THE DIGITAL EURO: A Strategic Response to the New Payments Landscape

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The digital euro is a proposed central bank digital currency (CBDC) that would be issued by the Eurosystem and made available to individuals and businesses across the euro area, complementing rather than replacing physical cash.
Its design would support online and offline payments, while incorporating privacy safeguards, holding limits and automated funding mechanisms to reconcile usability with financial stability.

- **The European retail payments landscape is undergoing a structural transformation, characterised by increasing digitalisation and persistent market fragmentation.** Cash's share of point-of-sale (POS) transactions fell from 79% in 2016 to 52% in 2024. At the same time, non-European solutions dominate POS payments in 17 of the 20 countries examined, highlighting Europe's dependence on international payment providers and the need for greater interoperability, competition and strategic autonomy.

- **The digital euro aims to strengthen European payment sovereignty through a common public payment infrastructure integrated with private-sector services.** Its two-tier design would preserve the role of private payment service providers (PSPs): distributing PSPs would provide consumer-facing digital euro services, while acquiring PSPs would enable merchants to accept digital euro payments at physical and online points of sale. The sustainability of both roles, including the calibration of merchant service charges and inter-PSP fees, remains central to the ongoing compensation debate.

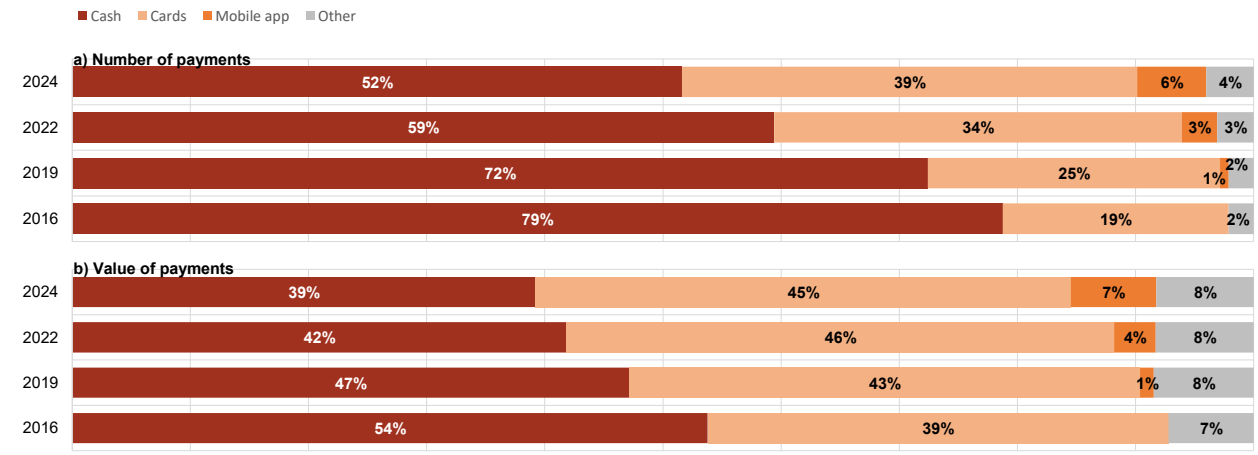
- **The digital euro's introduction will depend on the resolution of outstanding regulatory issues and the successful completion of technical preparations.** Legislative negotiations continue to address mandatory acceptance, distribution obligations, PSP compensation and holding-limit governance. In parallel, the Eurosystem is developing the scheme rulebook and settlement infrastructure, with a pilot involving 36 PSPs planned for 2027-2028. Technical readiness is targeted for 2029, although issuance remains conditional on the legal framework and a separate ECB Governing Council decision.

1. THE EUROPEAN RETAIL PAYMENTS LANDSCAPE

The increasing digitalisation of retail payments is progressively reshaping payment habits across the euro area, leading to a decline in cash usage and a growing reliance on electronic payment instruments. According to the European Central Bank (ECB) data, cash remained the most frequently used payment instrument at the point of sale (POS), although its share declined significantly from 79% of transactions in 2016 to 52% in 2024 (Fig. 1a). Over the same period, card payments increased from 19% to 39%, while mobile payments accounted for 6% of transactions in 2024. In terms of transaction value, cards had already overtaken cash, representing 45% of POS payments compared with 39% for cash (Fig. 1b).

Fig.1: Share of payment instruments used at the POS, euro area, 2016-2024

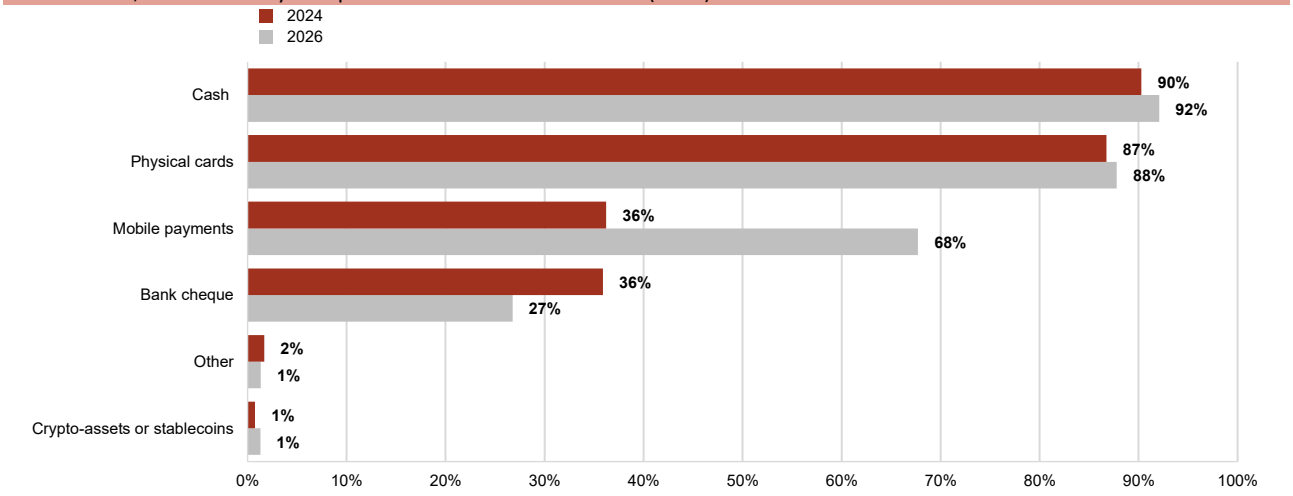
Source: ECB, Study on the payment attitudes of consumers in the euro area (SPACE) (2024)



The ECB's latest survey on the use of cash by companies provides further evidence of evolving payment acceptance patterns across the euro area. In 2026, cash remained widely accepted, with 92% of companies receiving payments at physical locations continuing to accept it. Card acceptance increased marginally, from 87% to 88%, while mobile payment acceptance recorded a substantially stronger increase, rising from 36% to 68% (Fig. 2).

Fig.2: Accepted means of payment at physical points of sale, euro area, 2024-2026

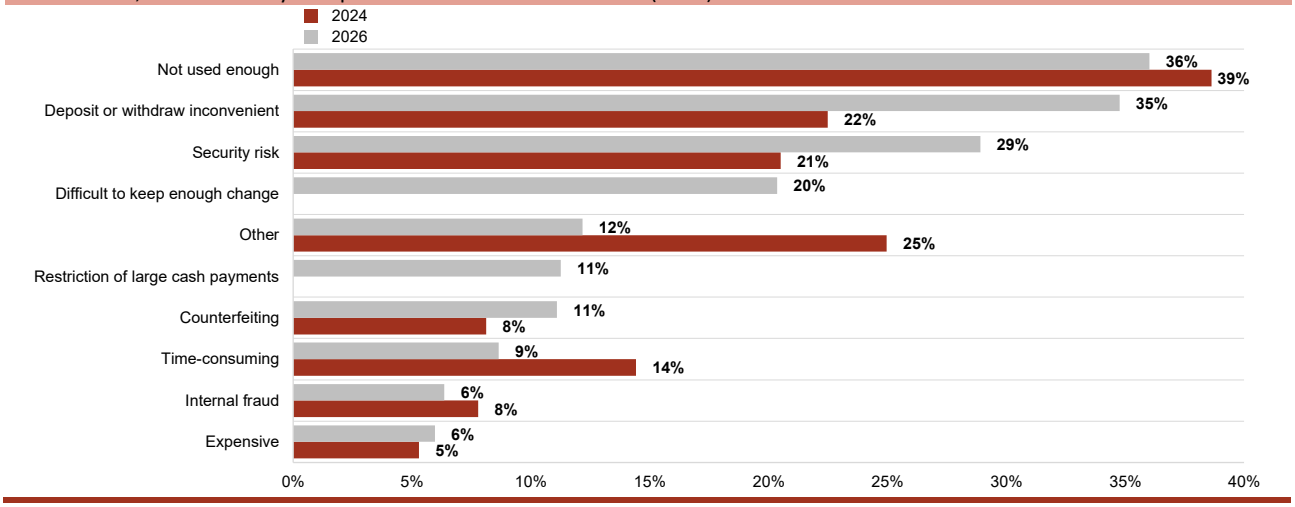
Source: ECB, Use of Cash by Companies in the Euro Area in 2026 (2026)



Nevertheless, some companies continue to face challenges associated with cash payments. Among businesses that did not accept cash, the most frequently reported reasons in 2026 were limited customer demand (36%), difficulties or inconvenience in depositing and withdrawing cash (35%) and security concerns (29%) (Fig. 3). Notably, the share of companies identifying cash deposit and withdrawal procedures as an obstacle increased from 22% in 2024 to 35% in 2026, highlighting the operational considerations influencing merchants' payment acceptance decisions.

Fig.3: Reasons why companies don't accept cash, euro area, 2024-26

Source: ECB, Use of Cash by Companies in the Euro Area in 2026 (2026)



Beyond these differences in payment preferences, the European retail payments market remains structurally fragmented. Existing European payment schemes are largely concentrated in domestic markets or specific payment use cases, while no European-governed electronic payment solution currently provides comprehensive coverage across the entire euro area.

According to the *Eurosystem's Comprehensive Payments Strategy (2026)*[1], more than two-thirds of card-based transactions in the euro area are processed under business rules established by non-European companies, while 13 countries in the euro area depend on international card schemes or mobile payment solutions for in-store transactions.

Among the 20 countries covered by the underlying market assessment, non-European solutions were the market leaders for POS payments in 17 countries, while only five had a relevant domestic alternative (Tab.1). Although European solutions held leading positions in certain national P2P and e-commerce markets, their presence remained uneven across countries and payment use cases.

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This fragmentation raises concerns regarding European strategic autonomy and operational resilience, particularly amid growing geopolitical uncertainty and technological vulnerabilities.

[1] https://www.ecb.europa.eu/press/pubbydate/2026/html/ecb.eurosystemcomprehensivepaymentsstrategy202603.en.html

Moreover, the limited geographical reach of domestic payment solutions restricts the ability of European payment service providers (PSPs) to achieve economies of scale, expand across national markets and compete effectively with international operators.

Tab.1: Market-leading payment solutions and major domestic payment options across euro area countries[2]

Source: ECB, Preparation Phase of a Digital Euro - Closing Report (2025) and I-Com elaboration for 2026 develpoments

COUNTRY	P2P		POS		E-commerce	
	Market leader	Domestic option	Market leader	Domestic option	Market leader	Domestic option
Austria	Non-EU	No	Non-EU	No	Non-EU	Yes
Belgium	Non-EU	Yes	EU	Yes	EU	Yes
Croatia	Non-EU	No	Non-EU	No	Non-EU	No
Cyprus	Non-EU	No	Non-EU	No	Non-EU	No
Estonia	EU	Yes	Non-EU	No	EU	Yes
Finland	Non-EU	Yes	Non-EU	No	Non-EU	Yes
France	Non-EU	Yes	EU	Yes	EU	Yes
Germany	Non-EU	Yes	EU	Yes	Non-EU	Yes
Greece	EU	Yes	Non-EU	No	Non-EU	No
Ireland	Non-EU	Yes	Non-EU	No	Non-EU	No
Italy	Non-EU	Yes	Non-EU	Yes	Non-EU	Yes
Latvia	EU	Yes	Non-EU	No	Non-EU	Yes
Lithuania	EU	Yes	Non-EU	No	EU	Yes
Luxembourg	Non-EU	Yes	Non-EU	No	Non-EU	Yes
Malta	Non-EU	No	Non-EU	No	Non-EU	No
Netherlands	EU	Yes	Non-EU	No	EU	Yes
Portugal	Non-EU	Yes	Non-EU	Yes	EU	Yes
Slovakia	Non-EU	No	Non-EU	No	Non-EU	No
Slovenia	EU	Yes	Non-EU	No	Non-EU	No
Spain	EU	Yes	Non-EU	Yes	Non-EU	Yes

2. THE DIGITAL EURO: STRATEGIC OBJECTIVES AND DESIGN

The digital euro is a proposed central bank digital currency (CBDC) that would be issued by the Eurosystem and made available to individuals and businesses across the euro area, complementing rather than replacing physical cash. As a digital form of central bank money, it would represent a direct liability of the Eurosystem, with each digital euro maintaining the same nominal value as euro banknotes and coins.

The initiative aims to preserve the role of public money in an increasingly digitalised economy while strengthening European monetary sovereignty and strategic autonomy in retail payments. It is consistent with the objectives of the *Eurosystem's Comprehensive Payments Strategy (2026),* which seeks to foster a more integrated, competitive and resilient European payments ecosystem. In this context, the digital euro would provide a common pan-European payment instrument based on public infrastructure, complementing existing private payment solutions and reducing fragmentation across national markets.

[2] ***Note:*** *This table is adapted from the ECB's Preparation Phase of a Digital Euro – Closing Report (2025), with selected updates to reflect the availability of domestic payment solutions in 2026. Compared with the original ECB version, the entries in the "Domestic option" columns have been changed from "No" to "Yes" for Germany (P2P and e-commerce), Ireland (P2P), Italy (P2P and e-commerce), Luxembourg (P2P and e-commerceo), and Spain (POS and e-commerce, domestic payment schemes). These updates reflect the availability of domestic solutions rather than necessarily meeting the ECB's original criterion of a market share exceeding 10% in the respective payment use case. All other entries remain unchanged.*

From a functional perspective, the digital euro would combine the convenience of electronic payments with key characteristics of cash, particularly accessibility, security and privacy (Tab.2). It would support a broad range of retail payment use cases, including person-to-person (P2P) transfers, payments at physical points of sale (POS), and e-commerce transactions, through both online and offline functionalities.

Accessibility and financial inclusion would be central to the distribution model: basic digital euro payment services would be provided free of charge to consumers, including individuals without a traditional bank account. Consequently, users would be able to access their digital euro holdings through applications offered by payment service providers (PSPs) or a common digital euro application developed by the Eurosystem.

Tab.2: Digital Euro Compared with Stablecoins, Crypto-assets and Bank Deposits
Source: B. Wallbaum, The Digital Euro (2026) and I-Com for the notes

Dimension	Digital Euro	USDC (Stablecoin)	Bitcoin (Crypto)	Bank Deposit
Issuer	ECB (central bank)	Circle (private company)	No issuer (protocol)	Commercial bank
Credit Risk	Zero	Issuer risk (reserves)	Market risk (volatile)	Bank risk (insured up to €100k)
Stability	1:1 with euro, guaranteed	1:1 with dollar (usually)	Highly volatile	1:1 with euro
Privacy	Offline: cash-like. Online: pseudonymised[3]	On-chain: public. On/off-ramp: full KYC	Pseudonymous, publicly traceable	Bank sees all details
Offline	Yes (NFC, secure element)	No	No	No
Interest	Zero (by design)	None on token	No	Variable
Legal Tender	Yes (mandatory acceptance)	No	No	No
Regulation	EU Digital Euro Regulation	MiCA (EU); GENIUS Act (US)	Varies by jurisdiction	Banking directive, PSD2
Cross-border	21 euro-area countries (since January 2026)[4], seamless	Global, blockchain-based	Global, blockchain-based	SEPA (EU), SWIFT (global)

Privacy protection would be a defining characteristic of the digital euro, with different arrangements for *online and offline transactions*.

- For *online payments,* PSPs would remain responsible for customer identification and compliance with Know Your Customer (KYC) and Anti-Money Laundering (AML) requirements. The Eurosystem, by contrast, would process transactions using pseudonymous identifiers and segregated information, preventing it from directly linking individual payments to identifiable users;
- *Offline payments* would provide a higher degree of privacy. Transactions would be settled directly between compatible devices in close proximity, without requiring an internet connection or real-time interaction with the central settlement infrastructure. The offline functionality would rely on tamper-resistant secure elements, such as embedded secure

[3] *Offline: payer and payee alone know the personal transaction details; PSPs process information on funding and defunding. Online: the Eurosystem cannot directly identify users, while PSPs can identify customers and process data necessary for service provision and legal compliance.*

[4] *Potential service provision by PSPs established in non-euro EU Member States is subject to separate proposed EU rules.*

elements (eSEs) or eSIMs, to protect stored value and execute sensitive payment operations.

Beyond these operational features, the digital euro's proposed design would incorporate specific safeguards to *preserve financial stability and monetary policy transmission*, while maintaining its primary function as a means of payment.

A central feature would be the *non-remuneration of digital euro holdings*. Similarly to physical cash, digital euro balances would not accrue interest, irrespective of the prevailing monetary policy stance. This provision is intended to discourage the use of the digital euro as a savings or investment instrument and preserve its role in everyday transactions. Unlike interest-bearing commercial bank deposits, holding digital euros would not generate a financial return. Non-remuneration would therefore reduce incentives to transfer funds from commercial bank accounts into central bank money, helping banks maintain stable funding sources and continue providing credit to households and businesses. However, the absence of interest alone would not eliminate the risk of deposit outflows, particularly during periods of financial stress, when demand for central bank money could increase.

For this reason, non-remuneration would be complemented by *quantitative holding limits,* designed to moderate the use of the digital euro as a store of value without restricting its payment functionality. For individuals, these limits would apply to the total amount of digital euros held rather than to the value of individual transactions. The final threshold has not yet been determined: the ECB examined hypothetical holding limits ranging from €500 to €3,000 per person[5].

Under the Eurosystem's current technical design, business users would generally be subject to a zero-holding limit for online digital euro balances, with incoming payments automatically transferred to linked commercial bank accounts. However, the final treatment of business holdings remains subject to legislative negotiations, including possible provisions for temporary balances and alternative defunding arrangements.

To preserve payment usability despite these restrictions, users would be able to link their digital euro account to a commercial bank payment account through automated liquidity management mechanisms.The reverse-waterfall mechanism can fund a digital euro payment from the linked commercial bank account when the user's digital euro balance is insufficient, without allowing the user's digital euro holdings to exceed the applicable holding limit. The limit constrains stored balances rather than the size of an individual payment. Conversely, the *waterfall mechanism* would automatically transfer incoming amounts exceeding the applicable holding limit to the linked commercial bank account.

2.1. Digital Euro Architecture and Distribution

In this context, the digital euro would operate through a two-tier distribution model, separating the issuance and settlement of central bank money from the provision of payment services to end users. Under this framework, responsibilities would be divided as follows:

[5] *ECB, Preparation Phase of a Digital Euro - Closing Report (2025)*

- *The Eurosystem*, comprising the European Central Bank (ECB) and the national central banks of euro area countries, would be responsible for issuing digital euros, operating the core settlement infrastructure and establishing common technical standards and scheme requirements;
- *Banks and other authorised payment service providers (PSPs)* would distribute digital euros and manage customer-facing services, including customer onboarding, payment initiation and authentication, digital euro account and wallet management, funding and defunding operations, regulatory compliance and customer support;
- *Acquiring PSPs* would enable merchants to accept digital euro payments at physical and online points of sale by providing or integrating acceptance solutions, supporting merchant onboarding and transaction processing, and managing merchant-facing services in accordance with applicable scheme and regulatory requirements. The distributing and acquiring roles may be performed by the same PSP or by different intermediaries.

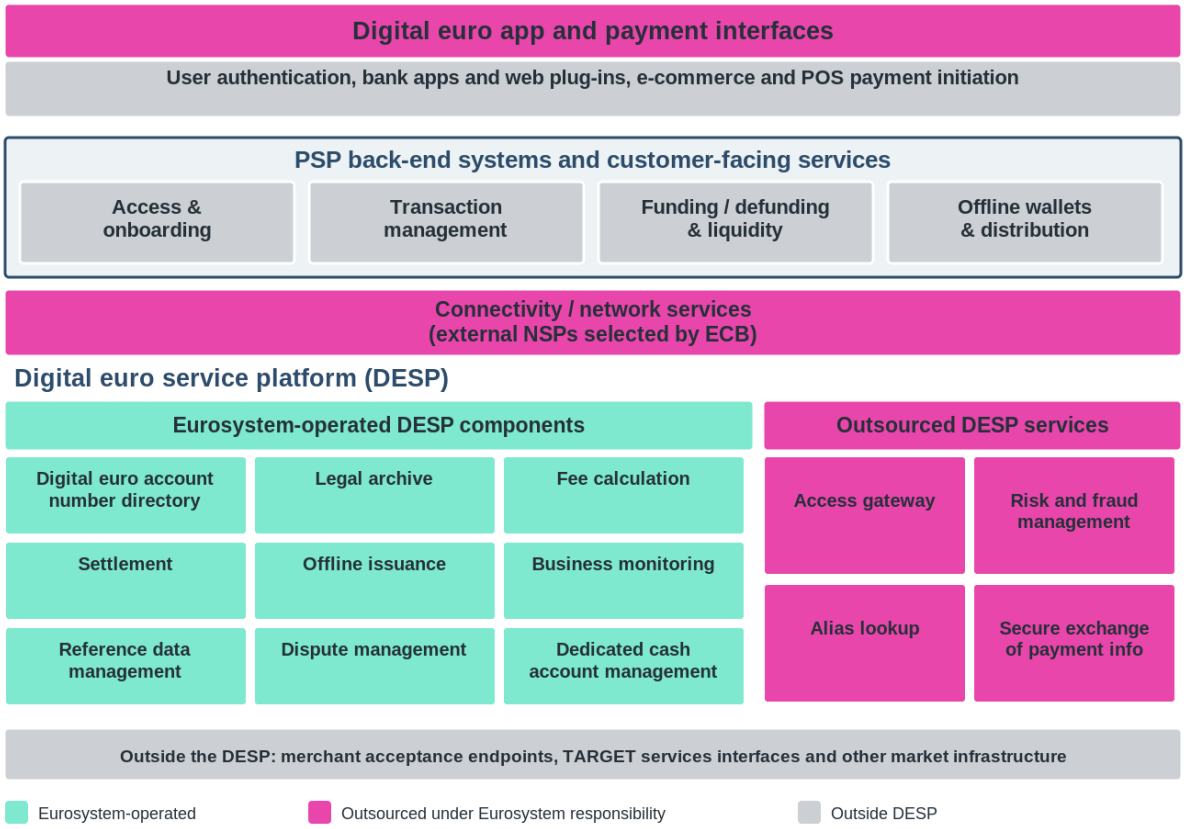
At the infrastructure level, the two-tier distribution model would be supported by the *Digital Euro Service Platform (DESP)*, combining Eurosystem-operated components for issuance, settlement and account management with supporting services provided by external operators (Fig. 4). These would include alias lookup, risk and fraud management, and secure exchange of payment information. Customer interfaces and authentication services would remain under the responsibility of PSPs, preserving their direct relationships with end users.

Online digital euro payments would be processed through a standardised sequence connecting PSP systems with the Eurosystem infrastructure. Following payment initiation and customer authentication, the relevant PSPs would perform the necessary checks, including verification of available funds and compliance with holding limits. Payment instructions would then be transmitted to the DESP using pseudonymous identifiers for settlement on the Eurosystem's ledger. Once completed, settlement confirmations would be communicated to the participating PSPs, allowing them to update customers' account information accordingly.

Communication between PSPs and the DESP would rely on standardised synchronous REST-based APIs, designed to simplify technical integration, support efficient transaction processing and facilitate interoperability with existing payment infrastructures.

Fig.4: Preliminary architecture of the digital euro

Source: I-Com elaboration



The core settlement infrastructure would rely on a centralised ledger operated across three geographically separate regions, each equipped with multiple servers. This multi-region configuration is designed to maintain service continuity in the event of localised infrastructure failures or major operational disruptions. Although the digital euro would not be based on blockchain technology, its architecture would incorporate selected principles associated with distributed ledger technologies (DLTs), including geographically distributed processing, transaction atomicity and immutability.

2.2. Compensation and Open Funding

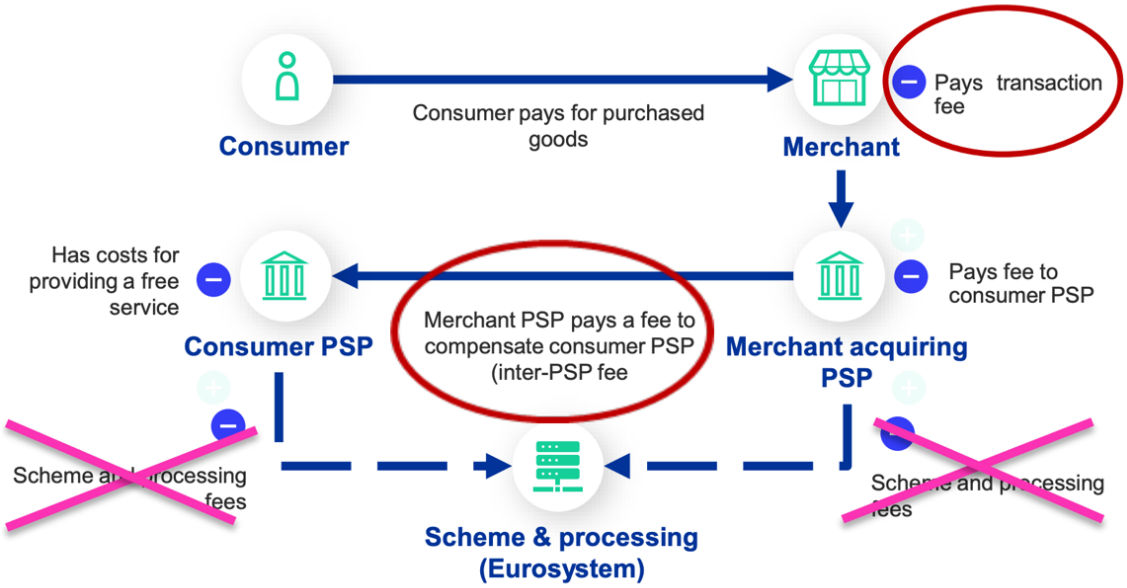
The separation between the Eurosystem's settlement infrastructure and PSP-provided services would also have implications for the broader European payments ecosystem. By establishing common technical and acceptance standards, the digital euro could facilitate interoperability between existing European payment solutions while allowing intermediaries to preserve their customer relationships and develop additional services.

Despite these potential benefits, the intermediated distribution model would raise questions regarding the economic sustainability of digital euro services. The proposed compensation framework draws on the *four-party structure* commonly used in debit card schemes, with adjustments reflecting the digital euro's nature as public money.

Under this model, consumers would receive basic digital euro payment services free of charge, while merchants would pay a merchant service charge (MSC) to their acquiring PSP. The acquiring

PSP would transfer an inter-PSP fee to the consumer's distributing PSP, contributing to the costs of providing services without directly charging consumers (Fig. 5).
Unlike the operators of conventional card schemes, the Eurosystem would bear the costs of establishing and operating the core digital euro scheme and settlement infrastructure, without imposing scheme or transaction processing fees on participating PSPs. To balance the interests of PSPs and merchants, both MSCs and inter-PSP fees would be subject to regulatory caps.

Fig.5: Digital euro compensation model
Source: ECB (2026)



An additional dimension of the distribution model concerns *open funding*, whereby the PSP distributing the digital euro differs from the institution maintaining the user's linked non-digital euro payment account (Fig. 6). This arrangement would enable automated funding and defunding across separate intermediaries, allowing consumers to access digital euro services independently of the PSP managing their underlying funds.

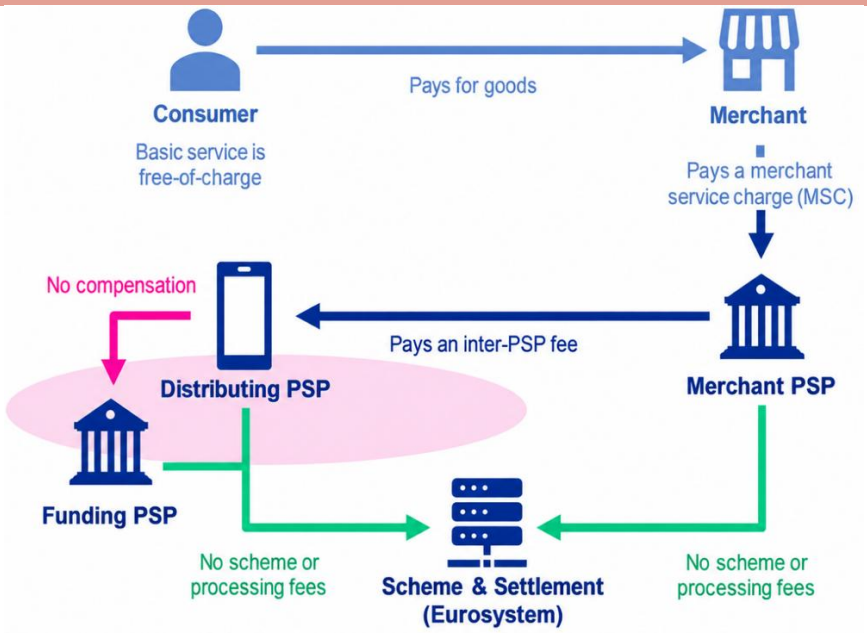
From an operational perspective, open funding would involve two distinct intermediaries on the consumer side:

- The *distributing PSP* would manage the digital euro account and customer-facing services, including onboarding, authentication, transaction processing, fraud prevention and regulatory compliance;
- The *funding PSP* would maintain the linked non-digital euro payment account and facilitate the transfers required to fund or defund digital euro holdings.

Open funding would also raise questions concerning the allocation of costs, revenues and operational responsibilities. Under the illustrative open funding compensation model, the distributing PSP would receive the inter-PSP fee, whereas the funding PSP would not receive dedicated remuneration for funding and defunding services. This potential imbalance has generated diverging views among bank and non-bank PSPs, particularly concerning the alignment of financial incentives with operational liabilities.

Fig. 6: Compensation model in open funding

Source: ECB (2025)



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3. THE DIGITAL EURO: REGULATORY FRAMEWORK AND IMPLEMENTATION ROADMAP

3.1. Regulatory Framework

The regulatory framework for the digital euro originates from the European Commission's proposal of 28 June 2023 for a Regulation on its establishment. Based on Article 133 of the Treaty on the Functioning of the European Union (TFEU), the proposal aims to establish a harmonised legal framework governing the issuance, distribution, acceptance and use of the digital euro across the euro area.

Following the adoption of the Council's negotiating mandate in December 2025 and the European Parliament's mandate in July 2026, the proposal entered the *interinstitutional negotiation phase*. Several issues remain under discussion, and importantly, the adoption of the Regulation would not automatically trigger the issuance of the digital euro, which would remain subject to a separate decision by the ECB Governing Council.

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A central provision of the proposed Regulation concerns *the legal nature and issuance of the digital euro*. Under Article 4, the ECB would retain the exclusive authority to authorise issuance, while the ECB and the euro area national central banks would issue digital euros as direct central bank liabilities. Users would access their holdings through authorised PSPs without establishing a direct contractual relationship with the Eurosystem. Accordingly, the insolvency of a distributing PSP would not affect users' claims on the issuing central bank. The Council's negotiating position further seeks to clarify the digital euro's legal treatment under national private law, including the protection of users' holdings against claims by the distributing PSP's creditors.

The legal tender status of the digital euro, established under Articles 7 and 8, would entail *mandatory acceptance, acceptance at full face value and the capacity to discharge monetary obligations*. These provisions would apply to online payments made to payees residing or established in the euro area and to offline transactions taking place within it.

However, Article 9 introduces exceptions intended to ensure proportionality, including certain micro-enterprises, non-profit organisations, transactions between individuals acting in a purely personal capacity and cases involving legitimate temporary difficulties. The precise scope of these exemptions remains subject to negotiation, particularly regarding smaller merchants and the relevance of their existing acceptance of comparable digital payment instruments. Article 10 would further restrict the use of standard contractual terms or commercial practices designed to circumvent mandatory acceptance.

The distribution framework, primarily governed by Articles 13 and 14, would impose *specific obligations on intermediaries*. Credit institutions already providing payment account services would be required to offer mandatory digital euro payment services to their existing consumer clients upon request. These services would include account opening and management, payment execution and essential funding and defunding functionalities.
Under the Council's position, PSPs already providing acquiring services for comparable payment instruments would also be required to offer mandatory digital euro acquiring services to merchants subject to acceptance obligations, within the physical or online environments in which they already operate. Additional provisions would require Member States to designate institutions responsible for ensuring access to digital euro services for consumers without conventional payment accounts, while providing appropriate assistance to individuals with disabilities or limited digital skills.

The legal framework also addresses *funding and defunding arrangements* involving different PSPs. In particular, Article 13a, introduced in the Council's negotiating position, would allow consumers to link a digital euro account to a commercial bank payment account maintained by another intermediary through voluntary contractual arrangements between PSPs. Where provided, these services would generally have to be free of charge for consumers using euro-denominated accounts. For merchants, the Council proposes stronger obligations requiring PSPs providing

mandatory acquiring services to support automated funding and defunding across intermediaries. The proposed rules also address access to central bank settlement arrangements, requiring eligible account-holding PSPs to provide access to other intermediaries under objective, transparent and non-discriminatory conditions.

The proposed Regulation further establishes a *governance framework for holding limits.* Articles 15 and 16 provide for restrictions on the use of the digital euro as a store of value, including quantitative limits and the prohibition of remuneration. These restrictions would apply at user level, with PSPs responsible for their implementation across digital euro payment accounts. Where users maintain multiple accounts, their individual holding limit would be allocated across those accounts to prevent circumvention.

An important point of negotiation concerns the institutional procedure for determining *an overall ceiling,* addressed in Article 16a. The European Parliament proposes that the Commission establish the ceiling for natural persons through delegated acts following an ECB technical recommendation. The Council instead envisages an implementing decision adopted on the basis of an ECB recommendation agreed with the Commission, with potentially different ceilings for natural and legal persons and a review at least every two years. In both approaches, the ECB would retain responsibility for calibrating the applicable individual limits within the legally established framework. The final governance arrangements would therefore determine how financial stability considerations and institutional responsibilities are reconciled.

Another central issue is the economic framework governing digital euro *payment services*, set out in Article 17. The proposed Regulation would ensure that mandatory basic services remain free for consumers while introducing regulatory caps on merchant service charges (MSCs) and inter-PSP fees. These provisions are intended to prevent excessive merchant acceptance costs while allowing PSPs to recover the costs associated with distributing digital euros.

The European Parliament proposes *uniform euro-area fee ceilings* based on comparable digital payment instruments, alongside a "*no worse-off" principle* designed to prevent merchants from paying higher acceptance charges than those applied by the same PSP for comparable payment solutions.

The Council's approach, detailed in Articles 17a–17c, introduces a two-stage methodology for calculating fee caps. During an initial transitional period of at least five and no more than ten years following the first issuance, the caps would be based on the weighted average fees charged by comparable domestic and international consumer debit card schemes. Uniform euro-area caps would apply, with lower national caps where domestic fee levels are statistically significantly below the common benchmark. The Commission would determine these ceilings through implementing acts, supported by data collected and aggregated by the ECB and national central banks.

Following the transitional period, fee caps would be calculated using a cost-based model, drawing on information from a statistically representative group of cost-efficient PSPs and incorporating a reasonable profit margin. The transition would be subject to an assessment of data availability, cost representativeness and the expected effectiveness of the resulting caps.

Article 17d of the Council's position also addresses the *compensation for offline digital euro payments*. Since these transactions would not generate the same centralised transaction records as online payments, compensation between PSPs would rely on a proxy-based allocation mechanism. Acquiring PSPs would transfer the applicable inter-PSP fees to a common pool managed by the ECB, with the accumulated amounts redistributed to distributing PSPs according to their offline funding and defunding activity. The detailed methodology would be established through a Commission implementing act following consultation with the ECB.

Privacy and data protection requirements are addressed in Articles 34-37, which specify the conditions under which PSPs, the Eurosystem and supporting service providers may process personal data. In particular, PSPs would remain responsible for customer identification and compliance with relevant anti-money laundering and counter-terrorist financing requirements, while information transmitted to the Eurosystem would be subject to pseudonymisation and data segregation safeguards.

For *offline payments*, Article 37 establishes a differentiated treatment of transaction information. Individual offline transaction data would not be retained by PSPs or Eurosystem central banks. However, PSPs would retain information relating to funding and defunding operations, including amounts, device identifiers, timestamps and relevant account details, for compliance purposes. The proposed framework would also provide for limits on offline transaction amounts and holdings, taking into account the distinct risks associated with locally stored digital value.

Further provisions aim to ensure *interoperability, continuity of service and effective competition*. Article 31 addresses switching between digital euro service providers, allowing users to switch providers while preserving their digital euro payment access identifiers. The Council's negotiating position also introduces additional requirements concerning the availability and protection of information needed to identify users' digital euro holdings, including segregated data backups designed to support continuity and recovery in exceptional circumstances.

Article 33 would require mobile device manufacturers and providers of electronic communication services to grant access to the hardware and software functionalities necessary for digital euro payments on fair, reasonable and non-discriminatory terms. These provisions are particularly relevant for secure elements, NFC-based payments and the integration of digital euro services into existing applications.

3.2. Implementation Roadmap and Pilot Project

The digital euro project has progressed through a phased implementation roadmap, combining technical development, market engagement and regulatory preparation.

The *Investigation phase (October 2021-October 2023)* focused on defining the main design requirements, assessing potential use cases and examining technological options.
This was followed by the *Preparation phase (November 2023-October 2025),* during which the Eurosystem developed the draft scheme rulebook, selected potential infrastructure providers and conducted technical testing and experimentation.

Following the completion of this phase, the ECB Governing Council decided on 29 October 2025 to proceed with further preparations. The current phase, which began in November 2025, follows a

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This approach is intended to allow technical development to progress while retaining the flexibility needed to accommodate changes arising from the legislative negotiations. In operational terms, these workstreams encompass the development of the technical infrastructure, user research and pilot activities, continued consultation with PSPs, merchants and consumers, and technical assistance to EU co-legislators.

Alongside the legislative process, the Eurosystem has been developing the *Digital Euro Scheme Rulebook*, which translates the proposed legal framework into common operational and technical requirements for participating PSPs.

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Developed in cooperation with the *Rulebook Development Group (RDG),* comprising representatives of PSPs, merchants, consumers and other stakeholders, the document seeks to establish harmonised standards for digital euro services throughout the euro area. The rulebook is owned by the Eurosystem and would define scheme-level requirements governing the adherence, participation and operation of intermediaries. Beyond ensuring a consistent payment experience, its open standards are intended to facilitate the integration and pan-European expansion of existing private payment solutions.
The *draft version 0.91, published in July 2026*, covers scheme participation and adherence, online and offline payment processes, end-to-end transaction flows, minimum user experience requirements, technical interface specifications, risk and dispute management, and testing and certification procedures.

While the proposed Regulation would define the legal rights and obligations governing the digital euro, the rulebook would establish the operational standards and procedures necessary for its implementation. As it remains under development and may require adjustments following the legislative negotiations, its finalisation constitutes an important component of the Eurosystem's preparations for a potential issuance.

Market engagement represents a central component of the current phase. At euro-area level, the *Euro Retail Payments Board (ERPB)* provides a forum for dialogue with representatives of PSPs, merchants and consumers. This is complemented by dedicated technical sessions, which have

involved non-bank payment industry associations since March 2022, including the European Payment Institutions Federation (EPIF), Electronic Money Association (EMA), European Third-Party Providers Association (ETPPA) and European Digital Payments Industry Alliance (EDPIA).

A further initiative is the ECB's *Digital Euro Innovation Platform*, launched in October 2024 to explore potential applications and promote collaboration with the private sector. The platform brought together two workstreams: the *Visionaries*, focused on innovative use cases and the longer-term potential of the digital euro, and the *Pioneers*, dedicated to technical experimentation.

A key milestone in the digital euro roadmap is the *Pilot exercise*, scheduled to begin in the second half of 2027 and last approximately 12 months. The pilot will test a beta version of the digital euro, without legal tender status, in a controlled real-world environment to assess technical reliability, operational processes and usability. Beyond technical validation, the exercise aims to assess readiness for subsequent deployment, refine the potential market roll-out strategy and explore opportunities for additional payment services.

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In July 2026, the ECB selected 36 PSPs from more than 50 applicants, including banks and non-bank payment institutions. The exercise will also involve staff from the ECB and 19 national central banks, alongside selected merchants. Preparations began in the third quarter of 2026, focusing on PSP integration with the Digital Euro Service Platform (DESP), technical certification and participant onboarding. The operational phase will test online and offline person-to-person payments, point-of-sale transactions and e-commerce payments. Testing will also cover funding and defunding, holding-limit enforcement, waterfall and reverse-waterfall mechanisms, and offline security features, including secure elements and double-spending prevention. However, cross-PSP open funding will not be tested, while liquidity management for dedicated DESP cash accounts will remain manual. The pilot's findings will inform further technical and operational refinements. The Eurosystem aims to be technically ready for potential issuance in 2029, assuming the regulatory framework is adopted in 2026.

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On 28 September 2026, the ECB launched a new call for expressions of interest in a second wave of Digital Euro Innovation Platform activities. The programme includes an experimentation workstream planned for January–June 2027, focused on additional payment features and proofs of concept, and an exploration workstream in the first half of 2027 addressing emerging

technologies and potential public-sector applications. This is distinct from the 2027-2028 pilot exercise involving 36 selected PSPs mentioned above.

KEY QUESTIONS

- **European payment integration and strategic autonomy.** The digital euro could help overcome the fragmentation of European retail payments by establishing common technical and acceptance standards. Its effectiveness will nevertheless depend on interoperability with existing payment solutions and the capacity to complement private-sector initiatives. How can the digital euro strengthen European strategic autonomy without duplicating existing infrastructures? Which forms of interoperability and cooperation between public and private operators should be prioritised?

- **Privacy, technological accessibility and operational resilience.** Offline functionality represents a distinctive feature of the digital euro. However, its implementation raises challenges concerning secure hardware, fraud prevention and accessibility across different devices and user groups. How can privacy and security requirements be reconciled in practice? What measures are needed to ensure that offline payments remain accessible, inclusive and technologically interoperable?

- **Financial stability and payment usability.** Non-remuneration and quantitative holding limits are intended to mitigate deposit outflows and preserve bank intermediation. However, their effectiveness will depend on the calibration of these restrictions and the reliability of automated liquidity management mechanisms. How should holding limits be determined to safeguard financial stability without undermining the digital euro's usability? Can waterfall and reverse-waterfall mechanisms adequately mitigate the operational constraints associated with holding limits?

- **PSP compensation and competitive market access.** The proposed compensation framework seeks to balance free basic services for consumers, affordable merchant acceptance costs and sustainable incentives for intermediaries. Open funding introduces further complexity, as distributing and funding PSPs may incur different costs and assume different responsibilities without receiving equivalent compensation. How should fee caps and compensation arrangements be designed to ensure economic sustainability? What mechanisms could support fair cost allocation and effective competition between banks and non-bank PSPs?

- **Regulatory certainty and implementation readiness.** The digital euro's potential introduction remains dependent on the outcome of legislative negotiations and the successful completion of technical preparations. Although the planned 2027-2028 pilot will test core functionalities, certain arrangements will require further validation. Which regulatory and operational issues should be prioritised before potential issuance? How can the pilot's findings be translated into effective implementation requirements while ensuring adequate preparation across the payments ecosystem?