



EUROPEAN CENTRAL BANK

EUROSYSTEM

CBDCs financial stability and some conceptual issues

13/07/2021



Ulrich Bindseil
European Central Bank



Part A: financial stability

[From: Tiered CBDC and the financial system \(January 2020\)](#)

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

Three perceptions of CBDC

Idealistic views:

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

Conservative views:

- CBDC destroys an efficient credit allocation system
- CBDC undermines financial stability
- CBDC is not needed as private payment solutions are efficient and innovative
- Market power could be addressed through regulation
- Cross border payments are sub-optimal because compliance has been made unmanageable by official sector
- CBDC is further instrument of financial repression (if combined with end of banknotes)
- CBDC can be easily misused as Orwellian instrument of control and spying on citizens

Pragmatic view of central banks:

- No plans to discontinue banknote issuance, nor to crowd out the private sector, nor to improve MonPol through CBDC
- Efficient and modern form of central bank money accessible to all – in a society that becomes more and more digital
- Ensures role of state in crucial function for society in areas with shrinking banknote use
- Public involvement in retail payments can make sense because of network externalities in payments

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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

Contingent convertibility restrictions (Kumhof/Noone, 2018)

Limits

Payments leading to excess holdings of CBDC would be rejected

Excesses “swept” to bank account that CBDC holders have to declare

Single remuneration rate to make CBDC unattractive if needed
(Riksbank reports; Kumhof/Noone, 2018)

Tiered interest rate

Panetta (2018, 29): “in bad times, depositors could switch rapidly and at no cost from bank account to CBDC. The central bank could limit such risks – ... by bringing the remuneration to zero for holdings of CBDCs above a certain threshold”

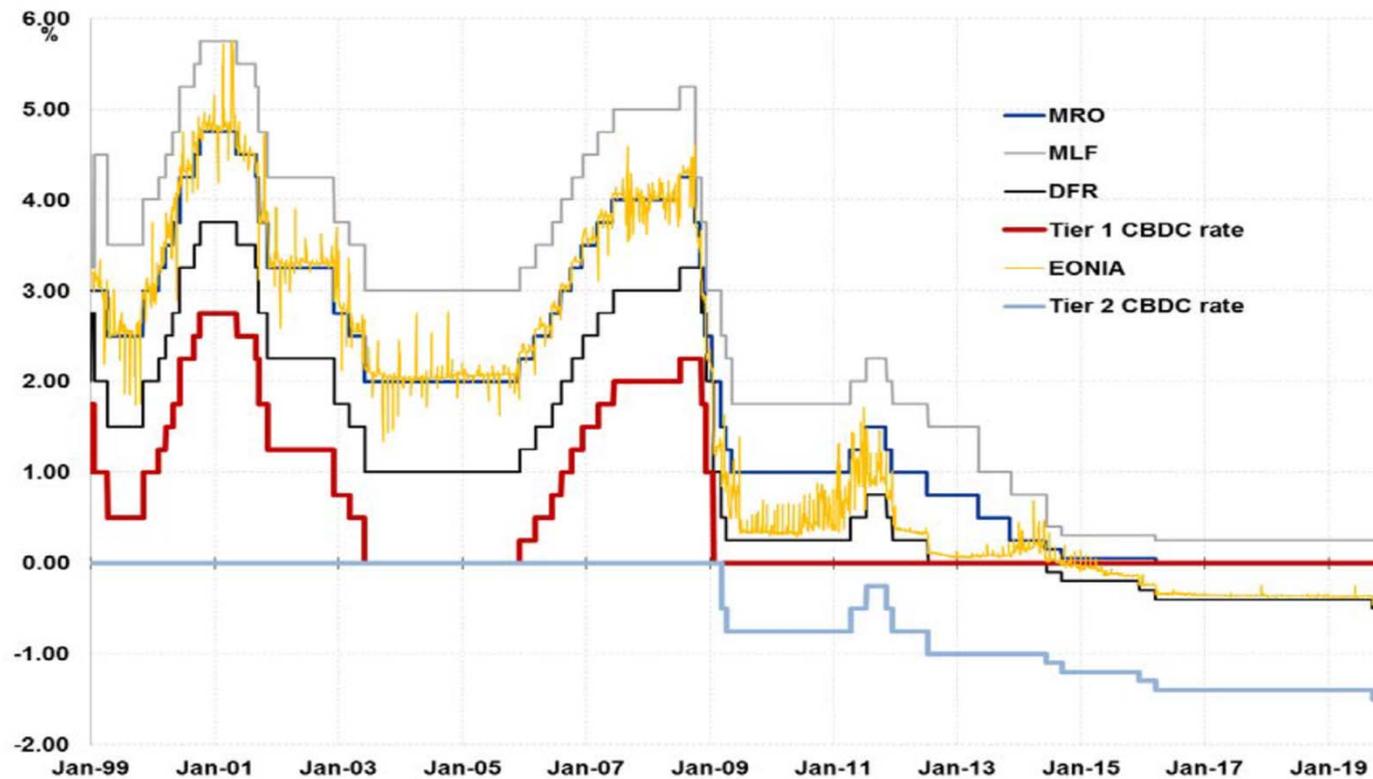
Bindseil (2020) further elaborates such an approach

Fictional, illustrative example: $r_1 = \max(0, DFR - 1\%)$; $r_2 = \min(0, DFR - 1\%)$; Tier one = EUR 3000;

CBDC “means of payments” – not “store of value”

Four ideas addressing risk of structural and cyclical disintermediation of banks

Figure 4: An example of CBDC remuneration rates relative to historical ECB official interest rates with tier one CBDC rate $r_1 = \max(0, i_{DFR}-1\%)$ and tier 2 CBDC rate $r_2 = \min(0, i_{DFR} - 1\%)$





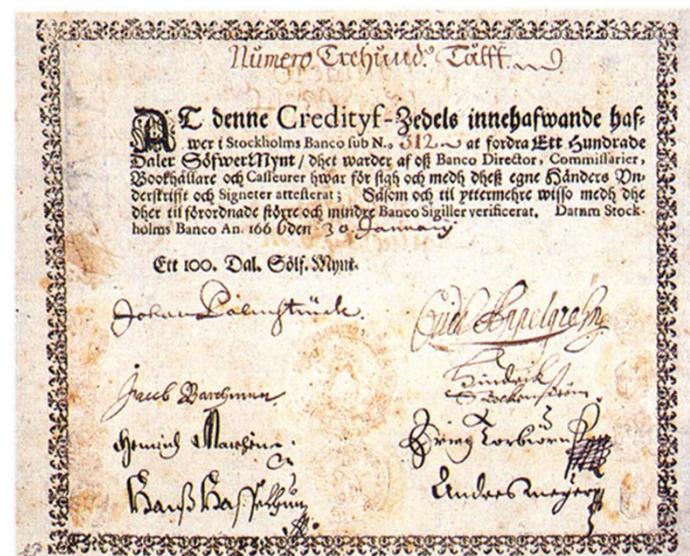
Part B

Forms of central bank money – past, present and future

Forms of issuing central bank money: various forms tested and worked over centuries

Deposits versus bearer-based forms of CeBM

- Deposits 250 years older form of CeBM: Barcelona, 1401.
- Naples public banks invented Fede di Credito in 1580s (remote access to accounts).
- Stockholm Banco invented banknotes in 1662 (but Chinese state paper money: 13th century).
- Banknotes give CeBM new reach and scale, in particular in surface economies (Sweden and England vs. city republics).
- For centuries, authors and legislators regarded banknotes as more dangerous form of CBM (more temptation to over-issue and risk for convertibility)



Forms of issuing central bank money: a long term journey

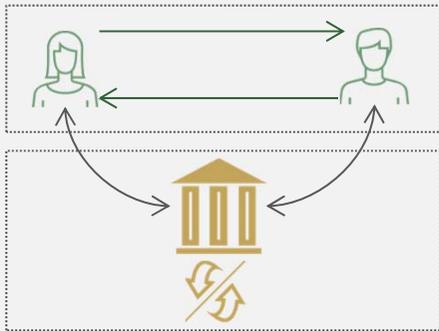
	State of matter: Material (M) Paper (P) Digital (D)	Issuer: None (N) Private (P) Public (C)	Access: All (A) Constrain (C)	Recording: Bearer based (B); central; distributed; multiple ledger (CL) (DL) (ML)	Legal Basis: None (N) Legislative (L) Contract (C)	Connectivity: Offline payments (Off) online (On) presence (P)
Historical						
(h1) Cowrie shells; early gold c.	M	N	A	B	N	Off
(h2) Gold coins 1875	M	N	A	B	L	Off
(h3) Giro banking – Venice 1300	P	P	A/C	ML	C	P
(h4) Public Giro bank, 1620	P	C	A/C	CL	L	P
(h5) Fede di Credito (Naples), 1600	P	C	A/C	CL+	L	Off
(h6) Bill of exchange, 1300-1960	P	P	A/C	B/ML	C	Off
(h7) Chinese paper money 1200	P	C	A	B	L	Off
Current						
(c1) Banknotes	P	C	A	B	L	Off
(c2) Bank deposits with CB	D	C	C	CL	L	On
(c3) Commercial bank deposits	D	P	A/C	ML	C	On
Future						
(f1) Crypto-asset (Bitcoin)	D	N	A	DL	N	On
(f2) Stablecoin	D	P	A/C	CL/DL/B (?)	C	On (Off)
(f3) Retail CBDC	D	C	A (C)	CL/DL/B (?)	L	On (Off)
(f4) Wholesale CBDC	D	C	C	DL	L	On

Most dimensions have been extensively applied in history, and maybe the future is not as revolutionary as sometimes argued

Technology of CBDC – key dimensions

Account-based:

Transaction



Bearer:

Transaction and settlement



“Token?”

Programmable?



“DLT?”

On-line / Off-line?



Part C

The functional scope question

Elements of functional scope (Swiss army knife problem)

CBDCs are asked to:

- Be as convenient as any **modern payment solution** for both POS and online payments
- Be **free of charge** for basic use by payers
- Be **legal tender**
- Allow if possible **off-line use**
- Allow if possible very high degrees of **privacy** (if not **anonymity**, for smaller transactions)
- Do not undermine **AML/CFT**
- Be supportive to **financial inclusion**
- Make **cross-border payments** cheap, fast and inclusive
- Allow for **programmability and smart contracts**
- Allow to **control for undesired effects** on financial stability and monetary policy, and do not excessively crowd out the private sector

Functional scope, and business model questions

- A new technology is a great occasion to get it right... and comprehensive
- But **project risks, costs 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**
- **Pricing:** Basic payment functions of CBDC should be cost free for users, like for banknotes. In the past, banknote issuance was anyway highly profitable because of seigniorage, and in this sense cost recovery was not an issue. But today? And what about a merchant fee? What about legal tender? With CBDC, central banks get directly into the habitat of private digital payment solutions.



Part D

Conclusion

Conclusion

- **The digitalization of society and thus of payments is a powerful and sufficient argument for CBDC**
- **It is not the first metamorphosis of money, and it is not even a very surprising one if one looks at history**
- **But CBDC design raises numerous questions, which can all be answered, but which are very relevant and require thorough examination**