



EUROPEAN CENTRAL BANK

EUROSYSTEM

U Bindseil

## **SUERF- BAFFI Bocconi Seminar**

# Conceptions of Money in the Digital Age

30 March 2022

- Looking back at history and at the history of economic thought has great merits for work on CBDC; Earlier metamorphosis of money were also not easy ones, and happened with design trade-offs, exuberance, bad surprises, intense learning, and gradual changes of beliefs
- *„Wer kann was Kluges, wer was Dummes denken, was nicht die Vorwelt schon gedacht?“ (Goethe, Faust I)*
- *(Who can think something clever, who can think something stupid, that the previous world has not already thought?)*

– U Bindseil, “The case for and against CBDC – five years later”, March 2022, *Section 2.3 Lessons from the history of the forms of central bank money*  
[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4038828](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4038828)

## Michael Peneder: “Austrian conceptions of money and the rise of digital currency”

- Dematerialisation of money was the objective of private giro-banking as of 13<sup>th</sup> century and of public giro banks as of 15<sup>th</sup> century.
- Non-convertible public money: Chinese state paper money; central bank money with suspended convertibility (18<sup>th</sup> century)
- Universal ledger idea was key to the idea of Public giro banks (15<sup>th</sup> century)

## Isaiah Hull and Or Sattath: “Revisiting the properties of money”

- Schumpeter: “Three of the four functions of money traditionally listed in those nineteenth-century textbooks—the fourth is to serve as the Standard of Deferred Payments—can ... be traced to Aristotle”. Maybe the original contribution of Jevons and Menger was not as big on this point.
- Many of the more detailed questions on the design of means of payment have emerged earlier in the design public means of payments; Fede di Credito as one stretch of the trade-offs. Reality is always full of trade-offs.
- 19<sup>th</sup> century was the era of adoration for banknotes in which all the issues of detail of account money as means of payment were less discussed (but they were during the previous centuries). Ulens (1908, 5):
- *“No-one is questioning today the advantages of fiduciary money; the advantages of replacing metallic money with it are universally accepted. That fiduciary money takes the form of banknotes... is far from being the last word of progress. Much more perfect will be the mechanism of exchange based on current account deposits. ... But we are not yet there. ... The love of gold for its own sake has been replaced by the love of the banknote for its own sake.”*

<b>A. Taula de Canvi, Barcelona</b>	<b>1401</b>
<b>B. Casa San Giorgio, Genoa</b>	<b>1407</b>
<b>C. Naples banking system</b>	<b>1580</b>
<b>D. Banco di Rialto, Venice</b>	<b>1587</b>
<b>E. Banco di Santo Spirito, Rome</b>	<b>1605</b>
<b>F. Bank of Amsterdam</b>	<b>1609</b>
<b>G. Banco del Giro, Venice</b>	<b>1619</b>
<b>H. Hamburg Bank</b>	<b>1619</b>
<b>I. Nürnberg Banco</b>	<b>1621</b>
<b>J. Stockholm Banco</b>	<b>1657</b>
<b>K. Riksens Ständers Bank*</b>	<b>1668</b>
<b>L. Bank of England</b>	<b>1694</b>
<b>M. Bank of Scotland</b>	<b>1695</b>
<b>N. Land based banks of N-America</b>	<b>1650-X</b>
<b>O. Banco di Depositi, Leipzig</b>	<b>1698</b>
<b>P. Banco di gyro, Cologne</b>	<b>1705</b>
<b>Q. Wiener Stadtbank</b>	<b>1706</b>
<b>R. Banque Générale, Paris</b>	<b>1716</b>
<b>S. Copenhagen Banco</b>	<b>1737</b>
<b>T. Royal Bank of Berlin</b>	<b>1766</b>
<b>U. Russian Assignment Banks</b>	<b>1768</b>
<b>V. Caisse d'Escompte, Paris</b>	<b>1776</b>
<b>W. Bank of North America</b>	<b>1782</b>
<b>Y. Bank of the United States</b>	<b>1791</b>

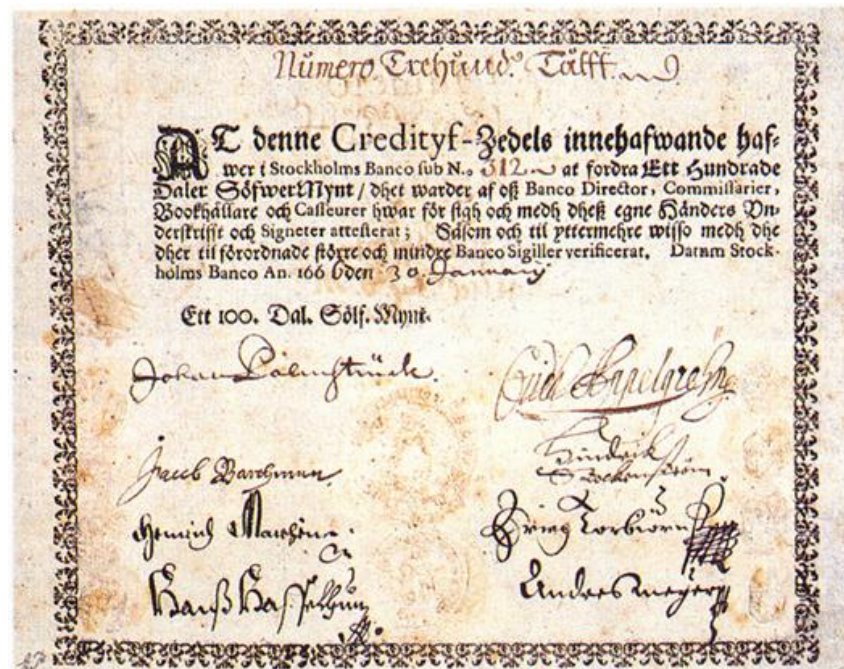
Before 1800: 24 public charter-based banks with central role and policy objectives issuing means of payment. Some of them were long-lived and successful, others less so.

Review of pre-1800 literature on means of payments and the role of central banking:

1. William Potter (1650)
2. Paterson (1694), Godfrey (1695), Janson (1697), (in context of the BoE launch)
3. John Law (1705), (1715)
4. Marperger (1717) – more descriptive
5. Cantillon (1730), Berkeley (1735), Steuart (1767)
6. Hamilton (1790)
7. Büsch (1801)
8. Less detailed and knowledgeable, but famous: Hume (1752), Smith (1776)

## Deposits versus banknotes

- Deposits (central ledger) is 250 years older form of CBM: Barcelona, 1401. Naples public banks invented Fede di Credito in 1580s. Stockholm Banco invented modern banknotes in 1662 (but Chinese state paper money: 13<sup>th</sup> century).
- Banknotes give CB new reach and scale, in particular in surface economies (Sweden and England vs. city republics).
- Authors and legislators regard banknotes as more dangerous form of CBM (more temptation to over-issue and risk for convertibility)



## Size and some balance sheet ratios of six central banks – 1700-1770

	Bank of Amsterdam	Hamburger Bank	Bank of England	Riksens Ständers Bank
<b>Metal reserve, tons of silver</b>	138	26	241	3
<b>Money issued, tons of silver</b>	166	40	371	22
<b>Balance sheet, tons of silver</b>	166	40	1703	103
<b>Metal reserves/money issued</b>	0.83	0.67	0.34	0.12
<b>Metal reserves / total BS</b>	0.80	0.64	0.14	0.07
<b>Gvt exposure / total BS</b>	0.05	0.14	0.78	0.38
<b>Discounting / total BS</b>	0.00	0.00	0.07	0.00
<b>Advances / total BS</b>	0.12*	0.21	0.00	0.26*
<b>Deposits / total BS</b>	0.97	0.97	0.17	0.31**
<b>Banknotes / total BI</b>	0.00	0.00	0.24	0.37
<b>Capital / total BS</b>	0.00+	0.00+	0.55	0.29
<b>Data source</b>	Van Dillen (1934)	Sieveking (1933)	BoE (1967)	Riksbank website



# Metamorphoses of money cross time

	<u>State of matter:</u> Material (M) Paper (P) Digital (D)	<u>Issuer:</u> None (N) Private (P) Public (C)	<u>Access:</u> All (A) Constrain (C)	<u>Recording:</u> Bearer based (B); central; distributed; multiple ledger (CL) (DL) (ML)	<u>Legal Basis:</u> None (N) Legislative (L) Contract (C)	<u>Connectivity:</u> Offline payments (Off) online (On) presence (P)
<b>Historical</b>						
(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, (1401-1875)	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 state paper money 1200	P	C	A	B	L	Off
<b>Current</b>						
(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
<b>Future</b>						
(f1) Unbacked 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