EUROPEAN CENTRAL BANK

EUROSYSTEM

FINAL

Basic concepts and design choices of a digital euro

Market Advisory Group

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Digital euro project team

Overview

1 **Basic concepts**

2 Design choices

What do we mean by “digital euro” and why consider it?

*Digital euro would be a **central bank liability** made available in **digital form** for use in **retail payments***

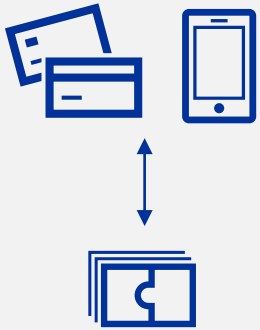
Possible advantages **in a range of scenarios**, particularly:

- **Against** declining use of cash as a means of payment
- Tackling **sovereignty** concerns related to foreign CBDCs or private digital means of payment in the euro area
- Supporting **digitalisation** in the European economy

*Objective: To maintain public **access** and full **usability** of **central bank money** in a world in which consumers and firms turn more and more to electronic payments.*

*See ECB’s Digital Euro Hub, Report on Digital Euro

Monetary anchor for digital payments



Today: confidence in private money is underpinned by its convertibility on a one-to-one basis **with the monetary anchor (cash)**

Central banks can commit to **supply** cash, but…

what if **demand** for it declines due to insufficient usability as a means of payment?

How can convertibility be maintained in the long term if there is insufficient demand for the monetary anchor?

Sovereign money needs to evolve and adapt to the changing needs of commerce …

… while maintaining the equilibrium with private monies

Maintaining the equilibrium commercial bank monies / central bank money

- Aim to offering CBDC **through supervised intermediaries**
  - Central banks do not have any ambition to offer front-end payment services. This does not exclude the possibility to provide a digital euro app.
  - Central banks do not have any ambition to take away deposits from banks' balance sheets.

- The **opportunity to distribute the safest/most liquid asset in an economy has great value** for any payment initiator

See speech by F. Panetta: Central bank digital currencies: a monetary anchor for digital innovation
https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211105~08781cb638.en.html

The success in functions of money paradox

Not a form of investment:
On digital euro accounts/wallets with limited balances…

Maximise usability as means of exchange:
… the vast majority of daily payments should be possible, without the user being too much concerned about funding the account/wallet

Funding mechanisms

Important for:
- **Financial stability**
- **Incentives for credit institutions**

Important for:
- **User convenience**

Scope vs Time: the Swiss army knife dilemma

Minimum viable product

- Too limited scope may provide insufficient value to consumers & merchants & financial intermediaries

Optimum

Minimum valuable product

?

- A digital euro cannot be a “Swiss army knife” from day one…
- … while retaining sufficient flexibility to add on top in future releases

Optimum

Broad scope

- Time, costs and project risks may increase over-proportionally with certain scope elements

Overview

1 Basic concepts

2 **Design choices**

Online

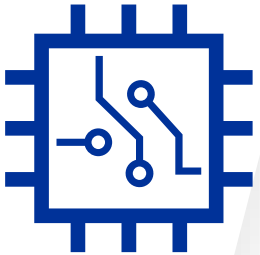
- Is the **standard** for electronic payments today
- Provides **tested** levels of security
- Requires **high capacity for settling transactions** (volume & latency)
- Supports **many payment use cases**

Offline

A payment that is executed without live supervision but can be considered valid

- No material such payment instrument is currently **widely used** in Europe
- Requires **prefunding** of the device
- May enables **highest privacy** of transactions
- Was **proven potentially viable** in Eurosystem experimentations, with some limitations:
  - Device brought **online from time to time**
  - Needs safe **creation & distribution** channels

"Secure element"



Hardware that **stores** information and **executes** valid operations

[≠ trusted **execution** environment]

Account-based system and/or bearer instrument?

Two types of (possibly co-existing) digital euro

Account-based

Transaction

e.g. TIPS, most DLT

Settlement

Example: bank transfers, major electronic payment solutions

Bearer

Transaction and settlement

Example: cash payments, some prepaid card (e.g. 'Oyster card')

Tools to avoid disintermediation

Aim:

- Design **digital euro as means of payment**
- A digital euro will need to be designed so that it does **not interfere with the transmission of monetary policy.**
- **Prevent large holdings** as risk-free investment

Options:

- Tiering, with **unattractive rates** applied to holdings beyond threshold
- Set **quantity limits** on individual users' holdings

Design options with different degrees of privacy (I)

** Always in line with rules on data protection*

- **Privacy of holdings and transactions:** identity checked at onboarding; information on users' identity, holdings and transactions **not shared** by user with intermediaries

- **Selective privacy:** identity checked at onboarding; **only larg*er*-value transactions subject to monitoring and user identification** for regulatory purposes [*current practice for large cash payments but not foreseen in electronic payments*]

Design options with different degrees of privacy (II)

** Always in line with rules on data protection*

- **Transparent for compliance only**: Transactions transparent to obliged entities **for compliance monitoring** [*current formal practice for electronic payments*]

- **Transparent to intermediary also for commercial purposes**: Intermediaries may use data on payment behaviour to offer **additional services** [*de facto standard for most electronic payment solutions*]

Role of intermediaries in core services

Types of **services**

- Onboarding of users
- Gateway and support
- Funding/defunding
- Provision of users' interface
- Customer care

Types of **intermediary**

➢ 'supervised' - TBD

Role of intermediaries in value-added services

- ECB/Eurosystem to provide **basic transaction services** and **enable** more advanced services
- **Intermediaries** to develop value added service and **innovate**, **differentiate** and **compete** on the market

Personal finance management

Buy Now - Pay Later

Automated payments

Multi-account

Cross-border services

IoT payments

Digital Identity

Payments categorisation

Settlement model and back-end structure

1. Centralised

- Does not mean ‘single node’
- Standard for digital retail payments, extensively tested

2. And/or Distributed ledger

- Distributed validation
- Automated payments customizable by end users

3. And/or Local storage

- Most similar to cash
- Necessary for offline

Integration

Digital euro aims for:

- Integration with different **end-user access solutions**
- **Interoperability** with the financial market ecosystem
- Possible integration with **digital identity (e-ID)** and **e-ID wallets**

Design choices on:

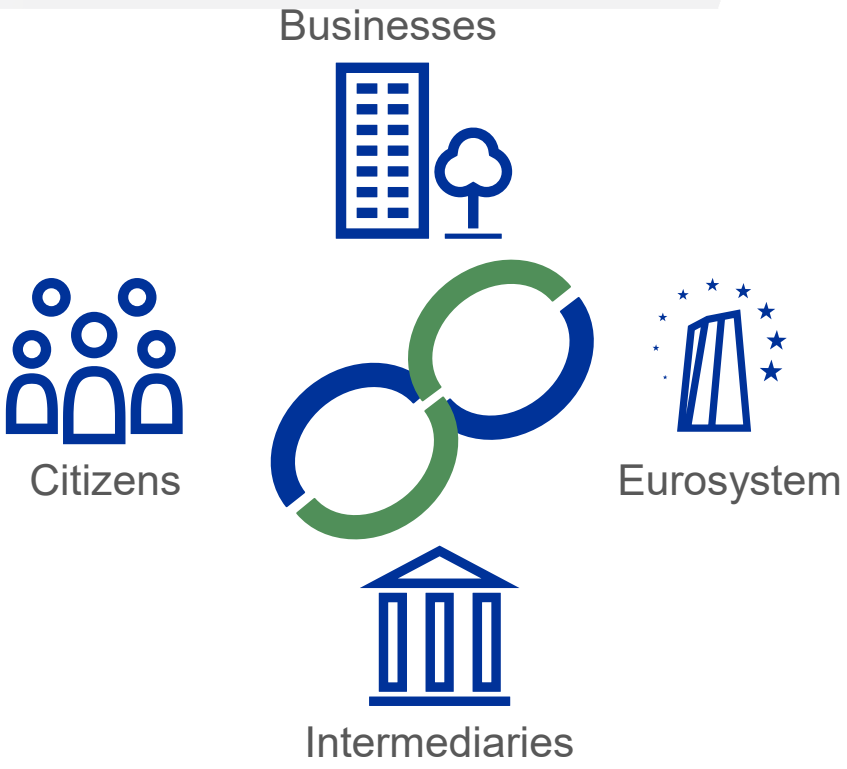
- Interoperation with **existing market solutions**
  - end-user
  - merchant
- **Industry standards**

Advanced functionalities

For instance **automation of payments**, aka ‘programmability’

Can be done at different levels along two dimensions

- **Where** the code is executed
  - Central infrastructure
  - Intermediary’s system
  - User’s device
- **Who** can program it
  - Back-end operator
  - Intermediaries
  - End users / firms



Cross-border and cross-currency use

Payments outside euro area (cf. discussion on global context)

- Cross-**border**
- Cross-**currency**

Options to restrict use outside a certain area

- Based on geo-location of user
- Short-term expiry of digital euro solution (e.g. for incoming travel)
- No restriction – entitled users can also use it abroad

Thank you for your attention!