Banks and the future of money

Stablecoins, tokenised deposits and CBDC

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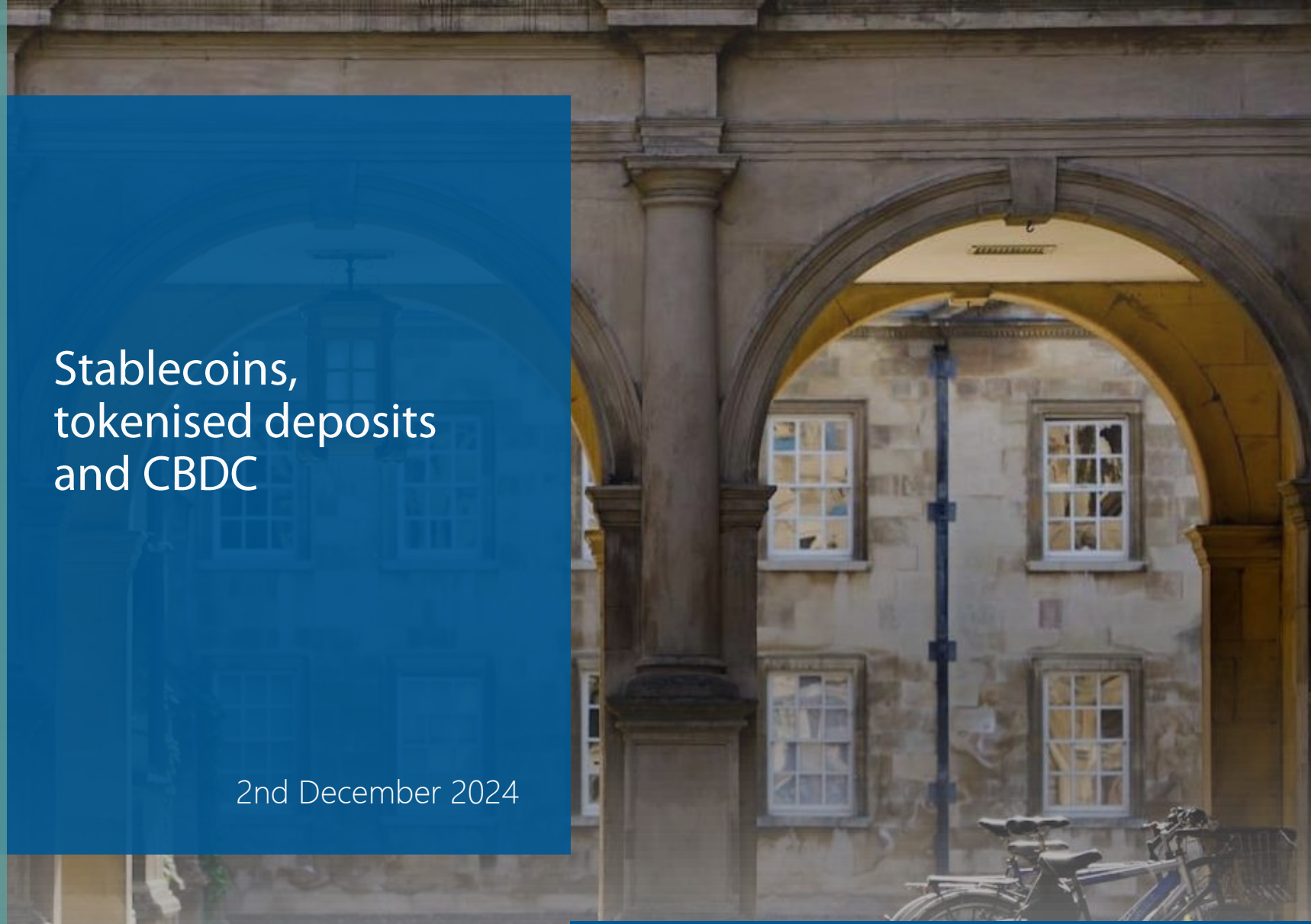

Financial Innovation for Impact

in collaboration with

Cambridge Centre for Alternative Finance

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Objectives

- To define money and describe its evolution over time
- To understand the digital riddle of money and the significance of DLT
- To identify and compare tokenized money instruments
- To reflect on the challenges for banking system

The concept of money

For something to be money, it perform three functions:

Unit of account

It can be counted and used to measure value

Medium of exchange

It's widely accepted and transferable from one person to another

Story of value

It can be stored, retrieved and used at a later time

Most importantly, we all need to trust that our money can do these things.

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History and technology

Monetary systems are built on one of the three types of base money.

- Commodity money (e.g. gold and silver coins)
- Representative money (e.g. USD that can be exchanged by gold)
- Fiat money (e.g. unbacked official currency)

Technology, trust / politics, etc, explain differences over space and time

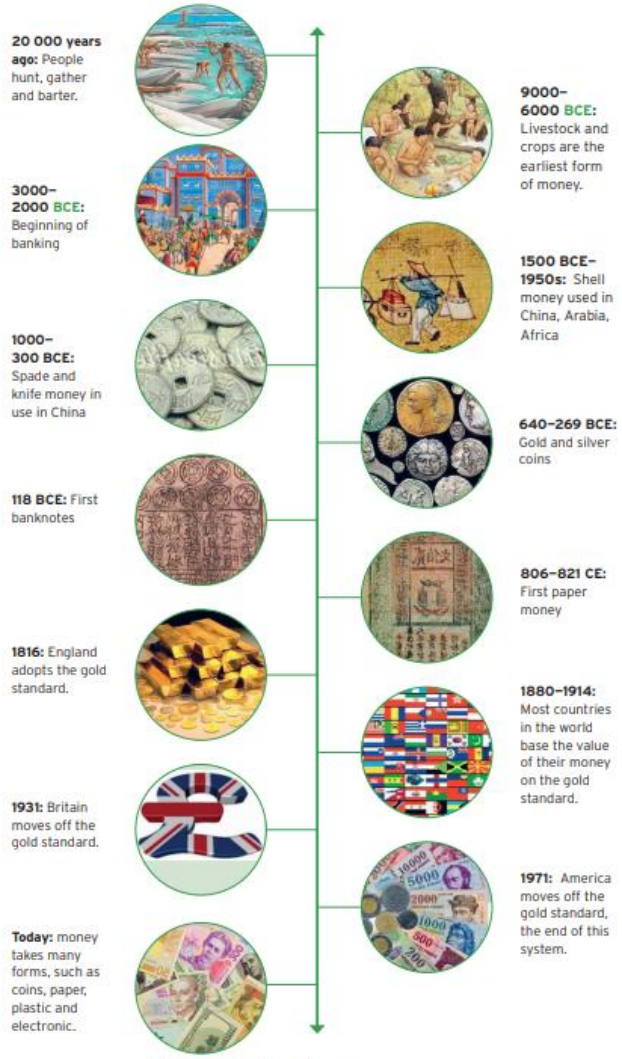


Figure 1.9 The history of money

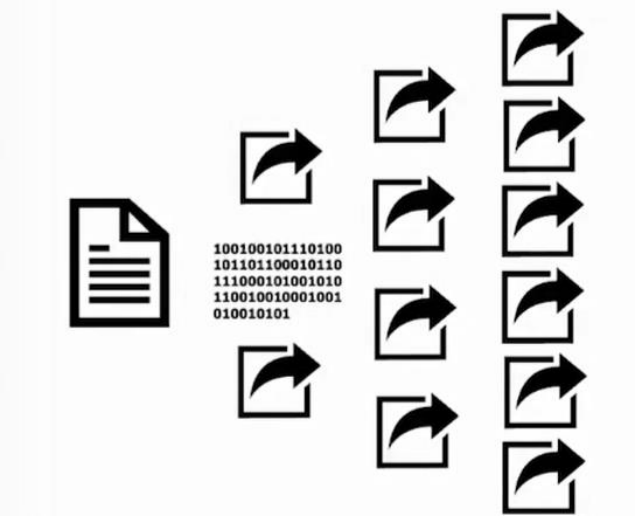
How is money represented and moved today?

- Today most of the money we use exists in the form of book entries on siloed proprietary ledgers (i.e. banks).
- **Moving money between these siloed ledgers must be connected by third-party messaging systems (Swift) that instruct involved parties to individually update their ledger books.**
- These systems create frictions, delay and add (intermediaries) costs to transfer and settlement processes (cross-border). They reduce electronic assets to 'dumb' data strings with little interactive functionality.

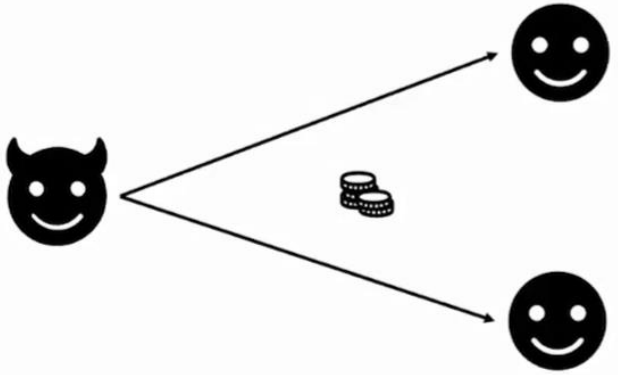
The riddle of digital money

How to move value on the internet peer-to-peer without a trusted central intermediary?

Digital abundance, which means that digital files can be replicated at zero cost;



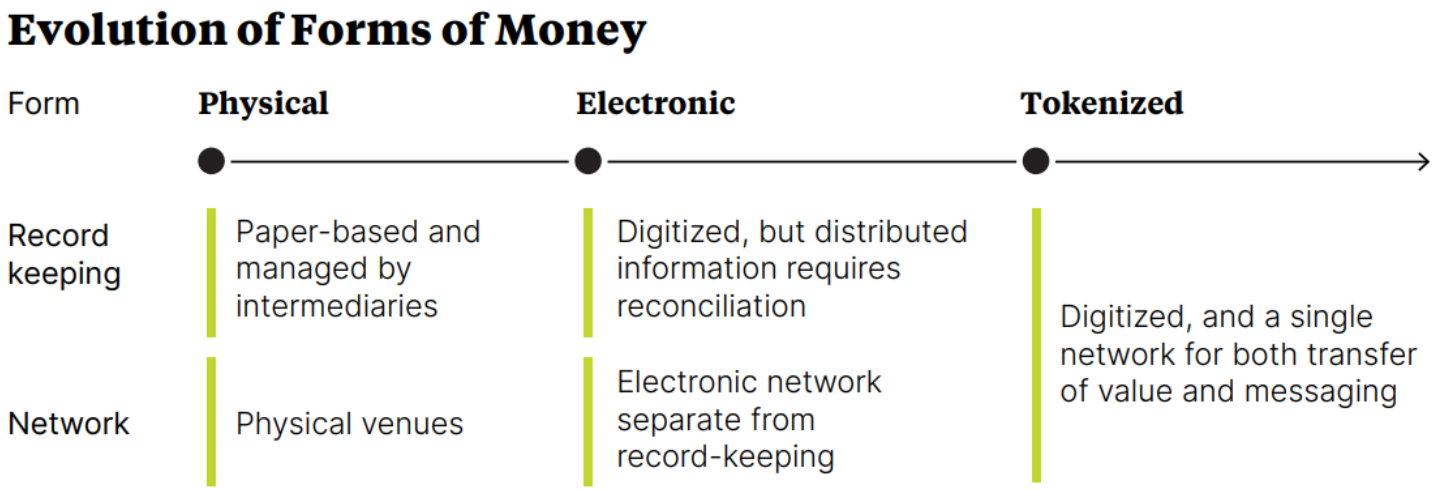
Double-spend problem, which means that files (e.g. coins) can be transferred more once;



“I've been working on a new electronic cash system that's fully peer-to-peer, with no trusted third party.”

Satoshi Nakamoto, 31 October 2008

Tokenised money



Source: Oliver Wyman

Tokenisation can be seen as the next logical step in digital recordkeeping and asset transfer. […] It could dramatically enhance the capabilities of the monetary and financial system by harnessing new ways for intermediaries to interact in serving end users, ***removing the traditional separation of messaging, reconciliation and settlement,"*** *BIS 2023.*

The race between tokenized money instruments

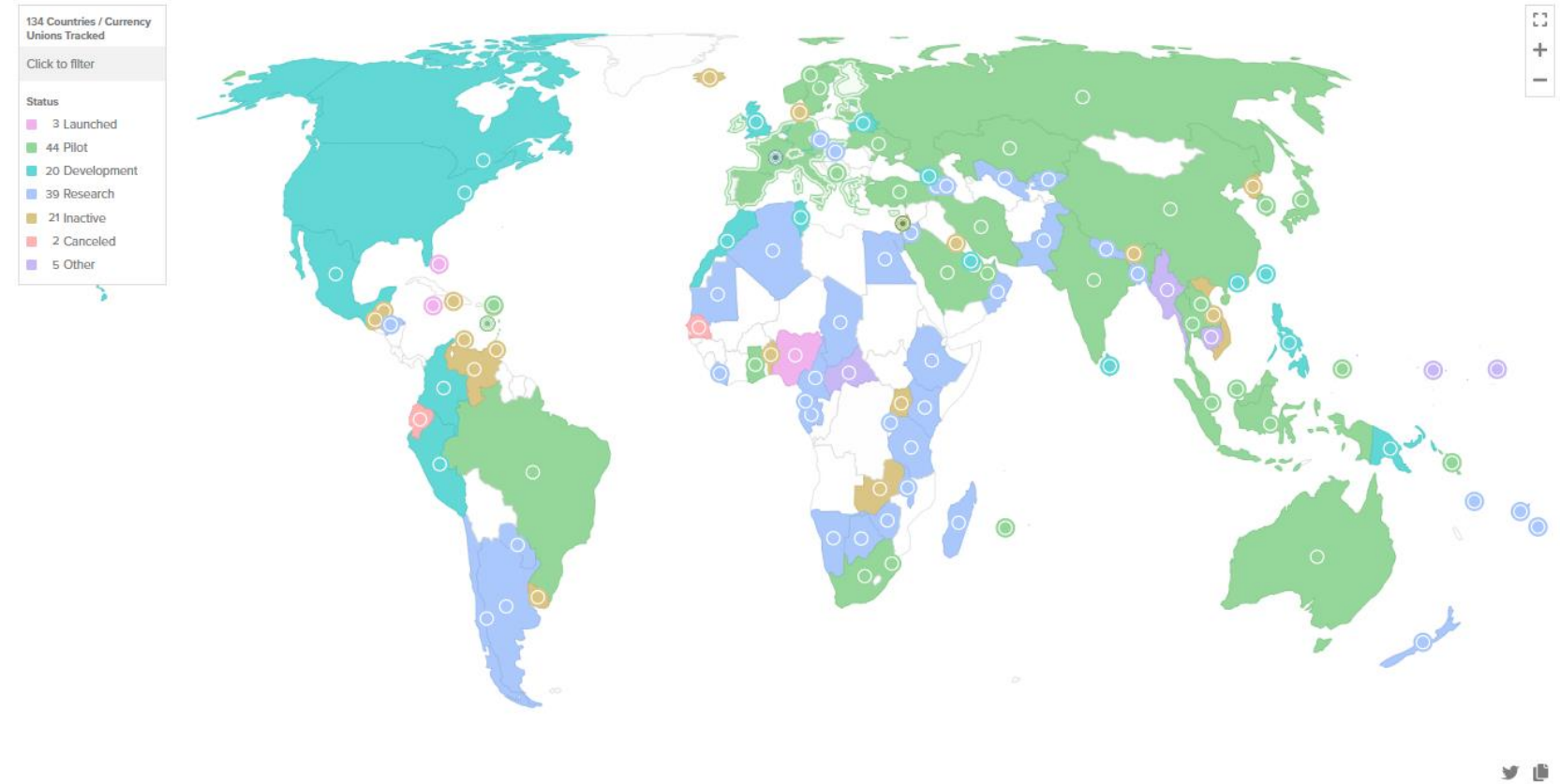
Central Bank Digital Currencies

CBDC is money issued by the central in digital form.

A retail CBDC is made available to all individuals, but digitally native and more similar in experience to a bank account.

Wholesale CBDC is only accessible to banks and others.

134 countries & currency unions, representing 98% of global GDP, are exploring a CBDC.

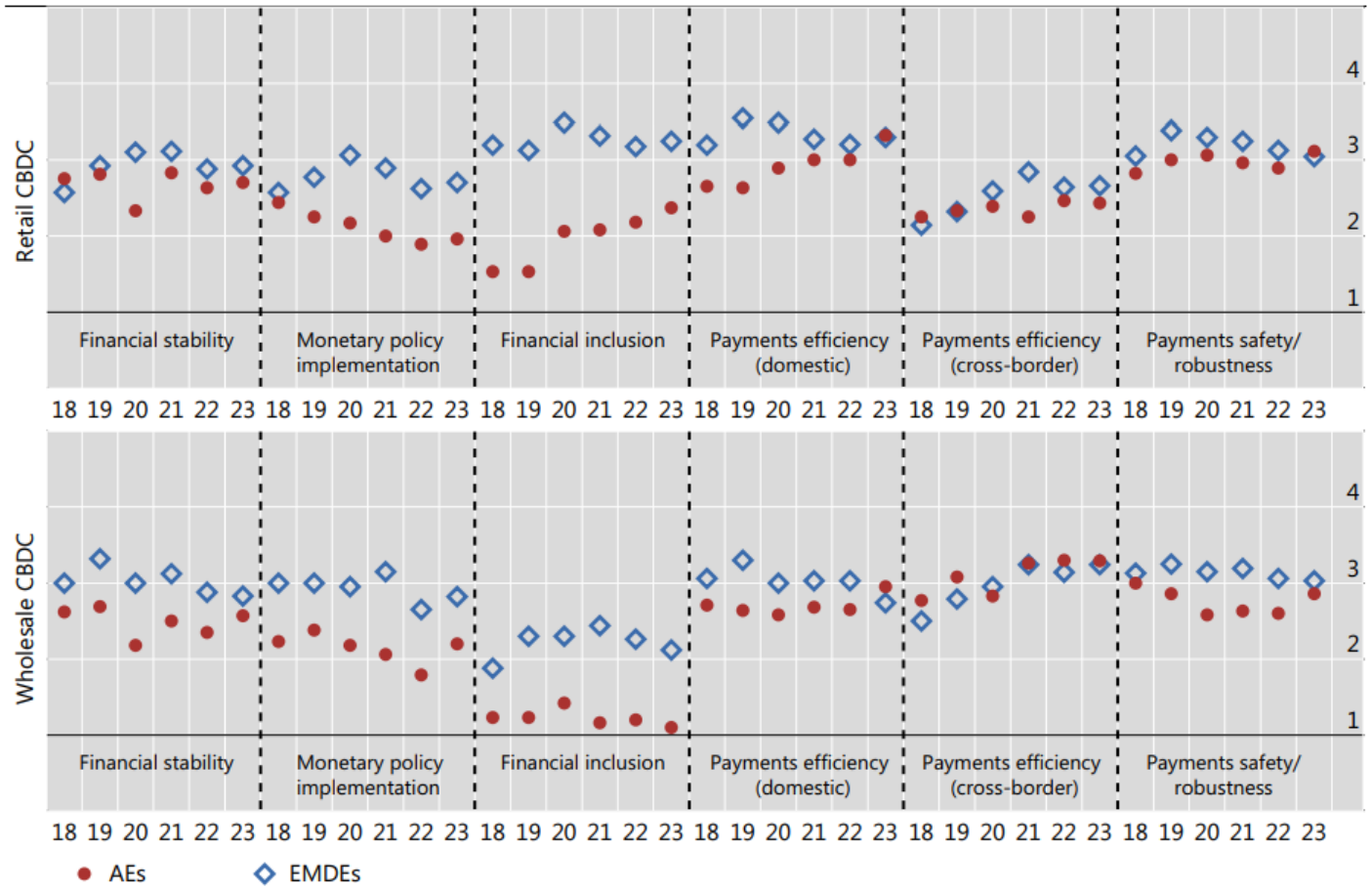


Source: Atlantic Council

Evolving motivations for issuing a CBDC

Motivations for issuing a retail and wholesale CBDC

Average importance, 1 (not so important)–4 (very important) Graph 5

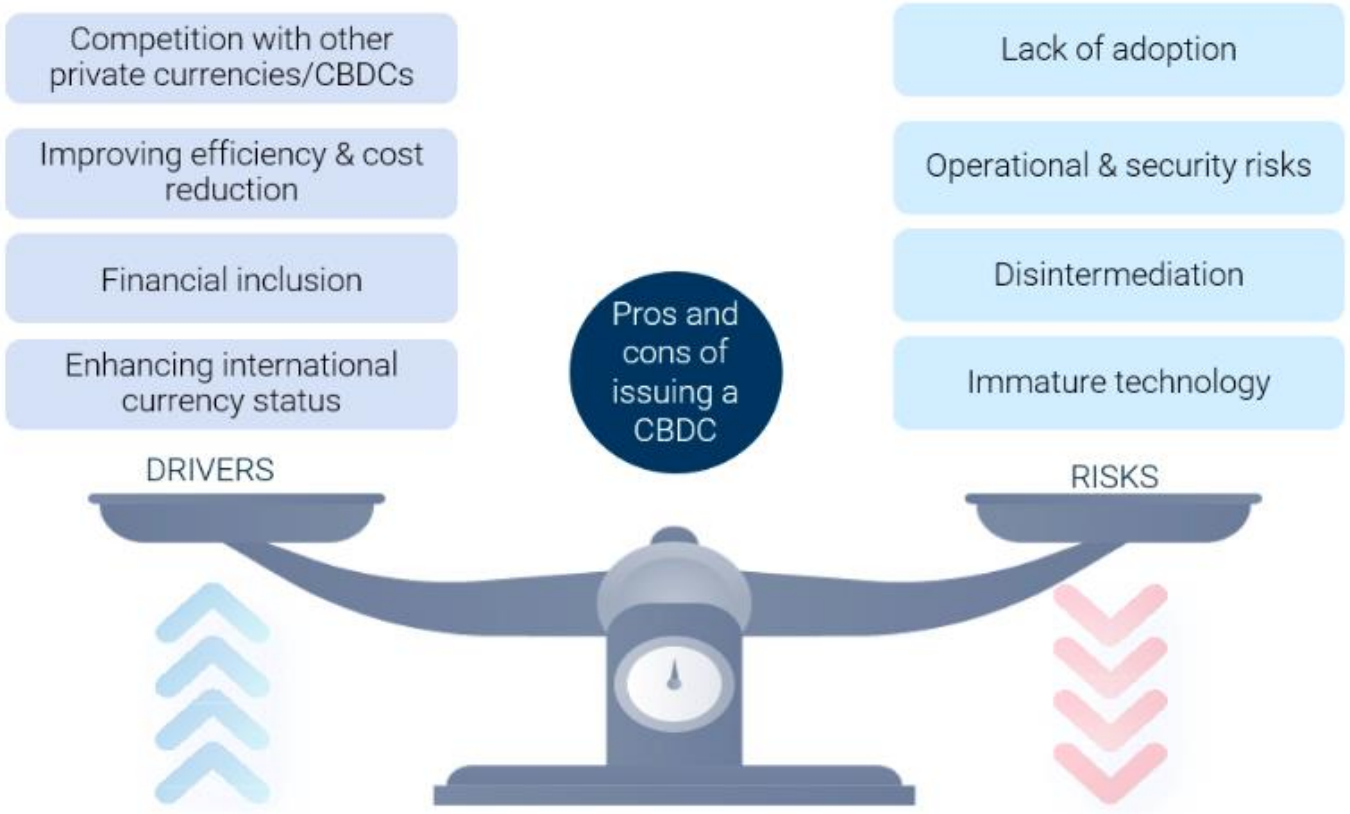


Sources: BIS central bank surveys on CBDCs and crypto, 2018–23; authors' calculations.

Source: BIS

Risks and opportunities of CBDCs

There are a range of opportunities with CBDCs, but also significant risks. Different jurisdictions will weigh risks and opportunities differently. A critical issue is whether it changes the relative roles of commercial banks and the central bank (private vs public money)

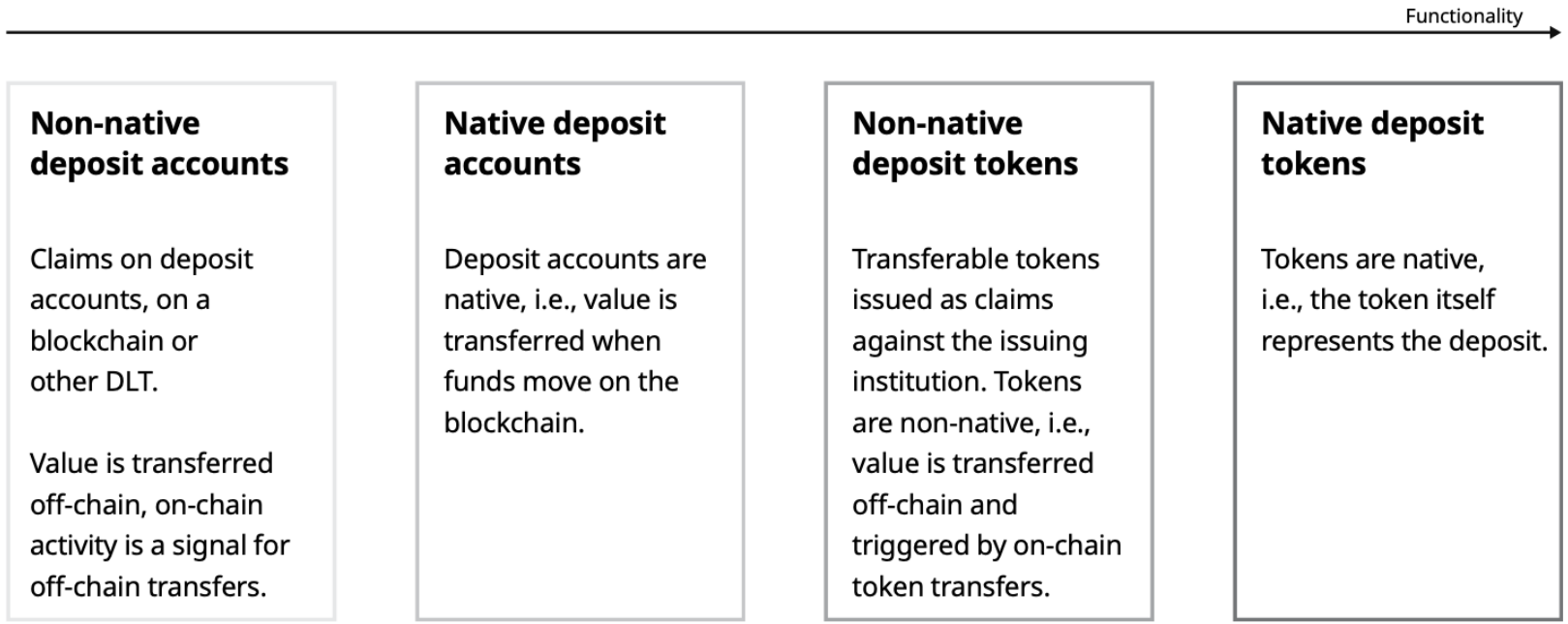


To address the risk of disintermediation, some jurisdictions are considering introducing limits on CBDC holdings for retail and corporate users.

Source: Goldman Sachs

Tokenised deposits – work in progress

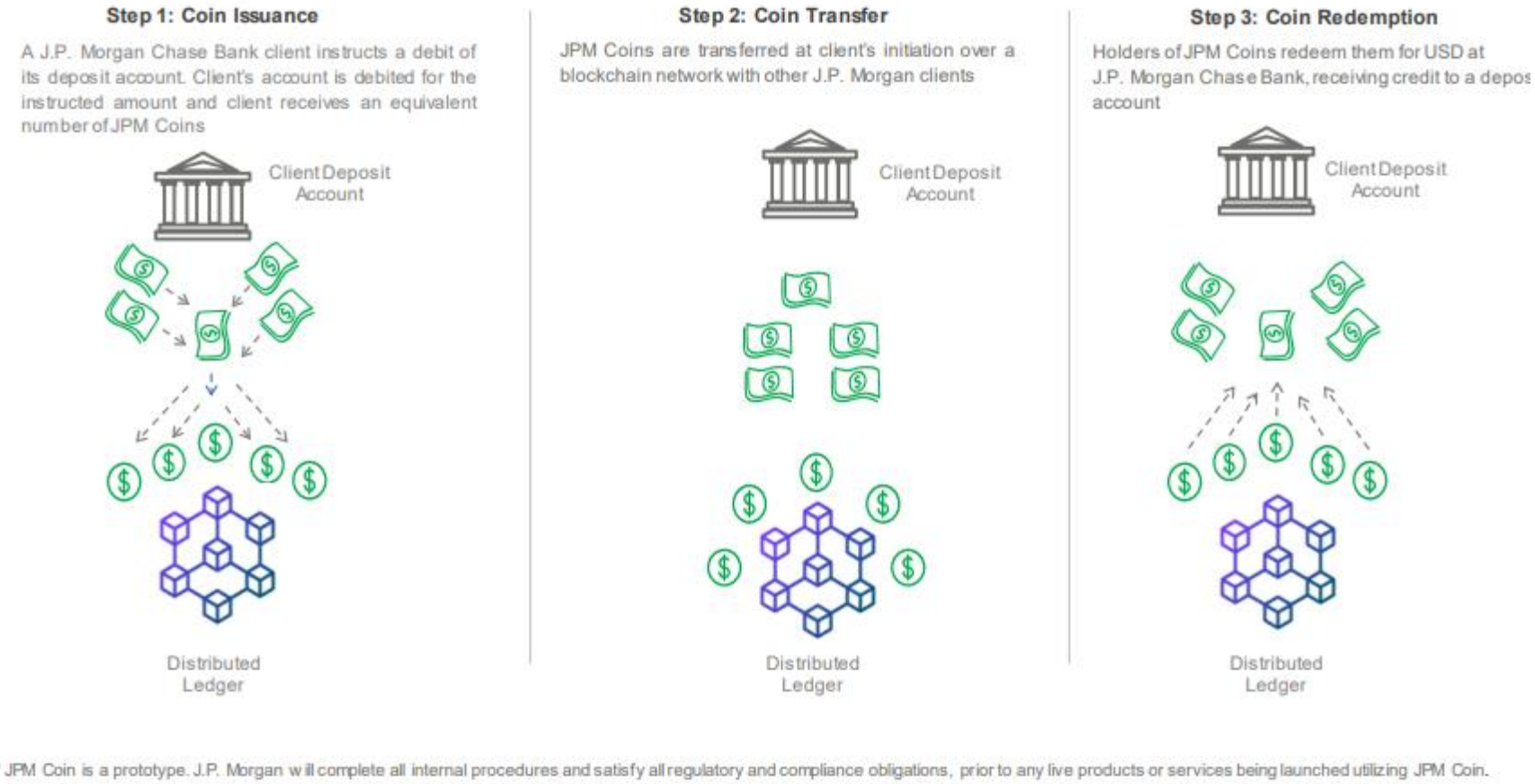
Tokenized deposits are a digital form of a bank deposit issued by a regulated institution on a programmable platform. **Most tokenized deposits live on private permissioned chains operated by a single bank i.e. there is no interbank settlement capability for such tokens. There are several attempts to address this problem (e.g. Project Guardian). Many issues remain to be resolved in both regulation and business models.**



Should prudential requirements for banks change with the changing features of deposits?

Source: Oliver Wyman

Tokenised deposits – JPMorgan Coin

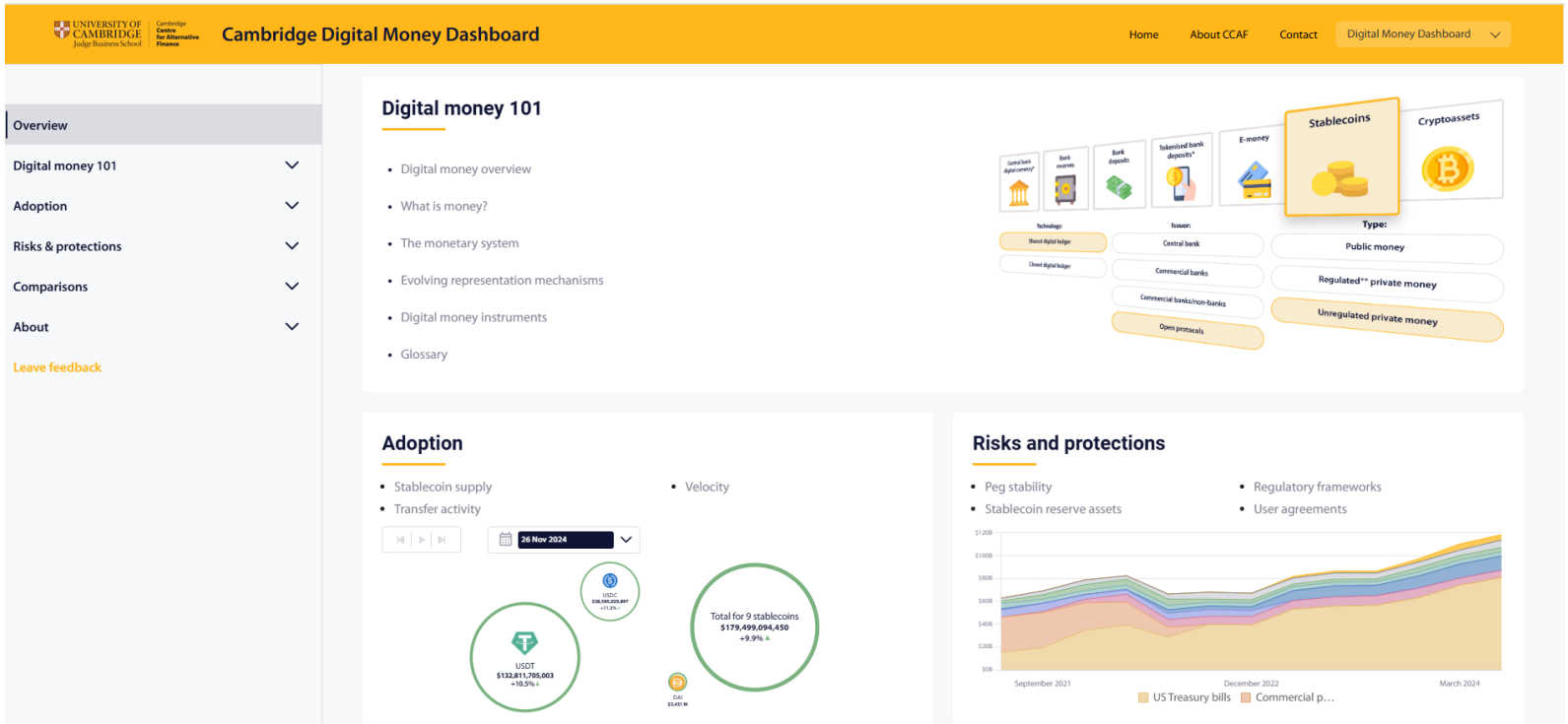


* JPM Coin is a prototype. J.P. Morgan will complete all internal procedures and satisfy all regulatory and compliance obligations, prior to any live products or services being launched utilizing JPM Coin.

Source: JPMorgan

Stablecoins

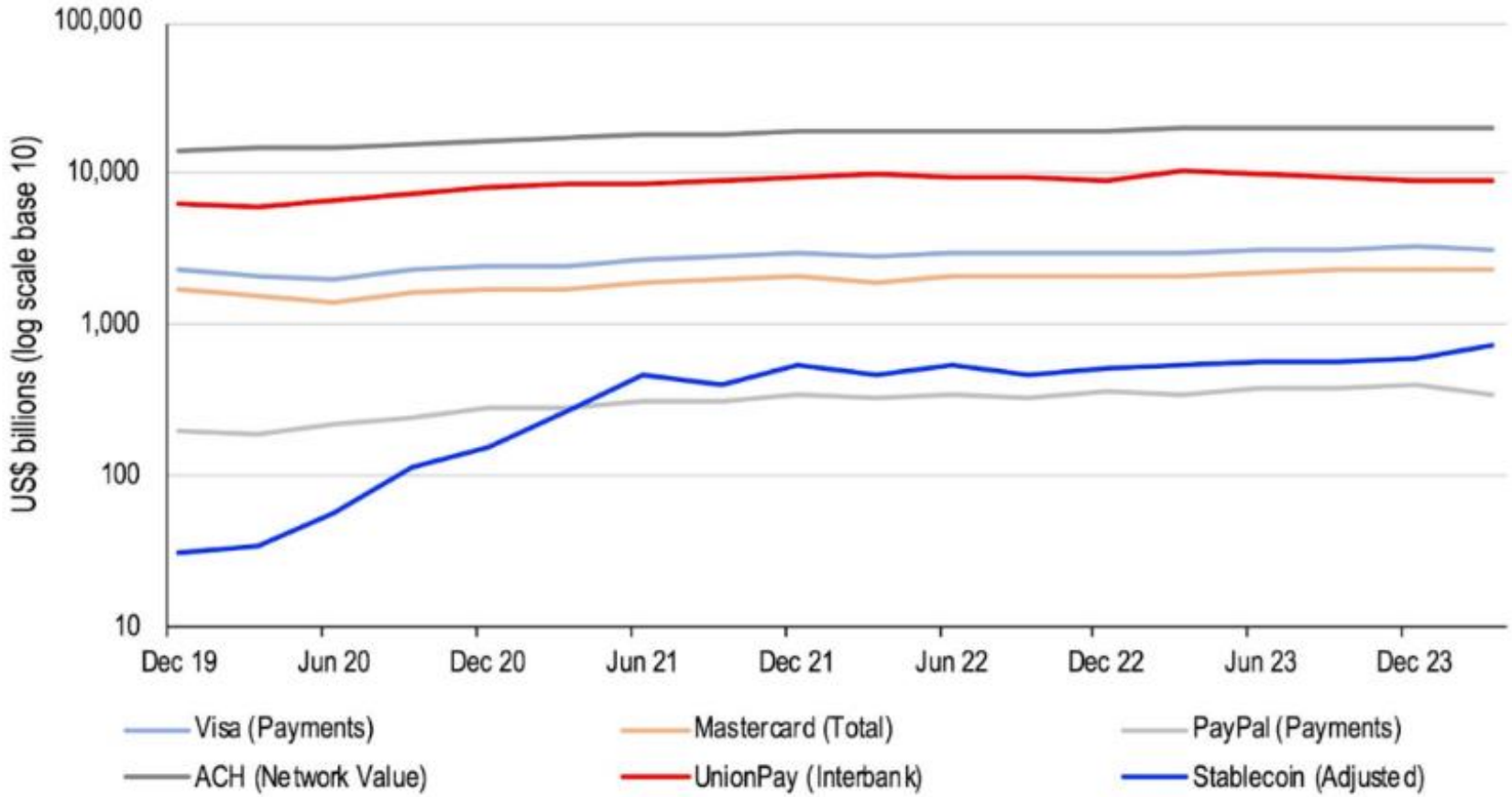
Stablecoins are digital asset designed to maintain a stable value against a fiat currency, such as the US dollar or the Euro, backed by assets denominated in that currency.



Source: https://ccaf.io/cdmd/

Stablecoins are increasingly used in payments

Chart 4. Quarterly volumes of existing payment systems (US$ B)

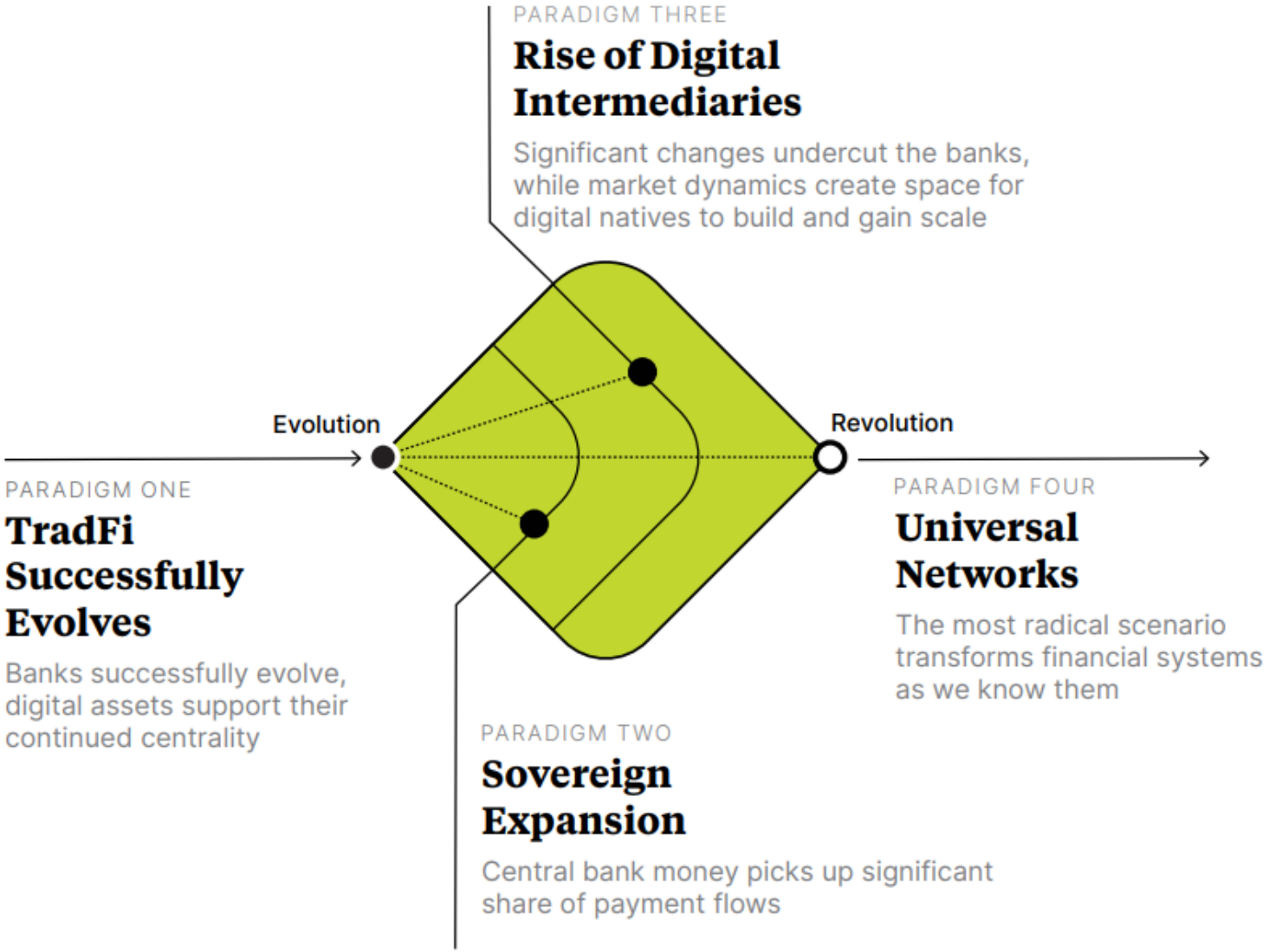


Sources: Allium, Mastercard, Nacha, PayPal, People's Bank of China, Visa and Coinbase.

Regulating tokenized money

Bank	**Issuer**	Non-bank
Against the issuer	**Rights and redemption**	Against reserves
Fractional	**Reserves**	Full
Permitted	**Remuneration**	Banned
Required	**Identification of user (i.e. whitelist)**	Not required
No	**Limits on use (e.g. in payments)**	Possible
Account	**Form**	Bearer
Central bank money	**Settlement**	Self-settling

Four future scenarios



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TradFi evolves

Experimentation will drive viable business models for banks.

Regulators will support this shift by fostering innovation and potentially strengthening banks' roles.

This outcome is more likely if regulations limit the growth of digital-native firms or constrain their commercial models.

Sovereign expansion

CBDCs pick up a significant share of payment flows.

This diversion of payment flows from private money to public would have a significant impact on bank business models (less deposits, more equity and wholesale funding).

Banks could move to fee-based business model, allocating and distributing public money.

Rise of digital intermediaries

Banking could be squeezed, with digital natives controlling customer access and expanding financial services provided.

Money increasingly moves into stablecoins held in digital wallets.

Beyond banks, competition between digital natives could also accelerate and would likely include the entry of big tech players.

Universal networks

The rise of new open networks would enable borrowers and lenders, issuers and investors, and other market participants to deal directly, without intermediaries.

The trend toward capital market-based financing would be accelerated by algorithmic creation and allocation of credit over highly integrated networks.

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Which scenario is more likely to unfold by 2035?

ⓘ Start presenting to display the poll results on this slide.

Key takeaways

- Money is poised for transformative changes in its creation and use, potentially reshaping the financial system and role of banks in it.
- Emerging technologies like distributed ledger technology (DLT) are driving the development of new money instruments such as central bank digital currencies (CBDCs), tokenized deposits, and stablecoins.
- The trajectory of money and payments will depend on various factors, including which forms of digital currency achieve widespread adoption, the technological designs implemented by issuers, the use cases they prioritize, the structure of incentives, and the regulatory and policy frameworks that evolve to support them.


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Introduction to the Cambridge Centre for Alternative Finance

Mission

To create and transfer knowledge addressing **emergent gaps** in the financial sector in order to **support evidence-based decision-making** by market participants, regulators and related stakeholders

- Established in January 2015 at the University of Cambridge Judge Business School (CJBS)
- Core activities: 1) Research (80+ publications); 2) Digital Tools (see ccaf.io); 3) Capacity building & education (trained over 2,800 regulators and central bankers)
- 4 Programmatic workstreams: 1) FinTech Market; 2) Regulatory Innovation; 3) Supervisory Innovation & 4) Digital Assets
- Supported by more than 100 full-time and part-time staff, fellows, research fellows and affiliates

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Digital Assets at the CCAF

In 2017, following the increased interest in digital assets, we released the first study to systematically investigate key cryptocurrency industry sectors by collecting empirical, non-public data. The study gathered survey **data from nearly 150 cryptocurrency companies and individuals**, and it covers **38 countries** from five world regions.

Since then, we have published **7 reports** mapping the global digital assets ecosystem as well as investigating the various regulatory frameworks being developed to ensure risks are mitigated.

In response to growing environmental concerns around cryptocurrency mining, we launched the Cambridge Bitcoin Electricity Consumption Index (CBECI) in 2019 which initially **included a mining map and a daily estimate of Bitcoin's electricity consumption**. To date CBECI has had 600+ mainstream media citations.

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CAMBRIDGE DIGITAL ASSETS PROGRAMME

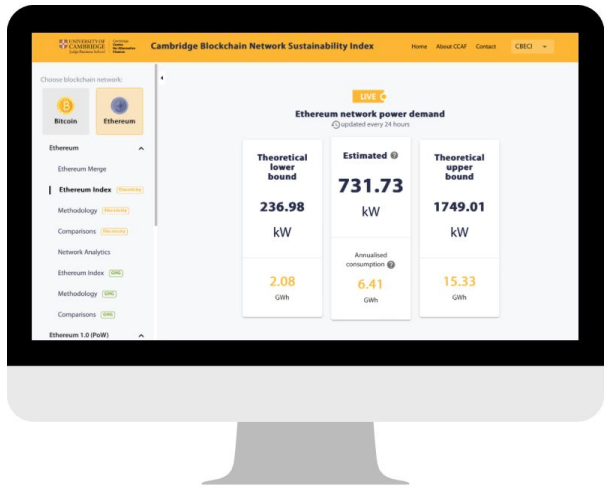
In March 2022, we **launched** Cambridge Digital Asset Programme (CDAP) **together with 16 renowned public and private financial institutions**. Since the launch we have added Bitcoin greenhouse gas emission estimates to CBECI, updated mining map data, released a research paper investigating the definition of DeFi, and started the development of both a Digital Money Dashboard, and DeFi Risk Dashboard.

In response to the growing demand of education and capacity building on digital assets, we **launched the Cambridge Digital Assets Course for Regulators (CDAR)** in January 2023 with the initial cohort comprising **70 regulators** from **25 countries**.

Global & Regional Reports | **Digital Tools with publicly downloadable datasets** | **Capacity Building**

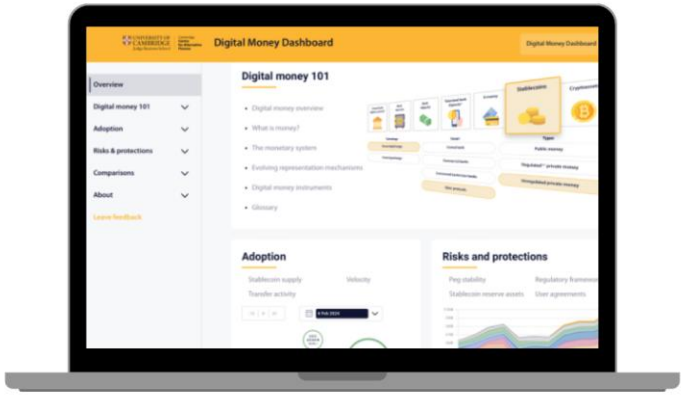
Digital Asset Tools

Cambridge Blockchain Network Sustainability Index



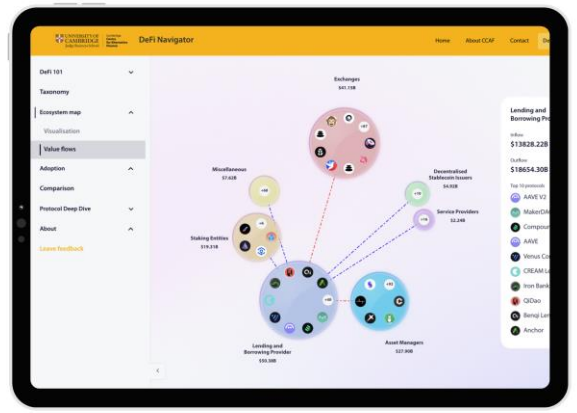
In April 2023, we launched the **Cambridge Blockchain Network Sustainability Index (CBNSI)** which offers detailed insights into the environmental impact of blockchain networks, focusing on Ethereum in the initial release. Leveraging the methodology of the Cambridge Bitcoin Electricity Consumption Index (CBECI), it provides data on Ethereum's electricity usage before and after The Merge, including comparisons and analyses of its environmental implications.

Digital Money Dashboard



In February 2024, we **launched the Digital Money Dashboard**, which provides policymakers, financial authorities, industry professionals and the general public with a trusted and comprehensive source of digital money data and educational content. With real-time datasets and interactive visualisations it provides greater transparency and insights into the digital money landscape.

DeFi Navigator



In November 2024, we **launched the DeFi Navigator**, which provides policymakers, financial authorities, industry professionals and the general public with a trusted and comprehensive source of decentralised finance data and educational content. The tool includes a comprehensive DeFi taxonomy, several ecosystem maps, and insights into adoption trends, governance, and custodial arrangements.