

INNOVATION IN RETAIL PAYMENTS AND ITS IMPACT ON CENTRAL BANKS' OVERSIGHT FUNCTION

Desirée Alemán, Justo Arenillas, Lourdes Cremades, Rosa Martín
and Miguel Pérez

BANCO DE ESPAÑA

<https://doi.org/10.53479/36157>

The authors belong to the Payment Systems Department. They are grateful to Juan Ayuso, Carlos Conesa, Montserrat Jiménez, Carlos Sanz and an anonymous referee for the comments received. See [contact form](#) for comments.

This article is the sole responsibility of the authors and does not necessarily reflect the opinion of the Banco de España or the Eurosystem.

Abstract

Technological advances are having a significant impact on countless aspects of our lives and, in particular, on how we pay for the goods and services we consume. These changes in the payment value chain are affecting the oversight functions of central banks and other authorities entrusted with making certain that new risks that appear are managed appropriately, to ensure that innovation translates into secure efficiency gains. This article focuses on the impact of these innovations on central banks' functions. It first examines recent developments in payment habits in Spain as a consequence of technological innovation and other key factors such as those related to the COVID-19 pandemic. It then describes the impact of innovation on interbank payment processes. Lastly, it analyses the response of the Eurosystem – from an oversight standpoint – and of other authorities to the changes in the payment ecosystem.

Keywords: innovation, oversight, instant payments, cyber security, cyber resilience, crypto-assets.

1 Introduction

Technological advances are having a significant impact on countless aspects of our lives and, in particular, on how we pay for the goods and services we consume. These changes are occurring throughout the payment value chain (see Figure 1), extending not only to the payment instruments and services provided to final users but also to interbank clearing and settlement services. In consequence, they are affecting the oversight functions of central banks and other authorities entrusted with making certain that new risks that appear are managed appropriately, to ensure that innovation translates into secure efficiency gains.

Against this backdrop, Section 2 presents an overview of recent developments in payment habits in Spain as a consequence of technological innovation and other key factors such as those related to the COVID-19 pandemic. Section 3 describes the impact of innovation on interbank payment processes, while Section 4 analyses the response of the Eurosystem – from an oversight standpoint – to the changes arising in the payment ecosystem. Lastly, Section 5 sets out the main conclusions drawn.

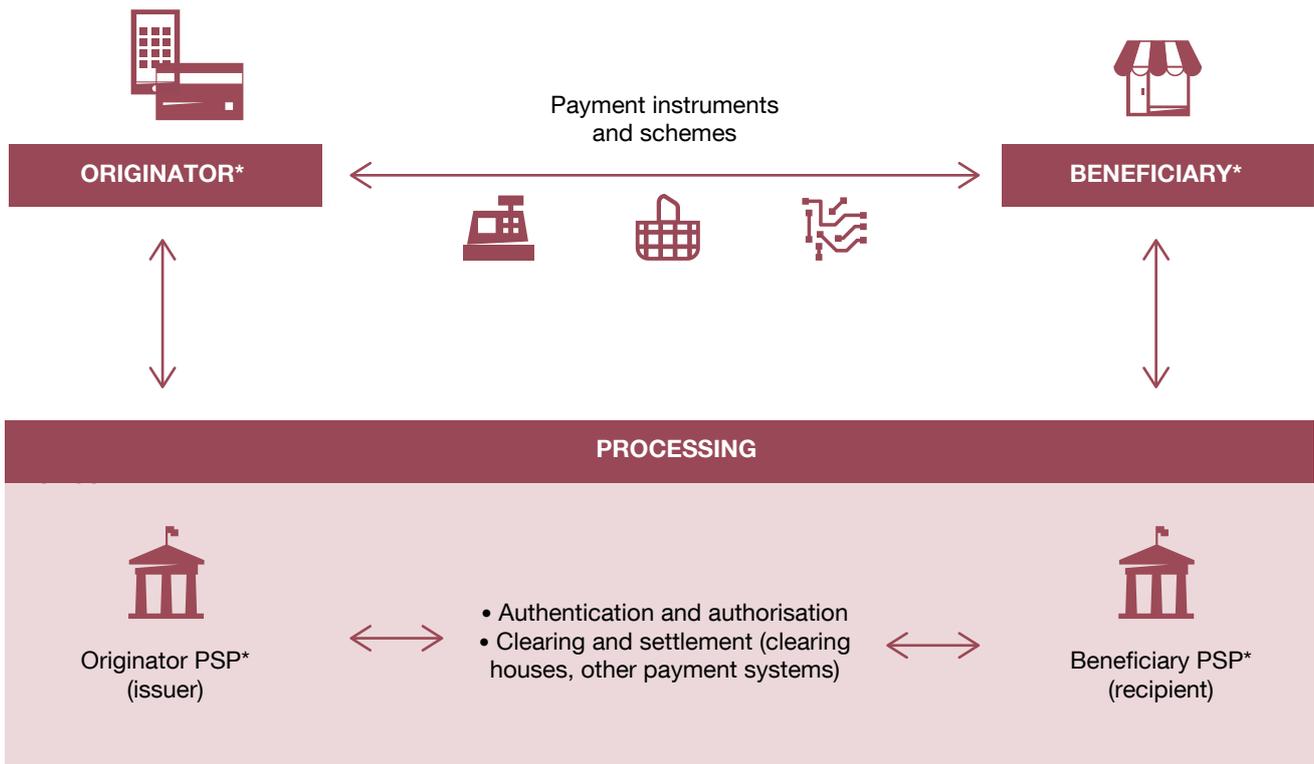
2 Today's retail payment ecosystem¹

The retail payment ecosystem was severely affected by the spread of the COVID-19 pandemic, owing to the impact of the restrictions and social distancing measures on economic activity.

¹ The payment ecosystem may be defined as the total set of players in the payment chain, including, among others, the participating institutions, the final service users (i.e. the payee and payer in each transaction), the clearing and settlement mechanisms and the IT service providers.

Figure 1

Typical payment value chain



* PSP: Payment Service Provider. In most payment transactions, the originator is the payer; one exception are direct debits, where the payment order is issued by the beneficiary, according to a previous direct debit mandate.

SOURCE: Banco de España.

Nevertheless, in Spain and in the rest of Europe, the financial market infrastructure and its ecosystems responded swiftly and effectively to the effects of the pandemic.

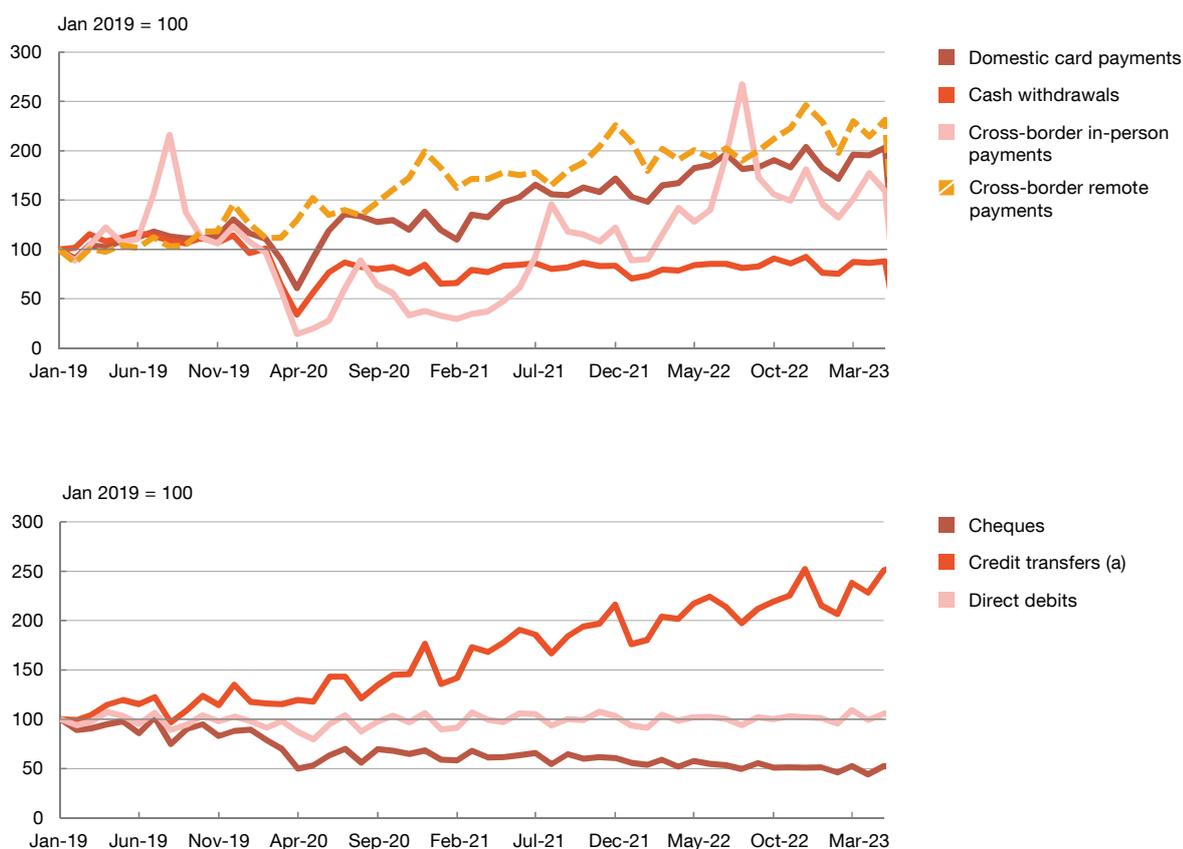
During the most acute phases of the health crisis, payment system transactions decreased significantly, in line with the sharp fall in economic activity. In 2020 Q2, for instance, card payments by residents fell by 50% year-on-year in Spain as a result of the slump in private consumption. Cross-border card payment transactions fell even more sharply, by almost 90%, owing to the collapse in travel and in the tourism industry in general. Direct debits also suffered a significant impact, decreasing by almost 20%, as did payments by cheque, which fell by 42% year-on-year during the lockdown periods in 2020.

After the crisis, activity levels recovered. Thus, compared with 2019 Q4, the last full quarter before the onset of the pandemic, in 2022² card transactions were 48% higher by number (34% higher by value). Credit transfers have likewise increased sharply, in this case largely

² On card data available up to 2022 Q2.

Chart 1

Latest developments in the use of different payment instruments in Spain, by number of transactions



SOURCE: Banco de España, drawing on data provided by card networks and the SNCE.

a Includes instant credit transfers.

driven by the take-off of instant credit transfers. All other electronic payment instruments have also shown signs of recovery, albeit at a more moderate pace, while payments by cheque continue to decline.

Electronic payment instruments have gradually gained ground, to the detriment of cash as a means of payment. The strong growth in remote payments is consolidating, especially in e-commerce, at the same time as contactless payments³ have become widely used. Thus, in 2022, remote card transactions were 45% higher than in 2019 Q4, whereas cash withdrawals from ATMs, which reflect the intensity of cash use, were 26% lower. Similarly, SPACE⁴ data

3 Contactless payments are those where the payment instrument – be it a physical card or other device (such as a mobile phone, or wearables such as a smartwatch or bracelet) – does not need to enter into direct contact with the point of sale in order for a payment to be made.

4 Study on the payment attitudes of consumers in the euro area (SPACE).

show that cash transactions at points of sale fell by 18 percentage points (pp) between 2019 and 2022, from 84% to 66% of the total.

Even before the pandemic, contactless card and mobile payments had achieved high penetration levels in Spain. This trend accelerated in 2020 Q2, especially for low-value purchases. By late 2021, contactless payments amounted to 84% of all in-person card payments, compared with 78% before the start of the pandemic, with stores reinforcing this consumer preference by encouraging purchasers to reduce physical contact at points of sale to a minimum as part of their COVID-19 protection protocols.

Broadly speaking, most contactless payments in Europe use NFC (near-field communication) technology. This is short-range wireless technology that requires that the distance between the point of sale and the physical card or mobile device is no more than 15-20 centimetres. In early 2022, 92% of cards and 93% of points of sale in Spain were enabled for contactless NFC payments. In addition to mobile phones, a wide variety of devices are being enabled for NFC technology, including wearables such as smart watches, bracelets and rings.

Remote card purchases (payments made online, via e-mail/post or by telephone), which accounted for slightly more than 20% of all card purchases in Spain before the pandemic, grew to more than 40% of the total in April 2020, as a consequence of the lockdown measures and physical store closures that led new users in different age groups to experiment with their first remote purchases and payments. In early 2022, remote purchases continued to account for around 25% of the total value of purchases made with cards issued in Spain.

The use of digital wallets on mobile phones⁵ and smart watches has also grown, via solutions owned by financial institutions and X-Pay solutions.⁶ Both provide for secure digital storage of cards, for in-person use via NFC technology and e-commerce, and are a means of payment accepted in a large number of stores.

Quick-response or QR codes⁷ are an alternative technology that offers various solutions for mobile phone payments. They may be either static or dynamic and are presented by either the consumer or the store. Bizum⁸ has introduced an in-person payment solution based on QR codes for use in Spain's State lottery outlets, for payments and for collection of lottery prizes via instant credit transfers. Other examples of mobile payment solutions using QR codes in the rest of Europe are MB WAY in Portugal, Bancontact in Belgium, Swish in Sweden and

5 Digital wallets are applications that store payment credentials securely, allowing users to make in-store and e-commerce payments. They can also provide other value added services, such as storing and sorting loyalty cards, identification documents, etc.

6 Mobile payment solutions provided by tech companies, such as Apple Pay, Google Pay or Samsung Pay.

7 QR codes have evolved from traditional barcodes and are a matrix of dots or pixels arranged in a two-dimensional square. They may be scanned, for instance, with a mobile phone camera, which instantly opens up the content of the matrix, enabling the exchange of information for payment.

8 Bizum is the outcome of a sector-wide initiative launched in 2016 by Spanish financial institutions to enable payments via mobile devices or telephone numbers. Among other use cases, Bizum allows individuals to make and receive payments to and from other individuals, and enables payments to and from firms and the self-employed. It is also expanding both as an e-commerce and an in-store payment solution.

iDEAL in the Netherlands. QR code-based payment solutions are also widely used in China and India. At the international level, PayPal is also expanding thanks to its own QR code-based in-person payment solution.

In consequence, mobile devices are being used more and more for making payments. In addition to providing an enhanced user experience, they incorporate security innovations, such as the use of biometrics for user authentication⁹ or tokenisation¹⁰ of payment credentials, thus limiting the risks associated with their use and, therefore, reducing fraud and enhancing consumer protection.

Another change in recent years is the rapid growth in instant payments, worldwide and especially in Spain, driven by the digitalisation of the economy and the need for immediacy. Indeed, instant payments are expected to replace other traditional payment instruments completely over the medium to long term. There are numerous use cases of instant payments, but mobile person-to-person (P2P) payments,¹¹ where the payment is made by the payer and received by the payee instantly, are currently the most common example. In Spain, Bizum has proved to be a successful payment solution, providing a basic service that uses the personal telephone numbers of the payer and payee rather than the IBAN of their respective payment accounts. Provided that both parties to the transaction have signed up to the service with their respective financial institutions, all that the payer needs to know to transfer funds to the payee is their personal telephone number.¹²

Although the concept of instant payments may be more or less intuitive, there is no agreed definition worldwide, but rather it varies by country or region. In Europe, the European Commission has launched a proposal for a regulation on instant credit transfers in euro, which aims to encourage the use of these transfers and will foreseeably include a definition. Meanwhile, the Euro Retail Payments Board (ERPB)¹³ defines instant payments as electronic retail payments that are processed 24/7, in which the payment instruction is processed and the funds are made available to the recipient immediately, or almost immediately, providing the payer with confirmation of the transaction in a matter of seconds, irrespective of the payment instrument and interbank clearing and settlement systems used. However, the ERPB

9 Confidence in payment systems is essential for financial stability. In this respect, the European regulation (PSD2) has been revised, to strengthen security. Payment service providers (PSPs) are required to undertake strong customer authentication when customers access their payment accounts and make electronic payments. Strong or two-factor authentication requires at least two of the following: 1) something you know (a password or PIN code known only to the user); 2) something you have (a chip card or device that generates a security code held only by the user); and 3) something you are (for instance, using fingerprint or voice recognition thanks to advances in biometrics).

10 Tokenisation consists in payment instrument credentials, such as card details, being replaced by limited-use tokens. For instance, a token may be linked to a specific mobile phone, or may be used only in a specific e-commerce store, with no need for the store to access the genuine card number, thus reducing the risk of unauthorised access to data and hence the risk of fraud.

11 Other use cases of instant payments are person-to-retail (P2R) or person to e-retail (P2eR) payments.

12 When a user signs up to Bizum, their telephone number is linked to the IBAN of the payment account that will be used to send and receive payments through Bizum. From that point on the telephone number becomes a proxy for the IBAN, such that, in practice, providing one's telephone number is the same as providing one's IBAN.

13 The ERPB is tasked with enhancing euro retail payments. It is chaired by the European Central Bank (ECB) and includes representatives from both the supply and demand side of the EU payments market.

has opted for instant credit transfers, as defined by the European Payments Council (EPC), as the underlying payment instrument for instant payments.

In November 2017 the EPC approved the pan-European SEPA instant credit transfer (SCT Inst) scheme¹⁴ to enable individuals, businesses and other economic agents in the SEPA area to make and receive instant credit transfers in euro according to the same rules, conditions and standards, irrespective of the country of origin or destination of the payment. Since the introduction of this new scheme, instant credit transfers are gradually replacing traditional credit transfers, such that by early 2023 they accounted for 13.3% of total credit transfers in the euro area. This migration has been much faster in Spain, where by the same date instant credit transfers amounted to 48.7% of the total, and is closely connected to the widespread adoption of mobile payments via Bizum, which accounts for some 90% of all instant credit transfers in Spain.¹⁵

One of the aims of the Eurosystem's retail payments strategy is for instant credit transfers to become the "new normal" in terms of payment instruments. This entails making instant credit transfers available to all individuals and businesses across Europe, offering attractive conditions for end users, such as reliability of payments across all electronic channels and ease of use. This aim is consistent with the ERPB's work streams, which seek to promote the development of a pan-European solution for instant payments in euro, open to any PSP in the SEPA area.

Lastly, among the innovations attracting most attention in recent years is the possibility of certain crypto-assets¹⁶ being used in the future to make payments.

However, the specific features of crypto-assets, together with their price volatility, stand in the way of their possible use as a means of payment because of the risks involved. Subsequently, variants have emerged with features that are more susceptible to such use. For example, stablecoins, whose main feature is that they are backed by another asset or pool of assets and aim to maintain a stable value relative to such asset or assets. Meanwhile, some types of centrally-issued stablecoins or payment tokens could be considered similar to e-money.

To date, the lack of a regulation governing the issue and use of stablecoins has hindered their expansion as a means of payment. In Europe, the recently approved MiCA (Markets in Crypto-Assets) Regulation aims to cover some of the activities related to these assets. So far, however, crypto-assets cannot be considered a reliable means of payment. Indeed, the European supervisory authorities of the European System of Financial Supervision (EBA, ESMA and

14 The EPC is an international non-profit association with 77 members (PSPs or associations of PSPs) which devises standards and schemes to promote the integration and development of European payments. The SCT Inst scheme, which enables instant credit transfers, is one of such schemes.

15 Source: Banco de España, drawing on data provided by Bizum and Iberpay, which manages the Spanish Electronic Clearing System (SNCE, by its Spanish acronym).

16 Crypto-assets are defined as digital representations of value or rights that can be transferred and stored electronically, using distributed ledger or similar technology, but which are not backed by any authority and for which there is no public or private body that controls the ledgers.

EIOPA¹⁷) have issued a warning, backed by the Banco de España, the Spanish National Securities Commission (CNMV) and the Directorate General of Insurance and Pension Funds (DGSFP), on the risks that crypto-assets pose to consumers in the European Union, making them inadvisable either as an investment or as a means of payment or exchange for most retail consumers.

In this setting, numerous central banks worldwide have launched projects to issue central bank digital currencies (CBDCs). Many of these projects are analysing how sovereign digital currencies can fit into the wholesale or retail payment sphere, considering a range of support technologies for their issue and distribution. In particular, in October 2021 the Eurosystem launched a research project for a possible digital euro,¹⁸ which could complete the retail payment ecosystem with an easy-to-use retail CBDC. The initial investigation stage of the project lasted for two years. On 18 October 2023, the ECB Governing Council approved the second or preparation phase, which is expected to last for another two years. The successive phases of the digital euro project are conditional upon the EU approving the necessary legislative framework, and upon the ECB Governing Council making the decision to issue the digital euro. Some countries, such as China, have already launched pilot CBDC projects.

3 Innovation in interbank payment processes

Technological innovation and changes in payment habits are also affecting interbank clearing and settlement processes, which are a key component of the retail payment value chain.

The boom in instant payments seen in recent years has inevitably been accompanied by changes in the payment systems used to process them, given the specific features of this payment instrument. In particular: (i) the immediate crediting of the payee's account as soon as the payer has issued the payment instruction, with the funds being made available instantly to the payee; and (ii) the need to mitigate the interbank credit risk that may arise if the funds are credited to the payee's payment account before interbank settlement takes place (i.e. before the funds are debited to the payer's bank and credited to the payee's bank).

To enable instant payments, the Eurosystem implemented a system for real-time interbank gross settlement, where transactions are settled individually on a firm and irrevocable basis in the corresponding clearing house register, without there being any interbank credit risk as banks prefund the dedicated central bank account managed by the clearing house. TARGET Instant Payment Settlement (TIPS) is the platform operated by the Eurosystem for the real-time settlement 24/7 of such transactions in central bank money.

Other central banks have also developed their own instant payment settlement systems, such as PIX, established by Banco do Brasil for mobile phone transactions; the CoDi platform,

17 The European Banking Authority, European Securities and Markets Authority, and European Insurance and Occupational Pensions Authority, respectively.

18 See the [digital euro page](#) of the ECB's website.

implemented by Banco de México to enable credit transfers to be sent and received using QR and NFC codes, or the Transferencias 3.0 initiative (using interoperable QR codes) launched by Banco Central de Argentina.

Moreover, much of the innovation in interbank clearing and settlement processes is based on distributed ledger technology (DLT). This enables the recording of data, such as asset holdings or financial transactions, on a computer network which verifies each item and stores updates, without having to rely on a single centralised ledger system. The key feature of this technology is that it offers a single shared ledger of which there are multiple identical copies distributed among several participants and which are updated in a synchronised manner. This reduces costs, by minimising messaging and eliminating the need for reconciliation between parties, while enhancing the traceability of transactions, transparency and, in some cases, the speed of interbank processes.

In addition, DLT networks can be leveraged for the use of “smart contracts”,¹⁹ allowing the execution of payments to be automated and programmed, based on a code or IT protocol that will enable automated verification and execution of the underlying agreement, without the need for intermediaries, when predetermined conditions are met. An example of how this technology is used is the “proof of concept” (PoC) launched in September 2019 by Iberpay (which, as mentioned earlier, manages and operates the SNCE) and various major financial institutions. The PoC, known as “Smart Payments”, aimed to test the execution of payments on blockchain networks linked to smart contracts, ultimately using instant credit transfers for these payments. The PoC tested the connection of blockchain networks to the SNCE (specifically, with the instant credit transfer sub-system), such that the payments initiated on a blockchain network could be processed and settled using the current payment systems. In particular, a collateral management business case was tested, that is, the entire lifecycle management of a bank guarantee in a blockchain network, and the automatic processing and settlement of the payment associated with the fees and enforcement of the guarantee.

4 Regulatory and oversight developments in response to these changes

The profound transformation of the payment ecosystem in recent years has, needless to say, led the various authorities concerned to adopt measures to avoid excessive risk-taking which could jeopardise the efficiency gains for this ecosystem, in particular, and the development in general, in economic terms, of financial and technological innovation processes.

One of the challenges the authorities face in this area stems from the cross-border nature of many of the innovative solutions that have emerged in recent years. A clear example are the initiatives launched by the big techs, which provide IT services for the payment chain or payment services of their own worldwide. This adds complexity and poses new challenges in

¹⁹ Programmable contracts that are automatically executed without the involvement of third parties and operate as IT programs, replacing printed documents containing legal language.

terms of ensuring the right balance between innovation, competition and national sovereignty. Accordingly, coordination efforts between the authorities of different countries and supranational institutions have intensified in recent years at different fora both within the Eurosystem and globally.

In short, the authorities have had to gradually adapt their regulatory, supervisory and oversight framework, to put in place the tools they need to more effectively address the challenge of boosting innovation, while ensuring that it offers security and develops in a level playing field, under the “same activity, same risks, same rules” premise, regardless of the technology used or the environment (traditional vs. new players).

Specifically, the oversight of infrastructures by a central bank, particularly of payment systems and instruments,²⁰ consists of various activities which include the assessment of their risk management and functioning, and their security and efficiency. Notable in this regard are the CPMI-IOSCO²¹ Principles for Financial Market Infrastructures (PFMIs), which are aimed at improving the security and efficiency of these infrastructures, be they payment or securities infrastructures, and more generally, at reducing systemic risk and promoting transparency and financial stability. These principles are international in scope and provide harmonised standards for infrastructures overall. However, they are not directly applicable but must be adopted by the competent authorities in their respective jurisdictions. The Eurosystem has developed its oversight frameworks on the basis of the PFMI, which serve as common principles applicable to all euro area payment systems, both those deemed systemic²² and other systems, based on proportionality from a risk perspective. The Eurosystem framework is complemented by the national frameworks, which may replicate it or expand on it further.

Consequently, the framework is more prescriptive for systemically important payment systems, to which Regulation (EU) 795/2014 (the SIPS Regulation) applies, regardless of whether they are large-value or retail payment systems, or operated by private operators or central banks. However, the requirements take into account the operator’s risk profile and, accordingly, the regulation establishes certain exemptions for central banks. The Eurosystem’s framework for the oversight of payment systems also includes a less prescriptive one for systems that are not systemically important.²³

Turning to the risks to which payment systems are exposed, cyber risk has featured prominently in recent years. Cyber space, digitalisation, cloud services and big data, among other developments, offer major opportunities for innovation, but they also pose new threats, such

20 The Banco de España’s oversight function is described in Article 16 of Law 13/1994 of 1 June 1994 on the Autonomy of the Banco de España.

21 The Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO). See the PMFI section of the website of the Bank for International Settlements.

22 Systemically important payment systems are those that pose a greater risk on account of their size, market share, cross-border activity or provision of settlement services to other financial market infrastructures.

23 The Eurosystem classifies payment systems as follows: systemically important payment systems (SIPS), prominently important retail payment systems (PIRPS), other retail payment systems (ORPS) and non-systemically important large-value payment systems (non-SIP LVPS).

as cyber attacks. The Eurosystem's current oversight frameworks therefore include additional requirements to address cyber risk. In the latest revision of the SIPS Regulation, a series of requirements for systems operators to establish an effective cyber resilience framework, with appropriate governance measures to manage cyber risk, was included in the article on operational risk. Operators shall identify their critical operations and supporting assets, and have appropriate measures in place to detect and respond to cyber attacks, protecting these operations and enabling their recovery from such attacks. In addition, bearing in mind the importance of implementing a culture of protection in this area, operators shall ensure that there is a process of continuous learning and change to enable them to adapt their cyber resilience framework to the dynamic nature of cyber risks, in a timely manner and whenever needed.

In 2017, the ECB adopted the Eurosystem's cyber resilience strategy for the financial market infrastructures under its remit. The strategy proposes the development of a range of tools that can be used by regulators and infrastructures to enhance cyber resilience. It consists of three pillars, for each of which a range of instruments are developed with a view to ensuring not only the cyber resilience of an infrastructure at the individual level, but also that of the infrastructure network as a whole. The first pillar centres on infrastructures and seeks to enhance their cyber resilience maturity. To do this, it includes tools such as: (i) cyber resilience oversight expectations (CROE),²⁴ which form the basis for the Eurosystem's testing exercises for payment systems; and (ii) the TIBER²⁵ framework, which details how to implement penetration tests such as "red teaming" in a real-life environment mimicking the tactics, techniques and procedures used in cyber attacks. The second pillar focuses on the collective resilience of the sector, through the analysis of interdependencies, collaboration through effective information-sharing mechanisms and sector-wide business continuity exercises. Lastly, the third pillar centres on the Euro Cyber Resilience Board (ECRB), a high-level strategic forum that brings together industry stakeholders and regulators. Its objectives include raising awareness about cyber resilience and acting as a catalyst for joint initiatives to develop effective solutions for the market.

It should be noted that the smooth functioning of payment systems overall not only requires robust and resilient infrastructures, but also secure and efficient payment instruments.

Traditionally, the oversight framework for payment instruments in the Eurosystem has been based on payment schemes. For oversight purposes, a payment scheme is a set of formal, standard and common rules for the transfer of funds between end users via electronic payment instruments (e.g. credit transfers, direct debit or payment cards).

Generally, the assessments conducted confirmed that payment schemes met with oversight requirements and, where shortcomings were found, the authorities governing these schemes followed the recommendations to remedy them issued by the overseers. However, the changes

24 European Central Bank (2018c).

25 European Central Bank (2018b).

in the payment ecosystem in the past decade have made it necessary to review the oversight framework for payment instruments, as occurred with that of payment systems, to broaden its scope, in order to encompass all the new developments in payments and any that may arise in the future.

The intent to extend the scope of this new framework is evident from its new name, the Eurosystem's oversight framework for electronic payment instruments, schemes and arrangements (the PISA framework). This framework, published in 2021,²⁶ comprises three documents: (i) the oversight framework itself; (ii) the assessment methodology, which takes into account the specificities of each particular scheme or arrangement; and (iii) an exemption policy, which is justified by a proportionality criterion.

It should be noted that the current definition of “payment scheme” has a broader scope, replacing the traditional concept of a transfer of funds with that of a transfer of value, in order to include, where necessary, certain crypto-assets. Specifically, crypto-assets that have a payment function and a governing authority are subject to oversight. Thus, crypto-assets that are fully decentralised fall outside the scope of the PISA framework.

Moreover, the framework introduces a new concept – “payment arrangement” – which is defined as a set of operational functionalities that support the end users of multiple payment service providers in the use of electronic payment instruments. These functionalities include: (i) payment initiation and facilitation of transfers of value; and (ii) storage or registering of personal security credentials or data related to electronic payment instruments. As with payment schemes, payment arrangements must be managed by a governing authority which issues the relevant rules (or terms and conditions) for their use. Payment arrangements include firms that provide support for the use of payment cards, credit transfers, direct debits, electronic money transfers and crypto-assets, such as digital wallets.

All in all, oversight frameworks are not static, but tend to evolve over time to respond to innovation in payments. Against this backdrop, the PFMI are regularly reviewed to verify that they remain pertinent, as shown, for example, by the publication in 2021 of an analysis of the stablecoin arrangements ecosystem, which concludes that the PFMI can also be applied to the oversight of such infrastructures, but must take into account their specific features.²⁷

The Financial Stability Board (FSB)²⁸ has also published high-level recommendations for the regulation, supervision and oversight of stablecoin arrangements, but applicable only to global stablecoin arrangements. By contrast, the CPMI framework has a broader scope as it also addresses local stablecoin arrangements, although, in principle, only those considered systemically important for the jurisdiction concerned.

26 European Central Bank (2021).

27 Bank for International Settlements (2021).

28 Financial Stability Board (2020).

5 Conclusion

Although the payment market has, from the start, evolved in step with technological developments, the pace of change has greatly accelerated in recent years. The rapid succession of innovations is affecting the entire payment chain, be it the interbank component or that of the products offered to end users, and it has an impact on existing payment instruments and services and also drives the emergence of new ones, such as instant credit transfers. In addition, the COVID-19 pandemic boosted the penetration of certain innovations, particularly in the area of digitalisation, as shown by the growth in contactless or instant payments.

The transformation of the sector requires constant adaptation by the players involved in the payment ecosystem, highlighting the strategic importance of both efficient payments and the smooth functioning of the payment infrastructures for the economy as a whole.

Lastly, the regulatory and supervisory authorities have kept a close eye on this transformation, engaging in intense activity to adapt their regulatory, supervisory and oversight frameworks in order to provide the appropriate tools for the new setting and make them sufficiently flexible to address the continuous changes. The sector faces a complex challenge: to optimise the benefits of innovation while at the same time ensuring a sufficient level of security and a level playing field (i.e. same risks, same rules).

REFERENCES

- Banco de España. (2023a). "Payment systems in Spain". <https://www.bde.es/wbe/en/areas-actuacion/sistemas-pago/los-sistemas-pago-espana/>
- Banco de España. (2023b). *Supervision Report 2022*. https://www.bde.es/f/webbe/Secciones/Publicaciones/PublicacionesAnuales/MemoriaSupervisionBancaria/22/Ing_MemoriaSupervision2022.pdf
- Bank for International Settlements. (2021). "Application of the Principles for Financial Market Infrastructures to stablecoin arrangements". <https://www.bis.org/cpmi/publ/d198.htm>
- Bank for International Settlements and International Organization of Securities Commissions. (2012). *Principles for Financial Market Infrastructures (PFMI)*. <https://www.bis.org/cpmi/publ/d101a.pdf>
- Bizum. (2016). "If you have a mobile phone, you have money". <https://bizum.es/en/>
- Bizum. (2020). "Use Bizum in your nearest lottery administration". <https://bizum.es/en/lottery-and-gambling-bets/>
- Euro Retail Payments Board. (2014). *Pan-European instant payments in euro: definition, vision and way forward*. https://www.ecb.europa.eu/paym/groups/erpb/shared/pdf/2nd_eprb_meeting_item6.pdf?27ef4897696839d1e7d0918f6b2dae48
- European Central Bank. (n. d.). "Payment systems". <https://www.ecb.europa.eu/paym/pol/activ/systems/html/index.en.html>
- European Central Bank. (2016). "Eurosystem oversight policy framework". <http://www.ecb.europa.eu/pub/pdf/other/eurosystemoversightpolicyframework201607.en.pdf?4cb84eb3183f0bb2c71bc3509af6ffe3>
- European Central Bank. (2018a). "What is TARGET Instant Payment Settlement (TIPS)?". <https://www.ecb.europa.eu/paym/target/tips/html/index.es.html>
- European Central Bank. (2018b). *TIBER-EU FRAMEWORK. How to implement the European framework for Threat Intelligence-based Ethical Red Teaming*. https://www.ecb.europa.eu/pub/pdf/other/ecb.tiber_eu_framework.en.pdf
- European Central Bank. (2018c). *Cyber resilience oversight expectations for financial market infrastructures*. https://www.ecb.europa.eu/paym/pdf/cons/cyberresilience/Cyber_resilience_oversight_expectations_for_financial_market_infrastructures.pdf
- European Central Bank. (2021a). "Eurosystem publishes new framework for overseeing electronic payments". <https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr211122~381857cdf.en.html>
- European Central Bank. (2021b). "The Eurosystem oversight framework for electronic payments (PISA) is published". <https://www.ecb.europa.eu/paym/intro/news/html/ecb.mipnews211122.en.html>
- European Central Bank. (2022). "Study on the payment attitudes of consumers in the euro area (SPACE)". https://www.ecb.europa.eu/stats/ecb_surveys/space/html/index.en.html
- European Central Bank. (2023). "Digital euro". https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html#/search/digital%20euro%20hub/1
- European Payments Council. (2022). "SEPA Instant Credit Transfer rulebook and implementation guidelines". <https://www.europeanpaymentscouncil.eu/what-we-do/epc-payment-schemes/sepa-instant-credit-transfer/sepa-instant-credit-transfer-rulebook>
- Ferrando, Laura, and Diana Posada. (2023). "The use of cash and other means of payment: how is the way we pay changing?". *Economic Bulletin - Banco de España*, 2023/Q1, 01. <https://repositorio.bde.es/handle/123456789/25132>
- Financial Stability Board. (2020). "Regulation, Supervision and Oversight of "Global Stablecoin" Arrangements". <https://www.fsb.org/2020/10/regulation-supervision-and-oversight-of-global-stablecoin-arrangements/>
- González, José, Alberto Urtasun and Miguel Pérez. (2020). "Consumption in Spain during the state of alert: an analysis based on payment card spending". *Economic Bulletin - Banco de España*, 3/2020, Analytical Articles. <https://repositorio.bde.es/handle/123456789/13242>
- Iberpay. (2022). "El sector bancario español se prepara para la posible emisión del euro digital por parte del BCE". <https://www.iberpay.com/media/evankvti/nota-de-prensa-poc-preparaci%C3%B3n-para-euro-digital.pdf>

Regulation of the European Central Bank (EU) No 795/2014 of 3 July 2014 on oversight requirements for systemically important payment systems (SIPS Regulation). <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R0795>

Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023R1114>

How to cite this document

Alemán, Desirée, Justo Arenillas, Lourdes Cremades, Rosa Martín and Miguel Pérez. (2023). “Innovation in retail payments and its impact on central banks’ oversight function”. *Financial Stability Review - Banco de España*, 45, Autumn. <https://doi.org/10.53479/36157>