

# Digital Euro

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# Content

Introduction

Reasons for the issuance

Different appearances of the digital Euro

Monetary policy considerations

Financial stability considerations

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Different appearances of the digital Euro

Monetary policy considerations

Financial stability considerations

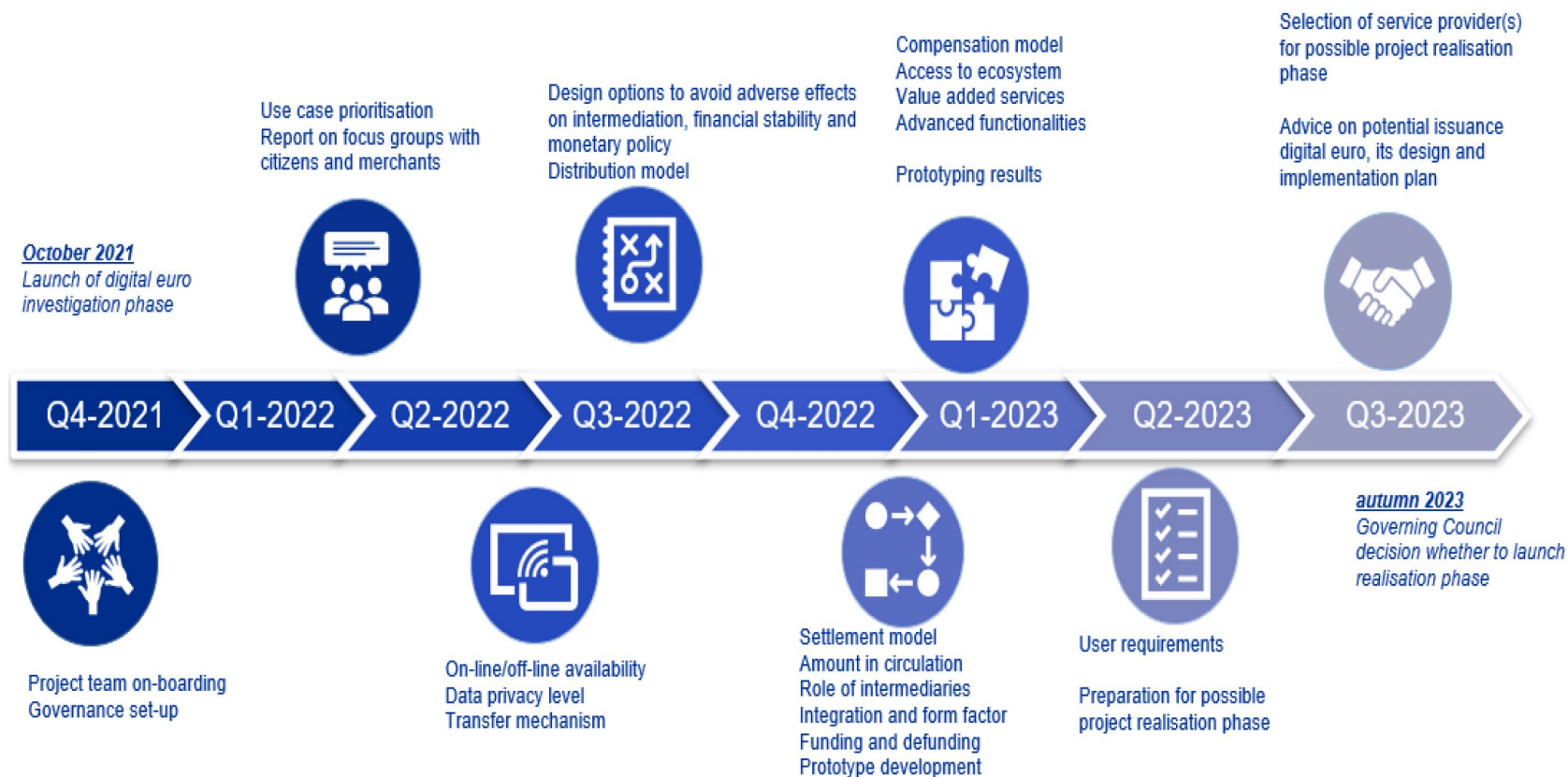
## Digital Euro - How it all began

- Digitalization is one of the so-called megatrends worldwide, which has also affected the monetary system.
- The emergence of cryptocurrencies, or crypto-tokens, has expanded the possibilities of available assets and also payment instruments.
- The trigger for central banks to get serious about these phenomena was Facebook's (now Meta) announcement in 2020 that it would launch a digital currency (Libra/Diem).
- This threat of a global alternative to mostly national sovereign money ensured that central banks began to worry about their monopoly as money providers.
- Only a short time later, central banks around the world began to consider the issuance of a central bank digital currency (CBDC) for everybody (retail).

# Time line for the establishment of a digital Euro

## Digital euro project timeline

Tentative - timing subject to change



# Content

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## **Reasons for the issuance**

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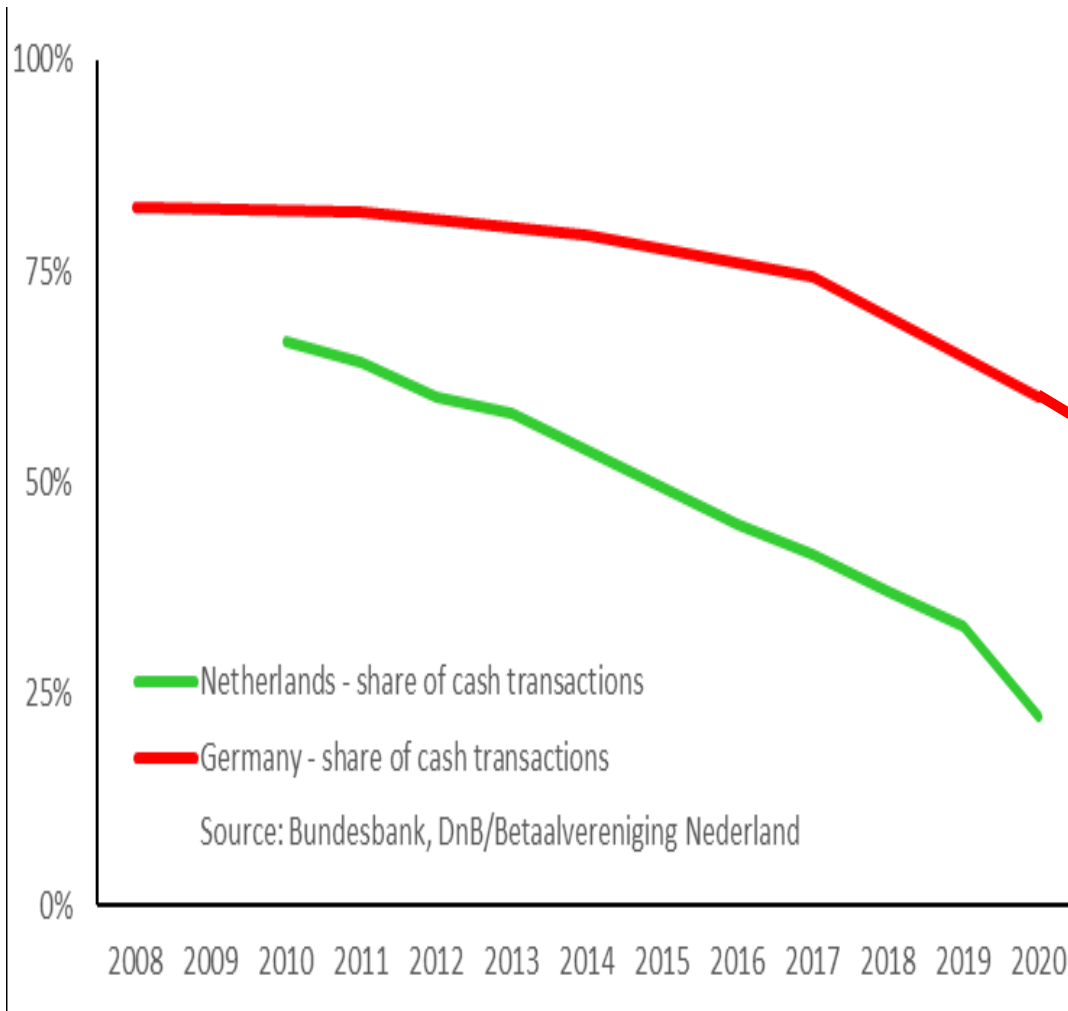
Monetary policy considerations

Financial stability considerations

# Reasons for issuance of a digital euro in retail transactions

1. The **use of cash as a medium of exchange** is declining. [Cash](#)
  - Does the shift to more convenient (from the user's perspective) payment instruments justify or require the government to issue a digital currency?
  - CBDC as a digital option to discipline banks (option for a run!).
2. The **emergence of privately issued digital currencies (BTC, StableCoins,..) as well as state-issued digital currencies (e-CNY, e-krona, SandDollar,...)**.
  - Significant cross-border use of these currencies as means of payment could undermine the ECB's monetary sovereignty in the euro area.

# Use of cash as a means of payment



- Share of cash transactions steadily declining in Germany.
- **Number:** 2021: Cash: 58%.
- **Value:** Debit cards and cash each account for 30%.
- Influence of government regulation and commercial interests of banks (cash payment caps, termination of the 500-euro banknote, high bank fees for cash deposits).
- Rising share of e-commerce.

[Back](#)



## Reasons for issuance of a digital euro in retail transactions

3. Network effects in cashless payments lead to market concentration and **monopolistic or oligopolistic price markups**. A digital euro could **promote competition**.
  - Euro area payments market is dominated by a few foreign entities. More than **two-thirds of card transactions** in Europe are conducted by companies headquartered outside the EU.
  - **But:** Is this task covered by ECB's mandate ?
  - A D€ would **protect the EU from financial sanction by third countries**.  
**ECB's mandate:** ...to promote the smooth functioning of payment systems.
  - In addition, the EU would have more autonomy in deciding whether to participate in sanctions imposed on third countries.

# Use cases of the digital euro

- Basically, there are four prioritized use cases for a digital euro:
- Payment in
  - physical stores
  - e-commerce
  - person-to-person (PTP)
  - Transactions with the government (welfare allowances, taxes)
- Other use cases (e.g. machine payments) might follow and be offered by the private sector.

# Content

Introduction

Reasons for the issuance

**Different appearances of the digital Euro**

Monetary policy considerations

Financial stability considerations

# Appearances of the digital euro

- Basically, there are **two relevant types** of a digital euro:
  - Digital euro as a **token** to be used **offline** with person-to-person validation.
  - Digital euro as an **account-based currency for transactions in physical shops/government payments as well as online** with validation of payments by a third party.
  - A third option, i.e. a DLT-based online version (with peer-to-peer validation), is not discussed as it is not one of the ECB's priorities and would require significantly more "technological" preparatory work. Given the potential of a DLT-based D€ to integrate **smart contracts**, there is a strong case for it to be launched at a later date.

## Digital Euro as a token

- The token-based version of the digital euro mainly serves as a mimic of cash.
- This offline version of the D€ guarantees a **higher degree of privacy** although far reaching anonymity raises concerns about its use for illicit transactions. **Customer authentication is envisaged at least during onboarding.**
- The success of the D€ depends on the Eurosystem to develop a superior alternative to private solutions, like e.g. Paypal, ApplePay, GooglePay etc.).
- Is it realistic to believe that the public sector is able to develop a more efficient (faster), more convenient and safer alternative to the existing private payment instruments?

## Digital Euro in a bank account

- Despite the introduction of a D€ account, there is a clear preference of the ECB to **stick with the two-tier banking system**.
  - Commercial banks will provide all account-related services to the customer.
  - The validation of transactions originating from the D€ account is executed by a third party, probably the Eurosystem.
- As before, banks are responsible for compliance with anti-money laundering (AML), counter-terrorist financing (CFT),...regulations.
- **Advantage for banks:** They still retain extensive information about the financial status of their customers (Know your Customer (KYC)).
- **Advantage for bank customers?** Safety, Convenience, Velocity?

# Content

Introduction

Reasons for the issuance

Different appearances of the digital Euro

**Monetary policy considerations**

Financial stability considerations

## Monetary policy considerations – Remuneration of D€ accounts

- Central bank deposits and bank deposits are **close substitutes**. The interest rate on risk-free central bank accounts for everyone therefore sets the **lower bound for deposit interest rates**.
  - The interest margin depends on the additional account services that banks offer their customers.
- Even more than cash, an **interest-free D€ account** would set the lower bound for bank deposit rates at zero, thus narrowing the scope for monetary policy.
- **Consequence:** The account-based digital euro will be interest-bearing and may also offer a negative interest rate.
- Due to close substitutability, the **transmission of interest rate changes** is likely to be **strengthened**.



## Monetary policy considerations – Remuneration of the offline D€

- The offline D€ must remain non-interest-bearing for technical reasons.
  - It therefore offers a way to circumvent negative interest rates.
- As a consequence **the amount available for offline payments has to be limited.**
  - Since the offline D€ is largely similar to cash, this should hardly restrict its intended use.

## Monetary policy considerations – Reserve provision

- The shift from bank deposits to the digital euro is accompanied by the loss of deposits as a stable form of refinancing for banks.
- In addition, the **banks' reserves at the central bank inevitably decline.**
- Thus, the issuance of digital central bank money requires a **structurally higher provision of liquidity by the central bank.**
- Since it cannot be ruled out that there will be frequent and unpredictable movements between bank and D€ accounts, stabilizing money market interest rates requires the central bank to operate in a **regime of excess liquidity.**
- As a consequence, the **deposit rate of the central bank would take over the role as the key interest rate (floor system).**

# Monetary policy considerations

- In normal times, the refinancing rate is higher than the rate on deposits in M3 (especially compared with sight deposits). Exception: zero interest rates.

*Table 2a: Euro area bank funding costs across different instruments, 2003 - 2008*

|                                | Share in bank funding | Average interest rate |
|--------------------------------|-----------------------|-----------------------|
| Deposits (in M3)               | 44%                   | 1.83%                 |
| Other deposits                 | 13%                   | 3.25%                 |
| Bonds issued                   | 30%                   | 4.10%                 |
| Equity issued                  | 10%                   | 8.47%                 |
| Central bank credit (MRO rate) | 3%                    | 2.79%                 |

Source: Bindseil (2020).

- **But:** If the D€ is issued in an environment of **excess liquidity**, liquidity can be provided by purchasing securities from non-banks, thereby increasing bank deposits and establishing favorable refinancing conditions.

# Content

Introduction

Reasons for the issuance

Different appearances of the digital Euro

Monetary policy considerations

**Financial stability considerations**

## Financial stability considerations – Loss of revenues from payments

- The loss of bank deposits in the event of a shift to the digital euro means a **loss of revenue from cashless payments** (credit/debit cards).
- Moreover, competition from D€ could result in **higher funding costs** for banks. If the pass on to loan rates fails, profit margins decline.
- The loss of revenue reduces banks' ability to generate capital.
  - Banks' loss-bearing capacity decreases.
  - The scope (of banks operating at the margin) for lending declines.
- **Consequence:** Risk of compensation through riskier investments by banks (**search for yield**)? → **But:** Run probability goes up!

## Financial stability considerations – Digital bank run

- A severe risk to financial stability would be an unforeseen shift of bank deposits into CBDC (**digital bank run**).
- A systemic banking panic can hardly be stopped by higher deposit rates, all the more as they raise the solvency risk for banks (and further increase the incentive for a bank run).
- **One option** is to set a **cap on the amount** that can be held in a **CBDC-account**. Any remaining liquidity shortfall of banks has to be made up by the central bank as lender of last resort (**LoLR**).
- **Another option** would be to **reduce the interest rate on digital central bank money** as the amount increases (Bindseil 2020).
  - In addition, this would ensure that D€ accounts are not used for investment purposes (endangering financial stability), but exclusively for payments.

# Bindseil proposal

- Two-tier-system for the remuneration of D€ accounts :
  - **Tier 1:** In this (payment) tranche (e.g. up to EUR 3,000), deposits would bear slightly lower interest than banks' excess reserves (interest rate of the deposit facility). However, the interest rate would always be **non-negative (like cash)**.
  - $i_1 = \max(0\%, i_{DF} - \alpha\%)$
  - **Tier-2:** Above the threshold of 3,000 euros (investment tranche), the interest rate would be **zero (upper limit) or even negative** if the deposit facility rate is low ( $< \beta\%$ ).
  - $i_2 = \min(0\%, i_{DF} - \beta\%)$
- In the event of a **bank run**, the **markdown  $\beta$  in tier-2** could be massively **increased!**

## Financial stability considerations – Excess liquidity

- The creation of **excess liquidity implies a downgrading of the money market** as an important source of liquidity for banks.
  - Money market rates indicate how the markets assess the solvency of individual banks or even the entire banking system. In an environment of excess liquidity, however, this important signaling function is largely lost.
- With the widespread absence of a peer assessment of bank solvency, there is a risk of **reduced financial stability**.
- **But:** the higher threat of a bank run might induce banks to follow a more prudent lending policy. Consequently, the introduction of a CBDC might increase financial stability.



## Financial stability considerations – Excess liquidity

- The **creation of excess liquidity** through asset purchases implies an expansion of the central bank's balance sheet with government securities.
  - The corresponding impact on government bond yields should **not conflict with monetary policy** considerations.
- The expansion of standard refinancing operations presupposes **sufficient eligible collateral** at the disposal of banks.
  - An option would be to **allow for an uncollateralized part of refinancing**.
- With the withdrawal of stable deposits, it might become more difficult for banks to **comply with regulatory liquidity ratios (LCR, NSFR)**.

# Summary

- The digital euro (D€) is expected to be issued both in an account-based form and as an offline payment instrument. **But:** Strong competition from private payment instruments.
- The maximum amount of D€ deposited in both forms should be limited for monetary policy considerations (zero interest rate lower bound), but also for financial stability reasons (digital bank run). **Added value for bank customers?**
- Monetary policy should operate in an environment of excess liquidity.
- Interest should be paid on the account-based D€, with a low (negative) interest rate applying to higher amounts.
- The biggest problem with the introduction of the D€ is the crowding out of banks from the area of cashless payments. Regulatory cap for D€ account holdings.



# Thank You!