB/Eurosystem is expected to contribute to financial stability.[2] Since ELA is currently a responsibility of national central banks (NCBs), it is treated within the framework of Article 14.4 of the ESCB Statute.

[1] For the basic tasks to be carried out through the ESCB, see Article 3 of the ESCB Statute and 127(2) TFEU.

[2] Article 127(5) TFEU states that "the ESCB shall contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system."

4. In practice, monetary policy is decided centrally but is implemented on a decentralized basis. NCBs deal directly with their own counterparties (with regard to exercising tenders and collateral management) and local markets while the implementation framework and policy is determined by the Governing Council.[3] The ESCB Statute provides that the Governing Council may decide that NCBs shall be indemnified in exceptional circumstances for specific losses arising from monetary policy operations.

5. The ECB/Eurosystem's monetary policy implementation framework is intricate, reflecting the breadth of its counterparts and collateral specificities in member countries.[4] Implementation of monetary policy is guided by a number of key ECB/Eurosystem principles, including neutrality and equal treatment (see Appendix I). The ECB/Eurosytem's counterparty framework is broad, reflecting the breadth of the euro area (EA) banking system and the bank-based structure of lending to the EA economy. The calibration of the ECB/Eurosytem's framework is underpinned by efforts to minimize disproportionate burdens on smaller banks. A Single List of collateral is common to all EA jurisdictions so that banks operating in different markets are not disadvantaged. The list covers both marketable and non-marketable assets that fulfil uniform EA-wide eligibility criteria. A positive ongoing development within the Eurosystem is the creation of a single collateral management system, which will provide a more efficient technical solution for collateral management services, and will contribute to the principle of equal treatment (of counterparties).

6. Pre-crisis, the ECB/Eurosystem successfully operated a conventional monetary policy implementation framework. Operating under a liquidity deficit environment, the ECB/Eurosystem's approach was to inject liquidity at the margin through short-term repos (rather than outright purchases). The ECB/Eurosystem used its variable rate weekly operation as the main tool to provide liquidity to allow for the smooth fulfillment of banks' reserve requirements over each reserve maintenance period. Longer-term repurchase operations (LTROs) of 3 months' maturity—making up roughly 25 percent of the total liquidity provision back then—provided longer-term liquidity at market rates, aimed at smaller banks and those less sophisticated at liquidity forecasting. Overall, this system was very successful at stabilizing short-term rates (see Figure 1).

B. ECB/Eurosystem Non-Standard Measures in Response to Market Strains

7. The ECB/Eurosystem acted flexibly and decisively to address the unprecedented challenges brought about by the banking crisis and EA sovereign crisis.[5] In addition to cuts in

[3] Collateral is assessed on a decentralized basis; where marketable assets are listed and where non-marketable assets are held. There is cross-border cooperation regarding the assessment of non-marketable assets used in monetary policy operations.

[4] The ECB/Eurosystem's operational framework and associated rules and procedures are established in its General Documentation, a document containing a detailed description of the monetary policy procedures, instruments, and risk controls. See http://eur-lex.europa.eu/eli/guideline/2014/60/oj/eng.

[5] Appendix B presents a summary of the ECB/Eurosystem's responses during the financial crisis.

interest rates, the ECB/Eurosystem quickly modified its monetary policy implementation framework and used an exceptional set of non-standard policy tools. The ECB/Eurosystem significantly widened the scope of its operations by providing liquidity against a broader range of collateral and for maturities as long as four years and extended liquidity in foreign currency (FX). The ECB/Eurosystem through its non-standard measures mainly focused on banks, essentially intermediating in the banking system, to improve their funding and liquidity conditions. During and since the global financial crisis, the ECB/Eurosystem conducted large scale asset purchases (see Table 2 and Figure 2) and launched targeted lending operations in an attempt to repair the bank lending channel and to meet the ECB/Eurosystem's price stability objective.[6]

Table 2. ECB/Eurosystem Asset Purchase Program

(end-January 2018; amortized cost; in euro million)[1]

	Total	Public Sector	Covered Bonds	Corporates	Asset Backed
Holdings	2,316,253	1,909,668	244,050	137,232	25,303
Risk Sharing	-	80 percent Not shared	Shared	Shared	Shared
WAM in years	Not available	7.65	Not available	Not available	Not available

Source: ECB.

[1] In terms of the ECB/Eurosystem's terminated programs, as at January 2018, holdings under the Securities Market Program and covered bond purchase programs stood at EUR89,134 million and EUR10,775 million respectively (amortized cost).

8. ECB/Eurosystem actions resulted in a structural shift in the liquidity position of the system to a position of excess, where the deposit facility rate became the relevant policy rate. Furthermore, the main refinancing operation was no longer its primary operation, instead asset purchases and targeted longer-term refinancing operations became the main liquidity injection tools.

9. In order to underpin the banking system, the ECB/Eurosystem introduced some elements of positive discretion into its unified monetary policy implementation framework. These discretionary derogations which may apply to very specific cases (see Appendix III) allow certain banks to continue to access ECB/Eurosystem standard operations.

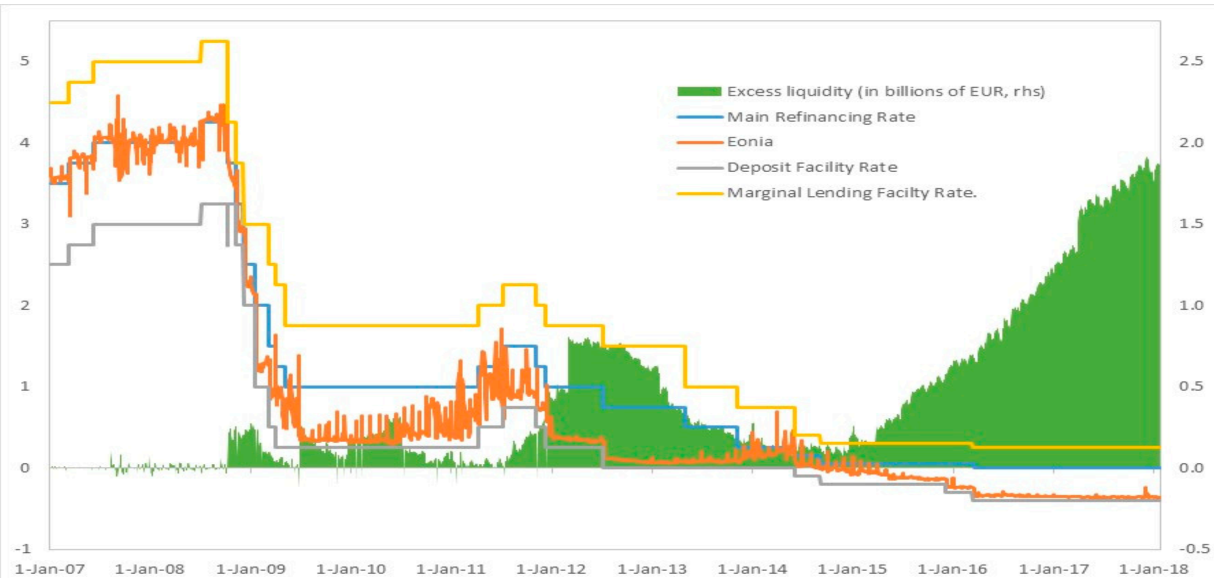
10. Constraints placed on the ECB/Eurosystem meant that sometimes its actions were effective in addressing its primary concerns but might have been sub-optimal in supporting monetary and capital markets union.[7] Unlike under a national system, the ECB/Eurosystem does

[6] See Box 3 of ECB Occasional Paper Series No 188 for a description of how the ECB/Eurosystem performs asset purchases.

[7] The ECB/Eurosystem is supportive of capital markets union—see for example the ECB/Eurosystem's contribution to the European Commission's consultation on Capital Markets Union mid-term review 2017 (https://www.ecb.europa.eu/pub/pdf/other/ECB_contribution_to_EC_consultation_on_CMU_mid-term_review_201705.en.pdf).

not have a central fiscal backstop.[8] So, when expanding its collateral framework, for example, the expansion bore some resemblance to the principles of its older (pre-2007) Tier 1/Tier 2 collateral framework by allowing NCBs to determine the eligibility criteria and accept the related credit risks of this collateral within certain limits set centrally by the Governing Council. More recently the ECB/Eurosystem has conducted the majority of its asset purchases on this non-loss sharing basis.[9] Furthermore, as discussed later, the ECB/Eurosystem introduced significant improvements to its securities lending arrangements.[10] The ECB recognizes that its actions have resulted in an increasingly complex framework, and it is understood that work is underway to seek opportunities for streamlining.

Figure 1. EONIA vs. ECB/Eurosystem Policy Corridor
(in millions EUR and in percent)



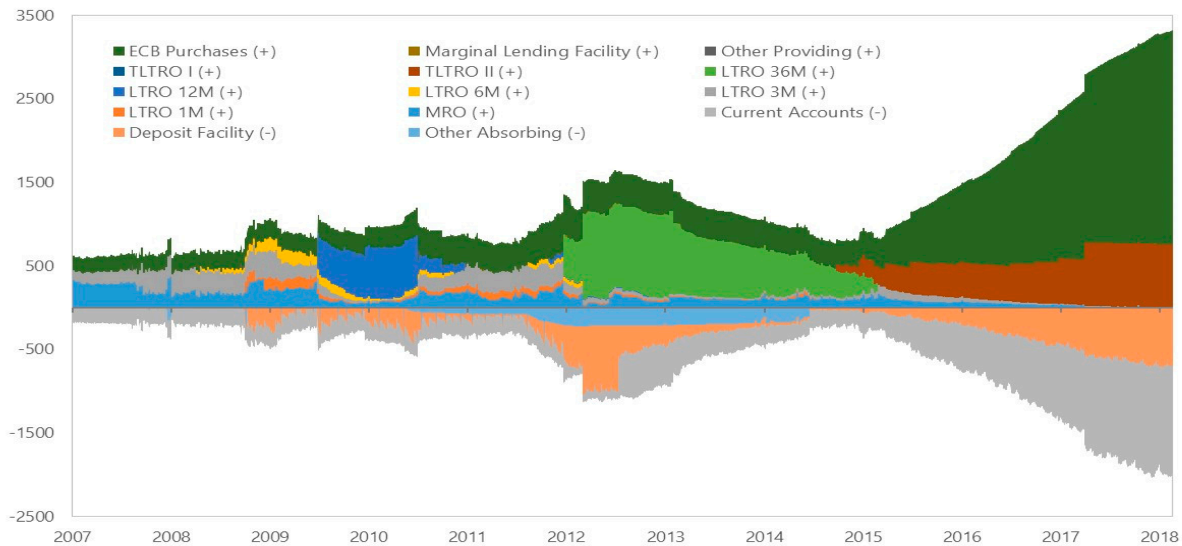
Sources: Bloomberg, and IMF staff calculations.

[8] In the case of the Bank of England, for example, its asset purchase programs were financed by a loan to the Asset Purchase Facility Fund, which holds the assets and is indemnified against loss by the Treasury.

[9] Prior to 2007, the ECB/Eurosystem operated under a Two-Tier list; Tier One consisted of marketable debt instruments which fulfilled uniform euro area wide eligibility criteria and were loss sharing, while the Tier Two list consisted of marketable and nonmarketable assets which are important for national financial markets and banking systems (non-loss sharing).

[10] Each NCB determines the securities lending modalities of their respective APP holdings, reflecting domestic infrastructures and market practices.

Figure 2. ECB/Eurosystem Operations by Type
(in millions EUR)



Sources: ECB, and IMF staff calculations.

EMERGENCY LIQUIDITY ASSISTANCE

A. Main Principles and Institutional Design[11]

11. The provision of ELA is currently a national responsibility, and its use in recent years was a key instrument for stabilizing the system. The provision of ELA within the EA is a discretionary decision for the relevant NCB(s). ELA losses, should they occur, reside with the NCB that provided the ELA.

12. Where significant ELA amounts are disbursed, this is subject to non-objection by the Governing Council. Specifically, where ELA for an individual financial institution or a given group of financial institutions exceeds a threshold of EUR2 billion, the Executive Board shall decide whether Governing Council consideration is required. In such circumstances the Governing Council assesses whether the provision of ELA interferes with the objectives and tasks of the ESCB (Article 14.4 of the ESCB Statute). All NCB actions, including the provision of ELA, are assessed by the ECB/Eurosystem from a monetary financing perspective.[12]

13. The provision of ELA is not an itemized item in NCB or ECB balance sheet publications. ECB/Eurosystem rules do not require NCBs to publish balance sheets on a regular basis, but the

[11] This analysis benefited greatly from responses to an IMF questionnaire circulated by the ECB to NCBs.

[12] Article 123 of the TFEU prevents the central bank from taking actions which would directly finance government spending.

ECB/Eurosystem does set guidance which the ECB/Eurosystem recommends applying to national operations "to the extent possible" for consistency and comparability reasons.[13] In practice, NCB's publish their balance sheets on a monthly basis, while the ECB itself publishes a consolidated balance sheet statement on a weekly basis, in addition to a daily estimate of the net liquidity effect from autonomous factors and monetary policy portfolios.[14]

14. In 2017, the ECB/Eurosystem took the positive step of moving towards a more transparent ELA framework. Before this little detail around the structure or provision of this arrangement was available publicly; mainly in order to prevent moral hazard and to incentivize self-insurance of liquidity risks. However, the increasing need for ELA by certain banks and banking systems during the crisis, and the increasing number of information requests received by the ECB/Eurosystem, prompted the ECB/Eurosystem to re-consider its approach and resulted in publishing the ELA Agreement with a view to streamlining and increasing transparency around the framework for central bank liquidity support to financial institutions.[15]

15. The ELA Agreement includes a description of the allocation of responsibilities, costs, and risks for euro denominated ELA, and for the provision and sharing of information. Many features of the ELA Agreement are structured as guidance to NCBs, given the national responsibilities around ELA use; for example, central banks are encouraged to put in place cooperation arrangements with other central banks, but are not required to do so. The ELA Agreement specifies certain key criteria (e.g. required solvency metrics) and other requirements, such as the need for funding plans within two months of when ELA is first provided. Some ELA features, such as the rate to be charged for foreign exchange ELA, and details regarding acceptable ELA collateral, are not disclosed.

16. Solvency is determined by compliance with harmonized minimum regulatory capital levels, while a formal viability assessment is not applied.[16] Credit institutions falling short of capital requirements can potentially receive ELA subject to an adequate recapitalization plan.[17] Meanwhile, should collateral allow, and conditional on counterparty eligibility criteria and related requirements being fulfilled, banks in the process of a swift and credible recapitalization, can continue to access ECB/Eurosystem monetary policy operations, but without any other ELA

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[13] See http://www.ecb.europa.eu/ecb/legal/pdf/celex_32016o0034_en_txt.pdf.

[14] NCB ELA can appear in a number of NCB balance sheet items, but generally would be expected to appear under balance sheet item 6 "other claims on euro area credit institutions denominated in euro" for euro denominated ELA and item 3 "claims on euro area residents denominated in foreign currency" for foreign currency ELA.

[15] See https://www.ecb.europa.eu/pub/pdf/other/Agreement_on_emergency_liquidity_assistance_20170517.en.pdf.

[16] In some recent instances of ELA, the solvency assessment was also made conditional on the availability of an agreed EU/IMF program to ensure the solvency of the concerned banks.

[17] For ELA, harmonized minimum regulatory capital levels should be restored within 24 weeks after the end of the reference quarter of the data that showed that the bank does not comply with these metrics (and in exceptional cases the Governing Council may decide to prolong the grace period beyond 24 weeks).

safeguards or government indemnities in place. Liquidity is potentially available to support resolution actions, except liquidation. Since July 2017, monetary policy liquidity is no longer provided to entities in wind-down, except for a narrowly defined grandfathering of legacy entities. ELA support to entities in wind-down is not explicitly referred to in the ELA Agreement.[18]

17. Decisions around the need for supporting indemnities from fiscal authorities resides with NCBs, but reliance on indemnities is complicated by European Union (EU) state aid rules. State indemnities are rarely sought by NCBs because they trigger the application of state aid rules. EU state aid rules apply where credit risk associated with ELA operations is moved from the central bank to the state.[19] The IMF mission was informed that such an EU assessment would not necessarily delay or prevent the timely provision of ELA, as in general, the EU assessment commences only after the European Commission is notified of the provision of the government indemnity. However, the assessment could add uncertainty to ELA provision, and therefore risk undermining the policy objectives the operation is trying to achieve. Uncertainty is created, inter alia, by the fact that the European Commission's 2013 Banking Communication is (i) silent on the conditions that a state guarantee for ELA should meet to be deemed compatible with the TFEU, and (ii) does not detail what remedial actions need to be taken should state aid be considered to be incompatible with the TFEU.

18. There are a number of emergency lending facilities available to support the euro and FX liquidity needs of euro area CCPs, but the configurations are complex. CCPs with banking licenses (of which there are two) have the potential to be counterparts under the ECB/Eurosystem's standard framework, including access to the ECB/Eurosystem's marginal lending facility and the U.S. dollar swap facility. In 2010, the possibility of providing euro area CCPs with access to marginal lending facility at the discretion of the Governing Council was introduced into the TARGET2 Guideline. FX needs from nonbank EA CCPs may be considered under NCB ELA arrangements at national risk. Regarding CCPs domiciled outside of the euro area, the ECB/Eurosystem may establish liquidity arrangements in line with the announcement of the international central banks.[20] In accordance with this announcement, a dedicated arrangement was put in place by the ECB/Eurosystem and the Bank of England (BoE). The scope of the existing BoE- ECB/Eurosystem FX swap arrangement was extended to cover potential emergency liquidity provision in euro to certain U.K. CCPs.[21] Should the swap line be activated for the relevant U.K. CCP(s), the credit risk of the CCP(s) would not be borne by the ECB/Eurosystem since they would be lending to the BoE.

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[18] Asset management vehicles or wind-down entities are considered ineligible and thus cannot access Eurosystem monetary policy operations.

[19] If the circumstances are considered exceptional, state aid can be found to be compatible with the common market if certain conditions are met.

[20] See Statement by the Economic Consultative Committee as set out in Appendix II of the FSB's Third Progress Report on Implementation of OTC Derivatives Market Reforms.

[21] See details of the arrangement here: https://www.ecb.europa.eu/press/pr/date/2015/html/pr150329.en.html.

19. ELA has been used by some banks for extended periods. Despite the broad expansion of eligible collateral for ECB/Eurosystem monetary policy operations, there were reported instances where banks had to take recourse to ELA arrangements, sometimes for prolonged periods in the absence of full market access.

20. Within the ECB, the anticipation and monitoring of liquidity needs is strictly bound by a "separation principle." There is a formalized framework for the exchange of liquidity-related data between the supervisory and monetary policy implementation and risk management areas of the ECB, both in the regular course of business and in emergency times.[22] In general, ECB Banking Supervision incorporates information received from the monetary policy implementation side of the ECB into their own prudential liquidity templates, while information received from ECB Banking Supervision is used by the monetary policy implementation and risk management side of the ECB to support relevant assessments (e.g., continuous financial soundness of monetary policy counterparties). This information sharing does not extend to recovery plans. The agreement is data focused and stops short of encouraging collaboration and the free and open flow of information between supervisory and operational/risk management teams.

21. At a national level, different approaches are taken regarding supervisory and monetary policy implementation/risk management interactions. The ECB/Eurosystem does not set minimum requirements regarding information sharing arrangements within NCBs or between National Competent Authority (NCAs) and NCBs, and therefore different approaches are taken regarding the information that is gathered and how this information is shared across monetary policy implementation/risk management and supervisory areas.

22. ECB monitoring of the liquidity needs of CCPs focuses primarily on an assessment of data and outputs from supervisory colleges established under European Market Infrastructure Regulation.[23] Additional and more real-time liquidity information may be obtained by the ECB's monetary policy operations area by relying on NCBs to request such information from national competent authorities (NCA) of EA CCPs.[24] In contrast, based on the dedicated BoE- ECB/Eurosystem emergency liquidity arrangement for relevant U.K. CCPs, the ECB/Eurosystem with the BoE has operationalized direct information exchanges for both regular and crisis-management purposes.

[22] "Emergency times" are defined as instances when an institution enters into Stage II of the Single Supervisory Mechanism's (SSM) emergency action plan.

[23] The ECB is also involved in European Securities and Markets Authority stress tests, including the design of the liquidity stress test.

[24] In this regard, the ECB/Eurosystem proposed in June 2017 to amend the ESCB Statute in order to be able to provide facilities to CCPs and making regulations for CCPs. As noted by this FSAP, this would also give the ECB/Eurosystem, as central bank of issue under European Market Infrastructure Regulation, increased the necessary powers to carry out its responsibilities with regard to the recognition and supervision of systemically important third-country CCPs.

MONEY AND FOREIGN CURRENCY MARKETS

A. Money Markets

23. The EA's money markets, while being deep and liquid, have been heavily influenced by the post crisis regulatory environment. In Europe, the main money market segment is the very short-term money market (most of which is an overnight market), including both unsecured, and secured transactions. The unsecured call market was, in the pre-crisis environment, the principal interbank market, but volumes have been declining in recent years mainly due to the high levels of excess liquidity, a preference shift towards collateralized transactions and more favorable regulatory treatment of secured trades. In addition, ECB/Eurosystem policy actions, such as the introduction of the TLTRO, appear to have squeezed out some use of both short-term and term funding markets.

24. ECB/Eurosystem monetary policy operations, asset purchases and the resulting excess liquidity environment as well as regulatory developments, have contributed to greater demand for, and lesser supply of, certain collateral for secured repos. Although secured market volumes have been sustained, cash driven transactions have declined significantly since the introduction of the APP. The demand for HQLA stemming from regulatory constraints, combined with ECB/Eurosystem asset purchases, has contributed to a clear (often jurisdiction-based) price differentiation in the EA secured market, with general collateral markets often trading below the ECB/Eurosystem's deposit facility (currently minus 40 basis points), and with specials trading below those levels (Figure 3).[25]

25. Regulatory measures aimed at addressing the buildup of leverage and unstable funding models have also had a material impact on functioning of repo markets. ECB staff analysis has found that correlations between adjustments in the NSFR and the LCR don't appear to be significant for repo activity. But in response to higher leverage ratios, banks may have somewhat reduced their repo activity, particularly over end-reporting periods.[26] The reduced intermediation capacity by banks over regulatory reporting dates (so-called 'window dressing'), globally, not just in the EA, appears to be adding to market volatility. These pressures have been compounded by higher CCP margin requirements and the lower availability of those assets held in the ECB/Eurosystem monetary policy portfolios.[27] Strains became pronounced at end-2016; at the time there continued to be a market, though not a cheap one.

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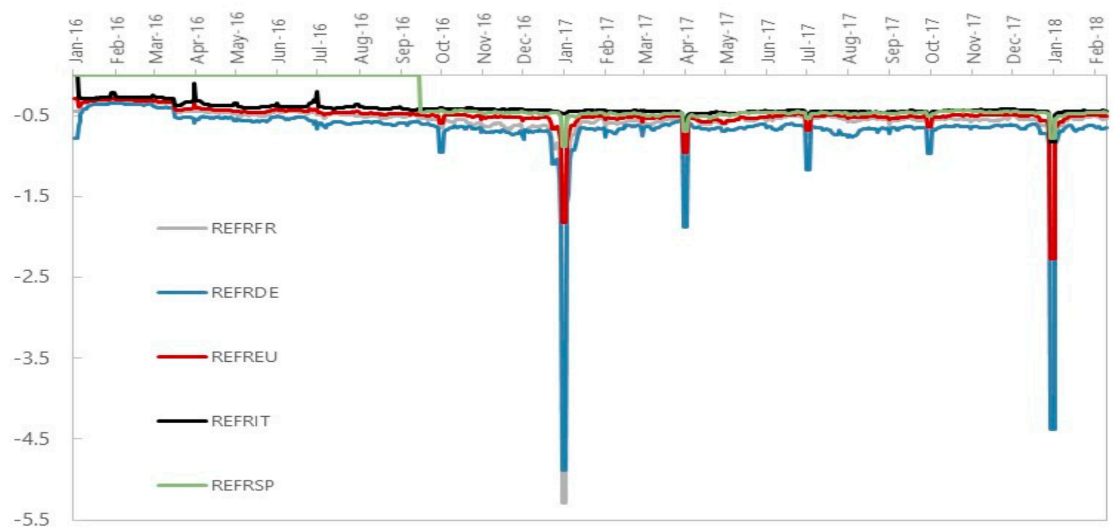
[25] CCPs are increasingly large participants in the repo markets. The use of CCPs has been strongly supported by the authorities, while the leverage ratio contains provisions for the netting of offsetting cash positions, making CCPs attractive.

[26] See the ECB's November 2017 Financial Stability Review for further background on the impact of regulatory metrics on market funding actives.

[27] In Europe, the calculation and reporting period for the leverage ratio is defined as at the end of the reporting quarter.

Figure 3. General Collateral Rates

(in percentage)



Sources: Bloomberg, and IMF staff.

26. In response, the ECB/Eurosystem took decisive action to ensure that its monetary policy actions did not impair market functioning or the smooth transmission of monetary policy signals. While the ECB/Eurosystem's asset purchases have increased excess liquidity, they have also squeezed collateral markets and in response to these market pressures, in early 2017 the ECB/Eurosystem removed the deposit facility rate floor on eligible purchases, thereby increasing the spectrum of potential purchases. The ECB/Eurosystem also set and published guidance for NCBs regarding securities lending arrangements, including permitting the acceptance of cash collateral, subject to an overall limit.[28] The ECB/Eurosystem monitors the market and its securities lending activities closely so as to ensure the ongoing effectiveness of the arrangements.

27. Overall, it appears that markets are adapting, but some strains are likely to recur. Helped by the ECB/Eurosystem measures, the spreads of the repo market rates to the ECB deposit facility has narrowed, and there has been increased pre-funding by market participants, since early 2017. But strains are likely to continue particularly given that year-end balance sheets form the basis for the calculation of regulatory metrics, including the leverage ratio, contributions to the Single Resolution Fund (SRF), global systemically important bank (G-SIB) designation and categorization related charges, as well as bank (tax) levies.

[28] In addition to the introduction of the cash collateral option, certain common principles and pricing rules have been agreed at the Eurosystem level. For example, the cash collateral option is offered at a rate equal to the lower of the rate of the deposit facility minus 30 basis points (i.e. currently minus 70 basis points) and the prevailing market repo rate. National central banks also make their APP holdings available for so-called fails mitigation lending programs of international or domestic central securities depositories, or ensure that comparable arrangements are in place in their jurisdiction

28. The ECB/Eurosystem has taken a strong role in supporting market reforms of systemically important reference rates (see Appendix IV). The ECB/Eurosystem is fully aware of the pivotal role of reference interest rates and is actively supporting industry reforms. The ECB/Eurosystem is developing its own alternative overnight reference rate, and recognizes the importance of transition measures, which will be crucial, particularly for longer-term rates given their widespread use in financial contracts. The ECB/Eurosystem will not be creating term reference rates as there are not enough transactions to construct a purely transactions-based index. This implies that expert judgement may be required. Such judgement cannot come from a central bank as it might be interpreted as being related to the (desired) monetary policy stance and accordingly might create, or be perceived as creating, a conflict of interest.

B. Foreign Currency Markets

29. The euro is the world's second most traded currency. The EA has an active FX market with a wide range of instruments. Table 3 below summarizes the general structure of the EA FX market.[29] FX swaps dominate, with spot being the next most traded instrument ahead of outright forwards.

Table 3. Euro Area: Foreign Exchange Market Size and Composition
(as at April 2016, USD billions)

	Daily Turnover	Percent Total
Spot	519.3	33.1
Outright Forward	177.5	11.3
FX Swaps	807.1	51.5
Options	64.3	4.1
Total	1568.2	100.0

Source: Bank for International Settlements Triennial FX Turnover Survey, April 2016.

30. Some banks in the Eurosystem have a structural mismatch between their U.S. dollar assets and liabilities, which requires routine funding in the market. In part, this may reflect investors being pushed abroad as a result of ECB/Eurosystem asset purchases. As part of coordinated international swap lines, the ECB/Eurosystem has had in place a U.S. dollar swap facility, which provided an effective backstop to European banks that had U.S. dollar funding needs during the global financial crisis (GFC). In November 2011, pricing was reduced from Overnight Index Swaps (OIS) plus 100 to OIS plus 50 regardless of maturity, in an attempt to de-stigmatize the facility. As liquidity conditions improved, in January 2014, the ECB/Eurosystem removed its 84-day operation from its framework, providing instead mainly one-week U.S. dollar liquidity.[30]

[29] Based on the most recent Bank for International Settlements Triennial FX survey conducted in 2016.

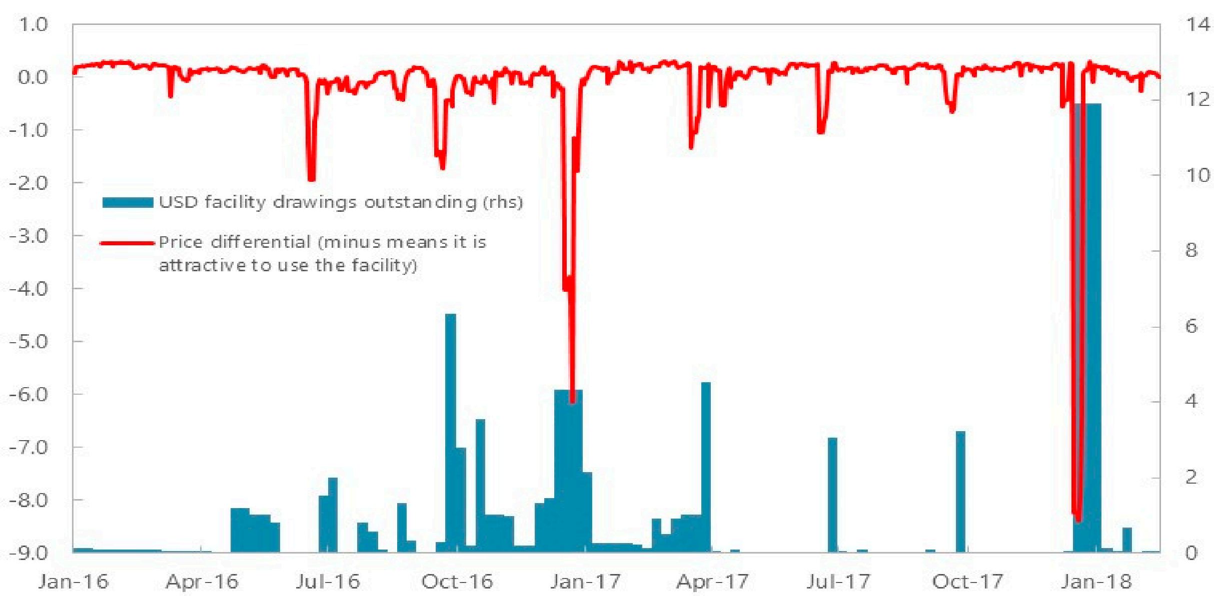
[30] Data on point in time usage by all participating central banks is available here - https://apps.newyorkfed.org/markets/autorates/fxswap.

31. **While in general there is ample market liquidity in U.S. dollars, pressures sometimes build and the FX basis has become pronounced around regulatory and balance sheet reporting dates.** Banks have weathered some shocks in the past few years—such as reforms to the U.S. money market mutual funds (which in 2016 saw a decline in asset holdings of prime funds and therefore the demand for short-term paper declined). But U.S. G-SIB designation and categorization charges meant that pressures in dollar funding markets continued to occur around regulatory reporting dates in 2017.

32. **These pressures have resulted in occasional increased recourse to the ECB/Eurosystem's U.S. dollar swap facilities, particularly over regulatory reporting dates, although total usage is relatively small (Figure 4).** At end-2017 drawings from the ECB/Eurosystem's U.S. dollar swap facility reached close to US$12 billion. It is difficult to exactly pinpoint the driver of structural demand for U.S. dollars, but there is anecdotal evidence that there are real money demands from bank's customers who have increased their holdings of U.S. dollar assets due to the monetary policy divergence between the Fed and the other major central banks.

Figure 4. U.S. Dollar Swap Facility Drawings and Price Differentials

(in billions USD and percentage points)



Sources: ECB, Bloomberg, and IMF staff.

KEY ISSUES FOR SYSTEM-WIDE LIQUIDITY

33. As the ECB/Eurosystem exits from its crisis related measures, it has an opportunity to redesign its steady state framework, learning from experience during the crisis period. The new framework needs to take into account regulatory developments which have increased the demand for central bank reserves and term funding. There is also an opportunity to harmonize arrangements to support the monetary, banking, and capital markets unions.

A. Framework Issues

34. The ECB/Eurosystem and the European authorities generally should seek to clarify what the ECB's financial stability mandate is, so that the ECB/Eurosystem can have confidence when conducting operations for financial stability purposes and be held accountable. So far, market support measures have been linked to the smooth transmission of monetary policy, which may limit the ECB/Eurosystem's potential responses to a financial crisis. The actual market-wide operations implemented by the ECB/Eurosystem were generally effective for reducing the strains identified, but the options might have been broader, and the operational choices easier, if the ECB/Eurosystem's financial stability mandate had been clearer. For example, there may have been options to use small scale market making operations rather than large scale purchases. A clarification of the mandate would also have wider benefits, such as reducing the scope for legal challenge that has been raised in respect of some of the ECB/Eurosystem's operations since the crisis.[31] A clearer financial stability mandate would ideally be supported by explicit recognition of the attendant powers and the governance arrangements through which they would be exercised.

35. The size of the ECB/Eurosystem's steady state balance sheet will depend on the demand for its liabilities, which have been boosted by liquidity regulations. Factors such as the leverage ratio, LCR, NSFR, and margin requirements for central clearing have boosted the demand for HQLA, including ECB reserve balances. The ECB/Eurosystem will need to decide how much of that structural demand to meet, consistent with its monetary objectives, and ensure that it has the scope to increase liquidity further in a crisis. It seems likely that the ECB/Eurosystem's asset purchases will be allowed to run off rather than being sold.[32] Either way, a floor approach to setting interest rates seems likely to remain until the balance sheet has reached its long-run level. In normal times, monetary policy operations should incentivize banks to build HQLA stocks in the market, rather than relying on using non-HQLA in ECB/Eurosystem monetary policy operations. One way to do this is through adjustment of the ECB/Eurosystem's collateral framework, notwithstanding the necessary risk management protections already in place.

[31] Some ECB/Eurosystem actions have been challenged in court, for example, see http://www.bundesverfassungsgericht.de/SharedDocs/Pressemitteilungen/EN/2016/bvg16-034.html.

[32] Based on the average duration of the public-sector purchase program. Data on the run-off rates of assets or categories of assets were not available to the FSAP team. At the time of the mission, the ECB/Eurosystem had not yet announced an end-date for the APP, nor any precise calendar for the end of full reinvestments.

36. Recognition should be given to the wider role of collateral policy, beyond one of pure central bank credit risk management. A positive example of this is where the ECB/Eurosystem has used asset backed securities (ABS) eligibility criteria to try and improve consistency and transparency around ABS transactions in the market.[33] While the ECB/Eurosystem's risk control framework equalizes credit risks across different collateral groups, the framework may not necessarily provide sufficient incentives to market participants to mobilize different types of collateral. This becomes more relevant given the increased demand for central banks to take on a collateral transformation role following recent regulatory reforms. The ECB/Eurosystem's collateral policy should seek to avoid undue incentives, otherwise market participants may become more vulnerable as (i) it will be more attractive for banks to hold the least liquid eligible collateral and minimize their holdings of more costly liquid assets and (ii) they may thus become reliant on the ECB/Eurosystem's collateral transformation role to meet their regulatory metrics, rather than on markets, even in normal times. Arguably through current arrangements the ECB/Eurosystem could be seen as providing a subsidy to the markets for less liquid assets, and the outcome could be counter to the intention of the new liquidity regulations, which aim at encouraging banks to internalize the cost of liquidity.

37. The introduction of differential charges for less liquid collateral would be a useful way for the ECB/Eurosystem to incentivize banks to build HQLA buffers in the market and should be investigated further (Box 1). There are various potential methods for setting differential charges, including the use of interest rate add-ons—at a spread above the policy rate—or separate collateral auctions, which could provide a better means of differentiating the value of liquidity associated with non-marketable collateral, particularly when banks are unlikely to be loan book collateral constrained.[34] We note that, whatever operational design is chosen, care does need to be taken so that the monetary policy signal is not distorted by the differential charges (which would be determined by collateral characteristics rather than monetary policy goals). Consideration could also be given to disclosing key features of the operations, such as the "clearing spread" which could give a good indication of what the market is prepared to pay for this privileged central bank support and allow the market to better prepare their bids.

[33] See https://www.ecb.europa.eu/press/key/date/2017/html/ecb.sp170704_1.en.html.

[34] Less liquid assets encompass not only credit claims, but also other less liquid assets, including ABS and covered bond transactions that are self-originated and retained on originator's balance sheet.

Box 1. Collateral-Dependent Charges in Credit Operations

Since the global financial crisis, there are new requirements (notably the LCR) that banks hold a minimum specified level of HQLA. The collateral taken by the ECB/Eurosystem is broad, including some non-HQLA assets. Although the haircuts are risk-adjusted, the charge in the ECB/Eurosystem's lending operation is otherwise the same whatever eligible collateral is delivered. The haircut does not act as an effective charging mechanism, particularly when assets are so illiquid that they cannot be freely used in the market. Whatever haircut is set, a bank will have a strong incentive to use as collateral its least liquid, non-marketable and hence non-HQLA assets which are eligible in ECB/Eurosystem operations given that the same interest rate is charged.

At the margin, for some choices of ECB/Eurosystem balance sheet and operational quantities, it could be possible for a bank to become totally dependent on the ECB/Eurosystem for transforming illiquid assets into HQLA. How much of that is desirable is a policy question for the ECB/Eurosystem.

Information provided to the FSAP suggested that the ECB/Eurosystem sets collateral policy on the grounds of risk management and monetary policy implementation rather than the impact on market spreads or counterparties behaviors, which was not a concern. The ECB/Eurosystem collateral framework uses haircuts that are calibrated to mitigate the risk to the central bank from the collateral, reflecting the potential for liquidity, market and credit risk in the event of a default. However, if the charge is the same, the counterpart will always have an incentive to provide collateral that is not readily usable in the market (i.e., has no opportunity cost). The FSAP recommends that a wider view is taken and that collateral policy should be set also by reference to market incentives, given regulatory developments.

A number of parameters can be adjusted by the ECB/Eurosystem to restrict the ability of commercial banks to rely on illiquid collateral in the way described. These include: the total size of its monetary liabilities; the extent of outright purchases versus lending operations; the collateral list it allows, potentially in different operations; and the charging of loans against different collateral types.

The ECB/Eurosystem should also want to keep in reserve the ability to inject more liquidity in a crisis. Again, there are choices: the size of the balance sheet; outright purchases vs lending; the term and charge (e.g. fixed rate full allotment) of lending; and widening the collateral set—in particular increasing the proportion of lending against non-HQLA collateral would be a useful stress-relieving operation (which could be done without a monetary expansion should that be preferred).

There may be benefits in charging different rates for lending against less-liquid collateral – particularly non-HQLA, but potentially the least liquid HQLA. Ideally, the rate would be determined by an auction mechanism so that the true charge is discovered. The purpose of such a change would be to give the right incentives to counterparts to manage their own liquidity by raising HQLA in the market, not to rely on the ECB/Eurosystem. It would eliminate an implicit subsidy in the current arrangements and offer a more precise tool to help relieve market-wide stress.

Adding collateral discrimination in charges, or by operation, would be an additional complication to the ECB/Eurosystem's framework, but there are a number of different ways of doing this, some of which are simpler than others. Alternatively, the ECB/Eurosystem could choose to influence behavior by changing other parameters of its balance sheet and operations, as outlined above, but these seem to be cruder ways of addressing the specific issue identified.

38. The current ECB/Eurosystem framework has been effective in responding to market strains, but a more comprehensive, forward-looking and harmonized framework would be helpful in supporting the monetary, banking and capital markets unions. The ECB/Eurosystem's current framework is an accumulation of decisions made during a prolonged period of market stress. As market conditions normalize, it will be important to embed a framework that supports progress towards euro area -wide capital markets. For example, changes to securities lending arrangements were necessary and effective to alleviate strains brought about by ECB/Eurosystem purchases, but operations are still conducted on a different basis in each jurisdiction.[35] The ECB's view is that the current set-up strikes a good balance between harmonization and adjustment to local market conditions, but the market's perceptions are that arrangements fall short of a more market efficient centralized system. Harmonizing securities lending arrangements would further support euro area-wide market functioning, and help align EA risk free rates which would be positive for the smooth transmission of monetary policy.[36] Similarly, the re-introduction of non-loss sharing arrangements for ECB/Eurosystem repurchase operations goes against the positive step taken through the creation of the Single List of collateral.

39. There should be a clearer separation between monetary policy operations and ELA. In particular, the ability to request a derogation to use self-issued government guaranteed bank bonds as collateral in ECB/Eurosystem monetary policy operations on a case-by-case basis, when general collateral buffers have been exhausted, is surrogate ELA, or could even delay necessary resolution actions, while it also introduces a level of opaqueness between ECB/Eurosystem monetary policy operations and ELA. Instead an ELA framework should provide full safeguards and incentives for managing such collateral constrained institutions.

B. Transition Issues

40. The ECB/Eurosystem needs to give careful signals to the market as it exits away from crisis related policy measures. At the moment, the market has a clear interpretation of what it thinks the ECB/Eurosystem will do—i.e. net purchases to stop towards end-2018, and moving away from negative interest rates at least six months later, with re-investments continuing over a longer period—although that interpretation seems credible, should events require a deviation, this could result in some volatility in markets.

41. Experience from the United States suggests it would be helpful, once thinking has progressed sufficiently, for the ECB/Eurosystem to prepare and publish balance sheet

[35] NCBs determine the securities lending modalities of their respective asset holdings, including legal agreements, collateral eligibility, pricing, haircut, term and counterparty eligibility.

[36] If full harmonization cannot be achieved, the ECB/Eurosystem should explore alternative solutions to improve efficiency across borders, for example, by examining the possibility of putting in place intra-NCB lending arrangements (including necessary safeguards), so that NCBs can source bonds from other NCBs on behalf of their counterparts.

normalization principles.[37] High-level normalization principles would help market participants understand the ECB/Eurosystem's intentions. Dealing with normalization would benefit from advance planning, including increased transparency around the maturity of asset purchases so if a decision is taken to run-off these assets, such actions can be priced into markets. Normalization principles would help market participants understand the ECB/Eurosystem's intentions, and should be supported by a clear and consistent communication policy to minimize risks of policy misinterpretation and market disruption.

42. One particular risk is the potential "cliff-edge" risks associated with the ECB/Eurosystem's TLTROs. TLTROs begin to mature in mid-2020, and therefore part of the funding begins to fall below 12-month maturity (relevant for regulatory compliance) from mid-2019. It is likely that banks will begin in earnest to replace TLTRO funding from late-2018. Possibly, longer-term funding markets may become abruptly "crowded", with smaller banks with limited or no market access being potentially more vulnerable. Although voluntary TLTRO repayments are permitted, they are not required, so the ECB/Eurosystem will need to monitor the outstanding amounts and consider whether further intervention is needed in order to smooth out the exit from these operations. The implications for term funding occur well before the maturity of the operations themselves, as the term of the operations declines below those required to meet regulatory term-funding metrics. Policy options could involve interim lending operations at market rates, rather than at preferential lending rates.

C. Other Issues

43. More generally, the ECB/Eurosystem may have cause to intervene to deal with market dysfunction. Support to securities markets is a nascent topic and because of this, can bring an element of unease within central banking circles. Even so, in recent years some central banks have deemed it necessary to support the functioning of securities markets with the aim of ensuring continued credit flow, mitigating the risks of financial asset fire sales, and supporting the transmission of monetary policy.[38] The ECB/Eurosystem's large-scale asset programs (e.g., the first and second covered bond purchase programs, and securities market purchase program) have had the effect of supporting certain securities markets, but were designed to effect a monetary expansion. Alternative small-scale buy-sell operations could in some circumstances be as supportive, without the attendant monetary expansion. It would be useful if the ECB/Eurosystem—supported by a clarification of the ECB/Eurosystem's financial stability mandate, as recommended by the FSAP—were to design principles for such operations so that in the future, if the ECB/Eurosystem did decide that this was an appropriate action, responses could be mobilized in a timely fashion with less

[37] See the Federal Reserve's normalization principles - https://www.federalreserve.gov/monetarypolicy/policy-normalization.htm).

[38] See IMF Working Paper No. WP/17/152.

operational risk and consider if, without implying a pre-commitment, whether elements of this discussion should be disclosed to the market.[39]

44. The ability to support securities markets may become more relevant given a possible build-up of liquidity risks in the nonbank sector. Recent ECB financial stability reviews have highlighted that liquidity and maturity transformation is growing among bond funds, driven by less-liquid portfolios and lower cash holdings resulting in smaller buffers against large outflows. Whilst it is not generally appropriate for nonbanks to receive ELA, it may be a case that certain systemically important markets need to be supported in order, for example, to prevent fire sale dynamics with possible systemic consequences. This possibility does not mean that all markets should be supported: interventions should be a truly last-resort action (no pre-commitment), and targeted at markets that are normally liquid, systemically important, and of high credit quality. Sometimes a statement of commitment might be sufficient.

45. The U.S. dollar swap line proved to be an extremely important tool for the ECB/Eurosystem in managing the systemic demand for U.S. dollar liquidity, but its operational parameters could be reviewed and its objectives clarified. On the one hand, it might be better if firms had to fund their FX needs in the market in steady state, but in the near-term, the factors that affected the EUR/USD basis in 2017 do not appear to be completely transient. The ECB/Eurosystem's U.S. dollar facility might therefore need to be retained for the foreseeable future. While the ECB/Eurosystem has reduced the term of this arrangement, pricing policy should also be reviewed to prevent opportunities for simple arbitrage outside stressed periods.[40] This could, for example, take the form of auctions of fixed quantities, rather than full allotment at a fixed price, with quantities perhaps increased around year-end. Any changes in the structure and the operational parameters of the facility would need to be discussed and agreed with other central banks among the swap network. Messaging around the arrangement should also be clarified, because the facility appears to be stigmatized, at least by a number of market participants, which could limit its effectiveness in stressed conditions.

46. As part of this work, careful attention is also needed to quantify the likely factors affecting U.S. dollar supply going forward. Specifically, U.S. monetary policy normalization and fiscal plans, including repatriation of offshore cash, could drain the supply of U.S. dollars in the future. Meanwhile, U.S. authorities are in the process of setting funding requirements above the minimum standards required by the Basel III liquidity framework. That may increase foreign banks' need to hold U.S. dollar liquidity in the United States. Quantifying these elements would give the ECB/Eurosystem a broad estimate of potential recourse to the arrangement going forward.

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[39] Central banks chose different approaches around disclosure, from the explicit approach of the Bank of England to the non-committed approach of the Federal Reserve.

[40] The ECB/Eurosystem does offer longer than one-week liquidity over year ends, however the pricing of the arrangement is not adjusted to take account of relevant term premia.

47. More generally, market volatility related to the end-period regulatory and balance sheet reporting could be reduced by the EA adopting averaging reporting periods for the leverage ratio and SRF contributions. The demand for funding, by quantity, maturity, currency and market source is being heavily influenced by regulatory demands. Average-period reporting of liquidity metrics and other requirements could help as the pressures appear to be cumulative. Moreover, the policy intentions of the leverage ratio would be better met by such a change. At the same time, no single change is likely to eliminate end-period issues, unless, or until, all such frictions are recognized and addressed in all major currency markets.

48. The ECB/Eurosystem is fully aware of the pivotal role of reference interest rates and is actively supporting industry reforms. The ECB/Eurosystem is developing its own alternative ECB/Eurosystem overnight rate, and recognizes the importance of early developed transition measures, which will be crucial for longer-term rates given their widespread use in financial contracts. A key challenge will also be to ensure the responsiveness of short-term rates to changes in policy rates. A smooth transition to new reference rates, especially the novation of existing long-term assets, such as the possible replacement of Euribor, is not yet assured and could lead to significant market stresses.

49. Consideration should also be given to how the liquidity management practices of CCPs are influenced by access to ECB/Eurosystem deposit facilities. It seems reasonable that the ECB/Eurosystem should give CCPs access to a safe asset, but it is important not to take away the incentive for CCPs to undertake proper liquidity management. An assessment should take place as to the potential for CCPs to dis-intermediate the banking system by relying on the ECB/Eurosystem's deposit facility for liquidity management purposes. This may be especially relevant in cases when the CCP unexpectedly needs to collect large amount of funds (e.g. variation margin (VM)) and those funds are not passed on to the market (i.e. directly to clearing members and their clients as VM pay-outs or via investments with the market), but held by the CCP with the central banks. Depending on the flexibility that the banks may still have at hand over the remaining part of the reserve maintenance period, they may face some challenges with their liquidity management due to the sudden increase of CCPs' overnight cash balances held with the central bank. The ECB/Eurosystem could consider tools to minimize the impact of such cases, such as through the introduction of remuneration limits.[41] Such tools should also encompass an ability for the ECB/Eurosystem to be able to receive information from NCAs or directly from the CCPs themselves, to facilitate timely "horizon scanning" and to assess the factors driving deposits in stress situations. This analysis would also be helpful in analyzing flows to determine the remuneration tiers, for example.

[41] TARGET2 provides that CCPs can access an NCB current account. Those EA CCPs with a banking license can potentially access the ECB/Eurosystem's deposit facility (normally remunerated higher than the current account).

KEY ISSUES FOR EMERGENCY LIQUIDITY ASSISTANCE

50. The ECB/Eurosystem has been successful in maintaining financial stability in recent years, but there are some shortfalls in its operational framework. ELA along with other ECB/Eurosystem liquidity support measures were critical in maintaining financial stability during and post-crisis. The Eurosystem did react to some recent cases of liquidity stress in individual banks and was able to track the respective banks' situations. However, certain improvements to the ELA process could allow for preparations to be started in anticipation of incipient strains. At a wider level, there is also a need to examine the robustness of the framework given the continued evolution of the regulatory and crisis management landscape. The FSAP recommends a number of necessary changes, which can be grouped under three headings; the ELA framework, "horizon scanning", and other detailed arrangements.

A. ELA Framework

51. Looking forward, the FSAP sees significant benefits to further harmonizing and ultimately centralizing ELA arrangements. There are a number of reasons that call for ELA decisions and risk to be assumed at the supranational level, rather than by NCBs, including (i) progress towards the banking union and continuing financial integration, (ii) the fact that the ECB is the competent authority for supervising all (significant) banks, and (iii) the reputational risk and complexity with preparing multiple cross border swap lines and collateral arrangements. Consistent with banking union developments, the ECB is now in a better position to take an objective view as to whether, and for how long, a bank should receive ELA, which would avoid any risk of misalignment of objectives when ELA is being provided. Under a more centralized approach, ELA decision making responsibilities (rather than just the ability to non-object) would reside with Governing Council, but the mechanics of ELA provision could be conducted on a decentralized basis (similar to the approach taken to current monetary policy implementation). Moreover, to achieve greater harmonization and ultimate centralization on a sound basis, the ECB/Eurosystem will need to clarify several issues, including: (i) its financial stability mandate underpinning centralized ELA, (ii) governance arrangements including profit distribution and allocation of losses,[42] (iii) standardizing ECB/Eurosystem's monetary policy collateral framework across member countries, and (iv) building "horizon scanning" capacity to centrally anticipate and manage ELA needs.

B. "Horizon Scanning" Arrangements

52. "Horizon scanning" involves looking for potential liquidity and other risks before they materialize, thereby allowing for advanced preparations. This process involves the sharing of knowledge and views on markets and institutions within a formalized framework, which would be facilitated by having a shared watch-list. Discussions could be based around items such as liability

[42] A phased approach could be considered, where the ECB would assume ELA responsibility for institutions it supervises (including those less significant institutions that the ECB decides to subject to its direct micro prudential supervision), with a phased approach to loss sharing, eventually encompassing all EA supervised banks.

and asset flows and scenario analyses, perceptions of the institutions from daily interactions, asset encumbrance levels, and collateral issues.

53. Information exchange within the ECB seems to be data driven and formalized engagement arrangements do not seem to be fully effective. The separation principle may be restricting the ability of both supervisory and monetary policy implementation/risk management areas to expand and improve joint "horizon scanning" so as to be able to enhance the ability to anticipate and therefore manage liquidity stresses. While there may be tensions, for example in knowing that an ECB/Eurosystem counterparty may be facing prudential difficulties, failing to share full information and views in both directions would not alleviate this issue. Rather it could just delay correct actions being taken. Knowledge that one of the ECB/Eurosystem's counterparties was having prudential issues or liquidity pressures, should not automatically lead to an entity having limited access to ECB/Eurosystem operations purely on risk grounds. Rather, a joint decision needs to be taken at a senior level about the best way to manage the entity under stress reflecting broader policy objectives. Countries with recent experiences of ELA have tended to move to closer collaboration internally, in order to fully exploit informational advantages and take account of different views. Closer collaboration could be encouraged through some further formal mechanisms, such as jointly preparing ELA funding plans (incorporating jointly agreed (stress) analyses of flows in the assets and liabilities of the entity) earlier (i.e., closer to when the ELA is given rather than within the current two-month timeline), and developing a shared watch list for banks and CCPs (under a "horizon scanning" framework). For this enhanced framework to work at a national level, similar and harmonized arrangements should also apply.

54. Supervisory actions should start before buffers are exhausted and even before ELA is deemed necessary. Evidence that an entity's buffers are deteriorating, should be taken as a strong signal of deficiencies in liquidity management by the bank in question, which deserve supervisory attention and, typically, timely corrective action, and providers of ELA should be alerted through the joint watch list.[43] Once a bank has reached the stage of ELA, then the supervisors and providers of ELA need to work hand in hand in order to help restore the bank's liquidity position and strengthen its liquidity management.

55. Harmonized ELA collateral pre-verification processes should be developed as a complementing exercise. This process involves pre-identifying and pre-checking by the relevant NCB—from an operational and legal perspective—the eligibility of portfolios of assets well in advance of ELA drawdown. This can and should be done without encumbering the collateral. This would help ensure that all eligibility requirements are met and that the collateral is available, when and if required by the counterparty in question; it would be particularly useful for credit claims. In other jurisdictions this process is known as "pre-positioning" of collateral. Pre-positioning of collateral could bring a number of benefits to the ELA process, for example, it would allow the

[43] For example, an ELA funding plan should demonstrate the initiatives that will lead to an exit from ELA within as short a time period as possible, where conditionality may be needed to prevent deviations from the plan or to get an institution 'back on track'.

respective NCB to determine which collateral is available to be quickly mobilized with the respective NCB, should ELA needs arise, and for which collateral further due diligence is required before mobilization; it would reduce the delay between an ELA application and the actual drawdown of the liquidity, and would also help all relevant stakeholders understand the entity's survival time should ELA need to be relied upon.

Box 2. "Horizon Scanning"

"Horizon scanning" is a term used to describe a jointly owned and forward-looking assessment framework to better detect emerging liquidity needs. In this context it attempts to anticipate the need for liquidity support in advance before formal action is required, so as to enable better information gathering and preparation. Within the ECB, early warning processes reside within the prudential area, where on top of on-going Supervision, liquidity reporting templates serve a specific purpose; assessing how a bank's liquidity position has evolved, based on observed and forecasted liquidity movements (based on the euro equivalent of contractual cash flows).

The current liquidity monitoring practices within the Eurosystem could be further improved via an expanded "horizon scanning" framework, which would pull together bank specific conditions with market conditions and dynamics, and attempt to highlight—using various scenarios—banks or CCPs which may have developing liquidity needs. The purpose would be to allow the authorities access to a broader range of solutions and contingencies, such as examination of eligible collateral and encouraging a bank to prepare more where possible. This would facilitate, in general, a more pre-emptive and less re-active treatment of liquidity needs should they materialize. As discussed elsewhere in this note, the separation principle as currently implemented, may be preventing the full maximization of working synergies between ECB Banking Supervision and Central Banking areas.

In order to further enhance its current monitoring and information exchange framework and to maximize synergies, the supervisory and monetary policy implementation areas, within the ECB, the national level, and between the two, should involve all relevant areas in such a horizon scanning work. The following suggestions are an example of what such a framework might involve:

- Develop at the level of the ECB a shared watchlist for banks relying on the input from the ECB Banking Supervision and Central Banking areas, and relevant national authorities. The watchlist would start with early warning signals–where there were perceived weaknesses in actual liquidity or liquidity management, or forthcoming stress events. A more detailed assessment for those highest on the list, should be based on projections of the liability flows, collateral buffers, and asset encumbrance levels, using stress scenarios jointly developed and calibrated based on plausible events (e.g. the impact of rating changes on central bank eligible collateral buffers, committed lines triggered (e.g. in self-retained secured transactions), early redemption of certain contractual flows (e.g. term deposits), along with the likely ability to rollover market funding). Such an analysis should be performed ideally for each significant currency. Advanced preparations for remedial action (e.g. possible ELA provision) should commence for those entities with the potential for funding gaps.

Box 2. "Horizon Scanning" (concluded)

- Further enhance the formal engagement framework between the ECB Banking Supervision and ECB Central Banking areas, for monitoring banks, relying on additional information and data provided by national authorities. In addition to the regular quantitative exchange of information as regards central bank liquidity support, this should also involve active discussion of potential issues that could imply a need for supervisory intervention or central bank liquidity support (either significant recourse to ECB/Eurosystem standard operations or the need for ELA). Conversations should be expected to cover supervisory issues identified from recent conversations or inspections, collateral usage and nature of buffers, plausible options available for the entity to enhance its buffers, market intelligence gathered, and NCB and counterparty progress regarding preparations for possible ELA.
- Use data and analysis from this shared bank watchlist and the formalized engagement to feed into the joint development of funding plans that should accompany any ELA applications.

An enhanced "horizon scanning" framework should be established centrally for all EA banks and CCPs. Thus, to be fully effective, this process should involve the ECB/Eurosystem setting minimum information sharing arrangements between NCBs and NCAs (in relation to less significant banks (LSIs) and CCPs). The output from the national processes as regards LSIs and CCPs should be shared with both ECB Banking Supervision and Central Banking areas, and collated with the respective significant institution output, to provide a central view of all entities within the system. Also the NCBs, through ELA operations and preparations, have information critical to the understanding of dynamics in distress. It is clear that the ECB/Eurosystem is expected to contribute to financial stability, a responsibility that is more likely to be met if actions are pre-emptive rather than reactive.

These improvements could bring a number of benefits relative to current practices. The improvements discussed would allow the ECB/Eurosystem—both its supervisory and monetary policy implementation areas—access to real-time information on potential needs for ELA well in advance, provide an understanding of how advanced ELA preparations are, and combined with collateral prepositioning processes, allow for a rapid and complete overview of the potential collateral available to support any liquidity needs, e.g., via ELA, and improved collateral risk management.

C. Detailed Arrangements

56. Until ELA is centralized, the ECB/Eurosystem should ensure that all intra-EA and external ELA co-operation agreements are formalized. While the provision of ELA remains a national responsibility, this should not prevent the ECB/Eurosystem ensuring that ex-ante cooperation and home host relations (including cross-border collateral arrangements) are formalized so that responses are timely and coordinated. However, for this to work effectively, more clarity in respect of the ECB/Eurosystem's financial stability mandate would be helpful.

57. The ECB should take a coordinating role in testing of ELA arrangements. There are benefits in conducting ELA testing in terms of operational preparedness. The ECB is best placed to coordinate, especially for cross-border institutions over which it has a more comprehensive view.

58. Meeting FX needs in ELA remains an unresolved problem for the global central banking community; nevertheless, the ECB/Eurosystem should be coordinating arrangements

as far as it is able across the EA. While the existing ECB/Eurosystem swap lines are potentially available, these are intended to deal with dysfunction in foreign currency markets and their use is dependent on international agreement. However, neither the NCBs nor the ECB can be expected to hold the very large FX cash buffers that would be commensurate with possible ELA needs for a large institution. Nor could FX-denominated securities portfolios be easily mobilized to generate large volumes of FX cash quickly, even should the *vires* permit the use of FX reserves in that way. That leaves two means by which potentially large FX exposures can be managed. The first is to take action to limit FX liquidity mismatches where possible, for example by imposing an LCR in each significant currency. In addition, advance agreement could be sought internationally on the conditions for the possible use of swap lines for ELA.[44]

59. The FSAP sees benefits in the ECB/Eurosystem clarifying the role of liquidity provision in relation to banks affected by resolution measures.[45] A bank emerging from resolution that is experiencing liquidity strains could have access to ECB/Eurosystem monetary policy operations. If not, for example if it did not have enough eligible collateral, it would need to seek ELA. Preparations for resolution measures must take into account the availability of collateral and the constraints on central bank refinancing (e.g., that use of ECB/Eurosystem monetary policy operations requires eligible collateral and that ELA is discretionary). It is important to clarify expectations across all relevant EA stakeholders in line with applicable legal frameworks. A resolution strategy would benefit from early engagement between all concerned authorities (e.g., ECB, Single Resolution Board), in order to ensure that the access to the ECB/Eurosystem's monetary policy framework and ELA, along with required safeguards, boundaries of support, and to discuss scenarios where collateral for ECB/Eurosystem monetary policy operations or ELA may not be immediately available.[46] Mutual understanding in this area would benefit from an MOU. The intervention strategy and planning must respect these constraints.

60. Current ELA eligibility criteria should be enhanced by incorporating forward looking viability and solvency assessments of the entity. With recent enhancements to other parts of the safety net structure, an explicit forward-looking assessment would clarify that ELA has no role in meeting the liquidity needs of entities in "wind-down." Moreover, a more explicit and forward business model assessment would help ensure that an institution is likely to remain viable, which would help set clear boundaries around the role of ECB/Eurosystem liquidity support. For a bank that is using its capital buffers, there is no need to wait for the formal data to show that it has become undercapitalized, these forward-looking solvency and viability assessments should be started in anticipation.

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[44] For example, the potential quantities and any conditions around any available central bank swap lines should be determined.

[45] In terms of country examples, both the Bank of Canada and the Bank of England have published policies on how central bank liquidity can potentially support resolution actions.

[46] For example, setting out the ECB/Eurosystem's rating and other requirements should bonds need to be issued into a bridge bank (but without providing formal pre-issuance advice).

61. Consideration should be given to paring back or at least streamlining state aid oversight for state indemnities provided to support ELA provision. In an emergency situation such as a bank resolution, the speedy provision of liquidity is of the essence. Yet in such a situation, and in particular in the context of bank resolution, the NCB may have doubts such as about (i) the quality of the counterparty (e.g., solvency is not clear); (ii) the collateral presented by the institution; (iii) the size or length of support; or (iv) the exit strategy. In such circumstances, a state indemnity to the relevant NCB may be necessary to enable ELA to be provided. The Commission should consider implementation rules whereby such indemnities are presumed to be compatible with EU state aid rules and possibly exempted from notification, when state involvement and distortion of competition are both limited and certain safeguards are met. For example, these situations could include instances where a bank does not need any financial support other than time-bound state-guaranteed ELA, where a bank is fully bailed-in by private investors, or where the resolution of a bank involves it being split and sold in the market according to fair and open procedures. Safeguards for such an approach should be in place. They could include; (i) validation by the NCB/ECB/Eurosystem of 2013 Banking Communication requirements of 'solvency', 'exceptional', 'penal interest rate', and 'temporary liquidity needs' (all of which are assessed by the EA as part of its ELA provision process), and (ii) 'viability' being introduced as an explicit ELA criterion as recommended by this FSAP.

D. Other Issues

62. The ECB/Eurosystem's approach to EA CCPs should be refined to remove apparent inconsistencies. Euro area CCPs at the discretion of the Governing Council may access euro liquidity through the possibility introduced into the TARGET2 Guideline. FX emergency support (beyond the U.S. dollar swap facility available to ECB/Eurosystem counterparts) is at national risk. The FSAP takes the view that any euro or FX emergency liquidity support from the Eurosystem should be formalized within a centralized framework, especially for EA CCPs, which are inherently deeply engaged in cross-border activities. The FX resources would need to be identified, particularly as current ECB FX reserves are for intervention purposes only.[47] While the possibility established under the TARGET2 Guideline provides a euro safety net for EA CCPs, this facility should have the safeguards equivalent to an ELA framework applicable to financial institutions (e.g., increased supervisory intrusion, funding plans and possibly reporting obligations, which normally apply to any ELA provision).

63. For (emergency) liquidity support to CCPs to operate effectively, information gathering would need to be improved. Discussions are currently ongoing within the EU regarding a stronger role for the ECB/Eurosystem as central bank of issue with regard to CCPs, and such developments could help the ECB/Eurosystem to directly receive timely information on CCPs and allow it to respond in a timely fashion should circumstances warrant.

64. Financial stability considerations justify flexibility in both the content and timing of the disclosure of information relating to ELA provision. A central bank is justified in temporarily keeping ELA information out of the market, to protect systemic financial stability, while providing full

[47] For example, it would need to be determined if central bank swap lines may be available to meet FX needs.

transparency ex post when its release would no longer undermine stability. Some recent national EA FSAPs have identified that ELA operations could be inferred and amounts estimated from the NCB's monthly balance sheets. Some central banks, for example the Federal Reserve and the Bank of England, have taken steps to ensure that ELA operations cannot be identified through routine balance sheet reporting, and ELA only becomes known with a lag. The Eurosystem should examine the ability to disclose their full balance sheets with a lag only.[48] If legal requirements would oblige banks to disclose their recourse to central bank facilities, then disclosure waivers should apply.[49]

[48] Normally, full balance sheet reporting is only formally required at year-end, and with annual accounts published with a lag.

[49] For example, in 2014 in the UK the Prudential Regulatory Authority, in line with European Banking Authority rules, allowed banks not to disclose receipt of ELA.

Appendix I. Principles Underlying the ECB/Eurosystem Operational Framework

A number of key ECB/Eurosystem principles, including neutrality and equal treatment, influence the way monetary policy is implemented.[1]

- *Objective:* The Governing Council clarified in 2003 that in the pursuit of price stability it aims to maintain inflation rates below, but close to, 2 percent over the medium term.

- *Tools:* Open market operations represent the key instruments used by the ECB/Eurosystem. They comprise reverse repo transactions, asset purchases (outright transactions), the issuance of ECB/Eurosystem debt certificates, the acceptance of fixed-term deposits, and foreign exchange swaps (although these have never been used in practice for monetary policy management). Pre-GFC, the seven-day main refinancing operation (MRO) was the main liquidity management tool aimed at stabilizing market rates relative to the ECB/Eurosystem policy rate. LTROs (generally three months) were intended in part to cater for smaller banks with less sophisticated liquidity forecasting. The ECB/Eurosystem's framework also incorporates standing deposit and credit facilities and reserve averaging to meet reserve requirements.

- *Risk Controls*: All assets eligible as collateral for ECB/Eurosystem monetary policy operations are subject to specific risk control measures in order to protect the ECB/Eurosystem against financial loss if underlying assets have to be realized owing to the default of a counterpart. Haircuts are applied to valuation of eligible assets, depending on the type of collateral, maturities, credit quality and the risk associated with interest rate term. Discretionary measures can be applied when the ECB/Eurosystem sees either risks with the collateral presented or the counterparty.

- Guiding principles:

  - *Operational efficiency* by enabling monetary policy decisions to feed through as precisely and as fast as possible to short-term money market rates.
  - Credit institutions are *treated equally* irrespective of their size and location, while the *harmonization of rules* and procedures helps to ensure equal treatment.
  - *Decentralization* allows the ECB to co-ordinate the operations and the NCBs carry out the transactions.
  - *Simplicity and transparency* ensure that the intentions behind monetary policy operations are correctly understood.
  - *Continuity* aims at avoiding major changes in instruments and procedures.
  - *Safety* requires that the ECB/Eurosystem's financial and operational risks are kept to a minimum.

[1] For further details, see the ECB's 2011 publication "The Monetary Policy of the ECB" (https://www.ecb.europa.eu/pub/pdf/other/monetarypolicy2011en.pdf).

- *Cost efficiency* keeps low the costs for both the ECB/Eurosystem and its counterparties arising from the operational framework.

Banks with different business models or operating in different markets should not be disadvantaged. To be eligible for ECB/Eurosystem monetary policy operations, entities must (i) be considered to be 'financially sound', where a certain focus is placed on compliance with "own funds requirements" of the Capital Requirements Regulation, (ii) be subject to the ECB/Eurosystem's minimum reserve system, and (iii) be supervised under an accepted supervisory regime.[2] As at Q1 2016 there were just under six thousand credit institutions eligible for ECB/Eurosystem operations.

The ECB/Eurosystem's Single List of collateral is common to all countries. All ECB/Eurosystem monetary policy operations are required to be based on adequate collateral, as defined by Article 18.1 of the ESCB Treaty. In 2007 the ECB/Eurosystem replaced its Tier 1 and Tier 2 list of collateral with its broad Single List collateral. This Single List is common to all countries so that banks operating in different markets are not disadvantaged and covers marketable and non-marketable assets that fulfil uniform EA-wide eligibility criteria, as specified by the ECB/Eurosystem. The Single List includes government securities, covered and uncovered bank bonds, corporate bonds, asset-backed securities, and bank loans. As a rule, no distinction is made between marketable and non-marketable assets with regard to their quality and their eligibility for individual credit operations. Assets are differentiated by risk based haircuts. Close link tests apply (i.e. to ascertain if the counterparty is linked to an issuer or guarantor of the asset), use of self-collateralized assets is permitted.

Eligible assets must meet the high credit standards laid down in the Eurosystem Credit Assessment Framework. The ECB/Eurosystem's collateral framework relies on a number of credit assessment sources, including external credit assessment institutions, NCBs' in-house credit assessment systems, counterparties' internal ratings-based systems or third-party providers' rating tools. The ECB/Eurosystem reserves the right to apply additional discretionary measures to credit assessment systems, counterparties, or collateral, should specific risks become evident.

[2] In addition, eligible counterparties must also fulfil operational requirements specified by the NCBs. Acceptable supervisory regime is defined as being either harmonized European Union/European Economic Area supervision by competent authorities or a comparable supervisory standard with respect to institutions subject to non-harmonized supervision.

Table 1. Overview of ECB/Eurosystem Instruments

Monetary policy operations	Type of instrument		Maturity	Frequency	Procedure
	Provision of liquidity	***Absorption of liquidity***			
Main refinancing operations	Reverse Repo	—	One week	Weekly	Standard tender procedures (*)
Longer-term refinancing operations	Reverse Repo	—	Three months (**)	Monthly (**)	Standard tender procedures (*)
Fine-tuning operations	Reverse Repo	Repo	Non-standardized	Non-standardized	Tender procedures Bilateral procedures
	Foreign exchange swaps	Foreign exchange swaps			
	—	Collection of fixed-term deposits			
Structural operations	Reverse Repo	Repo	Non-standardized	Non-standardized	Standard tender procedures
	—	Issuance of ECB/Eurosystem debt certificates	Less than 12 months		
	Outright purchases	Outright sales	—		Bilateral procedures Tender procedures
Marginal lending facility	Reverse Repo	—	Overnight	Access at the discretion of counterparties	
Deposit facility	—	Deposits	Overnight	Access at the discretion of counterparties	

(*) Main refinancing operations and three-month longer-term refinancing operations are currently conducted as fixed rate tender procedures with full allotment.

(**) Longer-term refinancing operations have been conducted with terms of one year and longer. Targeted longer-term refinancing operations have been conducted with maturities of up to four years.

Sources: ECB, and IMF staff calculations.

Appendix II. Summary of the ECB/Eurosystem's Monetary Response to the Financial Crisis

The financial crisis evolved in three main phases, each of which required different ECB/Eurosystem responses:

- *The first and early phase cumulated in the Lehman Brothers liquidity crisis, which prompted a systemic failure of interbank markets.*[1] As part of its response, the ECB/Eurosystem moved from auctions of fixed quantities to full allotment at a fixed rate, thereby allowing banks to have unlimited access to central bank liquidity at the main refinancing rate provided they had eligible collateral. It also expanded its collateral framework by lowering the applicable credit quality threshold and the acceptance of certain non-euro Eurobonds, and provided supplementary liquidity provision at longer maturities (at the time up to 12 months). The ECB/Eurosystem also undertook primary and secondary market purchases of covered bonds, an important source of funding for many banks. Along with other central banks, the ECB/Eurosystem undertook coordinated U.S. dollar swap operations at various maturities using reciprocal arrangements with the Federal Reserve.[2]

- *The second phase of the crisis came around 2010, with a more general loss of confidence in sovereign debt markets in some member states.* Banks' exposures to selected governments and vice versa came under intense market focus and in some cases national banking systems lost access to wholesale funding markets, thereby risking impairment to the transmission mechanism. In response the ECB/Eurosystem, (i) extended its longer-term operations up to three years, (ii) launched its securities markets program (SMP) to purchase certain sovereigns which was aimed at improving market functioning and was sterilized, and (iii) expanded its eligible collateral set through its "additional credit claims framework".[3] However, its most significant announcement was that of the Outright Monetary Transactions (OMT), which replaced the SMP. Although never used, the announcement of this measure had an instantaneous impact in removing the EA break-up risk which markets—by that time—had begun to price in.

- *The third phase came around 2014 when it became apparent that growth remained fragile, as banks were undergoing an extended process of downsizing their exposures and de-risking their balance sheets.* Additional measures introduced by the ECB/Eurosystem were intended to repair the bank lending channel and to halt an accelerated fall in inflation. The ECB/Eurosystem also cut the interest rate paid on banks' excess reserve deposits into negative territory. A credit easing package of measures was announced which included targeted 'funding for lending'

[1] See ECB speech describing some of the measures adopted by the ECB during the crisis - https://www.ecb.europa.eu/press/key/date/2016/html/sp160210.en.html

[2] See ECB Monthly Bulletin August 2014.

[3] Other measures included a reduction in the minimum reserve requirement ratio (from 2 to 1 percent), and the introduction of an additional covered bond purchase program.

operations (TLTROs), and undertook additional covered bond purchases, and commenced corporate and ABS purchases. These measures were further expanded in 2015 through the inclusion of a large-scale public securities purchases, and later a new series of targeted longer-term refinancing operations.

Appendix III. Derogations Under the ECB/Eurosystem's Operational Framework

Banks that exhaust their holdings of ECB/Eurosystem eligible collateral have the possibility to self-generate collateral, but subject to a number of restrictions. In March 2013, the ECB/Eurosystem announced that the use of self-issued government-guaranteed banks bonds (GGBBs) would be phased out (use of self-issued GGBBs frozen at July 3, 2012 levels until February 28, 2015). More recently, the ECB/Eurosystem's General Documentation allows for a temporary derogation from the prohibition on own-use of unsecured government guaranteed bank bonds in exceptional cases for a maximum of three years. Such derogations are decided upon by the Governing Council on a case-by-case basis, and only once the entity in question submits a funding plan which indicates how the mobilization of self-issued unsecured government-guaranteed bank bonds can be phased out in a period of three years.

Counterparties not meeting own funds requirements could remain eligible to access ECB/Eurosystem monetary policy operations, in certain circumstances and under certain conditions. The Governing Council may exercise positive discretion and allow a counterparty to continue to maintain access to ECB/Eurosystem monetary policy operations (subject to a limit). Such discretion may be possible if recapitalization measures are assessed as being adequate and timely, and are being undertaken. The relevant NCB monitors the recapitalization process during the grace period and reports without delay to the Governing Council if the envisaged recapitalization process does not proceed as expected.

Appendix IV. Interest Rate Benchmark Reform

The compilation of interest rate benchmarks has been detrimentally affected by two main factors. First, a reduction in trading activity in the interbank unsecured money markets, means that confidence in rates referencing these markets has been undermined. Second, banks due to legal and compliance risks associated with contributions to benchmark panels, are unwilling to have their employees provide so-called 'expert judgments', resulting in a weakened basis of data to establish the needed benchmarks. Although some factors affecting the activity in the underlying money market—like the level of excess liquidity prevailing in the EA—may be temporary, many are likely structural, making the compilation of longer-term benchmark rates more challenging.

New EU regulation pertaining to administrators of, contributors to and users of interest rate benchmarks is now in place.[1] Key provisions will come into force as of 2018, including a requirement for benchmarks to be transactions-based nature and for regulators to authorize critical benchmarks based on an assessment of compliance with EC regulation. Benchmarks not meeting the new regulatory rules are not allowed to be referenced in financial instruments or contracts as of 1 January 2020.[2]

In early February 2018 the EONIA administrator—the European Money Markets Institute—announced that it would no longer pursue a thorough review of EONIA, which had however been designated by the European Commission as a critical benchmark in June 2017.[3] The administrator's decision reflected, in part, the ongoing decrease in unsecured lending activity. In September 2017, a cross industry working group was created, for which the ECB provides secretariat functions, and which is tasked with the focusing on alternative interest rate benchmarks for certain contracts, and how best to transition to these rates.[4]

In September 2017, the ECB/Eurosystem announced the development of an alternative reference rate to complement existing benchmarks. The ECB/Eurosystem will calculate and publish its own transaction based unsecured overnight rate, which will serve as an alternative to current benchmarks. This new calculation will be based on money market statistical reporting data already available to the Eurosystem. It is planned that the features of the rate will be communicated in the course of 2018, with regular reporting to begin before 2020. The benchmark rate, which would be produced before 2020, would complement existing benchmark rates produced by the private sector and is intended to serve as a backstop reference rate.

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[1] See Regulation (EU) 2016/1011 on indices used as benchmarks (the "Benchmarks Regulation").

[2] As noted, volumes in unsecured markets have been declining, but there are other reasons that are likely generating the need for reform, for example EONIA does not have its own individual code of conduct, while transactions in this rate have become increasingly concentrated.

[3] See Commission implementing Regulation (EU) 2017/1147 of 28 June 2017.

[4] The working group, will be made up of market practitioners and representatives, was jointly announced by the European Commission, the European Securities and Markets Authority, the ECB and Belgian supervisor the Financial Services and Markets Authority.