



EUROPEAN CENTRAL BANK
EUROSYSTEM

Eurosystem oversight report

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Executive summary

The Eurosystem oversight report provides an overview of the oversight activities carried out by the Eurosystem between 2017 and 2020 related to financial market infrastructures (FMIs) and payments. The report also covers the main market and regulatory developments in the reporting period and touches briefly on the Eurosystem's oversight mandate and its approach to oversight.

Activities related to ecosystem-wide developments

In 2020 the **coronavirus (COVID-19) pandemic** required FMIs to largely operate remotely. Some FMIs had to deal with high volatility and peak turnovers, while others faced sudden reductions in traffic. The pandemic also led to changes on the demand side (e.g. an increase in contactless payments and e-commerce) and made it necessary for FMIs to review priorities and projects. Eurosystem overseers monitored these developments through continuous dialogue with the overseen entities and other authorities.

The **withdrawal of the United Kingdom from the European Union** on 31 January 2020 and the end of the transition period on 31 December 2020 required numerous preparations on the side of FMIs. It also required adaptations concerning cross-border participation in EU and UK FMIs to ensure continuity in the provision of financial services. The Eurosystem closely monitored developments. To avoid potential "cliff-edge" risks to financial stability, these monitoring efforts were particularly focused on the preparedness of euro area FMIs and participants for a potential "no-deal" Brexit.

The impact of **digitalisation and technological developments** has been strong in recent years. One example of technological developments is the adoption of the SEPA Instant Credit Transfer scheme (SCT Inst) and the supporting payments infrastructure which allow end users to make end-to-end retail payments on a 24/7/365 basis within seconds. Digitalisation resulted in proposals for new products and services, e.g. using distributed ledger technology (DLT), especially from FinTechs and BigTechs. A prominent example was the proposal of (global) stablecoins, such as Facebook's planned Diem (formerly known as Libra), and digital payment tokens. Eurosystem overseers monitored and assessed these developments, services and systems and reviewed the respective oversight frameworks so that they remained comprehensive in scope and effective.

In the field of **central clearing, market developments** led to the (incremental) development of clearing services and the transfer of certain activities as market participants adjusted their access modalities to reap the benefits of a more integrated post-trade environment (e.g. TARGET2-Securities) and/or started to adapt in

response to other significant external dynamics, such as Brexit and amendments to the European Market Infrastructure Regulation (EMIR)¹.

Cyber resilience remained a top priority for the Eurosystem, and in 2017 this led to the European Central Bank (ECB) Governing Council approving the Eurosystem's cyber resilience strategy for FMIs in order to increase the cyber resilience of FMIs in Europe at both an institutional and a sectoral level. From the oversight perspective, the main element was the development of the Eurosystem's Cyber Resilience Oversight Expectations (CROE)², published in 2018, and the subsequent assessments of systemically important payment systems (SIPS) using the CROE as a basis. Moreover, in 2018 the Eurosystem – operating in its role as a catalyst – published the TIBER-EU framework for threat intelligence led penetration testing. In 2018 the Eurosystem also formed the Euro Cyber Resilience Board (ECRB), a forum for high-level representatives from the most prominent FMIs in Europe, from critical service providers and from public authorities to come together for strategic discussions chaired by an ECB Executive Board member. In 2020 the ECRB in turn launched a market-driven intelligence and information sharing initiative for the aforementioned FMIs and critical service providers – the cyber information and intelligence sharing initiative (CIISI-EU) – with the aim of enhancing the protection and detection capabilities of these institutions. All these initiatives, which have received international recognition, support the ongoing resilience of the euro area financial infrastructure in withstanding potential cyber threats.

On the **regulatory side**: the ECB Regulation on oversight requirements for systemically important payment systems (SIPS Regulation)³ was amended and complemented by decisions setting out certain procedures for exercising powers under the Regulation; key regulatory technical standards were worked out with the respective European Supervisory Authorities (ESAs) for the revised Payment Services Directive (PSD2)⁴ and the Central Securities Depositories Regulation (CSDR)⁵; and two amendments to EMIR were adopted. In addition, political agreement was reached in June 2020 on a new EU Regulation on a framework for the recovery and resolution of central counterparties (CCPs). The new Regulation is expected to enter into force in early 2021 and its provisions will be implemented gradually over one to two years. There were also proposals for (i) an EU Regulation on markets in crypto-assets (MiCA), (ii) an EU Regulation on digital operational resilience (DORA), and (iii) an EU Regulation on a pilot regime for market infrastructures based on distributed ledger technology (PRR). All these regulatory initiatives support the

¹ [Regulation \(EU\) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories \(OJ L 201, 27.7.2012, p. 1\).](#)

² See [Cyber resilience oversight expectations for market infrastructures](#), ECB, December 2018.

³ [Regulation of the European Central Bank \(EU\) No 795/2014 of 3 July 2014 on oversight requirements for systemically important payment systems \(ECB/2014/28\) \(OJ L 217, 23.7.2014, p. 16\).](#)

⁴ [Directive \(EU\) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation \(EU\) No 1093/2010, and repealing Directive 2007/64/EC \(OJ L 337, 23.12.2015, p. 35\).](#)

⁵ [Regulation \(EU\) No 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories and amending Directives 98/26/EC and 2014/65/EU and Regulation \(EU\) No 236/2012 \(OJ L 257, 28.8.2014, p. 1\).](#)

safety and further development of the financial sector and should complement the role of the Eurosystem as overseer and central bank of issue (CBI).

Activities in relation to individual entities

A main pillar of the Eurosystem's oversight is ensuring the compliance of individual FMIs and other entities within the scope of its oversight with the relevant regulatory standards on a continuous basis.

In the field of payments, the Eurosystem concluded assessments of SIPS, non-systemic retail payment systems, Single Euro Payments Area (SEPA) schemes and card payment schemes. The Eurosystem also contributed to the cooperative oversight of CLS, a US-based payment system settling foreign exchange transactions. In addition, it assessed new instant payment systems/services, in particular RT1, operated by EBA CLEARING, and TARGET Instant Payment Settlement (TIPS), operated by the Eurosystem. In 2019 the Eurosystem conducted an assessment of SIPS to assess them against the revised provisions of the SIPS Regulation and also assessed SIPS against the CROE. In May 2020 the Mastercard Clearing Management System (MCMS), operated by Mastercard Europe, was identified as a SIPS and became subject to Eurosystem oversight under the SIPS Regulation. Potential new systems were assessed and offshore payment systems were monitored. Where shortcomings were identified, overseers agreed with operators on the implementation of remedial measures and reviewed their implementation.

In the field of securities, the Eurosystem concluded its first comprehensive oversight assessment of TARGET2-Securities (T2S) in operation and subsequently monitored the implementation of recommendations. As the relevant authority, the Eurosystem provided its view or reasoned opinion (as applicable under the CSDR) on 23 central securities depositories (CSDs) subject to authorisation under the CSDR during the reporting period and was also consulted in the first annual review and evaluation processes. In addition, some Eurosystem central banks also act as competent authorities for domestic CSDs.

In the field of CCPs, activities carried out in EMIR colleges included the annual review and evaluation of CCPs' compliance with EMIR as well as the assessment of significant changes to risk models and extensions of activities or services subject to EMIR college opinions. As the CBI for the euro, the Eurosystem participates in EMIR colleges for 11 of the 13 CCPs authorised within the EU. In addition, the Eurosystem also participated in crisis management groups for global CCPs. Owing to the pronounced contagion risks that CCP liquidity strains pose to money and repo markets, which are critical for monetary policy transmission and for the smooth functioning of payment systems, liquidity risk management continued to be a major focus of the Eurosystem's oversight of CCPs. This work is supported by analyses of data on cleared derivatives transactions available from trade repositories, e.g. studies of client clearing and of the financial network more generally. The Eurosystem also contributed to two supervisory stress-testing exercises for CCPs coordinated by the European Securities and Markets Authority (ESMA). In addition, the Eurosystem has

participated in discussions in European and international fora on resolution planning and resolvability assessments of CCPs that are significant in more than one jurisdiction. Since the beginning of 2020 the ECB has also represented the Eurosystem in ESMA's CCP Supervisory Committee (introduced under EMIR 2.2) as a non-voting member.

Finally, the Eurosystem continued to oversee **critical service providers**, in particular SWIFT and SIA.

Future activities

In the area of payments, the Eurosystem will conclude the review of its existing retail payments oversight frameworks and new technological developments by establishing a new oversight framework for electronic payment instruments, schemes and arrangements. There will be continued emphasis on risks related to crypto-assets (including stablecoins) and associated regulatory developments, including the emergence of any new actors in this field and the role foreseen for the Eurosystem. Eurosystem overseers will continue to assess changes in SIPS and their services and finalise the CROE assessment of one SIPS. It will further analyse payments fraud and incidents and promote further enhancements to endpoint security.

In the field of securities, T2S will be assessed against the CROE, and the implementation of recommendations issued in the comprehensive assessment and ad hoc assessments will be evaluated. The Eurosystem will contribute to the remaining authorisations under the CSDR and to the annual review and evaluation of authorised CSDs. In addition, in accordance with its oversight mandate and statutory powers, the Eurosystem will contribute to the review of the CSDR initiated by the European Commission in 2020.

In the area of central clearing, through its enhanced role as a CBI under EMIR 2.2, the Eurosystem will contribute to the supervisory process for EU and third-country CCPs. In particular, the Eurosystem will contribute to ESMA's review of the recognition of third-country CCPs, including in relation to UK CCPs in the wake of Brexit, given the large volume of euro-denominated derivatives cleared by UK-based CCPs. Another focus area will be the assessment of CCP recovery plans in EMIR colleges and the development of resolution plans and resolvability assessments in CCP resolution colleges for EU CCPs with the forthcoming entry into force of an EU Regulation on a framework for the recovery and resolution of CCPs.

Enhancing cyber resilience will remain one of the priorities for Eurosystem oversight, with a focus on maturing the frameworks and processes that have been successfully established over recent years.

The Eurosystem will continue to monitor changes in the FMI landscape to ensure that risks and challenges posed to, and by, FMIs are identified early on and action is taken where needed.

Introduction

The Eurosystem publishes oversight reports from time to time with a view to fostering transparency and accountability in its oversight activities. This report primarily serves to set out how the Eurosystem has exercised its oversight responsibilities and how it has worked to deliver its overall financial stability objective.

The current report provides an overview of Eurosystem oversight activities between 2017 and 2020. In addition, the report briefly outlines the Eurosystem's oversight mandate and its approach to oversight and reflects on market and regulatory developments during this period that were relevant from an oversight perspective.

The report is structured as follows:

- Chapter 1 outlines the Eurosystem's mandate for oversight and how the Eurosystem generally exercises this mandate;
- Chapter 2 highlights the main market and regulatory developments that Eurosystem overseers considered relevant to risk and efficiency;
- Chapter 3 shows the risk-based activities the Eurosystem undertook to ensure the safety and efficiency of overseen entities, delving more deeply into entity-specific oversight and cross-cutting activities;
- Chapter 4 concludes with a brief outlook on the Eurosystem's oversight priorities in the period ahead.

1 Eurosystem oversight – mandate and approach

This chapter provides a short overview of the Eurosystem’s oversight mandate and its approach to conducting oversight. A detailed description of the legal basis for Eurosystem oversight as well as its objectives, scope and general conduct can be found in the [Eurosystem oversight policy framework](#).

1.1 Mandate for Eurosystem oversight

The conduct of oversight aims to promote the safety and efficiency of financial market infrastructures (FMIs) and is directly linked to one of the basic tasks of the European System of Central Banks (ESCB) and the European Central Bank (ECB).⁶ The Eurosystem pursues this task through **three complementary roles**:

- as an operator, the Eurosystem owns and operates the Trans-European Automated Real-time Gross settlement Express Transfer system (TARGET2) (including TARGET Instant Payment Settlement – TIPS) and TARGET2-Securities (T2S);
- as a catalyst, the Eurosystem aims to improve the overall functioning of the euro area market infrastructure, including by fostering harmonisation and integration;
- as an overseer, the Eurosystem ensures safety and efficiency by monitoring developments at system and entity level, setting oversight standards for FMI operators, assessing compliance with those standards and inducing change where needed.

The **scope of Eurosystem oversight** comprises payment systems and payment schemes. Moreover, most Eurosystem national central banks (NCBs) conduct oversight of clearing and settlement systems under national law competencies, alongside regulation by securities regulators and banking supervisors. The competencies and powers transferred to individual NCBs under such national laws differ.

Finally, the Eurosystem oversees T2S and critical service providers of FMIs. The safe and efficient functioning of overseen FMIs is essential for the conduct of monetary policy and contributes to financial stability and, ultimately, to trust in our common currency, the euro.

⁶ According to the fourth indent of Article 127(2) of the Treaty on the Functioning of the European Union, as mirrored in Article 3.1 of the Statute of the European System of Central Banks and the European Central Bank, one of the basic tasks to be carried out through the ESCB is “to promote the smooth operation of payment systems”.

Central bank of issue concept

The Eurosystem has an interest in FMIs with meaningful euro activity, including those established outside the euro area. Where an adequate cooperative arrangement is warranted under Responsibility E of the [CPMI-IOSCO Principles for financial market infrastructures](#) (PFMI)⁷, or is in place as part of the applicable FMI supervisory framework (e.g. in the EU under the European Market Infrastructure Regulation (EMIR)⁸ and the Central Securities Depositories Regulation (CSDR)⁹, the central bank perspective is included through the consultation or participation of the CBI for the currency handled by the FMI.

In line with international standards, under the relevant EU legislation (e.g. EMIR and CSDR) the Eurosystem participates as CBI in the supervision or oversight reviews of FMIs (e.g. central counterparties (CCPs) and central securities depositories (CSDs)). In particular, it participates in EMIR supervisory colleges and is involved in the authorisation of CSDs and in the annual review and evaluation process under the CSDR as the relevant authority. Under EU law, the Eurosystem also contributes to the recognition process for third-country FMIs and is consulted on certain specific areas, being entitled to provide an opinion or recommendation. It is also consulted on certain implementing secondary legislation and technical standards relating to aspects of relevance to the central bank mandate.

1.2 Oversight approach

Oversight standards

In June 2013 the Governing Council of the ECB adopted the PFMI as the standards for all types of FMIs in the euro area subject to Eurosystem oversight.

For systemically important payment systems (SIPS), the PFMI have been transposed into an ECB Regulation on oversight requirements for systemically important payment systems (the SIPS Regulation)¹⁰. The oversight of non-systemic payment systems is primarily based on the PFMI. The Eurosystem is currently reviewing its oversight framework for all types of electronic payment instruments, schemes and arrangements (PISA framework)¹¹ (see Box 3).

⁷ For a more detailed description of the oversight and CBI functions and how they are performed by the Eurosystem and its members, see Sections 4.2 and 5.2 of the [Eurosystem oversight policy framework \(Revised version\)](#), ECB, July 2016.

⁸ [Regulation \(EU\) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories](#) (OJ L 201, 27.7.2012, p. 1).

⁹ [Regulation \(EU\) No 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories and amending Directives 98/26/EC and 2014/65/EU and Regulation \(EU\) No 236/2012](#) (OJ L 257, 28.8.2014, p. 1).

¹⁰ [Regulation of the European Central Bank \(EU\) No 795/2014 of 3 July 2014 on oversight requirements for systemically important payment systems](#) (ECB/2014/28) (OJ L 217, 23.7.2014, p. 16).

¹¹ See “[A single Eurosystem oversight framework for electronic payment instruments, schemes and arrangements](#)”, *MIP OnLine*, ECB, October 2020.

For CCPs and CSDs, as well as securities settlement systems (SSSs) operated by CSDs, the relevant EU regulations are EMIR¹² and the CSDR, respectively. In addition to the specific national responsibilities of Eurosystem members (which may act as overseer and/or national competent authority in the supervision of FMIs), the Eurosystem contributes in its role as CBI for the euro. For CCPs, the Eurosystem focuses in particular on those areas and risks that are more directly critical to the smooth conduct of monetary policy and the stability of the euro, i.e. the clearing and settlement process, liquidity and settlement risks (and other aspects insofar as they affect liquidity and settlement risks, e.g. collateral and haircuts), and interoperability arrangements with other CCPs and FMIs. For CSDs, the CBI function also covers operational and business risks, as well as other aspects, such as default management, collateral, and credit, liquidity, custody and legal risks. The oversight of T2S, which provides settlement services to CSDs and central banks, is based on the applicable principles of the PFMI. The CSDR does not apply to T2S, but T2S facilitates the compliance of CSDs with the CSDR.

Figure 1 gives an overview of the oversight standards applicable to (i) payment systems and schemes, (ii) T2S, (iii) CSDs and SSSs, and (iv) CCPs, both at international level and within the euro area.

Figure 1
Overview of regulatory standards

		Payment systems and schemes	TARGET2-Securities (T2S)	Central securities depositories, securities settlement systems	Central counterparties
Oversight standards	International	CPMI-IOSCO Principles for financial market infrastructures (PFMI)			
	Euro area / EU	SIPS Regulation, Eurosystem oversight standards	PFMI	Central Securities Depositories Regulation	European Market Infrastructure Regulation

Oversight methods, allocation of roles, and cooperation with other authorities

The Eurosystem oversight policy framework covers further elements of the oversight approach. In particular, Section 5.1 of the framework sets out the Eurosystem’s methods for conducting oversight, while Section 5.2 sets out the allocation of roles within the Eurosystem. In addition, Section 6 covers cooperation with other authorities.

¹² EMIR also sets regulatory standards for trade repositories.

2 Oversight in a changing environment

This chapter covers important developments affecting overseen entities and Eurosystem oversight during the reporting period. Section 2.1 looks at market developments, while Section 2.2 covers developments in the regulatory sphere.

2.1 Risk and market development monitoring

Introduction of instant payments

A major development in the payments ecosystem is instant payments, which were introduced in the euro area with the launch of the SEPA Instant Credit Transfer (SCT Inst) scheme in November 2017. SCT Inst transactions allow money to be transferred from one bank account to another within ten seconds on a 24/7/365 basis.¹³ SCT Inst is an optional scheme that payment service providers (PSPs) are free to adopt. In December 2020, 57% of PSPs using SEPA were offering instant payments. The number of instant payment transactions has been growing steadily and accounted for 7.92% of all SEPA-based credit transfers in the fourth quarter of 2020.¹⁴ As overseer of the SCT Inst scheme, Eurosystem overseers have followed recent developments in this new segment of retail payments. They also evaluated the possible impact of a migration of retail payments from existing retail payment systems to instant payments on potential business risk and possible liquidity risks related to 24/7 operations.

The introduction of instant payments led to the development of a number of new (instant) payment systems or services, including two at pan-European level: RT1, a private payment system operated by EBA CLEARING, and TIPS, a service within TARGET2 operated by the Eurosystem. In addition, by the end of 2020 there were seven national instant payment systems, offered by the clearing houses Equens (the Netherlands), Nexi (Italy), EKS (Latvia), SEPA(EU) (France), Iberpay (Spain), BIPS (Slovenia) and CENTROlink (Lithuania). While none of the aforementioned systems or services has reached systemic importance yet, Eurosystem overseers have discussed traffic developments and ways of increasing volumes with the governance bodies and operators. The use of instant payments for cross-border and multi-currency payments is one of the avenues being considered. This is also an important part of the related discussions of the Financial Stability Board (FSB) and the Committee on Payments and Market Infrastructures (CPMI).

Overall, the activities of Eurosystem overseers contributed to ensuring the safety and efficiency of systems and services related to the SCT Inst scheme and they will continue to pay close attention to the development of instant payments.

¹³ More precisely, SCT Inst allows the transfer of up to €15,000 between accounts of PSPs adhering to the SCT Inst scheme within ten seconds. The service is available 24 hours a day, every day of the year.

¹⁴ Based on data from the European Payments Council, available on its [website](#).

Technological innovations in the European retail payments market

In recent years payments have become faster and have moved towards real-time execution on a 24/7/365 basis. In addition, the range and diversity of payment solutions is increasing, and technological innovations such as tokenisation and distributed ledgers, as well as emerging instant or mobile payment solutions, are changing the way payments are being executed and the way payment-related services are being offered and used. The current COVID-19 pandemic has further accelerated the uptake of e-commerce and the digitalisation of people's everyday lives. These developments, coupled with ongoing regulatory initiatives, are reshaping the European retail payments landscape.

Innovations are increasingly being introduced by entities that are new to the field of payments but have a strong information technology background. Some of these are building their payment solutions on existing platforms (e.g. e-commerce, online advertising or social media) with the aim of leveraging their existing customer base. Others are providing ancillary or support functions to traditional PSPs, resulting in new payment solutions. In Europe, such new providers typically cooperate with card issuers and provide front-end services, leveraging the existing cards infrastructure. Card-based solutions (e.g. Google Pay, Apple Pay and Samsung Pay) can be broadly categorised as digital wallets which allow a card-based payment transaction to be initiated via a consumer device. Unlike card-based wallets, e-money wallets such as PayPal, Alipay and WeChat Pay¹⁵ also enable their customers to store value. Facebook's Diem (formerly Libra) project and other developments worldwide show that technology companies and other market entrants may offer substantially different options for making payments in the future.

Most market entrants have established EU subsidiaries and obtained an e-money institution and/or payment institution licence. However, not all of the digital wallet solutions that are available qualify as payment services under the revised Payment Services Directive (PSD2)¹⁶, although some are provided as a technical service on the basis of contractual agreements with the card-issuing or acquiring PSP. Depending on the services provided, these entities may also fall within the scope of Eurosystem oversight of payment systems or schemes. In the near future, consumers may be confronted with a range of different stablecoins offering seemingly attractive, cheap and convenient propositions. These developments also pose new challenges to the smooth functioning of the European payments ecosystem. To ensure that Eurosystem oversight remains future-proof with regard to these developments and that the Eurosystem's oversight standards apply to all relevant actors in line with the principle of "same business, same risks, same rules", the Eurosystem has reviewed its oversight framework for payment instruments and is considering including certain front-end technical services, payment initiation services, digital wallets and payment tokens within the scope of the revised PISA framework (see also Box 3).

¹⁵ Alipay and WeChat Pay are not currently offered to European payers but are available in the EU to foreign payers.

¹⁶ [Directive \(EU\) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation \(EU\) No 1093/2010, and repealing Directive 2007/64/EC \(OJ L 337, 23.12.2015, p. 35\).](#)

Box 1

Stablecoins from an oversight perspective

Stablecoins seek to provide a stable means of payment and a store of value. While stablecoins emerged in the context of crypto-asset trading activities, current projects are often broader in scope.

The price of stablecoins is typically linked to a reference currency or a basket of currencies. In most cases, issuers claim that the value of the stablecoin is backed by a pool of financial assets. Stablecoin arrangements typically entail the existence of a formal arrangement supported by one or more responsible entities called governance bodies.¹⁷

Stablecoins are characterised by their integration into a wider arrangement aimed at providing a variety of functions. As described in a G7 report on global stablecoin arrangements¹⁸, the arrangement is usually composed of the following core functions: (a) issuance, redemption and stabilisation of the value of the stablecoins; (b) transfer of stablecoins among users; (c) interaction with users.

As a result of the combination of several functions, stablecoin arrangements may fall under several different regulatory, oversight and supervisory regimes. The transfer function of a stablecoin arrangement can be similar to a traditional payment system. The existence of common rules and standardised procedures to enable the transfer of stablecoins between end users could also be regarded as a payment scheme or instrument, if seen to be distinct from the payment system function. Therefore, various functions and entities within a stablecoin arrangement are related to the provision of payment services and would fall under the oversight of the Eurosystem in addition to any other supervisory frameworks.

The Eurosystem has been closely monitoring developments in the area of stablecoins and, in coordination with international standard-setting bodies, assessing the applicability of oversight standards to stablecoin arrangements.

Tackling cross-border payments

As shown in Chart 1, the total number of electronic transactions in the euro area grew by 70% between 2009 and 2019, while the number of cross-border electronic transactions grew by 523% over the same period. Despite this rapid growth, cross-border electronic payments accounted for only 7% of all electronic payments in 2019 (up from 2% in 2009).

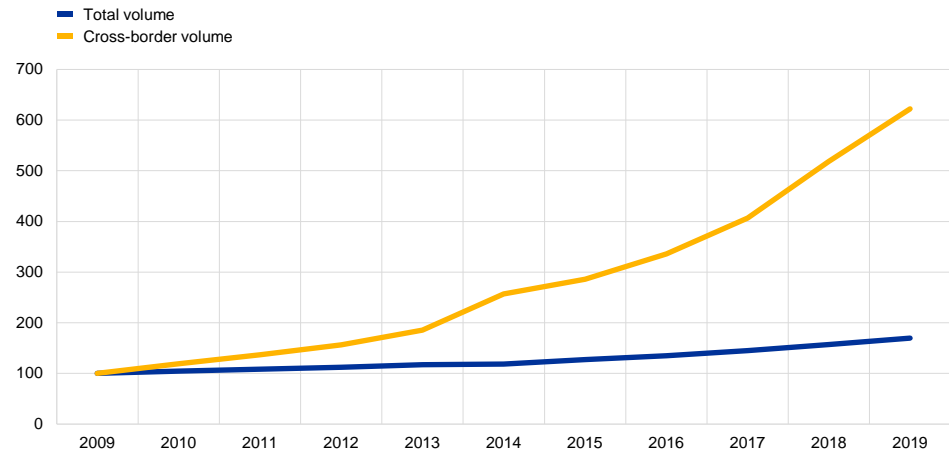
¹⁷ For a discussion of the basic elements of stablecoins, see “[Stablecoins – no coins, but are they stable?](#)”, *IN FOCUS*, No 3, ECB, November 2019.

¹⁸ See G7 Working Group on Stablecoins, “[Investigating the impact of global stablecoins](#)”, Bank for International Settlements, October 2019.

Chart 1

Total transactions and cross-border transactions involving non-MFIs in the euro area, 2009 to 2019

(index: 2009 = 100)



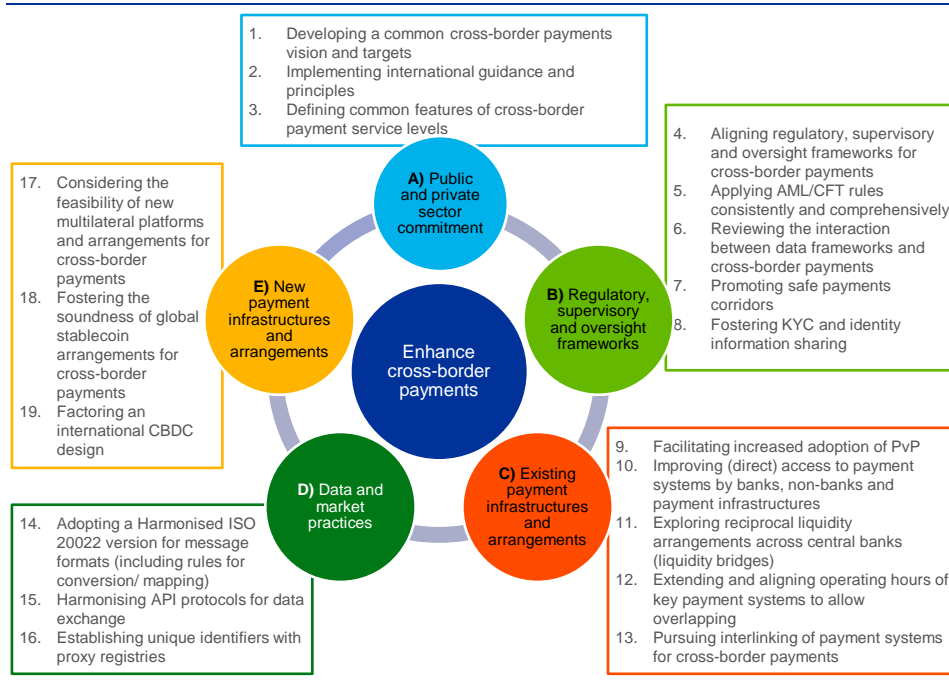
Source: ECB.

Compared to domestic and euro area payments, payments to or from outside the euro area are lagging behind in terms of cost, speed, access and transparency. While the Eurosystem collaborates at international level in the work of the FSB and the CPMI to enhance cross-border payments¹⁹ (see Figure 2), the topic has several implications for Eurosystem oversight, as new systems, schemes and services aimed at offering euro cross-border payments often make use of new technology (e.g. stablecoins). Therefore, there is a need for international cooperative oversight of systems active in several jurisdictions, and for shared oversight requirements and guidance to ensure the overall safety and efficiency of such systems.

¹⁹ See “[Enhancing Cross-border Payments: Stage 3 roadmap](#)”, FSB, October 2020.

Figure 2

Overview of the focus areas and associated building blocks of the FSB’s work on cross-border payments



Source: FSB, "Enhancing Cross-border Payments – Stage 3 roadmap", Financial Stability Board, October 2020.
 Notes: AML/CFT stands for "anti-money laundering/countering the financing of terrorism"; KYC stands for "know your client"; PvP stands for "payment versus payment"; API stands for "application programming interface" and CBDC stands for "central bank digital currency".

Adoption of ISO 20022

ISO 20022 is an international standard, published by the International Organization for Standardization (ISO), which is aimed at enhancing and simplifying interoperability between financial institutions, market infrastructures and end-user communities. The standard is already widely used in the euro area, including in retail payments, as the required format for SEPA payment messages under the Single Euro Payments Area (SEPA) Regulation²⁰. The standard is also an enabler, improving cross-border transactions.

For large-value payments systems, the older SWIFTNet FINCopy Message Type (MT) is still used, but the migration for the industry as a whole is envisaged to come by the end of 2025. In the euro area, TARGET2 and EURO1 are planning to adopt ISO 20022 in November 2022. As both systems plan to migrate on the same weekend in a "big bang" approach (in the case of TARGET2, not only for the ISO 20022 migration but also for the launch of the consolidated T2/T2S platform, including a renewed real-time gross settlement (RTGS) service), the Eurosystem has been carefully monitoring the migration plans, testing and contingency planning being developed by the operators.

²⁰ Regulation (EU) No 260/2012 of the European Parliament and of the Council of 14 March 2012 establishing technical and business requirements for credit transfers and direct debits in euro and amending Regulation (EC) No 924/2009 (OJ L 94, 30.3.2012, p. 22).

Correspondent banking

Correspondent banking consists of bilateral relationships between banks that allow the transfer of funds via book-to-book transfer. It enables banks to access financial services and to provide payment services in jurisdictions where the banks are not connected to the local FMIs. This network continues to represent an important link in the payment chain, with a total average daily turnover of €686 billion in 2019.²¹

Over the last few years, there have been two big trends in correspondent banking. First, while correspondent banking services were traditionally predominantly offered on a reciprocal basis, there has been a trend towards large-scale business offered by a more limited number of international banks that have specialised in this activity. Second, in line with regulatory expectations²², correspondent banks have increasingly focused on the risks posed by their customers. A related phenomenon, known as de-risking, has seen selective withdrawals from correspondent banking relationships over the past few years. In 2015 the FSB launched a four-point action plan to assess and address the decline in correspondent banking relationships. Several progress reports have subsequently been published.²³

Finally, growing customer expectations in relation to cross-border payments pose another challenge to correspondent banks. The banking industry has been working to improve the services offered. In particular, the development of the SWIFT global payment initiative (gpi) and the migration to ISO 20022 are important steps in the modernisation of correspondent banking processes.

Market developments in central clearing

The amount of euro-denominated clearing activity in the euro area has increased in recent years, driven by the development and transfer of certain clearing services to the euro area. In December 2017 Eurex Clearing AG initiated a partnership programme with major swap dealers to develop its clearing service for euro-denominated interest rate swaps. This has led to a substantial increase in activity, reaching €18 trillion in notional outstanding in November 2020. Since January 2019 LCH SA has extended its existing repo clearing service to sovereign bonds of additional euro area countries. Since February 2019 the overwhelming majority of euro-denominated repos previously cleared via LCH Ltd have been cleared via LCH SA. Euro-denominated repos are now almost exclusively cleared in euro area CCPs, which is a welcome development. This increase in euro clearing activities also reinforces the need for the Eurosystem to closely monitor the risk management of CCPs where relevant under its

²¹ See “[Eleventh survey on correspondent banking in euro – 2019](#)”, ECB, November 2020.

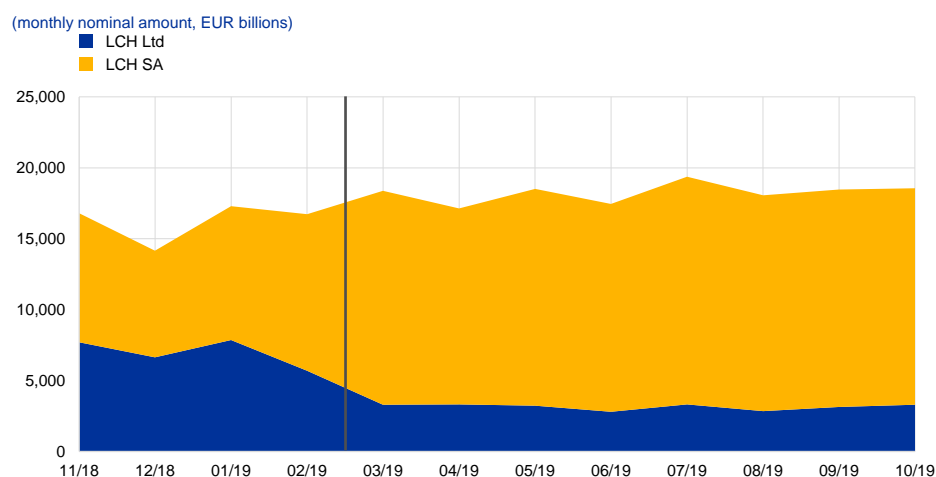
²² See “[Drivers for 'de-risking' go beyond anti-money laundering/terrorist financing](#)”, Financial Action Task Force (FATF), June 2015: “When establishing correspondent banking relationships, banks are required to perform normal customer due diligence on the respondent bank. Additionally, banks are required to gather sufficient information about the respondent bank to understand the respondent bank’s business, reputation and the quality of its supervision, including whether it has been subject to a money laundering or terrorist financing investigation or regulatory action, and to assess the respondent bank’s AML/CFT controls.”

²³ See, for example, “[FSB Action Plan to Assess and Address the Decline in Correspondent Banking – Progress Report](#)”, FSB, May 2019.

CBI mandate. It should, however, be noted that systemically significant amounts of euro-denominated clearing activity remain outside the euro area, especially in UK CCPs, and that the Eurosystem will continue to cooperate with the relevant authorities in the EU and in third countries to monitor these activities.²⁴

Chart 2

Repos cleared via LCH Ltd and LCH SA, 2018-2019



Source: LCH.

Box 2

The impact of the COVID-19 pandemic on FMI

The outbreak of the COVID-19 pandemic in early 2020 had a severe impact on peoples' lives globally. EU Member States implemented containment measures, such as social distancing and country-wide lockdowns. The pandemic also affected FMIs and their ecosystem and thoroughly tested their operational resilience and their capacity to cope with the havoc in financial markets. While some FMIs saw volatile turnovers with peak traffic, others saw sharp and sudden decreases in traffic. The latter occurred in particular in the area of retail payments from March to the end of May 2020, stemming from the reduced economic activity.

The Eurosystem, in its role as overseer, has been monitoring the impact on FMIs and their reaction to the COVID-19 pandemic and has been in close dialogue with overseen entities, including their critical service providers. The overseen entities have largely proven to be operationally resilient in this crisis, maintaining the level of operations and service to their clients as well as most of their regulatory commitments and the development of products and other projects. At the beginning of the pandemic, each rolled out their business continuity plans at different levels depending on the situation and in full observance of official guidance. The vast majority of staff worked remotely in most of the overseen entities, with only a few critical staff remaining onsite. Over the summer of 2020, some of the entities carefully managed partial returns to the office, as infections rates slowed and authorities relaxed local restrictions. However, by the end of 2020 the majority of overseen entities had gone back to almost

²⁴ See "Implications of Brexit for the EU financial landscape", *Financial Integration and Structure in the Euro Area*, ECB, March 2020, Special Feature A, Box A.1.

full remote working mode as the second wave of the pandemic struck and restrictions were toughened up once more.

Overall, no major incidents related to COVID-19 occurred during this period. However, issues with supply chains from third parties located in heavily affected areas were occasionally noted in the first half of 2020. Also evident were slight delays in the provision of services and reduced settlement efficiency during the peak of the pandemic on account of higher than usual processed volumes. The overseen entities took swift measures to address these issues, and fixes were implemented where necessary.

As the pandemic crisis deepened in the months of April and May 2020, payment systems continued to work smoothly and were able to support the financial sector and the public in their day-to-day payments. Some retail payment systems, in particular those processing card payments, observed a considerable drop in transaction volumes as activity came to an almost complete halt in several business segments (such as the travel and aviation industry). While cross-border and card-present transactions suffered a decrease, the use of contactless payments increased. By contrast, payment systems settling wholesale transactions and those settling foreign exchange transactions experienced increased traffic owing to the high volatility in financial markets. This did not cause capacity issues at these FMIs.

CCPs also proved resilient in March 2020 when the financial crisis peaked amid the uncertainty surrounding the pandemic. Market volatility led to large intraday and end-of-day variation margin calls, which reached over €35 billion on a gross basis, about four times the pre-crisis level. In addition, initial margins posted by clearing members to euro area CCPs increased by 70% to a peak of over €100 billion. Anti-procyclicality measures (both those in place on a business-as-usual basis and those used during the crisis) were able to dampen the increase in initial margins. Payment obligations to CCPs were nevertheless met by clearing members.

CSDs and T2S operated without any major issues, although, in few cases, the exceptionally high volumes that had to be settled between March and May justified a number of extraordinary measures on the side of the operators in order to maintain the punctuality of the settlement schedule.

Although no operational incidents linked to the COVID-19-related operating arrangements occurred, the pandemic prompted a significant increase in risk levels. A particular case was third-party risk, especially dependence on providers, which increased the risk posed by end-to-end supply chains. Another notable risk was cyber risk. Overseen entities and their participants reported increased cyber threats in the form of COVID-19-related phishing and malware, although none were materially successful. The Eurosystem continues to carefully monitor and raise awareness of these and other risks. The Eurosystem also fosters the timely exchange of cyber-relevant information between market entities and authorities through the new Cyber Information and Intelligence Sharing Initiative (CIISI-EU) under the Euro Cyber Resilience Board (ECRB) to help the industry prevent and contain such attacks.

Other focus areas for Eurosystem oversight during the 2020 pandemic included easing some requirements in order to allow overseen entities to concentrate on their core business, crisis communication and monitoring the agility of entities to review priorities in close consultation with their stakeholders. One prominent example in this context was the extension of the timeline of the T2-T2S consolidation project by one year, with a launch in November 2022. The decision followed discussions with Europe's financial community in response to the challenges posed by the COVID-19

pandemic (as well as the rescheduling of SWIFT's global migration of cross-border payments to ISO 20022).

At the time of writing, we are in the second wave of infections in Europe, with increased restrictions and new lockdowns imposed in several countries. It has become clear, however, that the steps taken by overseen entities at the beginning of 2020 have been effective in maintaining overall activity and operations. In the meantime, some entities have improved their remote working environment (e.g. through increased cyber monitoring and stronger authentication requirements), have trained their staff thoroughly on threats associated with working remotely and have improved some processes in order to better adapt them to remote working (e.g. application testing, e-voting, virtual recruitment). In some cases, business continuity and resilience testing exercises have been prioritised to obtain sufficient assurance during this second wave.

Brexit

Since the United Kingdom decided to leave the European Union, Eurosystem overseers have continuously monitored developments affecting cross-border participation in FMIs between the United Kingdom and euro area countries. Particular attention has been paid to the preparedness of euro area FMIs and participants in the event of the United Kingdom leaving the EU without a withdrawal agreement (a “no-deal” Brexit). Between 31 January and 31 December 2020, the United Kingdom was in a transition period, during which EU law continued to apply in the United Kingdom and cross-border participation remained subject to pre-existing arrangements under EU rules. The United Kingdom became a third country on 1 January 2021.

The Eurosystem monitored and assessed the preparedness of euro area FMIs and participants in relation to the applicable EU and UK regulatory frameworks. It considered the implications of Brexit for euro area FMIs with UK participants, given the applicable UK regulatory framework following Brexit, the requirements for third-country participants under EU law and the FMIs' own rules. The Eurosystem also monitored developments around the use of critical UK FMI services by EU participants, in particular derivatives clearing and securities settlement services. With respect to these services, the financial stability risks associated with a “cliff edge” at the end of the Brexit transition period on 31 December 2020 were fully addressed by temporary Commission equivalence decisions adopted in September and November 2020. With respect to UK CCPs, the Eurosystem is also involved in the implementation of EMIR 2.2 (see Section 3.1.3 below) and its application to third-country CCPs of systemic importance for the EU.

The Eurosystem also monitored developments in the area of retail payments, in particular the participation of UK payment service providers in SEPA payment schemes. On 7 March 2019 the Board of the European Payments Council (EPC) approved the application from UK Finance for the continued participation of UK PSPs in SEPA.

2.2 Developments in regulatory and oversight standards

This section focuses on developments in the regulatory framework and the oversight requirements during the period covered in this report. These often take into account market developments, as described in the preceding section, and in some cases facilitated them. Given the global nature of financial markets and of the risks they face, regulatory and oversight standards are often developed at international level. The Eurosystem contributes to this work, notably through its active participation in the CPMI but also via other fora.

2.2.1 Payments

ECB Regulation on oversight requirements for systemically important payment systems (SIPS Regulation)

The ECB published amendments to the SIPS Regulation in November 2017. The amended Regulation sets clearer requirements on credit and liquidity risk mitigation, introduces new requirements on cyber resilience, and assigns additional powers to the competent authorities.²⁵ At the same time, the ECB also published a Decision on the methodology for calculating sanctions for infringements of the oversight requirements for SIPS²⁶ and a Decision on procedural aspects concerning the imposition of corrective measures for non-compliance with the SIPS Regulation²⁷. Following a transition period to implement additional requirements, overseers concluded an assessment of SIPS against the changed requirements (a “gap assessment”) in the middle of 2020 (see Section 3.1.1 for details).

To provide additional transparency and legal certainty on the exercise of powers granted to competent authorities on the basis of Article 21 of the SIPS Regulation, in August 2019 the ECB published a Decision on the procedure and conditions for exercise by a competent authority of certain powers in relation to oversight of SIPS²⁸.

²⁵ In addition to the right to obtain information, competent authorities now also have the power to conduct on-site inspections and to require a SIPS operator to appoint an independent expert to perform an investigation into or independent review of the operation of the SIPS.

²⁶ [Decision \(EU\) 2017/2097 of the European Central Bank of 3 November 2017 on the methodology for calculating sanctions for infringements of the oversight requirements for systemically important payment systems \(ECB/2017/35\) \(OJ L 299, 16.11.2017, p. 31\).](#)

²⁷ [Decision \(EU\) 2017/2098 of the European Central Bank of 3 November 2017 on procedural aspects concerning the imposition of corrective measures for non-compliance with Regulation \(EU\) No 795/2014 \(ECB/2017/33\) \(OJ L 299, 16.11.2017, p. 34\).](#)

²⁸ [Decision \(EU\) 2019/1349 of the European Central Bank of 26 July 2019 on the procedure and conditions for exercise by a competent authority of certain powers in relation to oversight of systemically important payment systems \(ECB/2019/25\) \(OJ L 214, 16.8.2019, p. 16\).](#)

Wholesale payments fraud

The Bangladesh Bank cyber heist in 2016 brought the issue of wholesale payments fraud to the forefront. It showed that fraudsters have become increasingly sophisticated, with real world examples highlighting how weaknesses in endpoint security can be exploited to commit fraud at the level of wholesale payment systems. This led the CPMI to develop a strategy for reducing the risk of wholesale payments fraud related to endpoint security.²⁹ The strategy is composed of seven elements designed to work holistically to address all areas relevant to preventing, detecting, responding to and communicating about wholesale payments fraud. The ECB actively contributed to the development of the strategy and has been monitoring its implementation across euro area wholesale payment systems.

Revised Payment Services Directive

The revised Payment Services Directive (PSD2)³⁰, published in 2015 and to be transposed into national law by EU Members States by January 2018, has four main objectives: (i) to contribute to a more integrated and efficient European retail payments market; (ii) to further level the playing field and enhance competition for payment service providers by including new types of players; (iii) to make payments within the EU safer, more efficient and more secure; and (iv) to enhance protection for European consumers and businesses.

PSD2 is supplemented by regulatory technical standards (RTS) on strong customer authentication (SCA) and common and secure open standards of communication, guidelines on major incident reporting, guidelines on fraud reporting, and guidelines on security measures for operational and security risks. The requirements, which apply to all payment service providers within the European Economic Area (EEA), were developed by the European Banking Authority (EBA) in close cooperation with the ECB.

SCA has been required for access to payment accounts and for the initiation of payments³¹ since September 2019, while for e-commerce card-based payment transactions the deadline for implementing SCA was extended to the end of 2020.³² SCA is a process whereby either the identity of the user of a payment service and/or the use of a genuine payment instrument is validated. Such authentication is considered strong if it is based on multiple factors, i.e. using two or more of the following elements:

1. knowledge (something only the user knows, e.g. a password or a PIN);

²⁹ See CPMI, “[Reducing the risk of wholesale payments fraud related to endpoint security](#)”, Bank for International Settlements, May 2018.

³⁰ PSD2 updates and enhances the EU rules put in place by the initial PSD adopted in 2007. The Directive entered into force on 12 January 2016 and EU Member States were given until 13 January 2018 to transpose it into national law.

³¹ In the instances defined in Article 97(1) PSD2.

³² On the basis of supervisory flexibility as outlined in [Opinion of the EBA on the elements of strong customer authentication under PSD2 \(EBA-Op-2019-06\)](#) and [Opinion of the EBA on the deadline for the migration to SCA for e-commerce card-based payment transactions \(EBA-Op-2019-11\)](#).

2. possession (something only the user possesses, e.g. a chip card or an authentication code generating device);
3. inherence (something the user is, e.g. using fingerprint scanning or voice recognition).

To balance security with user convenience there are also exemptions from the requirement to apply SCA, for example for low-value payments at the point of sale or for remote transactions to trusted beneficiaries.

The Eurosystem, with support of the European Forum on the Security of Retail Payments (SecuRe Pay)³³, has been contributing to the practical implementation of PSD2 and the above-mentioned guidelines. Data on fraud help the Eurosystem and other European regulators to better understand developments and make more informed decisions, e.g. on changing oversight standards or determining the focus of Eurosystem oversight. The Eurosystem has been publishing its card fraud report³⁴ for several years, but PSD2 broadens the reporting beyond card payments.

Major incident reporting framework for payment schemes and retail payment systems

Leveraging on the major incident reporting under PSD2 applicable to PSPs, the ECB has worked with the EBA via SecuRe Pay on a dedicated Major Incident Reporting Framework for oversight purposes which covers payment schemes and retail payment systems (RPS) overseen by the Eurosystem. Incident reporting is important for providing early warning of potential disruptions to the smooth functioning of the payment system, understanding the reasons for incidents and follow-up. The framework has been widely adopted across euro area countries since January 2019, and 42 incidents were reported in the course of 2019 and 2020.

ECB Payment Statistics Regulation

Following the publication of PSD2, and in order to keep track of the changing retail payments market, on 11 December 2020 the ECB published amendments to its [Regulation on payment statistics](#)³⁵. The amending Regulation also covers the fraud data to be reported under the EBA Guidelines on fraud reporting under PSD2³⁶, thereby facilitating a potential future “single data flow”. This would make it possible for each reporting agent to report a single set of payment and fraud statistics to only one national authority in each reporting period, subject to further assessment of the feasibility and practicalities of such approach.

³³ SecuRe Pay aims to foster a harmonised level of security in retail payments across Europe. It is composed of EU/EEA overseers of payment systems and instruments and supervisors of PSPs and is co-chaired by the ECB and the EBA.

³⁴ See “[Sixth report on card fraud](#)”, ECB, August 2020.

³⁵ [Regulation \(EU\) 2020/2011 of the European Central Bank of 1 December 2020 amending Regulation \(EU\) No 1409/2013 on payments statistics \(ECB/2013/43\) \(ECB/2020/59\) \(OJ L 418, 11.12.2020, p. 1\)](#).

³⁶ [Guidelines on fraud reporting under the Payment Services Directive 2 \(PSD2\) \(EBA/GL/2018/05\)](#).

New Eurosystem oversight framework for electronic payment instruments, schemes and arrangements (PISA framework)

In the light of technological developments in the payments ecosystem, with new services, products and also new players (including BigTechs), the Eurosystem is reviewing and improving its oversight framework with a view to achieving a holistic, harmonised, up-to-date and future-proof framework based on the international oversight standards, the PFMI. The overall aim is to ensure compliance with the “same business, same risks, same rules” approach (see Box 3).

Box 3

Oversight framework for electronic payment instruments, schemes and arrangements (PISA framework)

Since 2009 the Eurosystem has adopted a harmonised oversight approach and oversight standards for payment instruments³⁷ which are further detailed in dedicated oversight frameworks for card payments, credit transfers, direct debits and e-money schemes. Taking into account the experience the Eurosystem has gained in the oversight of payment schemes and payment instruments, and in order to stay abreast of market, technological and legal developments, the Eurosystem is reviewing and consolidating the respective oversight frameworks.

In this respect, consideration is being given to the emergence of new services (e.g. payment initiation services³⁸ and payment integration services³⁹), new technologies (e.g. DLT and tokenisation) and new means of exchange that go beyond the traditional understanding of payment instruments (e.g. stablecoins). At the same time, the regulatory environment has undergone significant changes (e.g. with PSD2, the Interchange Fee Regulation⁴⁰ and the General Data Protection Regulation⁴¹) with an impact on oversight requirements and coordination with other competent authorities.

Beyond general purpose electronic payment instruments and payment schemes, the PISA framework also aims to cover payment arrangements. The latter provide functionalities supporting end users of multiple payment service providers in their use of electronic payment instruments.⁴² Such payment arrangement functionalities include (i) initiation, facilitation or requests to execute transfers of value and (ii) the storage or registering of personalised security credentials. Moreover, the review takes into consideration the Eurosystem’s approach to the oversight of payment systems and thus, where relevant and possible, the framework will be aligned with the relevant principles of the PFMI, the SIPS Regulation, and the revised oversight framework for retail payment systems⁴³ as well as relevant

³⁷ See “[Harmonised oversight approach and oversight standards for payment instruments](#)”, ECB, February 2009.

³⁸ According to Article 4(15) PSD2, “payment initiation service” means a service to initiate a payment order at the request of the payment service user with respect to a payment account held at another payment service provider.

³⁹ A technical integration of several payment services on a merchant platform.

⁴⁰ [Regulation \(EU\) 2015/751 of the European Parliament and of the Council of 29 April 2015 on interchange fees for card-based payment transactions \(OJ L 123, 19.5.2015, p. 1\)](#).

⁴¹ [Regulation \(EU\) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC \(General Data Protection Regulation\) \(OJ L 119, 4.5.2016, p. 1\)](#).

⁴² Online banking services of account servicing PSPs solely offered to the account holder do not constitute a payment arrangement.

⁴³ See “[Revised oversight framework for retail payment systems](#)”, ECB, February 2016.

requirements set out for microprudential supervision of PSPs. In the implementation of the framework, existing assessments of individual payment system operators already overseen by the Eurosystem as well as supervisory assessments of PSPs conducted by competent authorities will be considered.

The framework will be supplemented by an assessment methodology further explaining the nature of oversight expectations and facilitating the oversight activities, as well as compliance with the oversight requirements by overseen entities. In finalising the framework, the Eurosystem will consider feedback received in a public consultation which ended on 31 December 2020.⁴⁴

2.2.2 Securities

Central Securities Depositories Regulation

The European Securities and Markets Authority (ESMA) has further developed the CSDR regulatory framework in close cooperation with the ESCB. Most importantly, in May 2018 the European Commission adopted the ESMA RTS on settlement discipline⁴⁵ which specify measures and procedures for preventing and addressing settlement fails. The entry into force of the RTS is being delayed until early February 2022 owing to the impact of the COVID-19 pandemic.⁴⁶ ESMA has also developed CSDR-related guidelines on internalised settlement reporting⁴⁷, on settlement fails reporting (not yet adopted), on CSD participants default rules and procedures⁴⁸ and on standardised procedures and messaging standards between investment firms and their professional clients⁴⁹. ESMA also publishes questions and answers on the CSDR, which it updates as needed.⁵⁰

⁴⁴ See [“Public consultation on the draft Eurosystem oversight framework for electronic payment instruments, schemes and arrangements”](#) on the ECB’s website.

⁴⁵ [Commission Delegated Regulation \(EU\) 2018/1229 of 25 May 2018 supplementing Regulation \(EU\) No 909/2014 of the European Parliament and of the Council with regard to regulatory technical standards on settlement discipline \(OJ L 230, 13.9.2018, p. 1\)](#).

⁴⁶ See [“ESMA proposes to further postpone CSDR settlement discipline”](#), ESMA, 28 August 2020.

⁴⁷ See [“Guidelines on Internalised Settlement Reporting under Article 9 of CSDR”](#), ESMA, April 2019.

⁴⁸ See [“Guidelines: CSD participants default rules and procedures”](#), ESMA, June 2017.

⁴⁹ See [“Final Report: Guidelines on standardised procedures and messaging protocols under Article 6\(2\) of Regulation \(EU\) No 909/2014”](#), ESMA, October 2019.

⁵⁰ See [“ESMA updates the CSDR Q&As”](#), ESMA, 17 February 2020.

2.2.3 Central counterparties

European Market Infrastructure Regulation (EMIR) Refit and EMIR 2.2

Two amendments to EMIR were adopted by EU legislators in 2019. EMIR Refit⁵¹ was introduced in May 2019 to simplify or alleviate certain requirements under EMIR, in particular the reporting and clearing obligations, in accordance with the principle of proportionality. For example, EMIR Refit extended the exemption from the clearing obligation for pension scheme arrangements until June 2021, which the Commission can further extend until June 2023 if no viable technical solution has been developed to facilitate the central clearing of derivatives by pension scheme arrangements. EMIR 2.2⁵² was adopted in October 2019 to improve the supervisory process for CCPs, in particular third-country CCPs that are systemically important for the EU (designated as “Tier 2 CCPs”). These Tier 2 CCPs need to fulfil additional conditions to be recognised in the EU, in particular supervision by ESMA in cooperation with third-country authorities. When third-country CCPs clear financial instruments denominated in euro, the Eurosystem is involved in their designation as Tier 2 CCPs and the assessment of their compliance with the conditions for their recognition on an ongoing basis. The Eurosystem may also be involved in ESMA’s supervisory activities with respect to Tier 2 CCPs, such as general investigations and onsite inspections. ESMA must also seek the agreement of the Eurosystem before recommending that the Commission should deny recognition to a third-country CCP for clearing activities in euro of such systemic importance that they should be provided by an EU-based CCP. In addition, the Eurosystem is involved, as the CBI for the euro, in the annual ESMA supervisory stress tests for CCPs. EMIR 2.2 also created a CCP Supervisory Committee within ESMA to carry out ESMA’s enhanced role in promoting supervisory convergence across EU CCPs and its new tasks in respect of third-country CCPs. The ECB represents the Eurosystem (as CBI for the euro) in the CCP Supervisory Committee. ESMA will also share information on the recognition process for third-country CCPs with a range of EU authorities via a newly established third-country CCP college in which all members of the ESCB participate.

CCP Recovery and Resolution Regulation

In November 2016 the European Commission put forward a proposal for a regulation establishing an EU framework for the recovery and resolution of CCPs. The legislative process is currently in its final stages, as political agreement on the proposal was reached in June 2020, and the regulation is expected to enter into force in 2021. Once

⁵¹ [Regulation \(EU\) 2019/834 of the European Parliament and of the Council of 20 May 2019 amending Regulation \(EU\) No 648/2012 as regards the clearing obligation, the suspension of the clearing obligation, the reporting requirements, the risk-mitigation techniques for OTC derivative contracts not cleared by a central counterparty, the registration and supervision of trade repositories and the requirements for trade repositories \(OJ L 141, 28.5.2019, p. 42\).](#)

⁵² [Regulation \(EU\) 2019/2099 of the European Parliament and of the Council of 23 October 2019 amending Regulation \(EU\) No 648/2012 as regards the procedures and authorities involved for the authorisation of CCPs and requirements for the recognition of third-country CCPs \(OJ L 322, 12.12.2019, p. 1\).](#)

the new framework is in operation, the Eurosystem will contribute, as CBI for the euro, to the assessment of CCP recovery plans in EMIR colleges and the development of resolution plans and resolvability assessments in CCP resolution colleges for EU CCPs.

The adoption of the recovery and resolution framework is a very important step towards completing the implementation in the EU of the global reforms initiated in the wake of the financial crisis in 2008-09. It will ensure adequate consideration of the public interest throughout the lifecycle of these infrastructures of great financial stability relevance, including more extreme, albeit rare, potential outcomes (“tail of tail” events).

Other EU and international workstreams related to CCPs

ESMA conducts regular system-wide stress test exercises relating to EU CCPs. The ECB participates in the task force set up by ESMA to support the exercise, in particular in relation to the liquidity stress test element, which is of particular relevance from a CBI perspective. The assessment of liquidity risk was covered in the second EU-wide CCP supervisory stress test conducted in 2017-18 and has become one of the regular components of the exercise.⁵³

The international work on CCP resilience, recovery and resolution continued during 2017 and 2018 under the aegis of the relevant standard-setting bodies.

In relation to CCP resilience and recovery, the work focused on monitoring the implementation of the relevant international standards (including the PFMI) as well as on exploring relevant policy and analytical aspects in relation to CCP resilience, recovery and resolvability, such as:

- developing a framework on supervisory stress testing of CCPs;
- analysing central clearing interdependencies to assess whether the key findings are stable over time;
- assessing incentives to centrally clear over-the-counter (OTC) derivatives;
- working on CCP default management auctions;
- collecting and sharing authorities’ experiences of cooperation under Responsibility E of the PFMI, which specifies that central banks, market regulators and other relevant authorities should cooperate with each other, both domestically and internationally, to ensure FMI safety and efficiency (besides CCPs, this also covered other types of FMIs).⁵⁴

⁵³ See “[Report: EU-wide CCP Stress Test 2017](#)”, ESMA, February 2018; and “[Report: 3rd EU-wide CCP Stress Test](#)”, ESMA, July 2020.

⁵⁴ See “[CPMI and IOSCO share authorities’ experiences in cooperation to increase FMI safety and efficiency](#)”, *press release*, Bank for International Settlements, 10 December 2019.

Going forward, the main priorities will include (i) the finalisation of the work on CCP default management auctions; (ii) further work on client clearing; (iii) practices in relation to identifying, monitoring and managing non-default losses under recovery, and (iv) analysis of CCP margin procyclicality following the COVID-19 market turbulence.

As regards CCP resolution, in November 2018 the FSB, building on its 2017 guidance on CCP resolution and resolution planning⁵⁵, issued a discussion paper⁵⁶ setting out considerations that may be relevant to resolution authorities and crisis management groups (CMGs) in developing their respective assessments and approaches. The responses to this public consultation, together with the experience of authorities in evaluating these matters and further FSB analysis, informed the development of potential further guidance on the adequacy of financial resources and the role of equity in CCP resolution which was published in November 2020.⁵⁷

Box 4

Using trade repositories data to analyse client clearing

In the past few years, the oversight function has increasingly benefited from quantitative analytics shedding light on important structural features of the markets served by FMIs. In addition, analytics have helped to monitor risks that build up and that are subsequently transmitted via FMIs. Recent improvements in the quality of derivatives data reported to trade repositories under the reporting obligation in EMIR have allowed for increased transparency in derivatives markets, where CCPs play a critical role. To make the most of this improved data reliability, the ECB began a study⁵⁸ on the extent and magnitude of client clearing, i.e. clearing not carried out via a direct relationship with the CCP but indirectly via existing CCP clearing members (which are typically banks). Figure A shows a network of all market participants clearing OTC trades in the euro area. The yellow circles denote CCPs, the green circles denote clearing members, the orange circles denote market participants who act as both clearing members and clients, and the blue circles denote clients. A link between two market participants indicates a relationship in the clearing path of a centrally cleared OTC derivatives trade.

⁵⁵ See “[Guidance on Central Counterparty Resolution and Resolution Planning](#)”, FSB, July 2017.

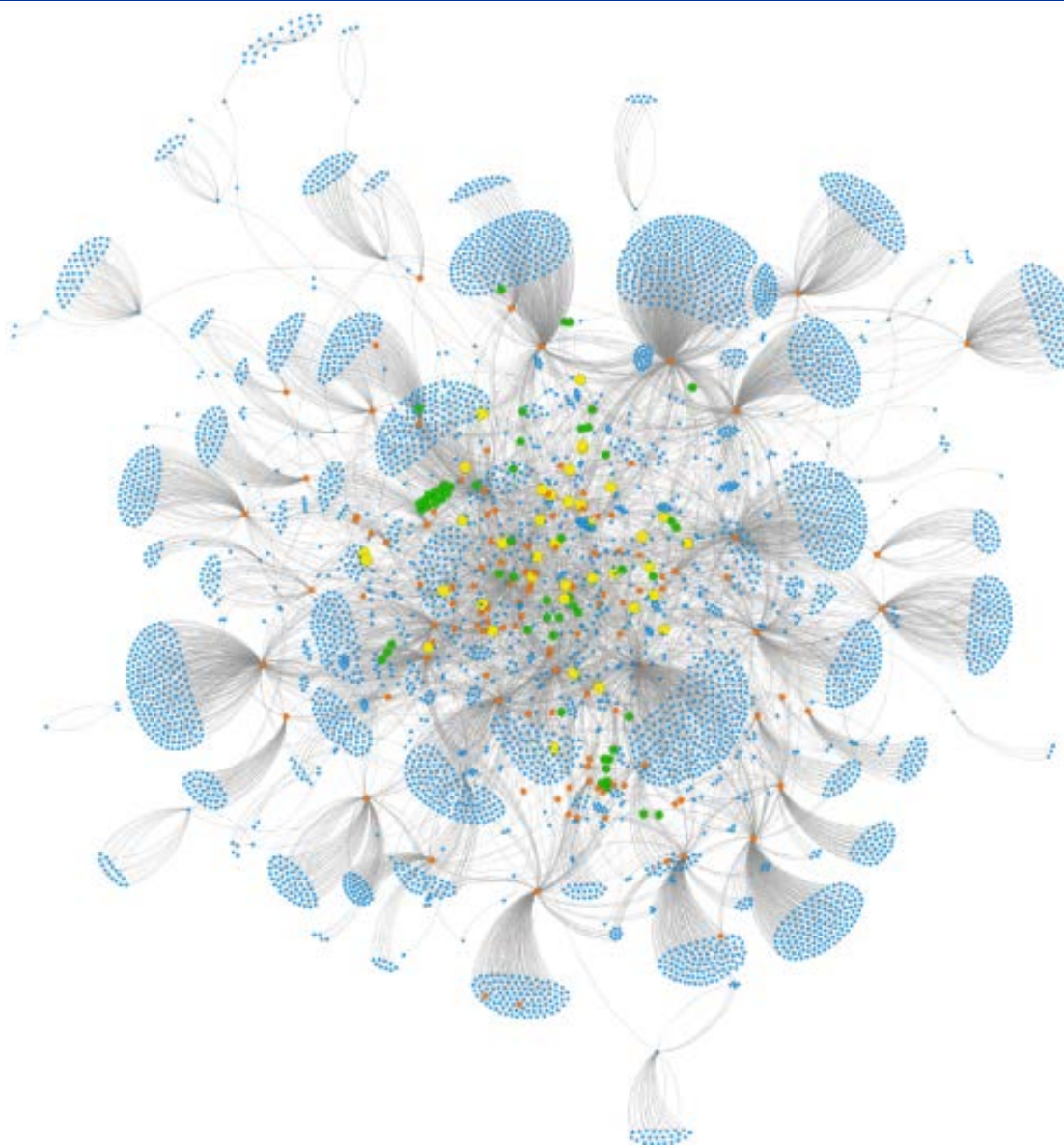
⁵⁶ See “[Financial resources to support CCP resolution and the treatment of CCP equity in resolution](#)”, *discussion paper*, FSB, November 2018.

⁵⁷ See “[Guidance on Financial Resources to Support CCP Resolution and on the Treatment of CCP Equity in Resolution – Final report](#)”, FSB, November 2020.

⁵⁸ For more information, see the [presentation](#) given at the [17th Bank of Finland Payment and Settlement System Simulator Seminar](#).

Figure A

Network of market participants in the universe of euro area OTC centrally cleared derivatives



Source: ECB.

Note: Yellow circles are CCPs; green circles are clearing members; orange circles are both clearing members (in one or more CCPs) and clients (in other CCPs); blue circles are clients.

The analysis facilitates regulators' understanding and in-depth monitoring of market developments in central clearing by way of qualitative and quantitative assessments of the extent of client clearing, as well as the concentration of client clearing services provision from clearing members. This is an important consideration because exclusion of client clearing considerations distorts the view of the real exposure network between counterparties by implicitly attributing client trades to the portfolios of the clearing members through which clients access CCPs. A clear delineation between house and client portfolios also facilitates understanding the exposures of various sectors in the economy that relate to clearing, as well as an assessment of the potential resulting impact and spread of systemic risk beyond clearing. Furthermore, this information is key to assessing potential challenges in transferring client positions from a defaulting clearing member to a non-defaulting clearing member (a

process called porting). As illustrated by Figure A above, client clearing is concentrated in the top 20 euro area clearing members. Interestingly, euro area clients depend to a large extent on clearing members domiciled outside of the euro area (mainly in the United States and the United Kingdom). The latter point emphasises the global nature of the derivatives market and the importance of monitoring market developments within and across jurisdictions.

2.2.4 Overall FMI landscape

Cyber resilience oversight expectations

In June 2016 CPMI and IOSCO published their cyber resilience guidance for FMIs.⁵⁹ Following a public consultation, the Eurosystem published its cyber resilience oversight expectations (CROE) in December 2018.⁶⁰ The CROE are comprehensive, internationally recognised standards which were developed in response to the need for the highest levels of cyber resilience. The CROE aim to:

- provide FMIs with detailed steps for implementing the guidance, ensuring they are able to foster improvements and enhance their cyber resilience over a sustained period of time;
- provide overseers with clear expectations for assessing FMIs under their responsibility;
- provide the basis for a meaningful discussion between FMIs and their respective overseers.

The CROE set out three levels of expectations (“evolving”, “advancing”, and “innovating”). SIPS and T2S are expected to meet at least the “advancing” level, given their systemic importance. As described further in Chapter 3, Eurosystem overseers have started to assess the respective FMIs against the CROE.

Contribution to international work on cyber security and resilience

Cyber risk has been addressed by overseers and regulators at national and international levels. The Eurosystem supports the view that the various groups and initiatives should actively coordinate and collaborate, where feasible, with the aim of producing harmonised standards and approaches. For that reason, Eurosystem central banks represented in the G7 (ECB, Deutsche Bundesbank, Banque de France, Banca d’Italia and De Nederlandsche Bank) actively participate and contribute to various international groups, such as the G7 Cyber Expert Group (CEG),

⁵⁹ See [“Committee on Payments and Market Infrastructures Board of the International Organization of Securities Commissions Guidance on cyber resilience for financial market infrastructures”](#), Bank for International Settlements, June 2016.

⁶⁰ See [“Cyber resilience oversight expectations for market infrastructures”](#), ECB, December 2018.

the CPMI-IOSCO Working Group on Cyber Resilience (WGCR) and FSB working groups, building on the work done by the Eurosystem on this topic. In particular, this has involved:

- developing various [G7 fundamental elements of cybersecurity in the financial sector](#) (which includes [effective assessment of cybersecurity](#), [third-party cyber risk management](#), and [threat-led penetration testing](#));
- establishing the WGCR in 2014 to enhance cyber resilience through joint work between FMIs and relevant authorities;
- publishing the [FSB Cyber Lexicon](#) in 2018;
- establishing the [FSB toolkit for effective practices for cyber incident response and recovery](#).

In addition to being involved in the international working groups, the ECB carries out its oversight function by participating in, and contributing to, conferences and events organised by institutions such as the World Bank and the International Monetary Fund. This close engagement has resulted in the CROE being adopted by the World Bank in its efforts to achieve global harmonisation and enhance the cyber resilience of FMIs in developing countries under its mandate.

The European Commission's legislative proposals for DORA, MiCA and the PRR

In view of the challenges posed by digitalisation, the European Commission has proposed draft legislation on [digital operational resilience](#), [crypto-assets](#) and [DLT-based market infrastructures](#). These future legislative acts will be highly important for FMIs, other overseen entities and their ecosystems. Therefore, they are also highly relevant for the Eurosystem and its oversight function. For DORA, the oversight relevance stems from its close links to cyber resilience, critical service providers and incident reporting, while for MiCA, this is largely attributable to its focus on crypto-assets used for payment purposes (i.e. stablecoins). For the PRR, the relevance for oversight is related to the innovations that it introduces in securities settlement.

3 Outcome of Eurosystem's oversight activities

This chapter provides an overview of the main oversight activities carried out in the reporting period. It is divided into two sections covering (i) oversight activities involving individual FMIs or other entities that fall under Eurosystem oversight, and (ii) horizontal activities, i.e. activities where risks span across several overseen entities.

3.1 Oversight of individual entities

This part of the report describes the main oversight activities of the Eurosystem that involve individual FMIs or other entities and details how such oversight activities have contributed to promoting safety and efficiency. First, it focuses on entities in the payments landscape. Second, it looks at entities in the securities area and central counterparties. Third, it examines how critical service providers are also covered. An overview of FMIs under Eurosystem oversight, together with further basic information, is provided in the Annex.

3.1.1 Payments

3.1.1.1 Payment systems

The Eurosystem differentiates between SIPS and non-SIPS euro area payment systems. This distinction reflects the relative importance of a payment system for the Eurosystem and is based on quantitative and qualitative criteria (Article 1 of the SIPS Regulation). It determines both the applicable oversight requirements and how they are enforced. SIPS are subject to the SIPS Regulation, while non-SIPS are subject to less stringent oversight requirements. The Eurosystem maintains a list of all overseen payment systems and their classifications.⁶¹ For some key data on SIPS, please see Table 1 in the Annex.

Systemically important payment systems

There are currently five SIPS subject to the SIPS Regulation: TARGET2, EURO1, STEP2-T, CORE(FR) and the Mastercard Clearing Management System.

In April 2017 the Eurosystem undertook a [comprehensive assessment](#) against the SIPS Regulation of the four SIPS in the euro area at that time, namely TARGET2,

⁶¹ The latest classifications can be found on the payment systems page on the [ECB's website](#).

EURO1, STEP2-T and CORE(FR). This indicated that, as of 31 January 2016, all four SIPS demonstrated a high level of compliance with the SIPS Regulation. While infringements and recommendations were identified in certain areas for all systems, the SIPS operators have since taken measures to address most of the shortcomings identified. In October 2019 the Eurosystem approved the formal closure of the majority of infringements and recommendations raised in the assessments of TARGET2, EURO1 and STEP2-T, while also acknowledging the actions taken to remedy infringements and recommendations raised in the assessment of CORE(FR) – these were closed by the Banque de France in its role as competent authority. Overall, the changes made improved the management of risks and contributed to an increased level of safety and/or efficiency of the systems as well as improving the compliance of the SIPS with the SIPS Regulation. The overseers continue to work with the operators to address the minority of infringements and recommendations that remain outstanding. These shortcomings mainly relate to aspects of the implementation of a sound and comprehensive risk management framework.

In January 2019 a gap assessment was launched, using the revised SIPS Regulation to assess the compliance of the four SIPS (as of January 2019) with the new requirements. The gap assessment also included a separate assessment of compliance with the CROE. All four SIPS Regulation gap assessments are now complete, as are the CROE assessments for three out of four SIPS. The remaining assessment is expected to be completed by early 2021. The Eurosystem is currently following up on the remediation plans prepared by SIPS operators to address infringements and recommendations raised by the assessments.

TARGET2, incl. TIPS

TARGET2 is the RTGS system for the euro. It is owned and operated by the Eurosystem. The main development related to TARGET2 was the launch of TIPS in November 2018. TIPS is a pan-European service used to settle transactions based on the SCT Inst scheme in central bank money 24 hours a day, 7 days a week, 365 days a year. As TIPS is legally constructed as a service within TARGET2, the Eurosystem classified it as a major change in TARGET2 and assessed it as such before it was launched. The assessment resulted in several recommendations that were all followed up on in 2019 by the Eurosystem. TIPS itself is subject to Eurosystem oversight and any changes to it are appropriately assessed and all developments are monitored. For instance, the introduction of the Swedish krona as a currency in TIPS led to a cooperative oversight arrangement between the Eurosystem and Sveriges Riksbank.

On 24 July 2020 the ECB's Governing Council took significant steps to support the full deployment of instant payments across the euro area through a pan-European reachability package in line with European Commission objectives. All payment service providers that adhere to the SCT Inst scheme and are reachable in TARGET2 should also become reachable in TIPS, either as a participant or as reachable party (i.e. through the account of another payment service provider that is a participant). At the same time, all automated clearing houses offering instant payment services

should migrate their technical accounts from TARGET2 to TIPS. The implementation of the measures is scheduled for November 2021 and will be subject to review under Eurosystem oversight in 2021.

Furthermore, in response to the dynamically changing threat landscape, and in order to address oversight requirements, the operator upgraded the existing TARGET2 contingency module. A new contingency tool – the Enhanced Contingency Solution (ECONS I) – was implemented in November 2019. ECONS I allows the Eurosystem to cope with an extended outage of TARGET2 and helps to process very critical transactions. The Eurosystem’s overall assessment of ECONS I found it to be a positive development and that it further supported TARGET2’s compliance with the SIPS Regulation.

Since the publication of the CPMI strategy for reducing the risk of wholesale payments fraud related to endpoint security⁶² in May 2018, the Eurosystem has been monitoring progress in making this strategy operational in TARGET2. TARGET2 was reviewed in relation to the seven elements of the CPMI strategy. This review led to recommendations being issued to the operator. The TARGET2 operator has taken the actions necessary to address seven out of the eight recommendations issued following the review, while one recommendation remains outstanding.

In December 2017 the Governing Council of the ECB approved the T2-T2S consolidation project. The project aims to introduce a new RTGS system which will offer enhanced services to the market (such as optimised liquidity management features). The project has entered the implementation phase. It is scheduled to be delivered using a “big bang” approach by the end of 2022, one year later than originally envisaged owing to market demands. The Eurosystem is monitoring the project with the goal of identifying risks at an early stage, particularly those that might affect the project’s successful launch, the related big-bang migration or the smooth operation of the platform in the future.

Two major incidents occurred in TARGET2 in 2020, on 11 August and 23 October. Both incidents caused notable outages of TARGET services for several hours. TARGET2 overseers have prioritised conducting a complete and thorough assessment of the incidents to ensure the operator takes the necessary steps to avoid a repetition and to ensure the resilience of TARGET2 and its participants. The overseers’ assessment of both incidents is underway and will be completed in early 2021.

EURO1

EURO1 is a pan-European, large-value payment system for single same-day euro transactions. It was launched in 1998. EBA CLEARING, the operator of EURO1, introduced a change allowing the system’s maximum debit and credit caps (which limit the maximum obligation/claim a participant can have with the system) to fluctuate

⁶² See “Committee on Payments and Market Infrastructures: Reducing the risk of wholesale payments fraud related to endpoint security”, Bank for International Settlements, May 2018.

between a minimum and maximum amount, thereby ensuring that individual liquidity shares in the EURO1 liquidity pool could be kept more stable. An additional liquidity distribution window – which allows participants to release liquidity from the system and move it to their TARGET2 account – was also implemented, increasing the number of such windows to seven. The Eurosystem found that these changes did not adversely affect the compliance of EURO1 with the SIPS Regulation. The additional liquidity distribution window resulted in nearly 100% of prefunded value being redistributed before the end of the EURO1 operating day.

In addition, the Eurosystem has been monitoring progress towards implementing the CPMI strategy for reducing the risk of wholesale payment fraud in EURO1. EURO1 was reviewed in relation to the seven elements of the CPMI strategy. This review led to recommendations being issued to the operator. EBA CLEARING has taken the necessary actions to address the recommendations. The Eurosystem has also been closely following EURO1's project to migrate to the ISO 20022 standard. This was announced by the operator, in conjunction with SWIFT, in October 2018 and is scheduled to go live in November 2022.

Furthermore, EBA CLEARING conducted a review of its governance and “users’ say” arrangements⁶³ and adopted identical structures for user consultations for EURO1 and STEP2-T, the other SIPS operated by EBA CLEARING. The Eurosystem assessment of these changes found that they do not adversely affect the compliance of EURO1 with the SIPS Regulation.

STEP2-T

STEP2-T is a pan-European retail payment system for SEPA credit transfer (SCT) and SEPA direct debit (SDD) payment transactions owned and operated by EBA CLEARING. It settles payments on a multilateral net basis through a series of settlement cycles throughout the day. While the development of STEP2-T was rather stable, with only minor technical and functional changes deployed during the period, the system plans a fundamental change in its settlement model. This will move from the current cycle-based deferred net settlement to continuous gross settlement in real time. The change was introduced by the operator to meet the requirements for credit and liquidity risks as outlined in the revised SIPS Regulation. Eurosystem overseers will monitor the preparations for this change and complete a major change assessment before the new system launches.

CORE(FR)

CORE(FR) is a French systemically important retail payment system. It was launched in January 2008 by a private operator, STET CORE(FR), and provides processing, clearing and settlement services for most types of interbank retail payment

⁶³ To ensure all types of users are considered in the design and development of its systems and offerings, EBA CLEARING maintains a broad range of communication channels with its (current and potential) users and other stakeholders.

transactions within the French banking community, including SCT, cheques, interbank payment orders, bills of exchange, card payments and ATM withdrawals. However, SDD and SCT Inst payments are processed in a separate system, SEPA(EU), which was launched in November 2016 and is also operated by STET.

The development of the system has been fairly stable since the migration of SDD payments to SEPA(EU). An assessment of CORE(FR) against the revised SIPS Regulation (including the CROE) was concluded in 2020, and the Banque de France continues to monitor the system's compliance as part of its continuous oversight activities.

Mastercard Clearing Management System

On 4 May 2020 the ECB's Governing Council identified the Mastercard Clearing Management System (MCMS) operated by Mastercard Europe as a SIPS. MCMS processes a large share of the card transactions made using Mastercard and Maestro cards in Europe, in particular cross-border transactions. After a one-year transition period, i.e. by May 2021, MCMS must comply with the requirements laid down in the SIPS Regulation and will then be comprehensively assessed against those requirements.

Non-systemically important payment systems

The Eurosystem distinguishes three types of non-systemically important payment systems: non-systemically important large-value payment systems (LVPS), prominently important retail payment systems (PIRPS) and other retail payment systems (ORPS).

LVPS, which normally process a considerable number of high-value payments related to financial market transactions, are subject to all principles in the PFMI that are applicable to payment systems. PIRPS and ORPS must comply with a subset of the PFMI, as defined in the revised oversight framework for retail payment systems (OFRPS), and, where relevant, with some of the Oversight expectations for links between retail payment systems.

In 2017 the ECB's Governing Council endorsed the assessment of eight PIRPS and sixteen ORPS against the applicable PFMI requirements. This assessment was carried out by the respective euro area NCBS and included a peer review by other Eurosystem central banks. The results showed that non-systemically important retail payment systems in the euro area comply with most of the applicable principles of the PFMI. Following the assessment exercise, the overseers provided a list of recommendations to the system operators who then identified mitigating measures. The majority of these measures were already implemented in 2018-19. The Eurosystem regularly monitors the progress of the overseen payment systems and works with the system operators to ensure that full compliance with applicable

oversight standards is reached and that payment systems continue to operate in a safe and efficient manner.

As mentioned in Chapter 2, the introduction of instant payments led to the creation of a number of new payment systems. All were classified as ORPS and a majority were assessed against the applicable PFMI either prior to launch or shortly after.

RT1

RT1 is a pan-European payment system processing instant payments. It is owned and operated by EBA CLEARING and went live in November 2017. As an ORPS, RT1 is bound by a subset of the PFMI as specified in the OFRPS. The oversight assessment of RT1 against the applicable requirements began in July 2017 (i.e. before the system launched) and was conducted with a cut-off date of 9 March 2018, taking into account the first months of operations. The system was found to observe, or broadly observe, all applicable principles, but a number of recommendations were issued. Since the cut-off date, EBA CLEARING has taken measures to address most of the recommendations, while the overseer continues to monitor and encourage the operator to address those that remain.

In addition to the comprehensive assessment before launch, the overseer has undertaken two change assessments of RT1, one for major changes in 2018 and one for minor changes in 2019. The changes were requested by the RT1 participants and mainly referred to improvements in system functionalities (e.g. RT1 becoming an instructing party to TIPS), connectivity options or technical changes stemming from updates of the SCT Inst rulebook. None of the changes adversely affected the system's compliance with the applicable PFMI principles.

Other payment systems

CLS

CLS provides payment-versus-payment (PvP) settlement and multilateral netting for foreign exchange (FX) transactions in 18 major currencies through its CLS Settlement service. PvP settlement eliminates the risk of a counterparty paying the currency sold without receiving the currency bought. Netting increases liquidity for CLS clients by reducing their funding requirements. The Federal Reserve System supervises CLS and assumes primary responsibility for the oversight of CLS under a cooperative oversight framework⁶⁴ between the G10 central banks and other central banks of issue for CLS-eligible currencies. The ECB, which has primary oversight responsibility

⁶⁴ See "[Protocol for the Cooperative Oversight Arrangement of CLS](#)", Board of Governors of the Federal Reserve System, December 2015.

for settlement of the euro in CLS, represents the Eurosystem on the CLS Oversight Committee alongside other G10 euro area NCBs.⁶⁵

Since 2017 CLS has launched three additional major services:

- CLSClearedFX, a PvP settlement service for CCPs to mitigate settlement risk when settling cleared FX products;
- CLSNet, a standardised bilateral payment netting service for more than 120 currencies;
- CLSNow, a PvP settlement service for gross settlement of individual same-day FX transactions.

The CLS Oversight Committee welcomed CLS's efforts to launch these new services that enhance the safety and efficiency of the FX market. The CLS Oversight Committee has monitored the development of the three products and, in particular, welcomed the introduction of CLSClearedFX as a tool that allows CCPs to mitigate FX settlement risk while maintaining full discretion on the failure management process and associated liquidity risk. In 2019 CLS conducted a table-top exercise simulating the resolution of a hypothetical participant with the aim of identifying any issues concerning continued access to CLS.⁶⁶ The ECB and De Nederlandsche Bank observed the exercise from the Eurosystem.

CLS's current main focus is on migrating CLSSettlement, the main service, to a new unified services platform. The CLS Oversight Committee is closely following this process, given the systemic importance of the service in a number of jurisdictions (including the euro area).

Offshore payment systems

The Eurosystem is also following developments in offshore payment systems processing the euro, such as Euro Chats in Hong Kong and Visa Europe in the United Kingdom. In doing so, the Eurosystem takes a risk-based approach and, where relevant, strives to ensure a level playing field in its oversight requirements for payment systems processing in euro, taking into account their size and importance. For smaller systems, the ECB primarily monitors the development of traffic in the systems and reviews assessments shared by the systems' home authorities.

⁶⁵ Nationale Bank van België/Banque Nationale de Belgique, Deutsche Bundesbank, Banque de France, Banca d'Italia, De Nederlandsche Bank.

⁶⁶ For background and regulatory expectations, see also "[Guidance on Continuity of Access to Financial Market Infrastructures \("FMIs"\) for a Firm in Resolution](#)", Financial Stability Board, 6 July 2017.

3.1.1.2 Payment instruments and schemes

SEPA payments schemes

SEPA schemes establish the technical and business requirements for the execution of SEPA payment transactions as set out in the SEPA Regulation⁶⁷. During the reporting period, the ECB completed assessments of the European Payments Council (EPC) SEPA schemes, namely SEPA Instant Credit Transfer (SCT Inst) and SEPA Credit Transfer (SCT) in September 2018 and July 2019 respectively. The Eurosystem also monitored and assessed the measures taken by the EPC to address oversight recommendations made both in the oversight assessments and in an earlier oversight assessment of the SEPA Direct Debit (SDD) scheme.⁶⁸

EPC SEPA schemes present a sufficiently reassuring level of safety and efficiency overall, and four out of five oversight standards were found to be fully observed for the SDD Core and SCT Inst schemes. For the SCT scheme, three out five oversight standards were assessed as fully observed, diverging from the other two schemes only by legal soundness (Standard 1) being broadly observed. On security, operational reliability and business continuity (Standard 3), the overseer found the standard to be broadly observed for all schemes owing to certain improvements in areas related to fraud monitoring. The areas for improvement identified for the SEPA schemes centre on two main points: (i) the efficiency of the EPC framework for fraud monitoring and reaction to fraud events – the overseer acknowledged the current efforts of the EPC to address the remaining oversight recommendations; (ii) the EPC's approach to monitoring participants' compliance with the SCT scheme rulebook – here a more proactive approach from the EPC as the governance authority of the scheme was recommended.

Card payment schemes

A card payment scheme (CPS) is a set of functions, procedures, arrangements, rules and devices that enable a payment card holder to make a payment and/or cash withdrawal with a third party (other than their card issuer). In this respect, international CPSs could be regarded as most prominent, as they allow domestic and cross-border card payments throughout Europe and globally.

In September 2018 the Eurosystem published a dedicated report on the gap assessment of card payment schemes.⁶⁹ The gap assessment was based on the updated CPS oversight assessment guide⁷⁰ and focused only on the differences

⁶⁷ Regulation (EU) No 260/2012 of the European Parliament and of the Council of 14 March 2012 establishing technical and business requirements for credit transfers and direct debits in euro and amending Regulation (EC) No 924/2009 (OJ L 94, 30.3.2012, p. 22).

⁶⁸ See "Eurosystem oversight report 2016", ECB, November 2017, p. 36.

⁶⁹ See "Eurosystem report on the gap assessment of card payment schemes against the 'Oversight framework for card payment schemes – standards'", ECB, September 2018.

⁷⁰ See "Guide for the assessment of card payment schemes against the oversight standards", ECB, February 2015.

between the original and the updated assessment guide. A total of 13 national and three international CPSs operating in the euro area⁷¹ were sequentially assessed against the relevant guide. The Eurosystem concluded that, of those 16 overseen CPSs, 11 fully observed all oversight standards and the remaining five broadly observed the standards.

The 2018 gap assessment exercise confirmed an overall improvement in risk management and in the internal compliance function of CPSs, related to Standard 3 covering security and operational reliability and Standard 4 on governance arrangements, respectively. A higher overall number of findings were identified in the areas of security, operational reliability and business continuity (Standard 3). The oversight recommendations stemming from the above gap assessments have largely been addressed in the meantime or are currently being closely followed up on by the overseeing central bank.

Box 5

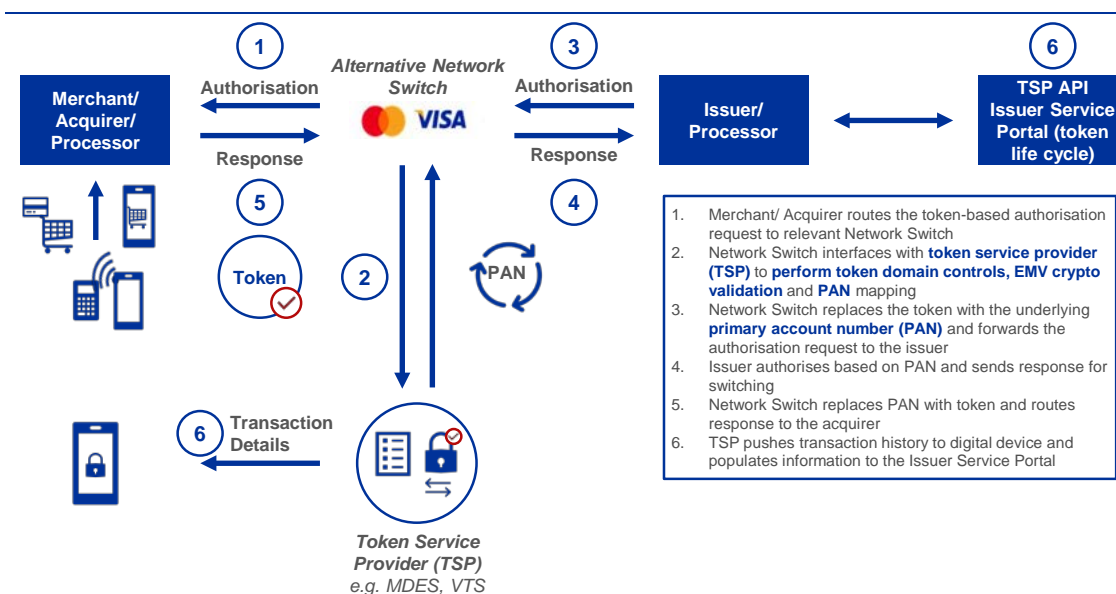
Card payment tokenisation

Card tokenisation is part of an industry-wide effort to better protect sensitive payment data across the acceptance environment. Payment tokenisation increasingly enables innovative digital solutions. These innovative solutions are securing a new generation of payment instruments by replacing traditional card details with tokens as payment credentials that can only be used in a restricted way. The crucial element is that the token is valid only for a specific device or a specific e-merchant (for online transactions). For example, a token provisioned to a mobile phone could potentially be set up to only initiate proximity payments from that particular consumer device. In order to use the token, it needs to be mapped to a primary account number (PAN), which is not known by the merchant or the device but only by the dedicated token service providers (see the second step in Figure A below).

⁷¹ All other CPSs were waived because they either issued less than one million cards per year, or they had annual transactions of less than €1 billion within the euro area, as per the Oversight Waiver Policy outlined on Section 5 of the Eurosystem's "[Oversight Framework for Card Payment Schemes – Standards](#)", ECB, January 2008.

Figure A

Tokenised transaction flow



Source: ECB.

The Eurosystem analysed the typical use cases of tokenisation with respect to card payments (i.e. for mobile payments and e-commerce) with a focus on the security of EMV payment tokens. The Eurosystem observed that card schemes in Europe are gradually expanding their operating rules and controls: (i) to ensure that token-based payment solutions are securely deployed by issuers; (ii) to safeguard the interoperability of tokenised transactions; and (iii) to govern the participation of token service providers (TSPs) and token requestors (TRs). This is done in accordance with broadly adopted international standards such as the EMV Payment Tokenisation Specification and the PCI Tokenisation Security Guidelines.

The Eurosystem welcomes card payment tokenisation as a security enhancement to enable innovative digital solutions while mitigating the risks of data compromise and fraud.

3.1.2 Securities

TARGET2-Securities

The continuous oversight activities conducted over the review period have been focused on assessing operational incidents and changes to T2S in relation to relevant principles of the PFMI. They have also focused on monitoring and analysing statistical indicators, the management of identified operational risks by the T2S operators and any substantial developments in T2S participation.

The first comprehensive oversight assessment of T2S operations in relation to the PFMI was endorsed by the ECB’s decision-making bodies in October 2019. The

comprehensive assessment concluded that T2S is largely compliant with the PFMI, which indicates that T2S services can be considered to be provided in a safe and efficient manner. However, a number of shortcomings were identified in certain areas, for which recommendations and observations were issued by the T2S overseers. These should be addressed in a timely manner by the T2S operators.

Before the final endorsement from the Governing Council, the outcome of the assessment was subject to consultation in the light of the T2S Cooperative Arrangement⁷², pursuant to the objective of the T2S cooperative framework between overseers and securities regulators, which was established in line with Responsibility E of the PFMI and the CSDR.

Box 6

The role of the Eurosystem as CBI in the authorisation of CSDs under the CSDR

The main objective of the CSDR is to ensure safe, efficient and smooth settlement. It establishes uniform requirements for the settlement of financial instruments in the EU and for the conduct of CSDs. Individual Eurosystem central banks qualify as relevant authorities in their capacity as overseers of SSSs, while the Eurosystem as a whole acts as CBI for the euro and as the central bank in whose books the cash leg of securities transactions processed in SSSs operated by CSDs is settled. Some Eurosystem central banks have been designated as competent authorities for the local CSDs under the CSDR. In some cases, this responsibility is shared with other national authorities.

The Eurosystem is involved as relevant authority on the grounds of statutory tasks in relation to monetary policy (i.e. to maintain the eligibility of CSDs for their use in Eurosystem credit operations), the safety and efficiency of payment and clearing systems and its role as settlement agent for CSDs. As concerns the authorisation of CSDs to provide core services and non-banking-type ancillary services, the Eurosystem is consulted by the national competent authorities on the features of the SSSs. For the subsequent regular review and evaluation, the Eurosystem is consulted on the functioning of the SSSs. The Eurosystem also contributes to the authorisation of CSDs as providers of banking-type ancillary services. In addition, the Eurosystem is involved in the recognition of third-country CSDs that intend to provide services in the EU.

The regulatory technical standards stipulate that, where a CSD settles a currency that is issued by several central banks, those central banks shall designate a single representative. The Eurosystem has therefore developed an internal framework for cooperation in the Eurosystem CBI function, which specifies that, for euro area CSDs, the Eurosystem is represented by the respective local NCB and, for non-euro area CSDs, by the ECB.

⁷² The T2S Cooperative Arrangement was established with the aim of facilitating information sharing and effective cooperation between the Eurosystem, as overseer of T2S, and the relevant authorities with a legitimate interest in the sound and efficient functioning of T2S. The participating authorities, are the Eurosystem (the ECB having primary responsibility vis-à-vis T2S), overseers of CSDs participating in T2S (largely NCBs), central banks of issue for currencies settled in T2S, competent authorities for the supervision of those CSDs that have signed the T2S Framework Agreement, and ESMA, as coordinator of competent authorities for the supervision of CSDs.

Central securities depositories

There are several CSDs in the EU that provide issuance, safekeeping and settlement of securities. Some of these CSDs also offer a range of value added services in collateral management or secured financing (for cash-driven and securities-driven transactions that are of key importance to financial markets). The services provided by CSDs underpin the sound functioning of the secured money market and are critical for the smooth execution of Eurosystem credit operations. A number of CSDs provide services for securities denominated in euro and in other currencies, while a few CSDs play a major role not only in the EU financial market as a whole but also in the global financial market. The list of CSDs established in the EU is included in Table 2 in the Annex.

In the last four years the Eurosystem has focused on the authorisation of CSDs, for which it assessed their compliance with the requirements of the CSDR. The Eurosystem has also started to review and evaluate ongoing compliance of already authorised CSDs and monitored their progress in addressing findings identified during the authorisation process. In addition, Eurosystem NCBs conducted regular oversight activities, including ongoing monitoring of CSD performance, in particular during the COVID-19 crisis. The Eurosystem also maintained a dialogue with the CSDs. Table 2 in the Annex provides more details on the oversight activities of Eurosystem NCBs.

NCB oversight of CSDs and the Eurosystem's contribution to authorisation, review and evaluation processes under the CSDR

As mentioned above, the Eurosystem participates, as relevant authority, in the authorisation and the regular review and evaluation processes under the CSDR in two capacities: as a CBI and as a central bank in whose books the cash leg of securities transactions is settled. For the reporting period there were, in total, 23 CSDs for which the Eurosystem qualified as a relevant authority.⁷³ Some of these CSDs are subject to separate authorisation processes, as they also provide banking-type ancillary services or have interoperable links with other CSDs. As a relevant authority, the Eurosystem provides its view or reasoned opinion (as applicable) on each of these processes. The scope of the Eurosystem's view/reasoned opinion covers aspects that are relevant from the perspective of its statutory responsibility.⁷⁴ This scope is broader for CSDs than for CCPs (see below) because CSDs and their links are used in the context of Eurosystem credit operations.

The authorisation process for CSDs under the CSDR was launched on 30 September 2017, and the Eurosystem was consulted on all but one of the euro area CSDs by the end of 2020. The Eurosystem, as a relevant authority and following consultation by the respective competent authorities, contributed to 27 authorisation processes, of which

⁷³ This number might be subject to changes from one year to another because the Eurosystem's status as a relevant authority for non-euro area CSDs depends on whether the euro is one of the most relevant currencies in which settlement takes place.

⁷⁴ The scope covers, among other things, operational risk and operational resilience, legal and business risk, securities safekeeping and settlement, settlement finality, default management and links with other CSDs.

22 concerned CSDs' core services. Three authorisations related to providers of banking-type ancillary services and two to the operation of an interoperable link. For some already authorised CSDs, the annual review and evaluation process has been launched. By the end of 2020 the Eurosystem had been consulted on the review and evaluation of ten CSDs.

The involvement of the Eurosystem in the authorisation process of all euro area CSDs and a few non-euro area EU CSDs contributed to the consistent application of the CSDR's requirements.

In addition, as the cash-leg central bank, the ECB has provided advice in the context of the recognition process of Euroclear UK & Ireland that was launched in the context of Brexit.

Since 2017 the oversight work of NCBs has concentrated on the contribution to the CSDR authorisation process and, more recently, the annual review and evaluation of already authorised CSDs.

3.1.3 Central counterparties

European financial markets are served by several CCPs, which provide clearing services for a variety of financial products, often with different (national, international or global) market focuses and customer bases. An overview of the CCPs and the respective markets served (including EU CCPs and some third-country CCPs which have systemic relevance for the euro) is provided in Table 3 in the Annex.

CCP oversight approach and scope

In accordance with Article 18 of EMIR, a supervisory college was established for each EU CCP before authorisation. Colleges are chaired and managed by the national competent authority (NCA) designated by each Member State – in some cases the NCB – and composed of authorities listed under EMIR which may have an interest in the smooth functioning and resilience of the CCP, including the NCB and the relevant CBI.

Since the initial phase of CCP authorisations (completed in September 2016), NCAs and supervisory colleges have focused their supervisory activities on the annual review and evaluation of each CCP's compliance with EMIR, in accordance with Article 21 of EMIR, and on the authorisation of new products and services as well as changes to the risk management of CCPs. Supervisory colleges agree and vote on opinions on new products or services which are considered as extensions of activities and services in accordance with Article 15 of EMIR and, following a validation from the NCA and from ESMA, on risk model changes considered significant in accordance with Article 49 of EMIR.

EMIR 2.2 (see Section 2.2.3) introduces clarifications and enhancements with respect to college procedures and opinions, in particular the possibility for the college, as well

as for the CBI independently, to adopt recommendations as part of college opinions. It also streamlines the process for the assessment and validation of significant risk model changes.

Eurosystem central banks participate in the supervisory process for CCPs, including college meetings and discussions as well as votes on the adoption of college opinions, either as representatives of the Eurosystem as CBI or as the overseer of the CCP.

Based on the FSB's Key Attributes of Effective Resolution Regimes for Financial Institutions⁷⁵, the Eurosystem participated in crisis management groups for global CCPs (including some third-country CCPs in the United Kingdom, the United States and Switzerland). The focus of this work is to ensure the effective involvement of relevant authorities in the context of developing resolution plans and resolvability assessments for CCPs that are systemically relevant in more than one jurisdiction.

The Eurosystem as central bank of issue for the euro

The Eurosystem participates as CBI for the euro in the colleges of CCPs for which the euro is a relevant currency in accordance with EMIR, which include ten euro area CCPs and three EU CCPs outside the euro area.⁷⁶ The Eurosystem's role as CBI focuses on aspects of CCP risk management that may affect its mandate: these include margining, liquidity risk management, collateral requirements, payment and securities settlement processes, and interoperability arrangements with other CCPs. The crystallisation of liquidity risks in CCPs may, in particular, lead to funding strains in the financial system and affect the smooth operation of payment systems or the functioning of the money and repo markets. To ensure that these risks are properly mitigated, the Eurosystem carries out CBI assessments of CCPs in whose supervisory colleges it participates, both at the point of initial authorisation and for each extension of activities and services or significant model change on which the college has to adopt an opinion.

Following the entry into force of EMIR 2.2, the Eurosystem will also be involved in the designation of "Tier 2" third-country CCPs (see Section 2.2.3) which clear euro-denominated financial instruments, and in ESMA's assessment of their compliance with key EMIR requirements which are relevant to the Eurosystem's mandate.

Finally, once the new EU framework for CCP recovery and resolution is in place (see Section 2.2.3), the Eurosystem will contribute, from a CBI perspective, to the developments of recovery plans, resolution plans and resolvability assessments for

⁷⁵ See "[Key Attributes of Effective Resolution Regimes for Financial Institutions](#)", Financial Stability Board, 15 October 2014.

⁷⁶ Regarding the CBI function, the ECB's Governing Council decided in December 2012 that, as a general rule, the Eurosystem should be represented by the relevant euro area NCBs when a CCP is established within the euro area, and by the ECB for CCPs established outside the euro area.

EU CCPs. In parallel, the Eurosystem, as CBI, will continue to participate in global CMGs for third-country CCPs that are of systemic relevance to the euro.⁷⁷

Overview of oversight activities/developments in relation to CCPs

Eurosystem NCBs – often alongside the relevant NCA, with whom they cooperate in the oversight, and supervisors of the relevant CCPs, with whom they participate in the respective CCP EMIR college – conducted their yearly risk assessments and, in some jurisdictions, assessed a number of changes introduced by the relevant CCPs. An overview of the main oversight activities and key developments affecting individual CCPs during the reporting period is provided in Table 4 in the Annex.

3.1.4 Critical service providers

The Eurosystem oversees critical service providers (CSPs) in accordance with a Eurosystem oversight policy (see Section 3.2.2). This section covers the oversight of SWIFT and SIA, the two CSPs directly overseen by Eurosystem central banks.

SWIFT

SWIFT is incorporated in Belgium and provides the exchange of standardised financial messages worldwide. SWIFT has been identified as a CSP to Eurosystem FMIs, given that it meets a range of criteria. These criteria include, for example, that SWIFT provides essential services to several systemically important FMIs across a number of jurisdictions – in most cases without an alternative provider being contracted by these FMIs. The oversight of SWIFT is organised in a tiered structure: the central banks of the G10, including the ECB, have established a cooperative oversight arrangement with the Nationale Bank van België/Banque Nationale de Belgique (NBB/BNB), which is the lead overseer of SWIFT. Moreover, owing to SWIFT's relevance for Eurosystem FMIs, annual meetings take place with the euro area central banks at which the NBB/BNB provides updates on relevant business and developments related to Eurosystem oversight.

In recent years, the overseers have devoted considerable time to monitoring SWIFT's Customer Security Programme, which supports SWIFT users in the fight against cyber-attacks through mandatory and advisory security controls. Attention was paid to the level of compliance with the security controls, to the current control mix (relevance of current controls, advisory versus mandatory controls), and the effectiveness of the attestation and reporting processes as enforcement mechanisms. The overseers also monitored and assessed the increased pace of internal change (e.g. agile software development, executive management reorganisation) and the expanding portfolio of SWIFT services (e.g. in the area of compliance with financial crime legislation).

⁷⁷ According to the FSB Key Attributes of Effective Resolution Regimes, CCP home resolution authorities should coordinate resolution planning for CCPs that are systemically relevant in more than one jurisdiction with relevant host authorities in the context of dedicated CMGs.

Furthermore, the focus of Eurosystem oversight remained on the adequacy of SWIFT's cyber strategy for protecting the infrastructure, networks and operations under its control.

SIA/COLT

SIA S.p.A. is a CSP incorporated in Italy and overseen by Banca d'Italia. SIA has been identified as a CSP for Eurosystem FMIs because it meets a range of criteria. These include, for example, that SIA provides essential services to several systemically important FMIs across different jurisdictions, in most cases without an alternative provider being contracted by these FMIs. Moreover, owing to its relevance for STEP2-T (as provider of the processing platform) as well as for providing value-added network (VAN) services to TARGET2 and T2S in partnership with COLT, in 2018 the Eurosystem established an annual oversight meeting with representatives of SIA and its competent authority. In the three annual meetings that have taken place so far, Eurosystem members were updated on relevant business and Eurosystem oversight-related developments for SIA. Specifically, Banca d'Italia presented its oversight activities on SIA and SIA-COLT. Topics included main corporate events and business outlook and focused in particular on operational risk and cybersecurity (including a cyber resilience assessment in relation to CROE and analysis of the updated Annex F related to T2/T2S).

In the summer of 2019 the SIA-COLT partnership was selected as a network service provider in addition to SWIFT for the Eurosystem Single Market Infrastructure Gateway of the future consolidated platform of TARGET services.

3.2 Horizontal activities

3.2.1 Cyber resilience-related work beyond single entities

Cyber threats are borderless and the capabilities of adversaries are constantly evolving, readily scalable and increasingly sophisticated, threatening to disrupt interconnected global financial systems. Threat actors are highly motivated and can be persistent, agile, and use a variety of tactics, techniques and procedures to compromise systems, disrupt services, commit financial fraud, and expose or steal intellectual property and other sensitive information.

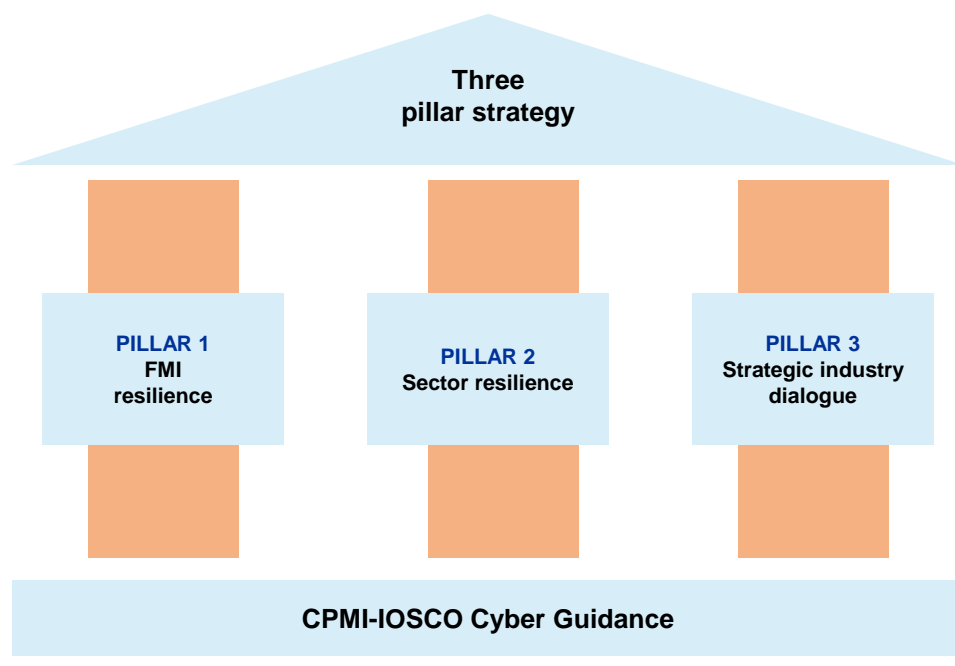
In March 2017 the Governing Council approved the Eurosystem cyber resilience strategy for FMIs.⁷⁸ The objective of this strategy is to improve the cyber resilience of the euro area financial sector as a whole by enhancing the “cyber readiness” of individual FMIs that are overseen by the Eurosystem central banks, and to foster collaboration among FMIs, their critical service suppliers and the authorities.

⁷⁸ See “[Eurosystem cyber resilience strategy for FMIs](#)” on the ECB's website.

Specifically, the strategy aims to put the CPMI-IOSCO cyber guidance⁷⁹ into practice and comprises three pillars as illustrated in Figure 3.

Figure 3

Illustration of Eurosystem cyber resilience strategy for FMIs



Pillar 1: FMI resilience

To implement this pillar, there were four key deliverables: a cyber survey; the CROE; the TIBER-EU framework (TIBER-EU)⁸⁰; and cyber training for overseers.

Between 2017 and 2020 the Eurosystem conducted a cyber survey across approximately 80 FMIs in the EU. The results provided useful insights into the levels of cyber maturity of the FMIs and of the sector more broadly. The following high-level findings were observed.

1. There are notable weaknesses in the cyber governance of FMIs.
2. FMIs appear to be overly focused on technology related protection and detection, and have not invested enough thought, time and resources in people and processes.
3. FMIs demonstrated a weakness in their security culture and training.

⁷⁹ See "[CPMI-IOSCO Guidance on cyber resilience for financial market infrastructures](#)", Bank for International Settlements, June 2016.

⁸⁰ See "[TIBER-EU framework: How to implement the European framework for Threat Intelligence-based Ethical Red Teaming](#)", ECB, May 2018.

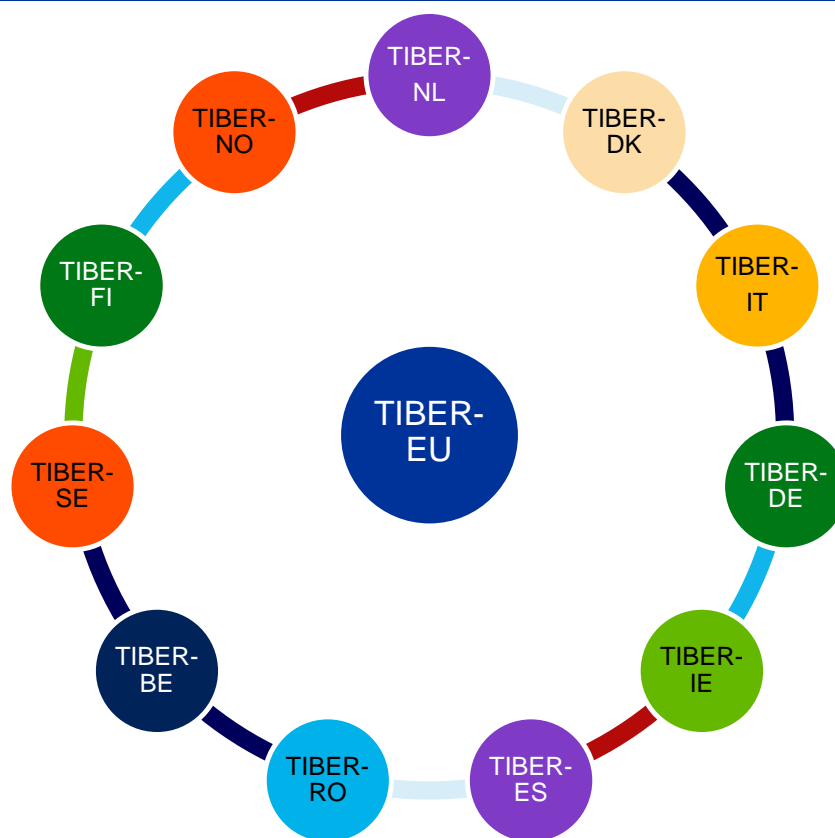
4. A significant number of FMIs currently do not have dedicated cyber incident response plans, nor do they have the policies and procedures in place to retain key information needed to handle and investigate an incident, if or when it materialises.
5. A majority of FMIs do not seek effective assurance from their third-party providers.

To facilitate the implementation of the guidance and ensure a level of proportionality, the ECB published the CROE in December 2018 – a tool for FMIs and overseers. To distinguish between small and big systems, the CROE present three levels of increasingly demanding expectations.

To further supplement the CROE and catalyse sophisticated cyber testing at a national and cross-border level, the Eurosystem has developed another tool – TIBER-EU. TIBER-EU involves red teaming, which is a strategy that helps to assess in a controlled manner by means of “ethical hacking” the extent to which an entity (financial infrastructure, bank, etc.) is capable of withstanding a cyberattack, providing insight on the entity’s protection, detection and response capabilities. The key objective of TIBER-EU is to guide authorities and financial institutions on how to conduct threat-intelligence-led red teaming. Since its publication, TIBER-EU has been adopted and implemented in several countries within the EU and beyond, as well as winning the Central Banking FinTech & RegTech Global Award for cyber resilience.

Figure 4

Implementation of the TIBER-EU framework in EEA countries



Source: ECB.

Pillar 2: Sector resilience

The financial ecosystem is highly interconnected and a cyberattack has the potential to trigger a contagion effect, which may affect the system as a whole. Ensuring the resilience of the sector is therefore very important and, in this respect, testing is key.

The ECB hosted UNITAS, a market-wide crisis communication exercise, in June 2018.⁸¹ UNITAS was a desktop discussion between pan-European financial infrastructures based on a scenario that envisaged a cyberattack on financial infrastructures resulting in loss of data integrity and a knock-on effect on interconnected financial infrastructures. The main objectives were to raise awareness of data integrity issues, to discuss how to cooperate in the event of an attack and to assess the need for external communication strategies. The exercise revealed that there were weaknesses at the European level, which are now being followed up on through the ECRB and other Eurosystem committees.

⁸¹ See “UNITAS Crisis communication exercise report”, ECB, December 2018.

Pillar 3: Strategic industry-regulator dialogue

The Euro Cyber Resilience Board (ECRB) was established in 2018 to foster trust and collaboration among FMIs and authorities and to catalyse joint initiatives. Chaired by a member of the ECB's Executive Board, the ECRB facilitates a non-technical, strategic cyber dialogue among board members of pan-European FMIs, CSPs and European authorities. The key topics identified for further work by the ECRB are: information and intelligence sharing; European crisis coordination; training and awareness; ecosystem recovery and coordinated reconciliation; and third-party risk.

At the beginning of 2019 the ECRB established a market-driven working group to set up an operational model for cyber resilience and information sharing. As a result, in February 2020, the ECRB approved the Cyber Information and Intelligence Sharing Initiative (CIISI-EU)⁸², which commenced operations in the second quarter of 2020.

3.2.2 Oversight approach for critical service providers to FMIs

CSP policy

Owing to the high dependency of FMIs on CSPs, the Eurosystem developed a Eurosystem policy for the identification and oversight of CSPs of FMIs (CSP policy). The policy covers CSPs of payment systems, card payment schemes and T2S⁸³ as well as, on a voluntary basis, CSPs of CSDs and CCPs.

The CSP policy defines a CSP as a service provider that has a direct contractual arrangement with an FMI to provide, on a continuous basis, services to that FMI (and potentially its participants) which are essential for ensuring information confidentiality and integrity and service availability, as well as the smooth functioning of its core operations.⁸⁴

Two surveys have been conducted by the Eurosystem to classify CSPs of euro area FMIs and a third will be launched in 2021.

Main findings of the second CSP survey

The 2018 survey found a total of 111 service providers in scope of the CSP policy, serving 59 overseen entities, including 27 payment systems, 18 CSDs/SSSSs, six CCPs, seven card payment schemes and T2S.

⁸² See "[New initiative to facilitate cyber information and intelligence sharing](#)", *MIP News*, ECB, 15 September 2020.

⁸³ T2S and card payment schemes are in the scope of this policy, even though they are not FMIs according to the PFMI definition.

⁸⁴ Essential services are either: data centres, financial messaging/network services, payment processing services, settlement functionality, or other business applications related to payment/clearing/settlement services.

The geographical location of CSPs in scope of the policy is represented in Figure 5 below. These include 41 located in the EU but outside the euro area and 32 were located outside the EU (in Australia, India, Singapore, Switzerland, Tunisia, the United States and Uruguay).

Figure 5
Geographical distribution of FMI



Source: ECB.

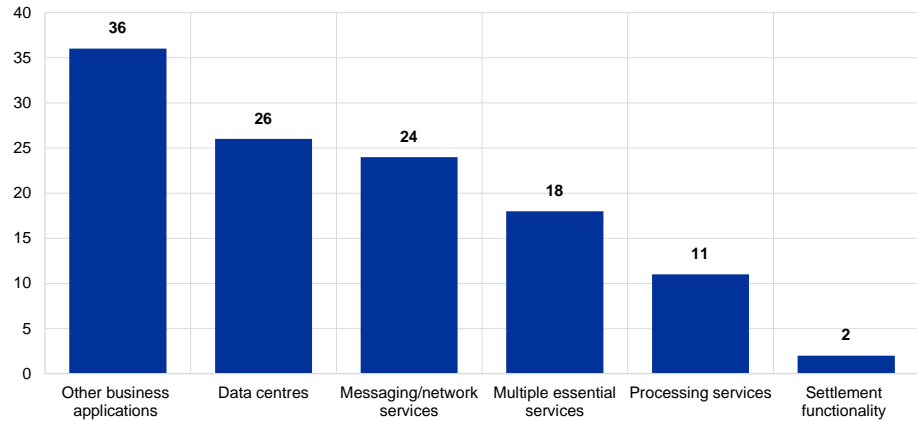
Notes: Three different colours are used to represent CSPs located in euro area countries (orange), EU non-euro area countries (blue) and outside the EU (red). The size of the circle corresponds to the volume of business with CSPs in the country concerned. The United Kingdom is shown as blue as the figure shows the situation before Brexit.

The 111 CSPs were classified by the type of essential service provided, as shown in Chart 3. The category of “other business applications” covers a whole host of providers critical to the overseen entities such as hardware and software providers (including for core system maintenance), authentication providers, market data providers, card manufacturing or personalisation.

Chart 3

Critical service providers by essential service provided

(number of CSPs)



Source: ECB.

Note: Some CSPs provide different essential services to different overseen entities, so the sum of CSPs by category is not equal to the total number of CSPs.

3.2.3 FMI interdependency analysis: insight from quantitative analysis of transactions data

Financial institutions are interconnected with each other via different linkages that encompass different layers, from risks related to their financial activities to operational and cyber risks. The use of common network and service providers, common participation in FMIs and interconnectedness stemming from various types of financial exposures (e.g. payment obligations, derivatives and securities exposures, etc.) connect financial institutions all over the world. Understanding the resulting structure of financial networks and the types of connections between financial institutions is essential for the comprehension and oversight of the financial system. Consequently, the PFMI place emphasis on the importance of interdependencies for FMIs. For instance, Principle 17 on operational risk gives guidance to operators on the risks that can arise from operational interdependencies and how the FMI should identify and manage risks stemming from an operational failure of connected entities.

Eurosystem overseers therefore regularly monitor risks stemming from interdependencies among FMIs at various levels and strive to improve their knowledge of interdependencies by exploring new methodologies. Two recent examples are an analysis of interdependencies in the euro area derivatives clearing network and an analysis of the identification of communities in payment systems networks. The latter was aimed at better understanding the structure of the payment network in the euro area.

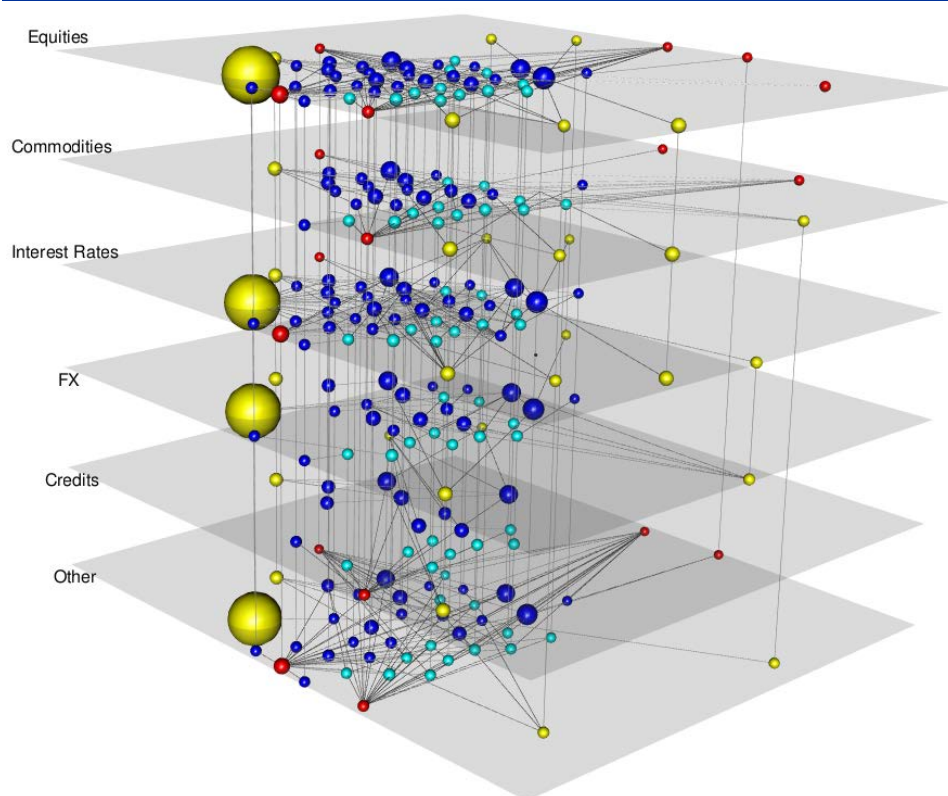
Derivatives clearing network

Interdependencies in the euro area derivatives clearing network were analysed using a multi-layer network analysis based on cleared derivatives transactions data reported under EMIR.⁸⁵ The centrally cleared derivatives network is modelled in the form of a multiplex network in which each layer represents derivatives of a certain asset class and each node represents a single counterparty in that market (see Figure 6). The counterparties that are active in more than one market segment (i.e. clear different types of derivatives products, such as interest rates, credit, equities derivatives, etc.) are indicated with vertical connections across the layers.

The analysis shows that the level of interconnectedness in the euro area cleared derivatives market is high and that the systemic importance of a node is reinforced by its direct and indirect connections with the rest of the system, both in the same asset class and across asset classes.

Figure 6

The cleared network, showing the most significant CCPs and clearing members



Source: ECB.

Notes: The red and yellow nodes represent euro area and non-euro area CCPs, respectively, while the dark and light blue nodes represent euro area and non-euro area clearing members, respectively.

Interestingly, there are nodes that, despite maintaining few relationships and showing relatively low exposure levels towards other nodes, are nevertheless central because

⁸⁵ See Rosati, S. and Vacirca, F., “Interdependencies in the euro area derivatives clearing network: a multi-layer network approach”, *Working Paper Series*, No 2342, ECB, Frankfurt am Main, December 2019.

their presence in several market segments means that they can potentially act as a channel of contagion across different layers of the network. Furthermore, this type of analysis enables mapping and monitoring of the interconnections that arise across different CCPs owing to the overlaps in the respective memberships. CCPs share a number of internationally active, often large, clearing members and this means, for example, that if one of these clearing members defaults other clearing members might need to simultaneously absorb losses in various CCPs.

It is worth emphasising that, while interconnections are potential transmission channels for stress or contagion, a higher number of interconnections can also improve the resilience of the network by allowing a shock to be absorbed by a larger number of entities.

The analysis also shows the significance and concentration of client clearing.

This work provides several important insights: it shows evidence of strong market integration across euro area and non-euro area CCPs and at the level of clearing members. This confirms the need to look beyond stress testing of individual CCPs and to conduct supervisory-led, macroprudential CCP stress tests. Macroprudential stress testing should complement the stress tests that each CCP conducts to calibrate the size of initial margin and guarantee funds. Moreover, the interdependencies identified highlight the limits of jurisdictional stress tests and call for global collaboration.

Communities within payment systems

The second topic, identification of communities within payment systems, was aimed at enhancing the identification of critical participants, which is of the utmost importance for assessing and managing risks stemming from interdependencies between FMIs and other entities. A conceptual study⁸⁶ based on TARGET2 data was conducted, but its findings are also relevant for other systems.

It is generally acknowledged that critical participants are those that have higher volumes or a higher number of relationships at the level of the whole network. However, so far, limited attention has been given to participants' roles in their local community. In fact, although the global nature of FMIs allows small and large financial institutions to join the global market, markets are typically organised in a tiered structure. Identifying communities of participants, understanding how those communities interact, and how smaller participants have access to the global market can help in understanding the network interdependencies as well as identifying potential associated weaknesses.

The results of the investigation identified nodes that, despite not being big at the global level, are critical for local communities. Their criticality derives from their role in providing services to their community and connecting the community with the rest of

⁸⁶ Kahros, A., Rosati, S. and Vacirca, F., "[Detecting community critical participants in payment networks: an application to TARGET2](#)", presentation at the 17th Simulator Seminar, Suomen Pankki – Finlands Bank, 29-30 August 2019.

the network. These finding could be considered by FMI operators and overseers as part of the process of identifying critical participants.

4 Outlook

Going forward, the Eurosystem will continue to monitor, assess and respond to technical, market and risk developments as they emerge to ensure the safety and efficiency of FMI and other overseen entities and the services they provide in the euro area. Emphasis will be put on operational risk, including cyber risk, the development of the cyber resilience strategy under the guidance of the ECRB, the implications of the pandemic and promoting business practices, impacts of technological developments, including DLT and crypto-assets, and dependency on third-party providers. In addition, Eurosystem overseers will further enhance their analytical work to support the oversight process with relevant insights.

The Eurosystem will contribute, in line with its mandate and statutory responsibilities, to new proposed legislation, such as DORA, MiCA, and the PRR. It will also contribute to the review of relevant EU legislation (e.g. the Settlement Finality Directive⁸⁷, CSDR, PSD2, and secondary legislation).

In the area of payments, the focus of the Eurosystem will be on:

- monitoring the safety and efficiency of the entire payments ecosystem, in line with the aforementioned focus areas, including the role of BigTech in payments, the development of instant payments and the digital euro;
- engaging in monitoring the security of payments, including assessing major incidents and retail payments fraud and cooperating with the EBA in the context of PSD2 and SecuRe Pay;
- implementing the new framework for electronic payment instruments, schemes and arrangements (PISA) and the review of the SIPS Regulation with respect to oversight standards;
- maintaining continuous oversight of individual entities and their compliance with the oversight standards and the assessment of changes planned for SIPS, for example the T2-T2S consolidation or the migration of EURO1 to ISO 20022;
- assessing the compliance of newly identified SIPS with the SIPS Regulation, while overseers will also stand ready to assess any new payment system, scheme or arrangement that is of potential relevance for the euro area.

For securities settlement, the 2021 priorities for the T2S overseers will be to conduct the assessment of T2S compliance with the CROE and to monitor T2S operators' efforts to implement measures addressing findings of the T2S comprehensive assessment. Moreover, the Eurosystem will contribute to the authorisation process for the few CSDs not yet authorised and to the annual review and evaluation of those that have been authorised. From a regulatory perspective, the framework in relation to the

⁸⁷ Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems (OJ L 166, 11.6.1998, p. 45).

settlement discipline regime under the CSDR is expected to be complemented by finalising the relevant guidelines.

Regarding securities and derivatives clearing and settlement, following the adoption of the relevant European Commission delegated acts foreseen under EMIR 2, the Eurosystem will contribute to ESMA's review of the recognition of third-country CCPs. The focus will be on CCPs with material euro-denominated activities and on ESMA's designation and supervision of third-country CCPs which are systemically important for the EU. Following the end of the Brexit transition period, this new framework also applies to UK CCPs. The Eurosystem will also continue to exercise its role as central bank of issue with respect to EU CCPs, including new functions such as contributing to ESMA's stress-testing exercises and adopting recommendations as part of college opinions. Furthermore, following the adoption of an EU framework for the recovery and resolution of CCPs, the Eurosystem will contribute to the assessment of CCP recovery plans in EMIR colleges and the development of resolution plans and resolvability assessments in CCP resolution colleges for EU CCPs.

Finally, overseers will contribute to the work of international standard setters, such as the CPMI and the FSB, of monitoring emerging risks, developing the regulatory agenda, and promoting the safety of the global financial system.

Annex

Overview of overseen FMI and FMI for which the Eurosystem contributes to oversight and supervision as the central bank of issue

Table 1
Payment systems

Country	Payment system	Payment instruments cleared or settled ⁸⁸	Classification ⁸⁹	Value settled (EUR billions, totals for 2019) ⁹⁰	Volume settled (millions of payments, totals for 2019) ⁹¹	Website / PFMI disclosure (where available)
BE	CEC (Centre for Exchange and clearing)	SCT, SDD, CRD, CQS	PIRPS	1,204.7	1,513.0	CEC website
BE	Mastercard Clearing Management System	CRD	SIPS	Not published	Not published	https://www.mastercard.com/news/europe/en
DE	RPS	SCT, SDD, CRD, CQS	ORPS	3,479.2	5,302.6	Deutsche Bundesbank website
DE	STEP2 Card Clearing	CRD	ORPS	134.7	2,519.0	EBA Clearing website
EE	Local clearing system for card payments	CRD	PIRPS	3.4	183.5	Eesti Pank website
IE	Irish Paper Clearing Company	CQS	ORPS	42.0	17.0	
GR	ACO	CQS	ORPS	24.8	0.3	Bank of Greece website
GR	DIAS	SCT, SDD, CRD, CQS	ORPS	252.7	273.9	DIAS website
ES	Sistema Nacional de Compensación Electrónica	SCT, SDD, Inst, CQS, OTH (e.g. bills of exchange)	ORPS	1,859.7	1,892.8	Iberpay website
FR	CORE(FR)	SCT, CRD, CQS, OTH (e.g. bills of exchange)	SIPS	5,097.3	13,529.8	STET website
FR	SEPA(EU)	SDD, Inst	ORPS	1,164.1	2,659.5	STET website
IT	CSM Banca d'Italia	SCT (CQS until 2019)	ORPS	1,563.2	2,009.7	Banca d'Italia website
IT	ICCREA/BI-COMP	CRD, CQS, OTH	ORPS	Not published	Not published	Iccrea Banca website
IT	Nexi ACH Instant/BI-COMP	Inst	ORPS	Not published	Not published	Nexi website
IT	Nexi/BI-COMP	SCT, SDD, CRD, CQS, OTH	ORPS	Not published	Not published	Nexi website
IT	SIA/BI-COMP	SCT, CRD,	ORPS	Not published	Not published	SIA website

⁸⁸ SCT – SEPA Credit Transfers; Inst – SEPA Instant Credit Transfers; SDD – SEPA Direct Debit; CRD – card payments; CQS – cheques; WHS – wholesale payments; OTH – other.

⁸⁹ Status as at the end of 2020. Updates to the classification of euro area payment systems are published on the payment systems page on the [ECB's website](#).

⁹⁰ Data are based on the [ECB's Statistical Data Warehouse](#).

⁹¹ Data are based on the [ECB's Statistical Data Warehouse](#).

Country	Payment system	Payment instruments cleared or settled ⁸⁸	Classification ⁸⁹	Value settled (EUR billions, totals for 2019) ⁹⁰	Volume settled (millions of payments, totals for 2019) ⁹¹	Website / PFMI disclosure (where available)
			CQS, OTH			
CY	Cyprus Clearing House for Cheques	CQS	ORPS	18.8	7.0	CBC website
CY	JCC Cards Payment System	CRD	PIRPS	Not published	Not published	Governance – JCC website Internal controls – JCC website CBC website
CY	Cyprus SEPA Direct Debit Payment System	SDD	ORPS	1.5	9.7	CBC website
LV	Electronic Clearing System EKS	SCT, Inst	ORPS	88.6	61.7	
LV	Worldline Latvia CSM	CRD	ORPS	1.4	44.6	
LT	CENTROlink	SCT, SDD, Inst	ORPS	50.2	22.5	
MT	Malta Clearing House (MCH)	CQS	ORPS	10.6	4.5	Central Bank of Malta website
NL	Equens CSM	SCT, SDD, Inst	ORPS	2,153.9	2,744.6	EquensWorldline website
AT	Clearing Service Austria (CS.A)	SCT, SDD	PIRPS	863.0	627.0	
AT	Clearing Service International (CS.I)	SCT, SDD	ORPS	158.0	72.0	
AT	PSA	CRD	PIRPS	61.0	1006.0	
PT	SICOI	SCT, Inst, SDD, CRD, CQS, OTH	PIRPS	508.6	2,741.7	Banco de Portugal website
SI	Multilateralni kliring Activa	CRD	ORPS	1.0	18.9	Banka Slovenije website
SI	BIPS	SCT, Inst		70.6	130.3	Bankart website
SI	Plačilni sistem Moneta ⁹²	OTH	ORPS	N/A	N/A	Banka Slovenije website
SI	Poravnava bankomatov	CRD	ORPS	1.5	13.4	Banka Slovenije website
SI	Poravnava kartic	CRD	ORPS	1.7	54.2	Banka Slovenije website
SI	Poravnava Multilateralnega kliringa MasterCard	CRD	ORPS	0.4	0.0	Banka Slovenije website
SI	SIMP-PS	SDD	PIRPS ⁹³	1.5	30.1	Bankart website
SK	SIA Slovakia	CRD	ORPS	Not published	Not published	
SK	SIPS (Slovak Interbank Payment System)	SCT, SDD	PIRPS	281.5	250.7	
FI	Automatia Real-time Payment Platform (ARPP)	Inst	ORPS	0.6	6.8	Siirto – Pankkirajat ylittävä reaaliaikainen mobiili siirto
FI	POPS	Inst, CQS	LVPS	0.7	0.3	
EU	EURO1	WHS	SIPS	42,065.9	52.7	EURO1 PFMI Disclosure Report by EBA CLEARING
EU	RT1	Inst	ORPS	44.0	82.9	

⁹² Plačilni sistem Moneta ceased to operate at the end of 2018.

⁹³ Based on 2020 data, the system is expected to be reclassified as an ORPS.

Country	Payment system	Payment instruments cleared or settled ⁸⁸	Classification ⁸⁹	Value settled (EUR billions, totals for 2019) ⁹⁰	Volume settled (millions of payments, totals for 2019) ⁹¹	Website / PFMI disclosure (where available)
EU	STEP2-T	SCT, SDD	SIPS	STEP2 SCT Service: 13,984.6 STEP2 SDD CORE Service: 1,289.2 STEP2 SDD B2B Service: 782.9	STEP2 SCT Service: 4,545.0 STEP2 SDD CORE Service: 6,456.7 STEP2 SDD B2B Service: 87.3	STEP2-T PFMI disclosure report by EBA CLEARING
EU	TARGET2	WHS	SIPS	455,086.4	88.8	ECB Disclosure report

Table 2
Securities settlement systems

Country	System	CSDR/oversight activities (status December 2020)	Value of delivery instructions (EUR billions, totals for 2019) ⁹⁴	Number of delivery instructions (millions of payments, totals for 2019) ⁹⁴	PFMI disclosure
BE	NBB-SSS	The Nationale Bank van België/Banque Nationale de Belgique (NBB/BNB) conducted the assessment of NBB-SSS compliance with the applicable CSDR requirements (finalised in January 2019) and its first review and evaluation (finalised in September 2020). In addition, the NBB/BNB organised ad hoc meetings with the operator to discuss the implementation of recommendations and developments in NBB-SSS. Furthermore, the NBB/BNB monitored NBB-SSS via regular (mostly monthly) provision of data and reports. Owing to COVID-19, the NBB/BNB set up regular (daily/weekly) calls with NBB-SSS.	12,077	952	
BE	Euroclear Belgium	The NBB/BNB was involved in the authorisation of Euroclear Belgium (granted in February 2019) and its first review and evaluation (initiated in November 2020). In addition, the NBB/BNB organised ad hoc meetings with the operator to discuss the implementation of recommendations and developments in Euroclear Belgium. The NBB/BNB monitored Euroclear Belgium via regular (mostly monthly) provision of data and reports. Owing to COVID-19, the NBB/BNB set up regular (daily/weekly) calls with Euroclear Belgium.	784	2,582	
BE	Euroclear Bank	The NBB/BNB led the authorisation of Euroclear Bank for CSD and banking services and the operation of the interoperable link with CBL (granted on October 2019). In addition, the NBB/BNB organised ad hoc meetings with the operator to discuss the implementation of recommendations and developments in Euroclear Bank and monitored its cyber resilience, its recovery plan and its regular (mostly monthly) provision of data and reports. Owing to COVID-19, the NBB/BNB set up regular (daily/weekly) calls with Euroclear Bank.	543,828	116,050	
DE	Clearstream Banking AG, Frankfurt (CBF) (CBF CASCADE and CBF)	The Deutsche Bundesbank was involved in the authorisation of CBF to provide CSD services (granted in January 2020). In addition, the Deutsche Bundesbank was involved in yearly (college) meetings for the Clearstream Group and	68,366	66,521	

⁹⁴ Data are based on the [ECB's Statistical Data Warehouse](#).

Country	System	CSDR/oversight activities (status December 2020)	Value of delivery instructions (EUR billions, totals for 2019) ⁹⁴	Number of delivery instructions (millions of payments, totals for 2019) ⁹⁴	PFMI disclosure
	Creation)	organised meetings with the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) when needed. Finally, the Deutsche Bundesbank conducted ongoing monitoring of CBF including on statistical data.			
EE	Nasdaq CSD SE	Eesti Pank was involved in the authorisation of Nasdaq CSD SE for the assessment of the Nasdaq SE SSS in Estonia (granted in August 2017), in its first and second review and evaluation (concluded in May 2019 and May 2020) and in the extension of its services to operate the Icelandic SSS (finalised in February 2020).	8	174	
GR	BOGS	The Bank of Greece (BoG) conducted the assessment of BOGS' compliance with the CSDR requirements (finalised in July 2019) and the first review and evaluation (finalised in January 2021). In addition, the BoG monitored BOGS' activities based on regular reporting and ad hoc meetings.	5,282	112	
GR	ATHEXCSD	The BoG was involved in the authorisation of ATHEXCSD (expected to be granted in the beginning of 2021).	39	7,007	
ES	Iberclear	The Banco de España was involved in the authorisation of Iberclear (granted in September 2019). In addition, the Banco de España, together with the CNMV, organised several meetings with Iberclear throughout the year on general or ad hoc issues and monitored the statistical data provided by Iberclear on a regular basis (monthly or yearly). In December 2019, the Swiss SIX Group AG launched a takeover bid for the BME Group, which manages all Spanish financial markets infrastructures, including Iberclear. The Spanish Government granted its authorisation during the first quarter of 2020 and the takeover was accepted by the majority of shareholders in June.	32,235	9,394	IBERCLEAR CPSS – IOSCO: principles for financial market infrastructures
FR	ID2S	The Banque de France (BdF) was involved in the authorisation of ID2S (granted in October 2018), its first review and evaluation (finalised in January 2020) and its second review and evaluation (initiated in November 2020). In addition, the BdF organised monthly meetings with ID2S, monitored the statistical data provided by ID2S on an ongoing basis and organised onsite inspections.			
FR	Euroclear France SA	The BdF was involved in the authorisation of Euroclear France (granted in February 2019) and its first review and evaluation (initiated in November 2020). In addition, the BdF organised monthly meetings with Euroclear France, monitored the statistical data provided by Euroclear France on an ongoing basis and organised onsite inspections.	112,464	29,214	
IT	Monte Titoli	The Banca d'Italia (BdI) was involved in the authorisation of Monte Titoli (granted in August 2019). In addition, the BdI monitored Monte Titoli's activities based on regular reporting, inspections, daily settlement data and monthly meetings.	97,731	25,662	
CY	CDCR	The Central Bank of Cyprus (CBC) conducted the assessment of CDCR's compliance with the applicable CSDR requirements from a user perspective (finalised in November 2020). In addition, the CBC was consulted by the competent authority (the Cyprus Securities and Exchange Commission – CySEC) in the context of the annual review and evaluation of CDCR.	0	36	

Country	System	CSDR/oversight activities (status December 2020)	Value of delivery instructions (EUR billions, totals for 2019) ⁹⁴	Number of delivery instructions (millions of payments, totals for 2019) ⁹⁴	PFMI disclosure
LV	Nasdaq CSD SE	Latvijas Banka was involved in the authorisation of Nasdaq CSD SE for the operation of the Nasdaq CSD SE SSS in Latvia (granted in August 2017), its first and second review and evaluation (concluded in May 2019 and May 2020) and the extension of its services to operate the Icelandic SSS (finalised in February 2020).	5	19	
LT	Nasdaq CSD SE Lithuanian SSS	Lietuvos bankas was involved in the authorisation of Nasdaq CSD SE for the operation of the Nasdaq CSD SE SSS in Lithuania (granted in August 2017), its first and second review and evaluation (concluded in May 2019 and May 2020) and the extension of its services to operate the Icelandic SSS (finalised in February 2020).	5	54	Self assessment on observance by NASDAQ CSD SE of the CPSS-IOSCO principles for financial market infrastructures
LU	Clearstream Banking SA – CBL	The Banque Centrale du Luxembourg (BCL) was involved in the authorisation process of CBL for the CSD services, banking services and the interoperable link between CBL and Euroclear Bank (the authorisation is expected to be granted at the beginning of 2021). In addition, the BCL monitored CBL's activities based on incident and statistical reports, and thematic meetings with CBL on an ongoing basis.	220,233	66,521	Clearstream: Principles for financial market infrastructures: disclosure framework
LU	LuxCSD SA	The BCL was involved in the authorisation of LuxCSD (granted in April 2020). In addition, the BCL monitored LuxCSD's activities based on incident and statistical reports and thematic meetings with LuxCSD on an ongoing basis.	17	19	
MT	Malta Stock Exchange – MSE	The Central Bank of Malta (CBM) was involved in the authorisation of MSE (granted in August 2018) and its first review and evaluation (finalised in March 2020). In addition, the CBM was informed of MSE's activities through meetings with MSE on a quarterly basis and monitored its statistical data.	2	35	
NL	Euroclear Nederland	De Nederlandsche Bank (DNB) was involved in the authorisation of Euroclear Nederland (granted in May 2019) and its first review and evaluation (initiated in November 2020). In addition, DNB (in cooperation with the AFM) organised meetings with Euroclear Nederland on a bi-annual basis as well as monthly and ad hoc calls, monitored Euroclear Nederland's statistical data on a bi-weekly /monthly basis and reported on incidents on a quarterly basis.	5,619	6,588	
AT	OeKB CSD GmbH	The Oesterreichische Nationalbank (OeNB) was involved in the authorisation of OeKB (granted in August 2018) and in the two review and evaluation processes following it (finalised in April and October 2020). In addition, the OeNB was in regular dialogue with the OeKB, conducted a yearly risk assessment, held meetings at least yearly and monitored statistical data provided on a monthly base.	640	1,321	
PT	Interbolsa, S.A.	The Banco de Portugal (BdP) was involved in the authorisation of Interbolsa (granted in June 2018) and in its first review and evaluation (finalised in June 2020). In addition, the BdP organised meetings when needed and monitored the statistical data provided by Interbolsa on an annual basis.	172	930	
SI	KDD-Centralna klirinško depotna družba	Banka Slovenije was involved in the authorisation of KDD (granted in September 2019) and in the first review and evaluation of KDD (initiated in December 2020). In addition, Banka Slovenije monitored the statistical data provided by KDD on an annual basis.	18	52	

Country	System	CSDR/oversight activities (status December 2020)	Value of delivery instructions (EUR billions, totals for 2019) ⁹⁴	Number of delivery instructions (millions of payments, totals for 2019) ⁹⁴	PFMI disclosure
SK	Centrálny depozitár cenných papierov SR, a.s. (CDCP)	Národná banka Slovenska was involved in the authorisation of CDCP (granted in January 2019). The first review took place at the end of 2019. In addition, Národná banka Slovenska was informed of CDCP's activities through regular meetings with CDCP and monitored its development.	34	32	
SK	Národný centrálny depozitár cenných papierov, a.s. (NCDCP)	Národná banka Slovenska was involved in the authorisation of NCDCP (granted in July 2018). The first review took place at the end of 2019. In addition, Národná banka Slovenska was informed of NCDCP's activities through regular meetings with NCDCP and monitored its development.	0	0	
FI	Euroclear Finland	Suomen Pankki – Finlands Bank was involved in the authorisation of Euroclear Finland (granted in August 2019) and its first review and evaluation (initiated in October 2020). Suomen Pankki – Finlands Bank closely monitored the deployment of the new securities settlement system Infinity in the Finnish market in 2018 and the ongoing T2S migration project. In addition, Suomen Pankki – Finlands Bank organised regular meetings with Euroclear Finland and monitored the statistical data provided by Euroclear Finland on a monthly basis as well as incidents reported.	1,557	9,576	Euroclear Finland Disclosure Framework

Table 3
Central counterparties

Country	CCP name	Classes of financial instruments cleared ⁹⁵	Total initial margin posted (billion Euro, end 2019) ⁹⁶	PFMI disclosure
DE	European Commodities Clearing AG	Derivatives: Commodities (OTC and RM), Emission/Climatic (OTC and RM), Freight (OTC and RM)	3.22 ⁹⁷	European Commodities Clearing website
DE	Eurex Clearing AG	Securities: Equity (OTC and RM), Debt (OTC and RM); Derivatives: Equity (RM), Debt (OTC and RM), Interest Rate (OTC and RM), Inflation Rate (OTC), Currencies (OTC and RM), Commodities (RM), Emission/Climatic (RM); Repo: Equity Debt (OTC); Securities Lending: Equity Debt (OTC)	57.70	Eurex Clearing website
GR	Athens Exchange Clearing House (ATHEXClear)	Securities: Equity (RM), Debt (RM);	0.22	Athens Exchange Clearing House website

⁹⁵ As per [ESMA's list of authorised CCPs](#). Over-the-counter (OTC) and regulated markets (RM).

⁹⁶ Total, post haircut, initial margin held at the CCP as per point 6.2.15 of the [CPMI-IOSCO – Public quantitative disclosure standards for central counterparties – February 2015](#).

⁹⁷ This number represents requested initial margin as per point 6.1 of the [CPMI-IOSCO – Public quantitative disclosure standards for central counterparties – February 2015](#).

Country	CCP name	Classes of financial instruments cleared ⁹⁵	Total initial margin posted (billion Euro, end 2019) ⁹⁶	PFMI disclosure
		Derivatives: Equity (RM), Currencies (RM), Commodities (RM); Securities Lending: Equity Debt (OTC)		
ES	BME Clearing	Securities: Equity (OTC and RM), Debt (OTC and RM); Derivatives: Equity (RM), Debt (RM), Interest Rate (OTC), Currencies (RM), Commodities (OTC and RM); Repo: Equity Debt (OTC and RM)	3.93	BME Clearing website
FR	LCH SA	Securities: Equity (OTC and RM), Debt (OTC and RM); Derivatives: Equity (RM), Credit (OTC), Currencies (RM), Commodities (RM); Repo: Equity Debt (OTC)	41.15	LCH website
IT	Cassa di Compensazione e Garanzia S.p.A. (CCG)	Securities: Equity (OTC and RM), Debt (OTC and RM); Derivatives: Equity (RM), Commodities (RM); Repo: Equity Debt (OTC and RM)	10.82	CC&G Due Diligence FAQ CC&G IOSCO Quantitative Disclosure
NL	European Central Counterparty N.V.	Securities: Equity (OTC and RM)	0.58	European Central Counterparty website
NL	ICE Clear Netherlands B.V.	Derivatives: Equity (OTC and RM)	0.00	ICE Clear Netherlands website
AT	CCP Austria Abwicklungsstelle für Börsengeschäfte GmbH (CCP.A)	Securities: Equity (RM), Debt (RM)	0.16	CCPA Austria website
PT	OMIClear – C.C., S.A.	Derivatives: Commodities (OTC and RM)	0.16	OMIClear website
SE	Nasdaq Clearing AB	Derivatives: Equity (OTC and RM), Debt (OTC and RM), Interest Rate (OTC and RM), Commodities (OTC and RM), Emission/Climatic (OTC and RM); Repo: Equity Debt (OTC)	5.16	Nasdaq Clearing website
UK	ICE Clear Europe Limited (ICE Clear Europe)	Derivatives: Equity (RM), Debt (RM), Interest Rate (RM), Credit (OTC), Currencies (OTC), Commodities (RM), Emission/Climatic (RM), Freight (RM)	64.20	ICE Clear Europe website
UK	LCH Ltd	Securities: Equity (OTC and RM), Debt (OTC); Derivatives: Equity (OTC and RM),	199.85	LCH website

Country	CCP name	Classes of financial instruments cleared ⁹⁵	Total initial margin posted (billion Euro, end 2019) ⁹⁶	PFMI disclosure
		Debt (RM), Interest Rate (OTC and RM), Inflation Rate (OTC), Currencies (OTC), Commodities (OTC and RM), Emission/Climatic (OTC), Freight (OTC and RM); Repo: Equity Debt (OTC)		

Table 4
Main oversight activities and key developments affecting individual CCPs

Country	Responsible authorities (responsible Eurosystem authorities with national competent authority in bold)	CCP	Assessment
DE	Deutsche Bundesbank Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht – BaFin)	ECC and ECAG	The Deutsche Bundesbank monitored the ongoing compliance of Eurex Clearing AG (ECAG) and European Commodity Clearing AG (ECC) with the PFMI. With regard to German CCPs, the Deutsche Bundesbank works in close cooperation with BaFin. Several new services and model changes were also assessed by BaFin, the Deutsche Bundesbank, and the CCPs' EMIR colleges.
GR	Bank of Greece Hellenic Capital Market Commission (HCMC)	ATHEXClear	The Bank of Greece represents the Eurosystem as CBI in ATHEXClear's EMIR college and regularly monitors ATHEXClear's activities. In 2019 ATHEXClear updated its risk methodology for the determination of the initial margin and haircut factors for the securities and derivatives market (non-significant change). In 2020 ATHEXClear extended its authorisation to provide clearing services for derivative financial products on electricity and gas indices, which are traded on the Hellenic Energy Exchange. Finally, ATHEXClear changed its investment policy, according to which the available own financial resources above the minimum capital requirements – up to a percentage – will be deposited in the four systemically important banks in Greece.
ES	Banco de España Spanish National Securities Market Commission (Comisión Nacional del Mercado de Valores – CNMV)	BME Clearing	During the period from 2017 to 2020 BME Clearing asked for authorisation to extend its clearing offer to several new types of contracts. Specifically, in 2017 it started to clear natural gas contracts, which are included in the energy segment. It continued to increase its product offering during 2018 and 2019 with the inclusion of the FX rolling spot futures in the financial derivatives segment and the authorisation to clear repos on other EU sovereign debts in the fixed income segment. All these service extensions were analysed by the EMIR college, including by the Eurosystem from a CBI perspective, and authorised by the CNMV. In 2020 there were no extensions of services or model changes that required the college to issue an opinion. In December 2019, the Swiss SIX Group AG launched a takeover bid for the BME Group, which manages all Spanish financial markets infrastructures, including the CCP. The Spanish Government granted authorisation during the first quarter of 2020 and the takeover was accepted by a majority of shareholders in June.
FR	Banque de France Autorité de contrôle	LCH SA	The Banque de France, along with the ACPR, the AMF and the other members of LCH SA's EMIR college, has assessed and authorised a number

Country	Responsible authorities (responsible Eurosystem authorities with national competent authority in bold)	CCP	Assessment
	prudentiel et de résolution (ACPR) Autorité des marchés financier (AMF)		<p>of changes and enhancements submitted by LCH SA since 2017. These encompassed the following:</p> <p>(i) the extension of activities to the clearing of several index and single-name credit default swaps, among which CDS iTraxx Europe Senior Financials, CDX North America Investment Grade and CDX High Yield indices (authorised in April 2017); Credit Index Options on European iTraxx indices (authorised in October 2017) and Markit iTraxx Europe Subordinated Financials (authorised in January 2020);</p> <p>(ii) a special access model for supranational entities with specific participation requirements on the RepoClear service (authorised in April 2019).</p> <p>The most significant business development was the full migration of euro-denominated repos from LCH Ltd to LCH SA in February 2019.</p>
IT	Banca d'Italia The Italian Companies and Stock Exchange Commission (Commissione Nazionale per le Società e la Borsa – Consob)	CC&G	<p>The Banca d'Italia monitored and assessed, along with Consob, CC&G's compliance with EMIR requirements, regularly sharing relevant information and data with CC&G's EMIR college, including on the basis of the harmonised reporting template developed by ESMA in 2019.</p> <p>The Banca d'Italia and Consob with the involvement of CC&G's EMIR college have also assessed a number of changes submitted by CC&G since 2017 with the aim of enhancing its product offer and overall risk management. These changes include the provision of clearing services for repo contracts on some non-Italian bonds traded on MTS markets and some enhancements to the margining and stress-testing framework.</p> <p>In line with FSB recommendations for CCPs systemically important in more than one jurisdiction, in December 2019 the Banca d'Italia established a CMG for CC&G.</p>
NL	De Nederlandsche Bank	EuroCCP and ICNL	<p>EuroCCP was acquired by the Chicago Board Options Exchange (CBOE) in a deal announced in September 2019 and signed in December 2019. De Nederlandsche Bank (DNB) issued the required declarations of no-objections (DNOs) and, in collaboration with ESMA and EuroCCP's EMIR college, approved the changes within EuroCCP associated with the deal. The acquisition was completed in July 2020.</p> <p>ICE Clear Netherlands B.V. (ICNL) extended its clearing services portfolio in September 2018 with the inclusion of derivative contracts for equity securities in regulated markets. ICNL started clearing for one of ICE Endex's options platforms through a central limit order book in October 2019. In December 2019 DNB issued a DNO following ICNL's application to adjust its methodology for calculating collateral and haircuts. In November 2020 DNB issued a DNO following ICNL's request to further align its methodology for calculating anti-procyclicality measures with the applicable RTS. Overall clearing volumes have remained limited.</p>
AT	Oesterreichische Nationalbank Financial Market Authority (FMA) European Central Bank	CCP.A	<p>CCP.A changed its clearing system at the end of June 2020 (which was not deemed a significant change, hence no Article 49 procedure was triggered).</p> <p>The OeNB conducts yearly risk assessments for the FMA as external assessor. The most recent assessments comprised:</p> <p>2019: the toolset for recovery and resolution (prior to the CCP Recovery and Resolution Regulation coming into force), the appropriateness of the new clearing IT systems for CCP.A's business model;</p>

Country	Responsible authorities (responsible Eurosystem authorities with national competent authority in bold)	CCP	Assessment
			<p>2020: equity requirements, the liquidity risk management, the default waterfall and the margin simulation tool.</p> <p>No major findings were made during the recent assessments.</p> <p>The ECB participates in CCP.A's EMIR college as the Eurosystem CBI representative.</p>
PT	<p>Banco de Portugal</p> <p>Portuguese Securities and Exchange Commission (Comissão dos Mercados de Valores Mobiliários – CMVM)</p>	OMIClear	<p>Three products added to OMIclear's clearing services portfolio were assessed, including (i) clearing services in the EU for natural gas futures contracts with physical settlement at the Spanish virtual trading point PVB-ES (authorised in August 2017); (ii) clearing services for derivatives that are not MiFID financial instruments (authorised in April 2018); and (iii) clearing services for SPEL Solar Futures (authorised in August 2018). In addition, on December 2018 OMIclear was authorised to have a new connection with MIBGAS S.A. to provide clearing services for natural gas futures contracts with physical settlement at the PVB-ES, which are derivatives that are not MiFID financial instruments. On December 2018 the CCP was given authorisation for a new trading mode from MIBGAS Derivatives, for natural gas futures contracts with physical settlement at the PVB-ES registered (bilateral transactions) in MIBGAS Derivatives. Finally, OMIclear added six new maturities between 2017 and 2020. OMIclear's activities are monitored through the analysis of monthly reports shared quarterly with OMIclear's EMIR college and participation in annual college meetings with the CBI, the Banco de Portugal, and the relevant NCA, CMVM.</p>

Country	Responsible authorities (responsible Eurosystem authorities with national competent authority in bold)	CCP	Assessment
UK	<p>European Central Bank</p> <p>Banque de France</p> <p>Bank of England</p>	ICE Clear Europe and LCH Ltd	<p>In the United Kingdom, the ECB represents the Eurosystem as CBI for ICE Clear Europe and LCH Ltd (with the Banque de France as deputy in the case of the latter). In this capacity, the ECB participates, for each of the two CCPs, in EMIR and global colleges⁹⁸ of authorities for ongoing supervisory cooperation as well as in global CMGs set up by the Bank of England as the UK CCP resolution authority for the purpose of cooperation in resolution planning.</p> <p>As regards ongoing supervision, the ECB has contributed in particular to the regular review of the two CCPs against EMIR and the PFMI, focusing on key areas of concern from a CBI perspective, such as risk management concerning liquidity, collateral, margining, investment services and interoperability.</p> <p>Another focus of the work has been the assessment of significant changes in the CCPs' risk management frameworks and product offerings.</p> <p>During the reporting period, such significant changes approved by the EMIR college for ICE included the extension of its existing credit default swap (CDS) clearing service to US CDX indices and the inclusion of further oil stress scenarios in</p>

⁹⁸ The EMIR colleges for ICE Clear Europe and LCH Ltd were discontinued as of 1 January 2021 following the end of the Brexit transition period. The global colleges remain active.

			<p>its stress-testing framework for futures and options.</p> <p>For LCH Ltd the EMIR college also reviewed various significant changes, including the change in estimating stressed variation margins for the purpose of the CCP's liquidity risk stress test, the extension of portfolio margining to sovereign bond futures and the increase in the default fund cap for the Rates services. For LCH Ltd the ECB also participated in the various supervisory reviews conducted by the Bank of England, such as the review of its liquidity risk management framework.</p> <p>As regards resolution planning, the Eurosystem has participated in discussions focusing on the UK framework for CCP resolution, the CCPs' recovery plans, the initial assessment of the Bank of England's resolution strategy and the available financial resources for a potential resolution of the two CCPs.</p>
SE	<p>European Central Bank</p> <p>Finansinspektionen (FI)</p> <p>Sveriges Riksbank</p>	Nasdaq Clearing	<p>In Sweden, the ECB represents the Eurosystem as CBI for Nasdaq Clearing AB in the EMIR college and in the CMG.</p> <p>The ECB has contributed to the regular review of Nasdaq Clearing in relation to EMIR, focusing on key areas of concern from a CBI perspective, such as risk management in the areas of margining, liquidity and collateral. In particular, the ECB has focused on the assessment of the 2018 default event at Nasdaq Clearing and the measures taken by Nasdaq Clearing to improve its models and processes as part of its Risk Management Enhancement Programme. During the reporting period, the EMIR college reviewed a number of significant margin model changes aimed at improving Nasdaq Clearing's financial resilience.</p>

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