Basic concepts and design choices of a digital euro

Market Advisory Group

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Overview

1. Basic concepts
2. Design choices
What do we mean by “digital euro” and why consider it?

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

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.
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

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

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

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

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

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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**
Secure element

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 enable 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]
Two types of (possibly co-existing) digital euro

**Account-based**

*Transaction*
- Example: bank transfers, major electronic payment solutions

*Settlement*
- e.g. TIPS, most DLT

**Bearer**

*Transaction and settlement*
- Example: cash payments, some prepaid card (e.g. ‘Oyster card’)

*Example:* major electronic payment solutions
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 larger-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
- Multi-account
- Cross-border services
- IoT payments
- Digital Identity
- Automated payments
- 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!