



EUROPEAN CENTRAL BANK

EUROSYSTEM

CBDC— remuneration, financial stability and monetary policy

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28/01/2021

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Overview

- 1 The ECB's report on digital euro and next steps (as introduction)**
- 2 Remuneration, financial stability and monetary policy

The first part provides the current thinking of the ECB; the second part is not necessarily providing ECB views

What is a “digital euro”? ECB report of October 2020

*Digital euro would be **central bank money** made available in **digital form** for **retail use in payments** by citizens and firms*



Digital equivalent of legal tender euro banknotes



Complementing, not replacing, cash



Costless access for citizens' basic payment needs to a **simple, risk-free and trusted** digital means of payment

Digital euro: why?



Key scenarios:

- Digitalization of society and economy => central bank money accessible to all naturally should also be digitalized to preserve its contribution to society
- Usage of cash declining; trend may continue even if official sector supports cash usability
- Payments is network industry; market power; European monetary sovereignty issues; international role of the euro

External developments in 2020

The Federal Reserve System:

- working group on policy aspects of CBDC
- Partnership with the MIT to test various architectures



Eurosystem to react
by entering phase of
'active listening' via:

- public consultation
- industry dialogue



The People's Bank of China:

- started CBDC live experimentation in 2020
- studies begun back in 2014

80% of central banks are engaging in CBDC work*

Private sector increasingly active

CBDC is a solution for citizens to have access to central bank money in a digitalised environment

Digital euro: a complement to private initiatives



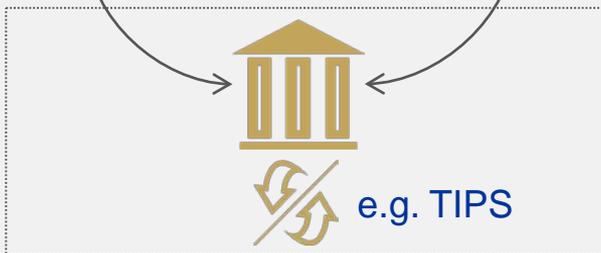
Key arguments to support this view:

- Co-existence of several means of payments is desirable
- Private sector will remain more innovative
- Central banks do not have ambition
 - to take-up the front-end (digital euro to be offered preferably through supervised service providers)
 - to take away deposits from banks' balance sheets.

Two types of (possibly co-existing) digital euro

Account-based:

Transaction



Settlement

Bearer:

Transaction and settlement



Public consultation



- ended in January 2021 with record level of public feedback
- over 8,000 responses received in online survey
- input from citizens, firms and industry associations on desirable designs and how to address challenges
- privacy, security and pan-European reach ranked highest in European citizens' preferences



Detailed analysis of responses to the public consultation will be published in spring.

Work on design and review of open questions



Conceptual work

- Continue the analysis of different design options

Practical experimentation

- Test the implementation of functional design options



Work with the European Commission

- Joint review of broad range of policy, legal and technical questions



This work will be done in parallel to the analysis of responses to public consultation

Possible launch of a digital euro project



Towards mid-2021 the Eurosystem will consider whether to launch a digital euro project

- **Start with an investigation phase**

... to obtain answers to open questions raised in the report

... to develop a minimum viable product that would be able to meet Eurosystem requirements and the needs of prospective users



The objective is to ensure that the Eurosystem will be prepared to issue a digital euro if it decides to do so in the future.

Link to digital euro pages

[Executive summary page](#)



[Full report](#)



1 The ECB's report on digital euro and next steps

2 **Remuneration, financial stability and monetary policy**

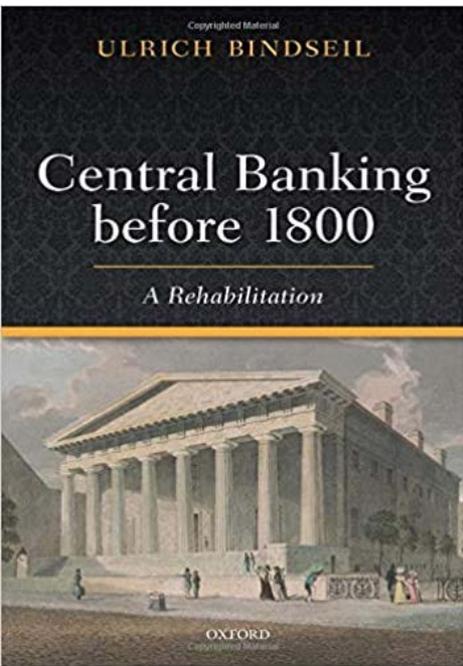
<https://voxeu.org/article/cbdc-remuneration-world-low-or-negative-nominal-interest-rates>

Ulrich Bindseil, Fabio Panetta (2020), "Central bank digital currency remuneration in a world with low or negative nominal interest rates, VoxEU, 05 October 2020

<https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2351~c8c18bbd60.en.pdf>

Ulrich Bindseil, Tiered CBDC and the financial system

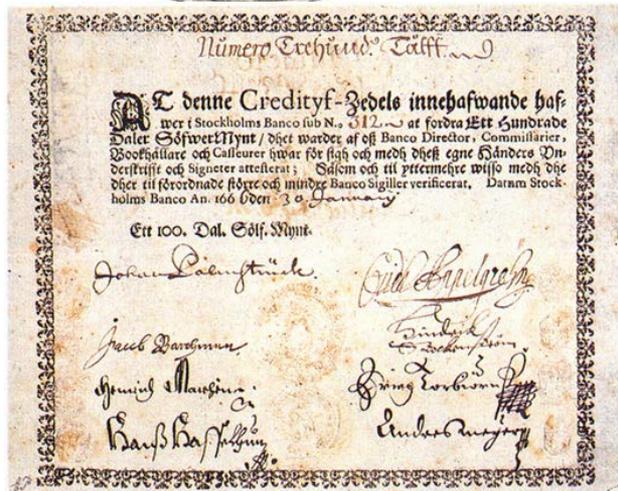
First a side remark: Different forms of universal and remote access CB money have been experienced for long



← Deposits with public deposit banks (Genova, Venice, Amsterdam, Hamburg) – since 15th century

Banknotes (Palmstruch's Bank, 1661)

Remote access to deposits (Naples charitable-institutions public banking system, 17th century) ↓



Three perceptions of CBDC

Idealistic views:

- CBDC to change the monetary order towards “sovereign money”
- CBDC to overcome the ZLB problem (in conjunction with discontinuation of banknotes)
- CBDC to enrich monetary policy toolkit with additional instrument: interest on CBDC

Fearful / conservative views:

- CBDC destroys an efficient credit allocation system
- CBDC undermines financial stability
- CBDC is further instrument of financial repression (if combined with end of banknotes)
- CBDC as Orwellian instrument of control of money flows

Pragmatic view (central banks, including report on digital euro):

- It is a more efficient form of central bank money accessible to all
- Ensures public role in crucial function in jurisdictions with shrinking banknote use. Public involvement in retail payments makes sense because of systemic relevance and natural monopoly characteristics

Impact of CBDC on financial structure

Financial accounts & flow of funds representation to understand effects of CBDC on financial structure.

Substitute banknotes (CBDC1) vs. bank deposits (CBDC2)

- How to avoid much larger reliance of banks on central bank credit to close the funding gap created by large CBDC2? CB could buy government bonds:
 - From households “S1” (assume that households substitute these with bank bonds – as banks may want to issue bonds)
 - From banks : “S2”

Households, pension and investment funds, insurance companies				
Real Assets	20		Household Equity	40
Sight deposits	5	-CBDC2		
Savings + time deposits	4		Bank loans	5
CBDC		+CBDC1 +CBDC2		
Banknotes	1	-CBDC1		
Bank bonds	4	+S1		
Corporate/Government bonds	7	-S1		
Equity	8			
Corporates				
Real assets	13		Bonds issued	3
Sight deposits	2		Loans	8
Savings deposits	1		Shares / equity	5
Government				
Real assets	11		Bonds issued	9
			Loans	2
Commercial Banks				
Loans to corporates	8		Sight deposits	7 -CBDC2
Loans to government	2		Savings + time deposits	5
Loans to HH	5		Bonds issued	4 +S1
Corp/state bonds	5 -S2		Equity	3
Central bank deposits	0		Central bank credit	1 +CBDC2 -S1-S2
Central Bank				
Credit to banks	1 +CBDC2 -S1-S2		Banknotes issued	1 -CBDC1
Corp/Government bonds	0 +S1+S2		Deposits of banks	0
			CBDC	+CBDC1 +CBDC2

Impact on bank funding costs, and implication for CB policy rates

Table 4a: 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%

In normal times: $i(\text{deposits}) < i(\text{CB funding}) < i(\text{bonds issued})$

⇒ Bank funding costs will increase as a consequence of CBDC2

⇒ To keep financial conditions unchanged, central bank will have to compensate for **CBDC2** by lowering somewhat its policy rates. But only to partially compensate increase of bank funding costs (as bank funding is only one funding source of real economy). Bank intermediation loses some competitiveness

Moreover, in economies with negative interest rate policies...

Example of the euro area – current yield of risk free investments:

- **Citizens can hold banknotes at 0%:** as much as they want, but large holdings create security risks / costs.
- **Banks currently deposit excess reserves at -0.5%**
- **Investors buy short term AAA rated Government bonds at -0.65%**
- **How to ensure that citizens can access digital euro at no worse conditions than banknotes (in terms of remuneration), while not undermining the current structure of interest rates as desired by monetary policy?**
- **Would unconstrained access to a zero remunerated digital euro mean the end of NIRP and/or the inflow of trillions of euro into the digital euro?**

Controlling CBDC volumes, also in crisis times – three approaches

1) Kumhof/Noone (2018) approach: contingent convertibility suspensions: “core principles are: (i) CBDC pays an adjustable interest rate; (ii) CBDC and reserves distinct; not convertible into each other: (iii) No guaranteed, on-demand convertibility of bank deposits into CBDC at commercial banks (and therefore by implication at the central bank): (iv) The central bank issues CBDC only against eligible securities (principally government securities).”

2) Limits: with or without “waterfall” (sweep) into commercial bank account. Hard rejection of incoming payments would be problematic of course.

3) Tiered remuneration: zero remuneration for citizens up to a certain amount, beyond that remunerate CBDC at a rate that makes it unattractive as large scale investment (“store of value”)

Tiering system:

Every registered **euro area citizen** could get an account

Tier 1 (“means of payment”): < [3000] euro, remunerated at r_1

Tier 2 (“investment”): > [3000] euro, remunerated at r_2

$r_1 > r_2$

Example: **$r_1 = \max(0, \text{DFR}-2\%)$; $r_2 = \min(0, \text{DFR}-0.5\%)$**

r_2 could be lowered further in financial crisis, to prevent aggregate run on the entire banking system

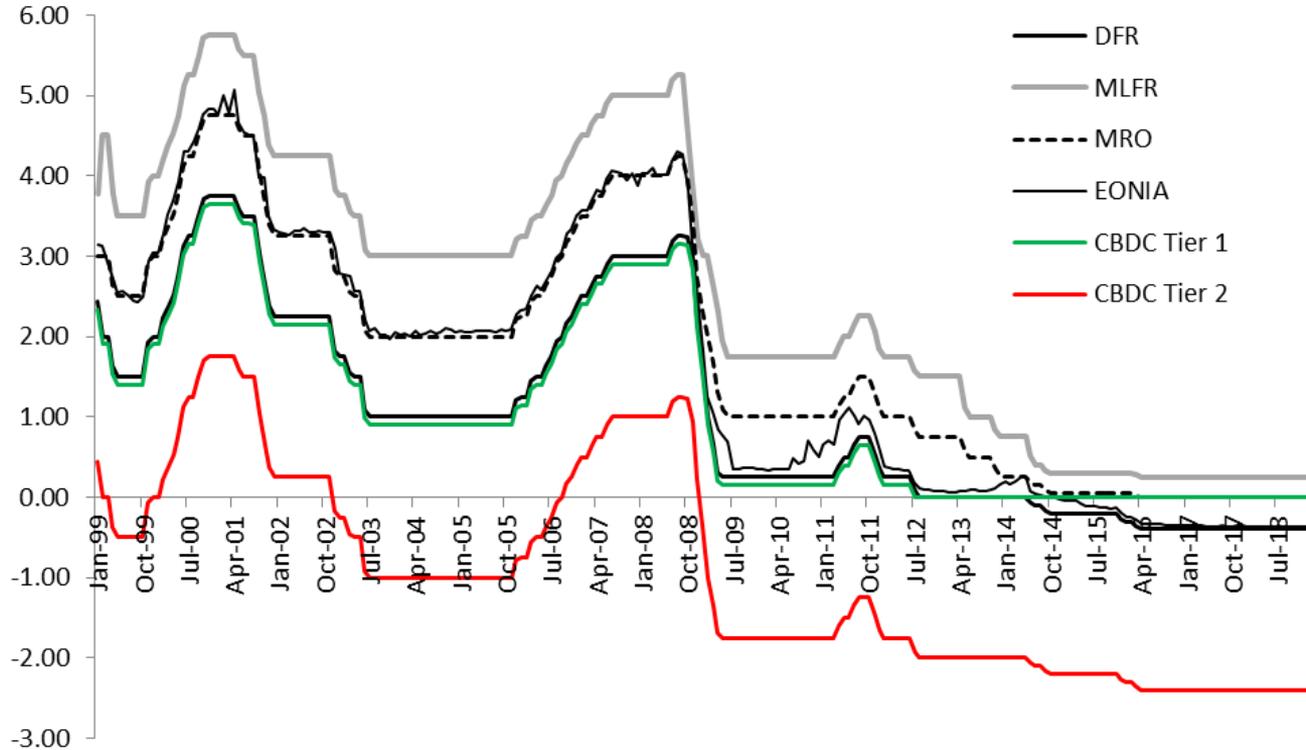
Tier 1 mitigates danger of outcry when Tier 2-interest rates need to be used to disincentivate large crisis-inflows into CBDC

Tier 2 remuneration should be seen as unrestricted

Tourists, foreigners and corporates would have access to Tier 2 only. For corporates, one could also imagine a formula to assign Tier 1, but this would be more complex than the “per capita” formula for natural persons.

Controlling CBDC through tiered remuneration – fictitious different example

$r_1 = \max(0, DFR)$; $r_2 = DFR - 2\%$



But controlling CBDC quantity is not equivalent to control its impact on the financial structure

If CBDC accounts offer convenient account services, then complementarity of banking services may be undermined

CBDC account + non-bank financial service firms could become sufficient for households

See **SUBST**itution effect on next slide (in which all CBDC is of type 1)

Importance of banks relative to these non-bank financial firms would decline over time

Is it transition issue?

Or is it structural financial efficiency and stability problem?

•Is it different from the problem of long balance sheets because of large CBDC2, because it does not imply a centralisation of the credit provision process?

Households, pension and investment funds, insurance companies			
Real Assets	20	Household Equity	40
Sight deposits	5 -SUBST		
Savings + time deposits	4	Bank loans	5
New non-bank intermediaries	+SUBST		
CBDC	+CBDC1		
Banknotes	1 -CBDC1		
Bank bonds	4 +S1		
Corporate/state bonds	7 -S1		
Equity	8		
New non-bank intermediaries			
Loans to corporates	+Subst/2	Household investments	+Subst
Corp/gvt bonds	+Subst/2		
Commercial Banks			
Loans to corporates	8 -Subst /2	Sight deposits	7 -Subst
Loans to government	2	Savings + time deposits	5
Loans to HH	5	Bonds issued	4
Corp/gvt bonds	5 -Subst /2	Equity	3
Central bank deposits	0	Central bank credit	1
Central Bank			
Credit to banks	1	Banknotes issued	1 -CBDC1
Corp/gvt bonds	0	Deposits of banks	0
		ECBM	+CBDC1

Role of functional scope and pricing...

CBDC has been asked (by different parties) to

- (i) allow for fully anonymous payments to protect privacy;
- (ii) allow for offline payments;
- (iii) allow for SEPA instant credit transfers and direct debits (like bank accounts);
- (iv) be programmable and allow for “smart contracts” for advanced use cases in industry and commerce;
- (v) ensure financial inclusion (meaning potentially to be also usable for the non-banked and those without mobile phones);
- (vi) be as convenient to use as existing private sector solutions;
- (vii) include card, mobile, and internet/desktop access.

Functional scope: The thickest Swiss army knife, or a minimum viable solution?

- A new technology is a great occasion to get it right... and comprehensive
- But project risks and delivery time grow (exponentially) with complexity
- Also, comprehensiveness is a key (although not the only) parameter in determining the right degree of attractiveness of a digital euro, such as to be **successful and have value for citizens, but not to crowd out unduly the private sector.**
- **Difficulties to predict use** in particular if CBDC is integrated into existing wallets and relies on existing front end solutions (which increases efficiency)
- Another interesting dimension in this context is **pricing**. The ECB's digital euro report suggests that basic payment functionality will be free for citizens, like for banknotes. In the past, banknote issuance was anyway highly profitable because of seignorage, and in this sense cost recovery was not an issue. And with CBDCs, central banks get directly into the habitat of private digital payment solutions.

Conclusion

1. In economies with a significant decline in the use of banknotes, CBDC maintains public involvement in retail payments, and therefore the access of citizens to central bank money
2. Issues of possible impact of CBDC on financial structure and on financial stability should be taken seriously, but can be mitigated.
3. CBDC could become **means of payment** (-> tier 1), but should not become large-scale **investment vehicle / store of value** (-> tier 2) - neither structurally, nor as safe haven investment in crisis times
4. **Two tier remuneration** is an effective solution to control the quantity of CBDC, i.e. to prevent it from becoming a large scale store of value
5. But controlling the size of the CB balance sheet is **not equivalent to controlling the impact of CBDC** on the financial structure
6. Changing the financial structure is not per se wrong. It may cause problems if it goes too quickly, or if it centralises the credit allocation process