an evolution with challenges and risks

Silvan Andermatt 16.09.2022



Agenda

Digital Assets – an evolution with challenges and risks

1. Blockchain

introducing the technology

2. Cryptocurrency

the first use case

3. Stablecoins

addressing volatility

4. Central Bank Digital Currencies

the solution to its all?

5. Metaverse

an outlook into the future

What is Blockchain about?

Summary: Definition, Inventors and first use case

Blockchain

a digital, immutable, distributed, ledger

Satoshi Nakamoto

an anonymous group of software developer or single person invented it

Bitcoin

as the beginning

Bitcoin: A Peer-to-Peer Electronic Cash System

Satoshi Nakamoto satoshin@gmx.com www.bitcoin.org

Abstract. A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a musted third party is still required to prevent double-spending, whe propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hastb-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers. The network itself requires minimal structure. Messages are broadcast on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone.

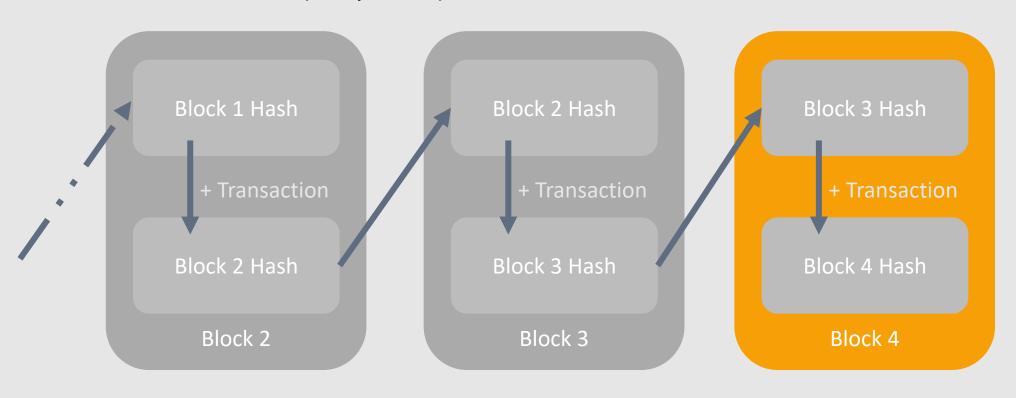
1. Introduction

Commerce on the Internet has come to rely almost exclusively on financial institutions serving as trusted third parties to process electronic payments. While the system works well enough for most transactions, it still suffers from the inherent weaknesses of the trust based model. Completely non-reversible transactions are not really possible, since financial institutions cannot avoid mediating disputes. The cost of mediation increases transaction costs, limiting the minimum practical transaction size and cutting off the possibility for small casual transactions, and there is a broader cost in the loss of ability to make non-reversible payments for non-be wary of their customers, bassling them for more information than they would otherwise need. A certain percentage of fraud is accepted as unavoidable. These costs and payment uncertainties can be avoided in person by using physical currency, but no mechanism exists to make payments over a communications channel without a trusted party.

What is needed is an electronic payment system based on cryptographic proof instead of trust, admiring any two willing parties to transact directly with each other without the need for a trusted third party. Transactions that are computationally impractical to reverse would protect sellers from fraud, and routine escrow mechanisms could easily be implemented to protect buyers. In this paper, we propose a solution to the double-spending problem using a peer-to-peer distributed timestamp server to generate computational proof of the chronological order of transactions. The system is sent as long as honest nodes collectively control more CPU power than any cooperating group of attackers nodes.

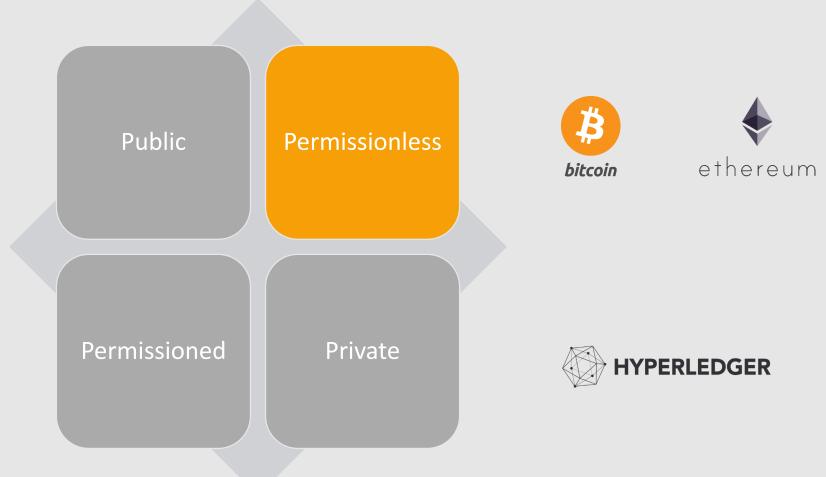
How does it works?

Chain of blocks (simplified)



What kind of blockchains exist?

Categories of blockchain



2. Cryptocurrency

Evolution

From privately issued Cryptocurrencies to Central Bank Digital Currency

Crypto currency

Stablecoins

CBDC

Interoperability

Comparison crypto currency to fiat

Definition



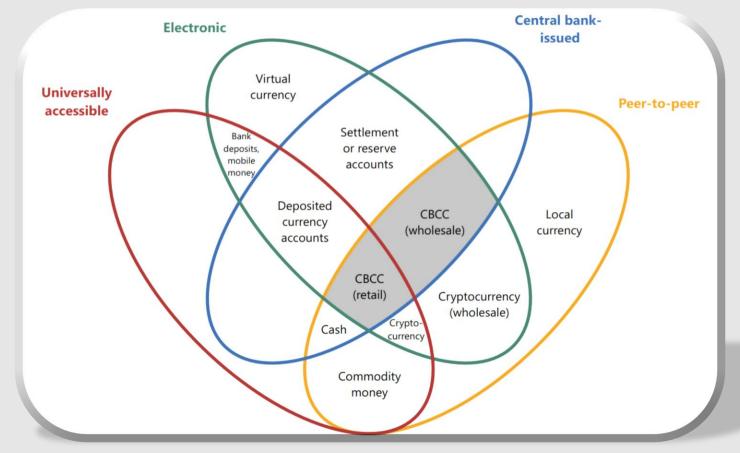
Digital assets are one of the most significant developments impacting the financial services industry over the past few years, and will have a prominent role in the digital transformation of the industry in the years to come.

Source: OECD (2022), Institutionalisation of crypto-assets and DeFi–TradFi interconnectedness

Comparison crypto currency to fiat

Money flower

Digital currency Stablecoins CBDC Interoperability



Source: bis.org

Comparison crypto currency to fiat

Major functions of money

Digital CBDC Interoperability

	Cryptocurrencies	fiat
Medium of exchange		
Scale of reference		
Storage of value		
Value / acceptance	not official tender (with exceptions)	official tender
Cross border transaction price	lower	higher

Comparison crypto currency to fiat

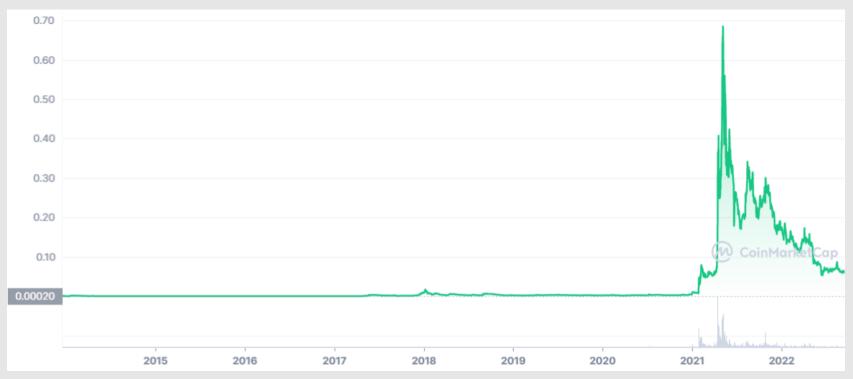
Volatility (Dodge Coin)

Digital currency

Stablecoins

CBDC

Interoperability



- 0.0638 10.04.2021
- 0.6848 07.05.2021
- ~10x in less than 1 month
- ~-74% in the next month

Source: coinmarketcap.com

Crypto Currencies

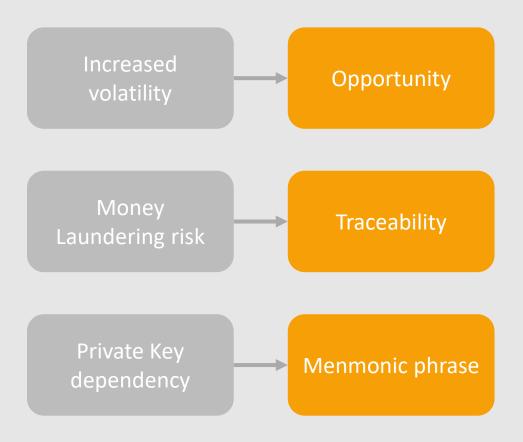
Major concerns

Digital currency

Stablecoins

CBDC

Interoperability



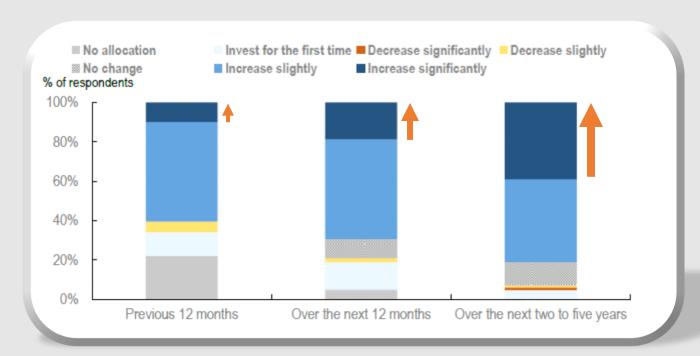
Major concerns

- may be mitigated
- can be major opportunities

Crypto Currencies

Adoption by Institutionals

Digital CBDC Interoperability



Source: State Street. 2021

- ~40% strong increase in Crypto Asset holding over next 2-5 years
- Additional ~40% slight increase in Crypto Asset holding over next 2-5 years
- First time investment is decreasing from ~20% in next 12 months to almost none in next 2-5 years

Crypto Currencies

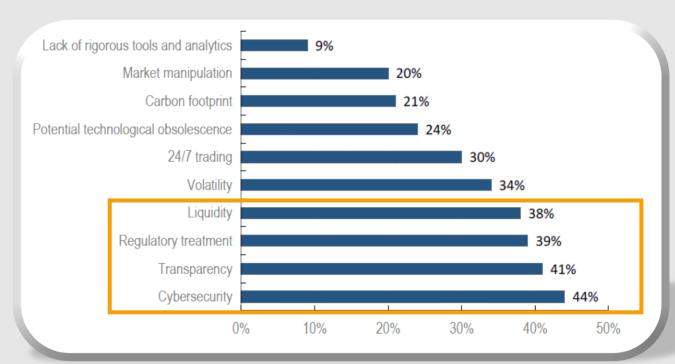
Concerns by Institutionals

Digital currency

Stablecoins

CBDC

Interoperability



Source: State Street. 2021

Operational

- 44% Cybersecurity
- 41% Transparency
- 34% Volatility
- 30% 24/7 Trading
- 21% Carbon Footprint

Ecosystem

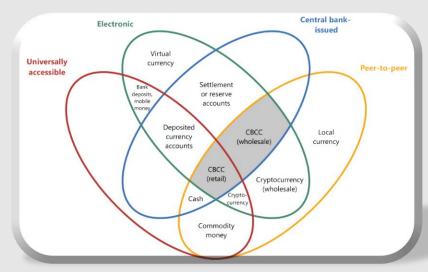
- 39% Regulatory treatment
- 38% Liquidity

3. Stablecoins

Stablecoins

Solution to all crypto?

Digital currency Stablecoins CBDC Interoperability



Source: bis.org

- Cryptocurrencies often show increased volatility
- Are Stablecoins a solution for stability?
- What functions do Stablecoins are used for?

Stablecoins

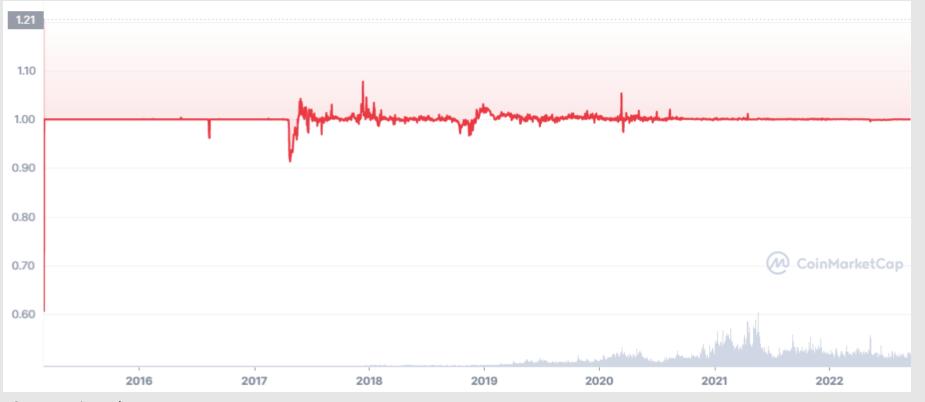
Solution to all crypto?

Digital currency

Stablecoins

CBDC

Interoperability



- USDT
- Displays relatively low volatility (~10%)
- Repeatedly questioned backing / reserve

Source: coinmarketcap.com

Stablecoins

Solution to all crypto?

Digital currency

Stablecoins

CBDC



 Terra Classic (LUNAC)

Interoperability

Crashed within days

Source: coinmarketcap.com

Stablecoins

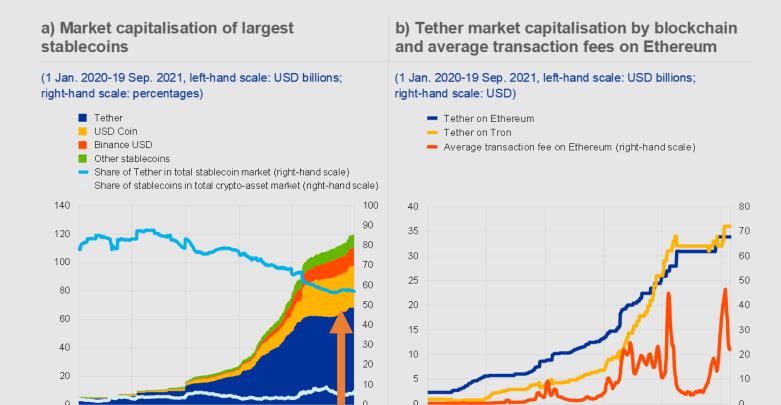
Market capitalisation & share

Digital currency

Stablecoins

CBDC

Interoperability



09/21

05/20

09/20

01/21

05/21

09/21

01/20

- The market capitalisation of stablecoins has risen from USD 5 billion to USD 120 billion since 2020
- Stablecoins only account for around 6% of the estimated USD 2 trillion total market capitalisation of crypto-assets

Source: ecb.europa.eu

05/20

09/20

01/21

05/21

01/20

Stablecoins

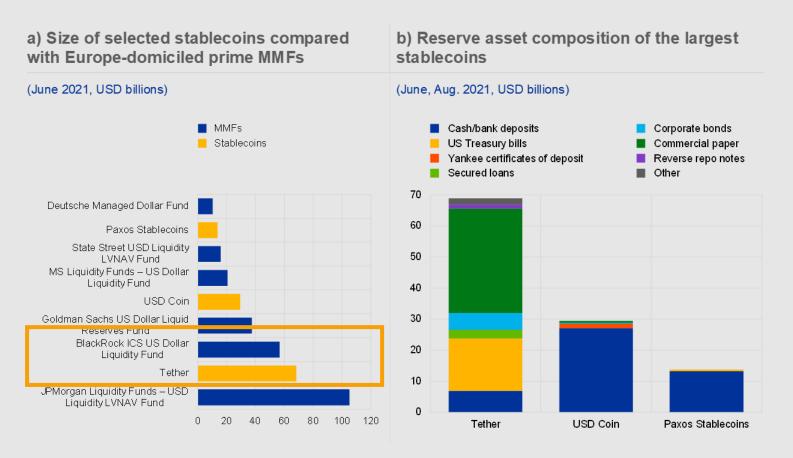
(In)transparent reserves

Digital currency

Stablecoins

CBDC

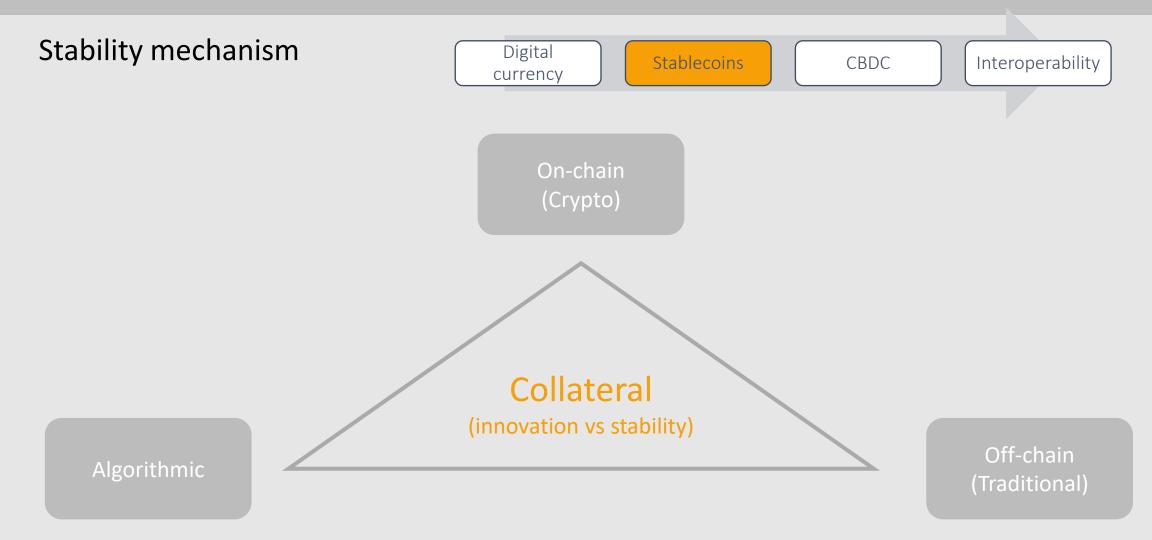
Interoperability



- Stablecoins often lack of transparency regarding their reserve assets, compared to money market funds (MMFs) although exposed to similar vulnerabilities
- Losses on reserves, may trigger loss of user confidence and prompt large-scale redemption requests, with contagion effects on the financial system.

Source: ecb.europa.eu

Stablecoins



Stablecoins

Use cases

Digital currency

Stablecoins

CBDC

Interoperability

Parking

- Temporary asset between trades
- Storage of value to avoid fx expenses

Bridge

- Bridging traditional and digital world
- Connecting fiat and crypto asset

Trading pair

- Crypto <-> Stablecoin
- 75% of trades were against a Stablecoin in September 2021

Collateral

- For crypto-asset derivative transactions
- DeFi. Liquidity provision/staking

Stablecoins

Risks

Digital currency

Stablecoins

CBDC

Interoperability

DeFi

- Parallel system
- (un)regulated

Concentration

 Two issuer representing 70% of market (Feb/2022)

Transparency

- Low disclosure of reserves
- Solvency

Redemption

- Unclear mechanics
- Handling of mass redemption

Operational resilience

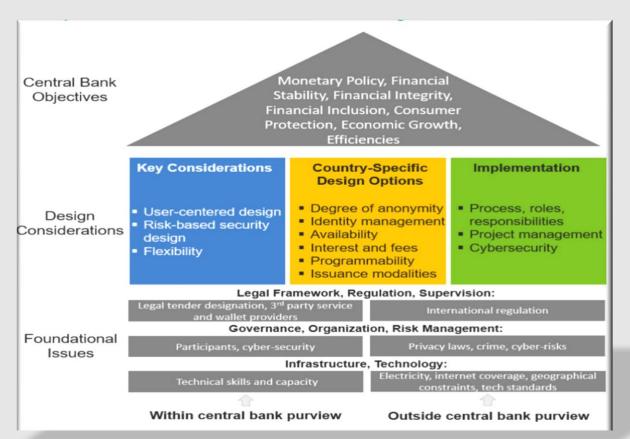
- Cyber risks
- Liquidity runs

4. Central Bank Digital Currency

Central Bank Digital Currencies

Objectives, Design, Issues

Digital currency Stablecoins CBDC Interoperability



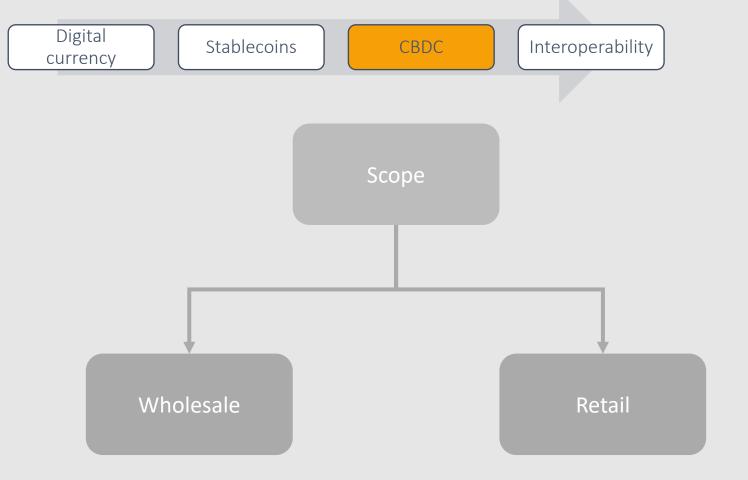
- Central Bank Digital Currencies are often debated
- What are fundamental design choices?
- What are the risks?

Source: IMF - A Survey of Research on Retail Central Bank Digital Currency

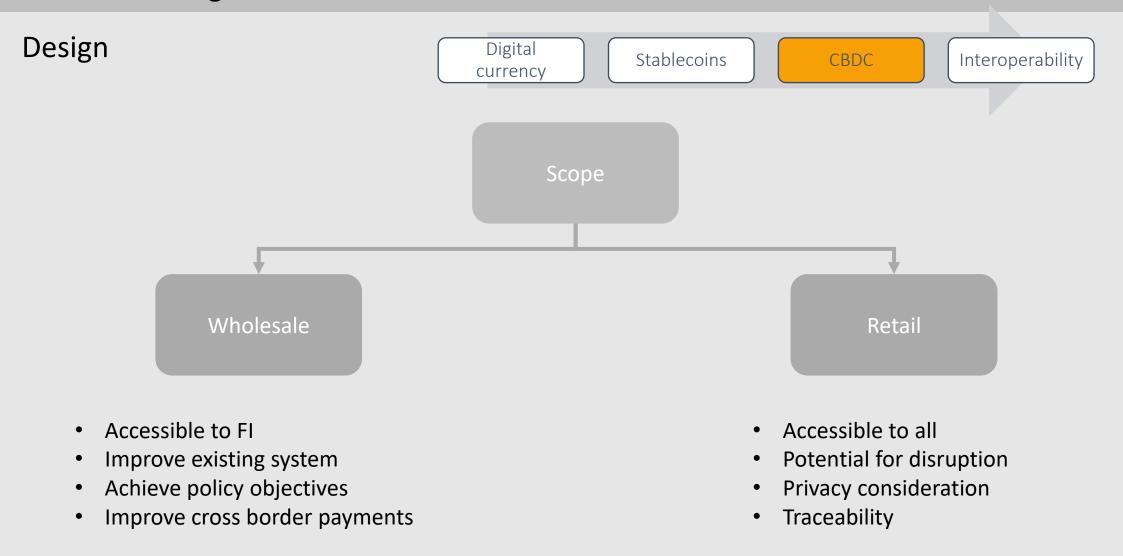
Central Bank Digital Currencies

Design

- Instrument
 - Interest-bearing
 - Limitation to individual holding
 - Programmability
 - Privacy
- Ledger
 - Degree of (de)centralisation
 - Payment authentication
 - Permissions (read/write)
 - Governance



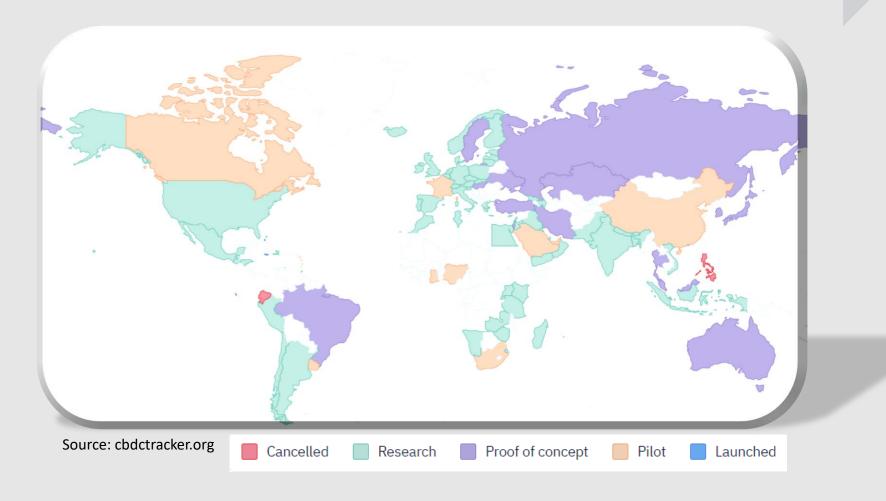
Central Bank Digital Currencies



Central Bank Digital Currencies

CBDC efforts overview

Digital currency Stablecoins CBDC Interoperability



Central Bank Digital Currencies

Projects in Switzerland

currency

Digital

Stablecoins

CBDC

Interoperability

Selected Projects explained



Settling tokenised assets in CBDC



Cross Border settlement with CBDC



Incl. commercial banks & core banking system

Central Bank Digital Currencies

Retail CBDC

Central bank Electronic issued Virtual Universally currency Peer-to-peer accessible CBCC Local currency (wholesale) currency Cryptocurrency (wholesale) Commodity

Source: bis.org

Digital currency

Stablecoins

CBDC

Interoperability

- Direct access to public money, as opposed to disappearing cash in modern digital economies
- Relatively stable digital money
- No credit and liquidity risks (same as cash today)
- Preventing oligopoly in retail payments (by financial institutions or wallet providers)
- Potential for greater privacy and control over personal information and transactions than provided by today's electronic payment system

Central Bank Digital Currencies

Wholesale CBDC

Universally accessible

Universally accessible

Bank Settlement or reserve mobile accounts

Deposited currency accounts

CBCC (retail) Cryptocurrency (wholesale)

Cash Cryptocurrency (wholesale)

Commodity money

Source: bis.org

Digital currency

Stablecoins

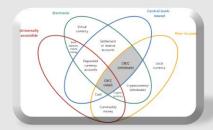
CBDC

Interoperability

- Restricted to use by financial intermediaries
- Strong use case: cross-border payments and settlements
- Atomic settlement and settlement in real-time
- The Bank for International Settlements Innovation Hub has embarked on Project Dunbar to explore a common multi-CBDC platform to enable atomic settlement across multiple countries. It is a partnership of the MAS, Reserve Bank of Australia, Bank Negara Malaysia, and South African Reserve Bank.

Central Bank Digital Currencies

Digital EURO by ECB



Source: bis.org

"In a more digital economy, we also need to ensure the strength and autonomy of European payment systems"
Christine Lagarde, ECB

Digital Stablecoins

ablecoins

CBDC Interoperability

Why introducing a digital Euro?

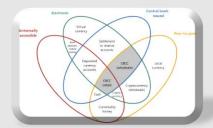
- 1. No solution across SEPA (Single Euro Payments Area) for retail, ecommerce or small straightforward P2P payments.
- 2. Decline of cash payments access to secure central bank money in the digital age.
- 3. Support digital processes on a large scale (e.g. automated payments).
- 4. Supporting digitalisation efforts by European legislators, such as digital identity.

To be considered:

>340 million people could use CBDC (Central Bank Digital Currency) to pay anywhere in the Single Euro Payments Area (SEPA (Single Euro Payments Area)), cross borders and independently of international providers.

Central Bank Digital Currencies

Digital EURO by ECB



Source: bis.org

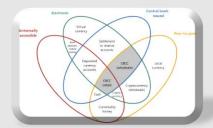
Digital currency Stablecoins CBDC Interoperability

Characteristics of a digital Euro?

- Complementary to cash
- Fast and convenient access to a digital means of payment for everyone
- Business neutral

Central Bank Digital Currencies

Digital EURO by ECB



Source: bis.org

Digital currency Stablecoins CBDC Interoperability

Risks of digital Euro?

- Exploration phase since October 2021 by Eurosystem experts
- Analysis of functionalities, conceivable technical infrastructure, as well as effects on the market and the role of intermediaries.
- Outflows of deposits from the banking sector and encourage short-term shifts during times of financial stress.
- Cyber security standards
- Operational resilience

Central Bank Digital Currencies

Interoperability



Source: bis.org



- mBridge Cross-Border Transactions
 - Multi central bank digital currency (mCBDC) platform for international payments
 - mCBDC Bridge is a wholesale CBDC co-creation project
 - exploring capabilities of distributed ledger technology (DLT)
 - studies application of CBDC in enhancing financial infrastructure to support multi-currency cross-border payments

5. Metaverse

Metaverse

Glimpse into the future



Source: fiat24.com

Digital currency Stablecoins CBDC Interoperability

Banking is gaining presence in the Metaverse

- 1Q22 JP Morgan first bank in the United States to enter Metaverse
- 2Q22 Fiat24, a Swiss based and FINMA licensed FinTech, entered Metaverse

What is it?

- Exploration phase
- Immersive customer experience and profiling
- (un)limited data gathering
- Enhanced "connectivity" / interoperability

Q&A







Happy to connect and stay in touch

Silvan Andermatt

LinkedIn

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