

Digitalization and currency competition

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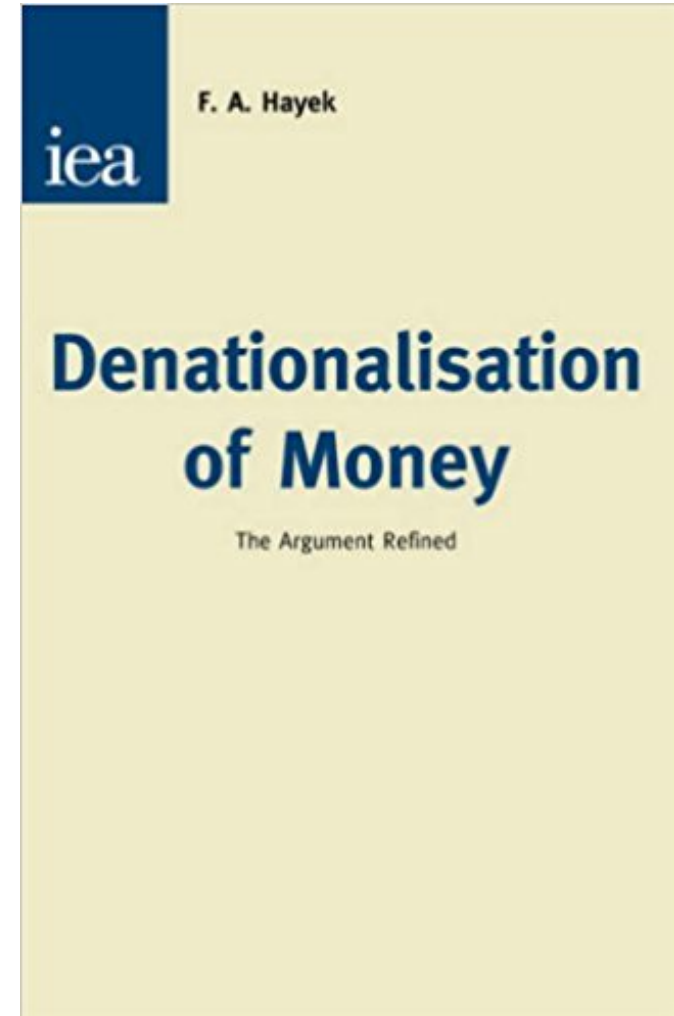
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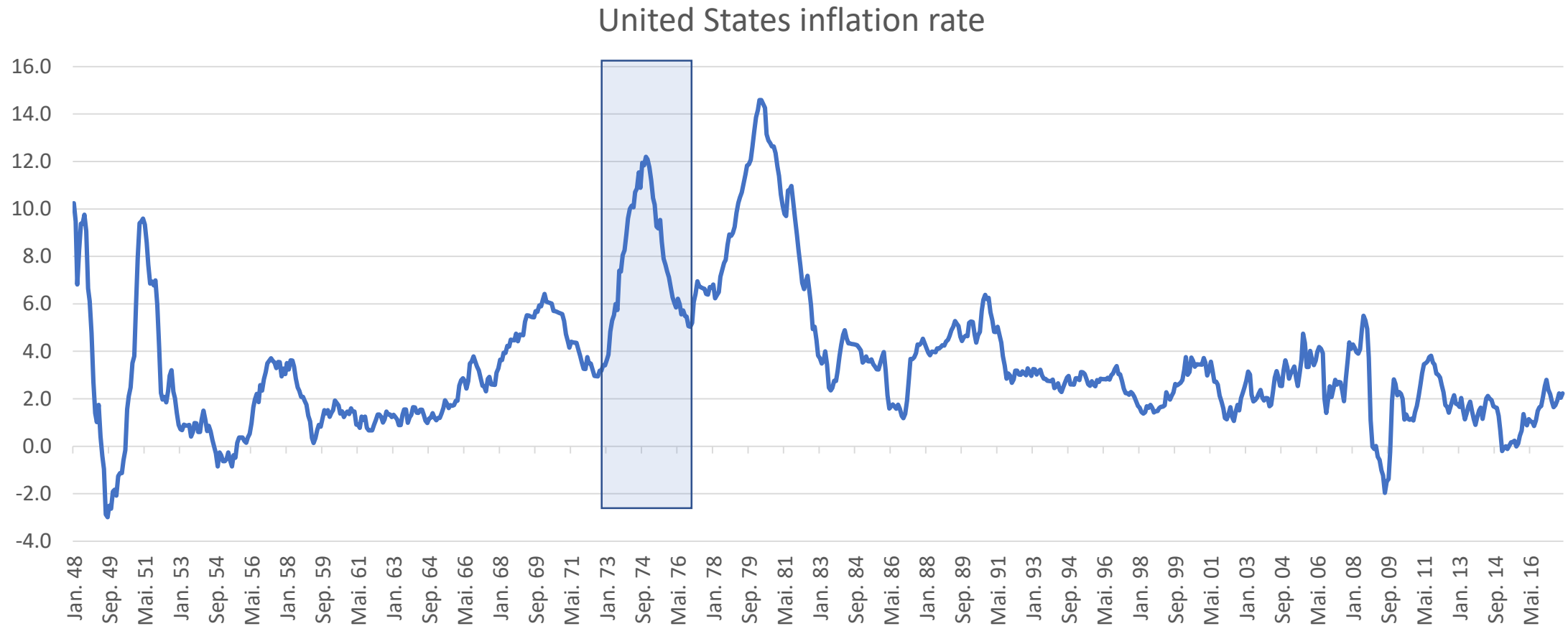
The vision of Friedrich A. von Hayek (1899-1992)



“Neither a general increase nor a general decrease of prices appears to be possible in normal circumstances so long as several issuers of different currencies are allowed freely to compete without the interference of government.”



Hayek: “A single monopolistic governmental agency can neither possess the information which should govern the supply of money nor would it, if it knew what it ought to do in the general interest, usually be in a position to act in that manner.”



Hayek's money

- I would announce the issue of non-interest bearing certificates or **notes**, and the readiness to open **current cheque accounts**, in terms of a unit with a distinct registered trade name such as 'ducat'.
- The only legal obligation I would assume would be **to redeem these notes and deposits on demand** with, at the option of the holder, either 5 Swiss francs or 5 D-marks or 2 dollars per ducat.
- This redemption value would however be intended only as **a floor** below which the value of the unit could not fall because I would announce at the same time my intention (...) to keep their (precisely defined) purchasing power as nearly as possible constant.
- “ (...) it seems **neither necessary nor desirable that the issuing bank legally commits itself to maintain the value of its unit.**”

Core insights by Hayek

“It seems to me to be fairly certain that

(a) money generally expected to **preserve its purchasing power approximately constant** would be in continuous demand so long as the people were free to use it,

(b) with such a continuing demand depending on success in keeping the value of the currency constant one could trust the **issuing banks to make every effort to achieve this better than would any monopolist** who runs no risk by depreciating his money,

(c) the issuing institution could achieve this result **by regulating the quantity of its issue**, and

(d) such a regulation of the quantity of each currency would constitute the **best of all practicable methods of regulating the quantity of media of exchange** for all possible purposes.”

A taxonomy with four dimensions of „money“

- Privately issued money versus money issued by government
- Electronic money versus physical money
- Money with fixed-rate convertibility guaranteed by the issuer versus „fiat money“ with no convertibility commitment by the issuer
- Centralized accounting mechanism versus decentralized accounting mechanism (peer-to-peer)

Electronic

Public

Peer-to-Peer

Convertible at a fixed rate

Hayek Bank Deposit (fiat money)

Central Bank Reserves/Central Bank Digital Currency

Cash

Bank Deposits

Central Bank Deposit Gold-Standard

FedCoin

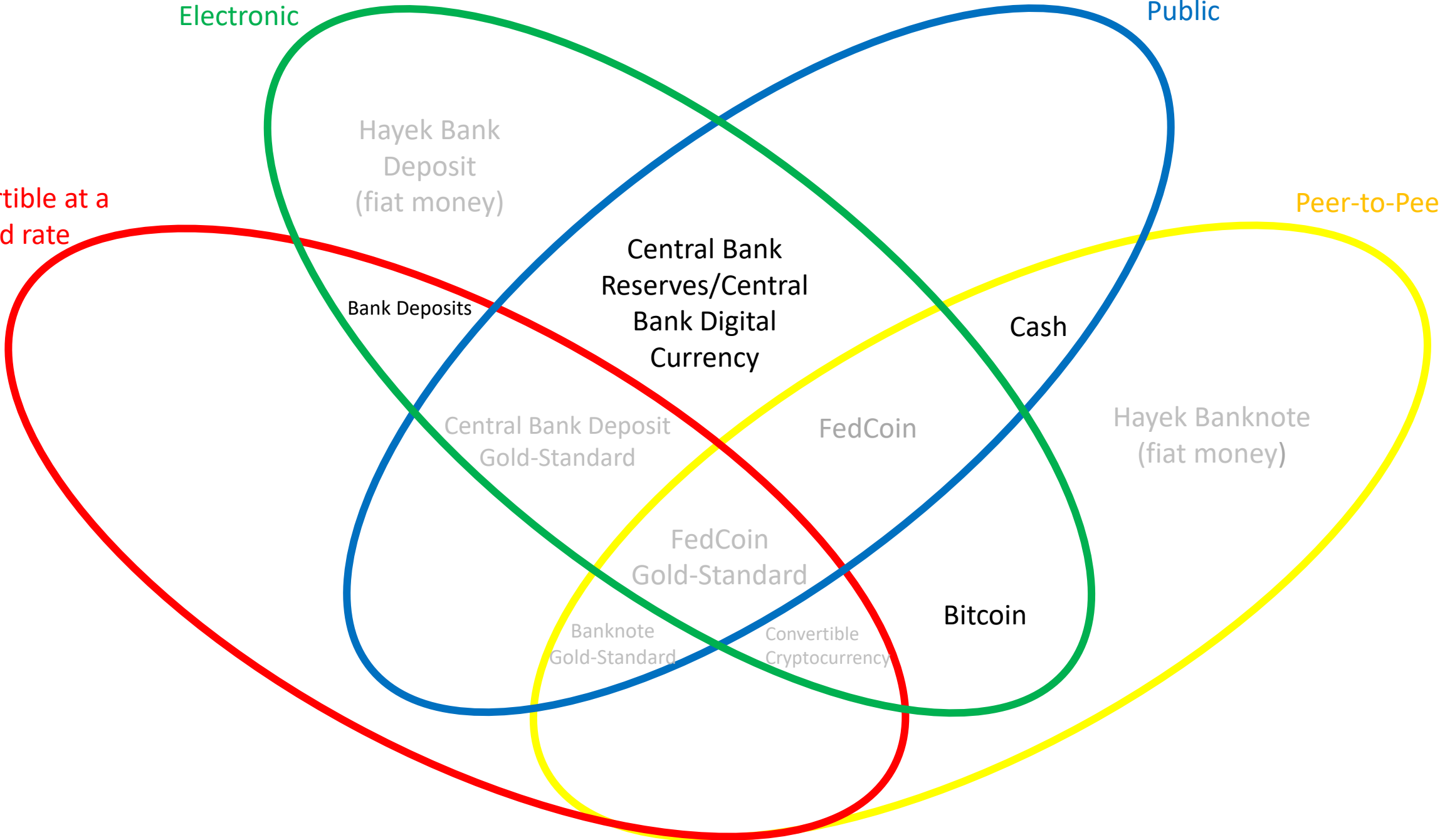
Hayek Banknote (fiat money)

FedCoin Gold-Standard

Bitcoin

Banknote Gold-Standard

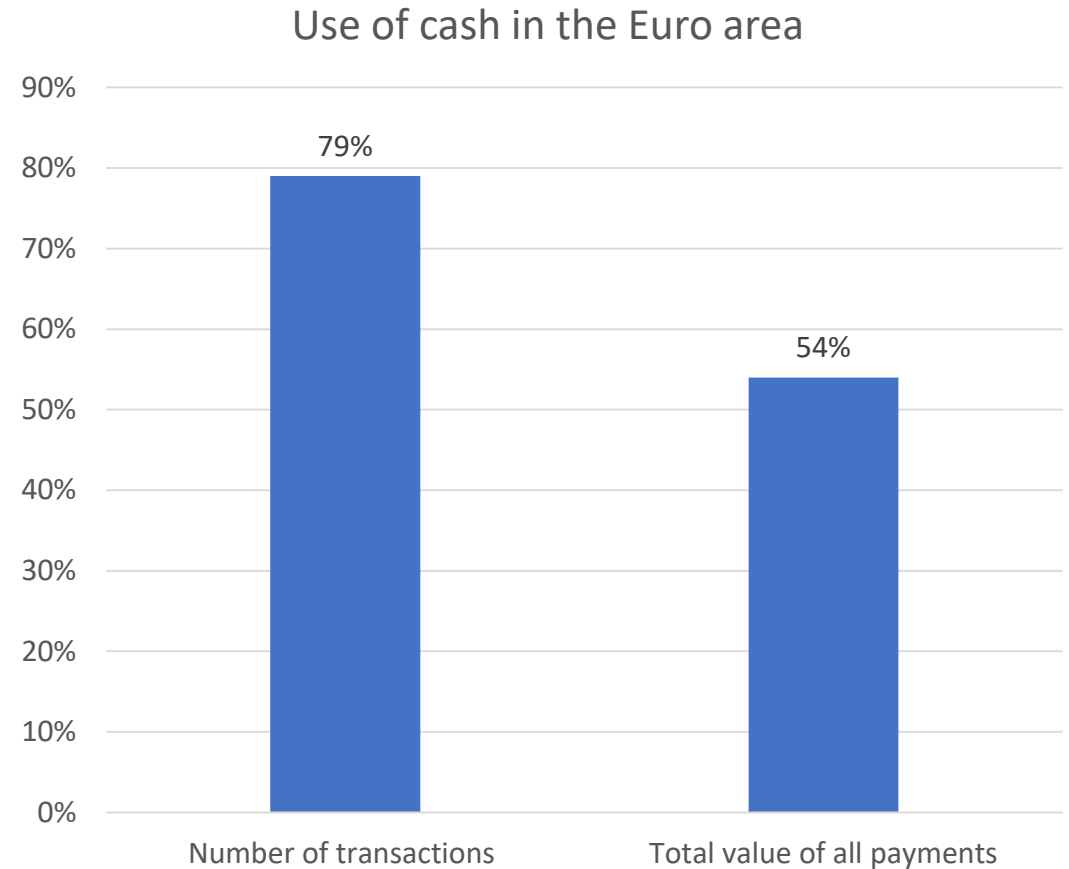
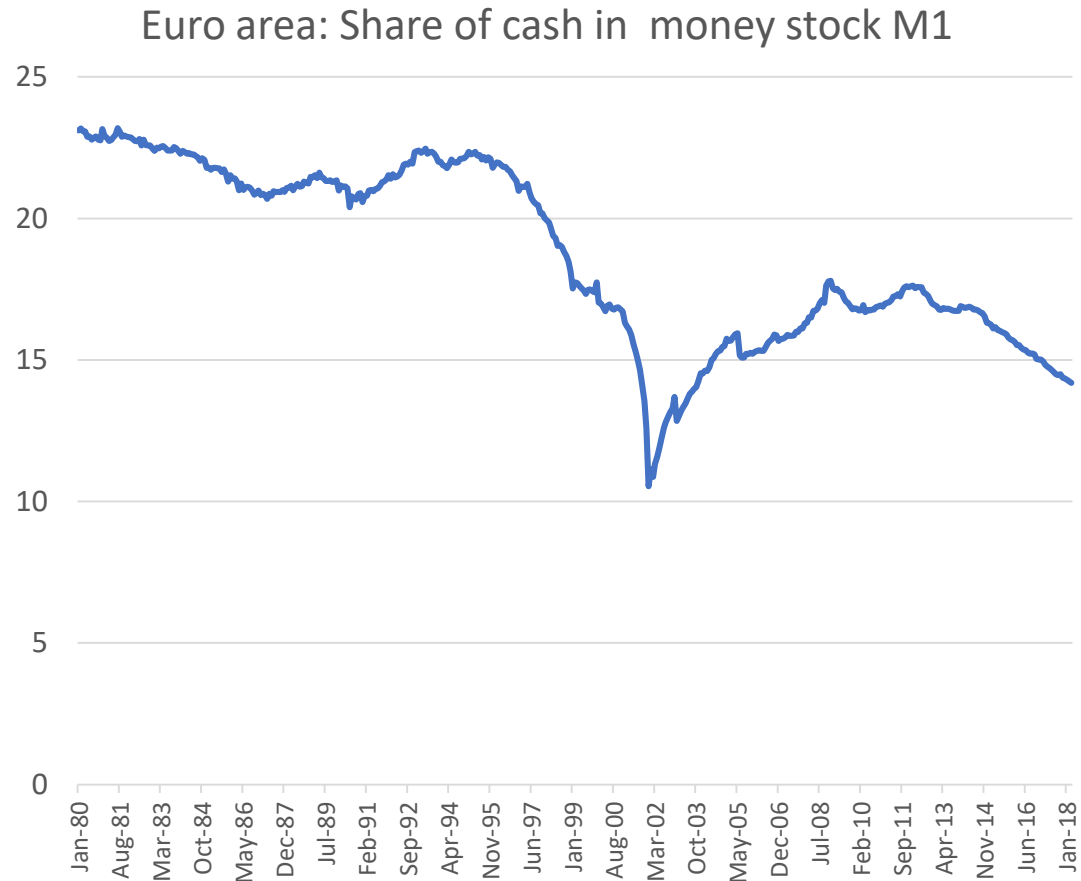
Convertible Cryptocurrency



Digitalization and currency competition

- Traditional banknotes versus electronic payments systems based on digital money (bank deposits)
- Traditional bank deposits and bank notes versus cryptocurrencies
- Traditional bank deposits versus central bank digital currencies

Substitution of cash by electronic money



Source: Esselink and Hernández 2017

A totally cashless society is not very likely

- But the usage of cash can decline considerably, above all by contactless technology for payments under 25 Euro, which make up 81 % of all payments at POS.
- Implications of a cashless society
 - Risk of bank-runs removed, but less market discipline for the banking system
 - ZLB removed: Central banks can enforce negative interest rates
- However, a regime would require a political decision to abolish cash, as in crisis situations the demand for cash would resurge
- At least from the German standpoint the end of cash is very unlikely

What kind of money is Bitcoin?

- **„Fiat money“** like bank notes and central bank digital currencies
- **Decentralized accounting mechanism** like bank notes
- **Electronic** like bank deposits and central bank reserves held by commercial banks
- **Private** like deposits held with a commercial banks

- Bitcoin and most other cyptocurrencies can be regarded as „base money“, as they do not provide a legal obligation of the issuer(s) to exchange them at a fixed rate into another asset

How are Bitcoins created?

- Monetary base is typically created in transactions, i.e. by
 - Purchase of foreign assets (fx interventions)
 - Purchase of domestic assets (government or corporate bonds)
 - Loans to banks (refinancing policy)
- Bitcoin and other cryptocurrencies
 - are created without transactions, i.e. they can be regarded as a form of helicopter money
 - are distributed by selling them against traditional currencies

Main areas of currency competition

- Functions of money
 - Money as an object
 - Means of payment
 - Store of value („safe asset“)
 - Money as a unit of account/unit of measurement
 - Numéraire: Unit in which absolute prices of goods are measured (temporal and intertemporal comparisons)
 - Standard of deferred payments: Unit in which the intertemporal value of a debt is measured
 - Standard for accounting: Unit in which the increase of the net value of a firm is measured

What makes currencies attractive?

- **Liquidity dimension** (low transactions and information costs): means of payment function
- **Stability dimension** (predictability) in terms of a basket of goods and services: store of value and money as a unit of account (numéraire, standard of deferred payments, standard for accounting)
- **Hayek:** “ (...) money renders one service, namely that as a unit of account, which makes stability of value the most desirable of all. Although at first convenience in daily purchases might be thought decisive in the selection, I believe it would prove that suitability as a unit of account would rule the roost.”
- With **electronic payments systems** the liquidity dimension becomes less relevant. Means of payment becomes means of settlement.

Stability guarantees for the store of value function

	Bitcoin/Crypto-currencies	Euro bank deposits	Euro bank notes issued by ECB	Euro reserves held with the ECB
Convertibility obligation by issuer	No: fiat money	Convertible in euro bank notes	No: fiat money	No: fiat money
Legal Tender	No	No	Yes	No
Mechanisms to guarantee the stability of value	<ul style="list-style-type: none"> • Fixed supply limits • But no limit for the number of CCs and thus aggregate supply of CCs • No active regulation of the quantity of issue 	<ul style="list-style-type: none"> • Banking supervision • Capital buffers 	<ul style="list-style-type: none"> • Article 127(1) TFEU defines the ECB's primary objective to maintain price stability. • ECB has the monopoly over the issuance of euro monetary base • ECB is actively engaged to control the value of the euro with its monetary policy instruments and so far quite successful 	
Risk of a total loss	High, no stabilization mechanism in crisis of confidence	Limited by deposit insurance and lender of last resort function of ECB	Hyperinflation is very unlikely	

Prospects for cryptocurrencies are limited

- Inconvertibility: No derived value
- Stability: As global currencies they cannot be targeted to national price indices
- No legal tender: Risk of full implosion impairs store of value function
- No active regulation
- While each issuer can limit the issue of its currency, the number of issuers and the total volume of cryptocurrencies is boundless
- High transaction costs and high transparency impair means of payment function

Central bank digital currencies (CBDCs) could be a game-changer

- Substitute for cash and bank-deposits
- Payment functions would be provided by financial service providers
- Attractive for large depositors as protection against bail-in (BRRD)
- Implications for central banks:
 - Risk of „digital bank runs“ (Cœuré)
 - Helicopter money becomes a possibility
 - ZLB only removed if cash is totally abolished
- Market-driven transformation of the financial system into a „full money system“ or „sovereign money system“ with restricted credit creation potential of the banking system
- Open question: How are banks refinanced?

Gesetz über die Deutsche Bundesbank

§ 22 Geschäfte mit jedermann

Die Deutsche Bundesbank darf mit natürlichen und juristischen Personen im In- und Ausland die in § 19 Nr. 2 bis 7 bezeichneten Geschäfte betreiben.

2. Giroeinlagen und andere Einlagen annehmen;
3. Wertgegenstände, insbesondere Wertpapiere, in Verwahrung und Verwaltung nehmen; die Ausübung des Stimmrechts aus den von ihr verwahrten oder verwalteten Wertpapieren ist der Bank untersagt;
4. Schecks, Lastschriften, Wechsel, Anweisungen, Wertpapiere und Zinsscheine zum Einzug übernehmen und nach Deckung Zahlung leisten, soweit nicht die Bank für die Gutschrift des Gegenwertes für Schecks, Lastschriften und Anweisungen etwas anderes bestimmt
5. andere bankmäßige Auftragsgeschäfte nach Deckung ausführen;
6. auf eine andere Währung als Euro lautende Zahlungsmittel einschließlich Wechsel und Schecks, Forderungen und Wertpapiere sowie Gold, Silber und Platin kaufen und verkaufen;
7. alle Bankgeschäfte im Verkehr mit dem Ausland vornehmen.

Summary

- Digitalization increases the potential for currency competition
- The role of cash will be drastically reduced. But this will not lead to a regime change for monetary policy, as long as cash is not abolished by law (which is very unlikely)
- Private, inconvertible cryptocurrencies lack the stability of value that is required for currencies that are widely used as store of value („safe asset“) and unit of account
- Central bank deposits for non-banks could fundamentally change the financial landscape, as they provide a 100% nominal stability guarantee