Digital Money

How the Ways We Pay and Get Paid are Going to Change

Future of Finance

Future of Finance

Tokenisation

October 15th 2024

Venue: The Aon Centre, The Leadenhall Building, 122 Leadenhall Street, London EC3V 4AN

The inaugural Future of Finance Tokenisation Event will assess the current state of the token markets, analyse the current obstacles to growth, explain the many benefits and opportunities that will flow from tokenisation markets as they scale, and itemise the threats that fully realised and liquid token markets pose to incumbents.

Find out more on our website

www.futureoffinance.biz

On 13 June 2024 Future of Finance hosted a one-day Digital Money event at the offices of Reed Smith in London. Entitled *How the Ways We Pay and Get Paid are Going to Change*, the event attracted 170 registrants from banks, central banks, financial market infrastructures and FinTechs. This is an account of what they contributed to the seven panels that day, as well as what they learned from the panellists and each other.

Panel	Title	Page
1	Bitcoin versus fiat currency: Did the cryptocurrency promise to transform money die of its own shortcomings or was it killed by central banks?	5
2	The impact of digital money on how payments are made	8
3	How can we build a fully transferable tokenised deposit market?	11
4	How many routes to interoperability does digital money need?	14
5	Is a unified programmable platform for multiple forms of digital money and digital assets a viable objective?	17
6	What are the roles of regulated and unregulated Stablecoins now?	20
7	What are the challenges and opportunities for a major reserve currency issuing a CBDC?	23

Bitcoin versus fiat currency: Did the cryptocurrency promise to transform money die of its own shortcomings or was it killed by central banks?

Bitcoin has demonstrably failed to deliver on its initial promises. Although more than 15,000 businesses around the world accept Bitcoin as payment, and both payment service providers and credit card companies are making it easier to move between Bitcoin and fiat currency, it is still extremely hard to spend Bitcoin in a shop or restaurant.

This is not surprising, since the day-to-day value of Bitcoin is so volatile that consumers are reluctant to use it and merchants to accept it. In addition, Bitcoin has proved that even peer-to-peer transfers cannot escape transaction fees, which also turn out to be highly volatile. Nor is Bitcoin safer than notes and coins or a bank deposit. Though Bitcoin has not been hacked since 2014, holders regularly lose their private keys or find a crucial storage device has failed.

The volatility in the value of Bitcoin reflects its reliance not on a creditworthy issuer but on the ability of the largest holders to attract successive waves of investment, mostly from retail investors. Like so many conventional financial products, Bitcoin functions mainly as a means of enriching the wealthy and the professional at the expense of retail investors, with the added disadvantage of proving useful to criminals and sanctions evaders.

So it is not surprising that the one burden regulators in developed markets have laid on participants in the Bitcoin market is Anti-Money Laundering (AML), Countering the Financing of Terrorism (CFT) and sanctions screening tests. For similar reasons, a growing number of regulators are restricting the marketing of cryptocurrencies – of which Bitcoin remains the most important - to retail investors.

The otherwise light regulatory touch has had the opposite of the anticipated effect by inhibiting direct institutional investment in Bitcoin, though institutional money has shown interest in Bitcoin derivatives and spot Bitcoin Exchange Traded Funds (ETFs). ETFs became available only after a court judgement forced the Securities and Exchange Commission (SEC) to allow them to be issued in spite of concerns about the impact on retail investors.

The uncertain regulatory position of Bitcoin has had wider effects. Though Bitcoin is credited with pioneering the issuance of tokens on to blockchain networks, the unregulated nature of the cryptocurrency itself has blighted efforts to develop markets in tokenised securities, funds and deposits. This reflects continued misunderstandings of the differences between cryptocurrencies and tokens.

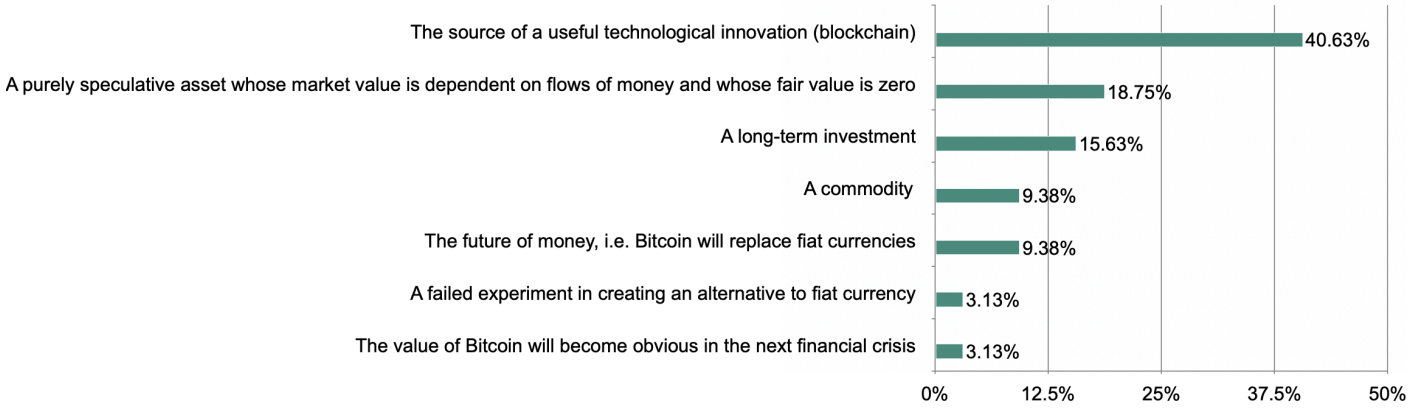
Another mixed legacy of Bitcoin is the proliferation of blockchain protocols which are not inter-operable, suppressing the development of liquidity in the wider token markets. Even where adoption of Bitcoin-inspired innovations is occurring, such as in the issuance of central bank digital currencies (CBDCs) to bring the unbanked within the financial system or to make cross-currency payments cheaper and faster, progress is more apparent than real.

15½ years have now elapsed since Bitcoin was launched in January 2009. Bitcoin today is a US$1.1 trillion speculative asset, without any meaningful underpinnings, controlled by a small number of large holders and exploited by both professional traders and criminals. A meaningful use-case for Bitcoin has yet to be identified. Thanks to its correlation with conventional assets, it cannot fulfil even the original ambition of its creator: to be a haven outside the legacy financial system. Bitcoin appears increasingly to be a failed experiment in creating a non-bank alternative to fiat currencies.

Panellists: Dr Raoul Herborg, Managing Director at Giesecke+Devrient; Alistair Milne, Professor of Financial Economics at Loughborough University; Tariq Rasheed, a Partner at Reed Smith; and Heike Winter, Principal at the Deutsche Bundesbank.

What the Audience Said

What is your assesment of Bitcoin?



Key Points Raised in the Panel Discussion

Benefits

• Bitcoin deserves credit for inspiring the development of peer-to-peer transfers of value on blockchain-based networks, not just in the payments industry but in the securities and funds industries too, presaging a future in which the costs of all types of financial transactions are lowered by disintermediation.

• Bitcoin also deserves credit for pioneering (via the Lightning Network, where minimum transaction sizes and fixed transaction fees do not apply) the possibility of making high volumes of micro-payments, where an obvious use-case is paying consumers for contributing to data sold by technology companies.

• The true long-term value of Bitcoin will likely lie not in Bitcoin as a form of money or as a payment instrument but in the use of blockchain technology to support central bank digital currencies (CBDCs) and make cross-border payments cheaper, faster, more transparent and more accessible.

• Bitcoin might develop as an alternative form of money to fiat currencies if physical cash disappears and consumers do not believe that CBDCs are anonymous, despite claims that privacy-preserving technologies are being developed for bearer versions of CBDCs.

Issues

• Bitcoin is not comparable with commodities sometimes treated as money (such as gold) because it generates no income and has no alternative or industrial uses, making its value entirely dependent on flows of speculative capital into and out of the asset class.

• Bitcoin can be treated as a store of value only as long as holders of Bitcoin believe it can retain and even increase its value, and the rapid collapse in the value of other cryptocurrencies indicates this confidence is fragile, creating a risk that the fair value of Bitcoin is zero.

• The slow speed, reversibility and transaction costs of Bitcoin payments compare unfavourably with the real-time gross settlement systems (RTGSs) operated by central banks, especially in terms of speed (which can be instantaneous) and finality (by which transactions are legally irreversible).

• Bitcoin has failed to win the confidence of legitimate consumers or merchants even in El Salvador, where the government made it legal tender in 2021, because of its price volatility, concerns Bitcoin transactions are not private and the fact that the official digital wallet is hard to use.

• The anonymity of Bitcoin transactions (however attenuated in practice, with experience showing that Bitcoin transactions are traceable) allows criminals to engage in nefarious activities, citizens to get round exchange controls and sanctioned entities and states to bypass sanctions.

• Bitcoin is unlikely to be prove a popular flight-to-quality asset in a financial crisis because of the strong correlation between the market performance of Bitcoin and the market performance of conventional financial assets, making Bitcoin useless as a hedge against price declines in financial markets.

Regulation

• Despite evidence of addiction to cryptocurrency trading, Bitcoin should not be regulated in the same way as gambling, alcohol, tobacco or narcotics but must instead be regulated (as derivatives were) as a new and separate asset class, currently being pioneered by the Markets in Crypto Assets Regulation (MiCAR).

• Regulation of Bitcoin is complicated by the absence of an issuer to regulate (or sue in the courts) and by the permissionless nature of the Bitcoin network, which means only the on- and off-ramps can be regulated, not the market participants or the instrument itself.

• Institutional interest in holding Bitcoin as an asset directly (as opposed to via exchange-traded funds and derivatives) is inhibited by the unclear regulatory status of Bitcoin, and the lack of regulated third party custodian banks to hold Bitcoin on behalf of investors, as well as its volatility and lack of asset backing.

• The new-found enthusiasm of US presidential candidate Donald Trump for Bitcoin reflects his political interest in appearing to support Main Street versus Wall Street, stimulating economic growth via deregulation and satisfying the sources of some of his campaign donations.

The impact of digital money on how payments are made

Payment services have made significant progress. Since 2008, when the Faster Payments service was introduced in the United Kingdom, instant payment around-the-clock has become a global norm. It is delivered not by blockchain technology but through domestic payments market infrastructures. In fact, payments infrastructures now process higher volumes of low value transactions and inter-bank payments more securely than ever before.

Other innovations are having an impact. Open Banking, also pioneered in the United Kingdom, has (despite its shortcomings) intensified competition in payments. One consequence is that embedded finance - or integrated Buy Now Pay Later credit services - are readily available at retailers. The United Kingdom has also led the world in giving non-bank Payment Service Providers (PSPs) access to settlement in central bank money.

The keys to cash payments on blockchains - namely, Stablecoins and E-money, which must be 100 per cent covered by cash on deposit at an independent bank - are either available now or awaiting regulatory approval. Digital wallets are readily available (indeed, the problem may be not a lack but a surfeit of them). A steady movement away from card intermediated payments to peer-to-peer and account-to-account payments out of digital wallets, saving retailers card fees, is gathering momentum.

In corporate payments, payment versus payment (PvP) in cash and FX or delivery versus payment (DvP) in securities is replacing reconciliation and balance sheet updating between correspondent banks. Instant settlement is replacing the three-day settlement cycles of the past. Early payment is reducing the cost of liquidity, including the cost of cash and collateral. Payment transaction costs, which range up to 2 per cent for domestic payments and average 6.4 per cent in cross-border payments, are falling.

An important question is what digital money could do to improve on these gains. Clearly, payments entrepreneurs believe there is still room for improvement. Consultants BCG have counted 5,000 FinTechs active in payments around the world. They predict that by 2030 FinTechs will own a quarter of a global payments market they say will be worth US$2.2 trillion in 2027. Which probably means not that a digital money revolution is imminent but that banks have struggled and are continuing to struggle to compete.

However, much of the improvement is more apparent than real. Instant payments are not instant, batch processing is more common than real-time processing of payments, and the most popular digital wallets continue to rely on banks and existing payment infrastructures. There are no genuine peer-to-peer, wallet-to-wallet, app-to-app payments going on. Banks have also resisted changes that might reduce their profits, notably in Open Banking, where they have made it hard for apps to succeed.

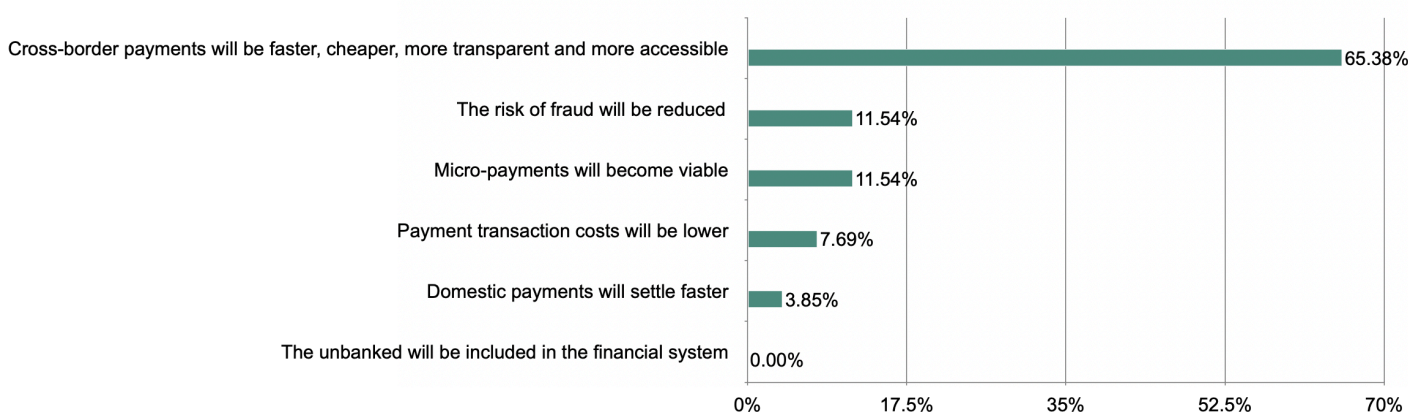
The biggest potential benefit of digital money – namely, programmability – remains a pipedream. Expectations that money could be programmed to limit the use of funds to avoid expenditure on alcohol or tobacco or gambling, restrict the use of welfare payments to energy or food or rent, defer payments of suppliers until milestones are reached, self-execute payments by smart contracts once data oracles trip switches, make payments only if supplies are actually received and reduce chargeback and refund costs when goods are returned, remain mired in the realm of theory only.

The forms that future money could take – Stablecoins, tokenised deposits, Central Bank Digital Currencies (CBDCs) and e-money – have proliferated, but without escaping niches (including criminal niches) or attaining scale or developing an inter-operable infrastructure that would drive network effects. Experiments with Bitcoin (in El Salvador) and CBDCs (in the Bahamas, Eastern Caribbean, Jamaica and Nigeria) as payment instruments have not enjoyed conspicuous success. Tokenised deposits remain intra-bank only. So far, the impact of digital money on payments is unimpressive.

Panellists: Tony Craddock, Director General at The Payments Association; Jón Egilsson, Chair and Co-founder of Monerium; Varun Paul, Senior Director at Fireblocks; and Sam Seaton, CEO of Moneyhub Enterprise.

What the Audience Said

How will digital money impact payments?



Key Points Raised in the Panel Discussion

Benefits

• Cryptocurrency payments infrastructures are merging with conventional payments infrastructures, through fiat currencies issued on to blockchain platforms in the form of Stablecoins and e-money within regulatory frameworks such as the Markets in Crypto Assets Regulation (MiCAR).

• The Internet of Things (IoT), in which domestic devices are connected to the Internet and initiate transactions, demands programmable money, real-time settlement and micro-payments, and this will drive further convergence of blockchain-based and conventional payments systems.

• The traditional method of settling payments by reconciliation and netting and the debiting and crediting of bank balance sheets will be replaced by a payments system in which value is transferred in tokenised form across the Internet in the same way as other forms of data.

• Cross-border, cross-currency payments will become faster and cheaper, with fewer intermediaries levying transaction costs, and more rapid crediting of accounts reducing the capital and collateral costs to corporates of maintaining liquidity in multiple locations around the world.

• Embedding finance in the business of non-financial companies is transforming the payment experience by replacing cards and bank-to-bank payments with regular payments into an account coupled with approvals to debit the account made via an officially regulated and authorised (by Open Banking) app.

• Bank issuance of Stablecoins is expected to increase significantly, because of the attractions of net interest margin, and as the rules prepared by international regulators for systemically important Stablecoins bed down and national regulators start to approve applications to issue a Stablecoin.

Issues

• Suggestions that “gas fees” payable on cryptocurrency transactions are high by comparison with conventional payments are misplaced because, although “gas fees” spike occasionally they are stable and low enough most of the time and can be managed via layer two applications anyway.

• The separation of the payment process from the underlying transactions should be further narrowed by embedding invoices and receipts into the payments process, eliminating the need for subsequent reconciliation by integrating the transaction, the payment and the documentation.

• Technology has not solved the cost and friction associated with management of the risk that money is being laundered or defrauded by pausing payments until they are validated, though UK payments service providers (PSPs) must from 7 October 2024 make customers whole for push payment scams.

• Innovation in the payments industry is not keeping up with the demand for better payment services created by faltering economic growth and rising inflation, which has increased the interest cash-strapped consumers take in achieving value for money in financial services.

Regulation

• An obvious solution to payments fraud, implemented in Australia already, is digital identities, which can be attached to every transaction and so mitigate the need for delays to validate payers and payees, but the United Kingdom government has resisted adoption on grounds of voluntarism and privacy.

• There is a risk that central banks that launch retail central bank digital currencies (CBDCs) will crowd out private sector investment in payments innovation, especially if they elect to supply services (such as wallets) rather than focus on protecting consumers and regulating private service providers.

• The infrastructure that central banks provide and operate to support digital payments must be built on a recognition that Stablecoins, tokenised deposits, CBDCs and e-money will continue to exist and must be inter-operable as different parts of a common payments system.

• There is a risk that the transformation of payments will be inhibited by a failure of inter-operability, isolating the most progressive payments innovations within silos where the benefits of a higher quality of service will be enjoyed by relatively small and closed business and retail networks only.

How can we build a fully transferable tokenised deposit market?

Tokenised assets issued on to blockchain networks need cash on-chain to create liquidity and drive network effects. Stablecoins and (to a lesser extent) e-money have fulfilled this role so far. Like Stablecoins and e-money, tokenised deposits offer the benefits of instant payment, atomic settlement and programmability via smart contracts.

But tokenised deposits have other advantages. They are a form of digital money underpinned by regulated banks. They preserve the "singleness" of money, being fungible with cash and central bank digital currencies (CBDCs), creating the prospect of a digital version of the two-tier commercial and central bank monetary system that prevails today that can scale naturally in line with the growth of token markets.

Tokenised deposits are demonstrably non-revolutionary, being commercial bank money of the same kind as 90 per cent of the money that exists today. They can be accommodated comfortably within the current system of banking. Transactions can ultimately be settled in central bank money. They benefit from deposit insurance. Banks ought to be drawn instinctively to favour tokenised deposits as the most appealing form of digital money.

So it is surprising that so few banks are exploring tokenised deposits actively. J.P. Morgan, which launched the JPM Coin in 2020 and proved in 2022 that a tokenised Singaporean dollar can be exchanged for a tokenised Yen asset, has few imitators. Citi has explored tokenised deposits in trade finance and two Korean banks - Hana Bank and Woori Bank - are reported to be exploring the concept. In Europe, Commerzbank has led the slow-burning Commercial Bank Money Token, seeing it as crucial to the further digitalisation of manufacturing.

But the JPM Coin is now four years old and seeing relatively low transaction volumes (reported to be US$1 billion a day). The USDF tokenised deposit consortium of ten banks and IT vendors dates to 2021 but has yet to persuade regulators that that issuing a tokenised deposit on to a public blockchain is a good idea. Likewise, in 2023 the Swiss Bankers Association (SBA) proposed a Swiss Franc tokenised deposit issued jointly by Swiss banks, but the SBA says more work needs to be done.

The USDF and SBA initiatives highlight the fact that the JPM Coin is intra-bank only. Money that is useful only for book transfers within a single bank cannot be transformational. Although infrastructural solutions to make tokenised deposits an inter-bank form of money - such as Partior and the Regulated Liability Network (RLN) – are emerging, progress is agonisingly slow.

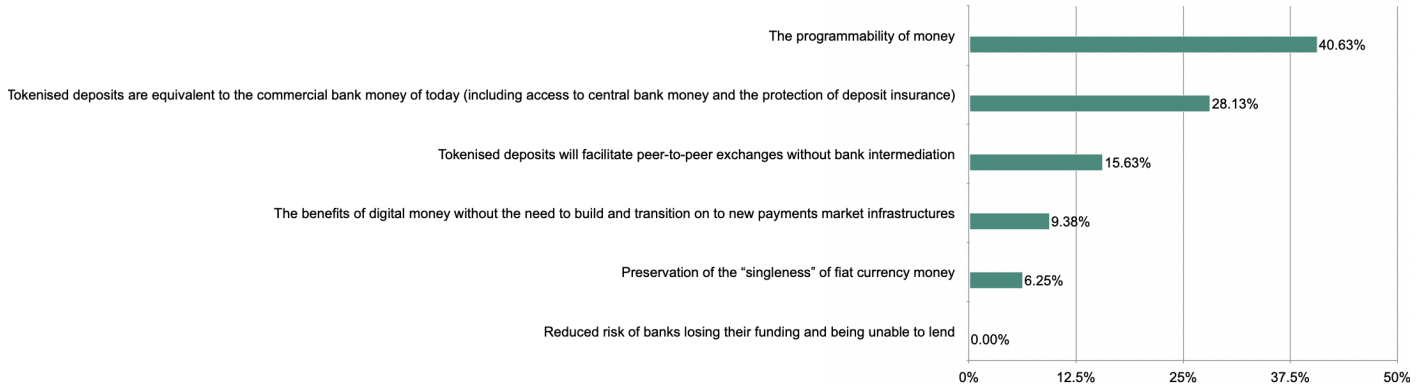
As always, banks are apt to plead the necessity of legal and regulatory certainty. It is a curious demand to make of tokenised deposits, which fit easily inside existing legal and regulatory frameworks for the simple reason that a tokenised deposit is identical to an off-chain deposit on the balance sheet of a bank.

That does mean the value of tokenised deposits ultimately hinges on the same criterion as bank deposits - the creditworthiness of the bank – but fears of a “run” on a bank that issues a tokenised deposit that trades at a discount to the value of a tokenised deposit issued by a more creditworthy bank are probably misplaced. After all, tokenised deposits, like traditional deposits, are supported not only by deposit insurance but by the central bank as lender of last resort. When it comes to tokenised deposits, there are no valid excuses for banks not to act.

Panellists: Emma Landriault, Vice President, Incubation and Architecture at J.P. Morgan Onyx; John O’Neill, Managing Director and Global Head of Digital Assets Strategy at HSBC Global Banking and Markets; Marciana Dumitrescu, Senior Product Manager at R3; Olaf Ransome, operations and liquidity specialist, consultant and futurologist; Roberto Pagliari, Director, Senior Product Owner, DLT Cash and Markets at Commerzbank; and Shearin Cao, Senior Director in the EMEA Regulatory Engagement function at Citi.

What the Audience Said

What is the biggest advantage of tokenised deposits?



Key Points Raised in the Panel Discussion

Benefits

• Tokenised deposits are digital records of demand deposit claims against financial institutions equivalent to traditional forms of on-balance sheet commercial bank money, without a maturity date and backed by fractional reserves and industry deposit insurance schemes.

• The advantages of tokenised deposits over traditional deposits are that they are issued as native tokens on to blockchains, which means smart contracts can be used to move them between digital wallets, with transactions settling atomically, and that they are programmable and composable.

• The simplest use-case for tokenised deposits is round-the-clock intra-bank payments in one jurisdiction or several irrespective of the cut-off times of national payments market infrastructures (PMIs), but the service can also be extended to inter-bank payments via shared ledgers such as Partior.

• Another obvious use-case for tokenised deposits is settlement of the cash leg of tokenised securities, funds and repo transactions, because they can offer atomic settlement on-chain in commercial bank money plus access to settlement in on-chain central bank money (CBDCs).

• An early use-case for tokenised deposits is payments in supply chain management automation, where smart contracts initiate orders when supplies run low and make payments once the supplies arrive and are checked for quality, with all transactions verified and recorded on a blockchain.

• Making cross-border payments faster and cheaper is a further use-case for tokenised deposits, not least because corporates prefer tokenised deposits because they are more stable and transparent and less open to adverse regulatory treatment than the Stablecoin alternatives.

• Tokenised deposits are a strong candidate to provide portable digitally native cash on common or unified ledgers (Partior is an instance) that operate to agreed standards of governance, are open to any type of financial institution that can meet the admission criteria and host a variety of digitally native assets.

Issues

• Not all the tokenised deposits issued so far are native to the blockchain and rely entirely on the blockchain as the ultimate record of ownership; some banks have maintained off-chain ledgers to record internal book transfers to prove the value of the concept internally.

• To date tokenised deposits have been issued by individual banks for use between clients of the bank but multi-bank tokenised deposits, which are issued on to shared blockchain ledgers – such as the Partior network used by J.P. Morgan, DBS and Standard Chartered in Singapore - are being developed.

• Like Partior, the Regulated Liability Network (RLN) is a model which could facilitate frictionless interoperability between tokenised deposits as digital commercial bank money and central bank digital currencies (CBDCs) as digital central bank money, potentially across borders as well as within jurisdictions.

• Tokenised deposits must be underpinned by settlement finality in central bank money or tokenised deposits issued by different banks will fragment the singleness of money, because some issuers are more creditworthy than others and atomic settlement potentially accelerates the realisation of credit risk.

• Making tokenised deposits useful as an inter-bank form of payment is essential to the growth of tokenised deposit markets because unless banks are willing to accept the IoUs of other banks, tokenised deposits will remain useful for intra-bank payments between the clients of individual banks only.

Regulation

• The legal and regulatory status of tokenised deposits is uncertain, but it is a mistake to postpone innovation until legal and regulatory clarity is achieved because legal and regulatory innovation is driven by the industry identifying use-cases and persuading legislators and regulators to allow them to proceed.

• Tokenised deposits could contribute to savings on liquidity buffers (by facilitating single pools of liquidity from which banks can make payments, settle securities and meet margin calls) and capital weightings (though capital adequacy regulations do not treat cryptocurrencies generously).

How many routes to interoperability does digital money need?

In theory, blockchain is an ideal technology for driving interoperability in financial markets because it puts digital money and digital assets on a single ledger shared with all parties at all times, ending the cost and complexity of coordinating multiple, siloed ledgers through complicated data exchanges between multiple intermediaries, each using proprietary systems, and it operates 24/7.

However, blockchains as they exist today do not conform to this promise. There are dozens of blockchain protocols, each seeking to capture and retain activity within their own network, whose users are unable to share data or value easily with users on other networks. There is a lack of fiat currency on-chain to make cash payments, necessitating recourse to the existing banking system. Nor can blockchain networks interoperate with existing financial networks.

This lack of interest in interoperability is not peculiar to blockchain, but the default setting in the digital technology industry, as a series of conflicts ancient and modern (IBM versus UNIX, Microsoft versus Linux, Microsoft versus Apple, Apple versus PC, Apple versus Android) can testify. But in blockchain, the lack of interoperability risks reducing the whole idea of Web 3.0 – an open, decentralised network in which users interact peer-to-peer using data they control directly in their own digital wallets – to a cipher.

The eventual outcome might even be worse than that. Just as Web 2.0 has seen a small number of centralised technology platforms undermine the original promise of the Internet with monopolies funded by mass data surveillance and collection, the current fragmentation of blockchain protocols might be overcome not by interoperability but by consolidation into a handful of giant corporations. Some are already predicting a narrowing of interoperability solutions through consolidation.

The cryptocurrency industry which spawned the digital money and asset industry has not solved the interoperability challenge but relied instead on a series of workarounds. These include cross-chain bridges (an intermediary blockchain that keeps score), token bridges (that Lock and Mint, Burn and Mint or Lock and Unlock tokens on different blockchains), sidechains (two-way channels between blockchains) and atomic token swaps between blockchains via Automated Market Makers (AMMs).

These do not provide comprehensive coverage of all blockchain protocols and many market participants worry about security, especially the vulnerability of "bridges" to being hacked. Meanwhile, technical solutions to interoperability ("routers" and "decoders") continue to proliferate and blockchain standards initiatives by the International Standards Organisation (ISO), the Institute of Electrical and Electronics Engineers (IEEE), the Internet Engineering Task Force (IETF) and the Enterprise Ethereum Alliance (EEA) are poorly co-ordinated.

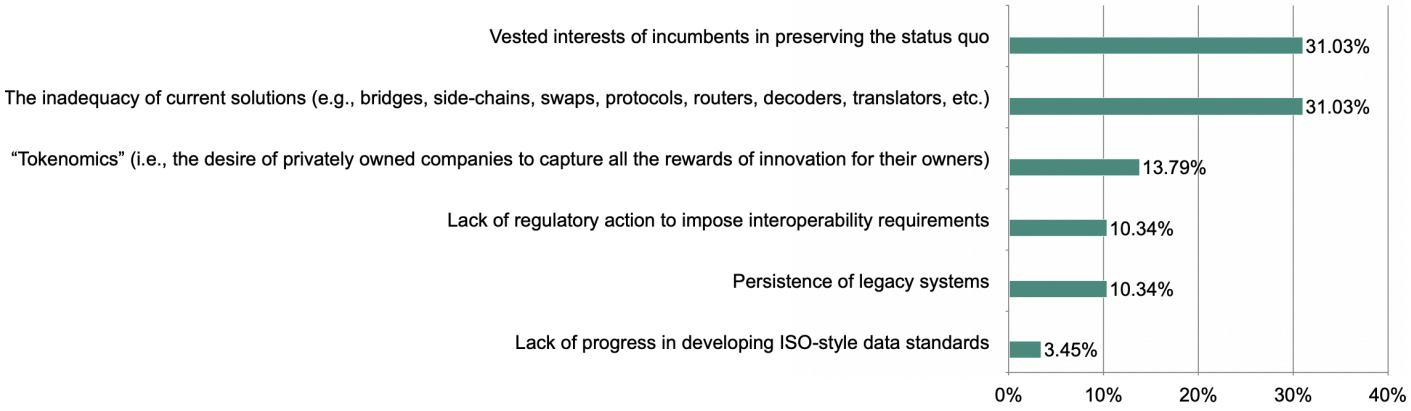
In this context, with multiple vendors and industry bodies contending to solve the inter-operability problem by using technical tools or standards to link disparate systems, the idea of a "unified" or "common" platform has emerged as an alternative route. Although a "common" platform is not in principle incompatible with interoperation between multiple platforms – a "virtual" common platform – a single model can in theory overcome the risk and cost of adapting an interoperability solution to the particular systems, processes, governance procedures and risk appetites of individual market participants.

The need for a solution to the interoperability conundrum is nevertheless urgent. It is easy to forget that interoperability is not just about connecting blockchain networks to each other, and connecting blockchain networks to traditional networks, but connecting the demand for capital to its supply (or, more plainly, issuers to investors). Without interoperability, the network effects that will drive growth and liquidity in digital money (and digital assets) will never acquire momentum.

Panellists: Ami Ben-David, Founder and CEO of Ownera; Lee Braine, Managing Director for Advanced Technologies in the Chief Technology Office at Barclays; Eitan Katz, CEO of Kima; Nick Kerigan, Managing Director and Head of Innovation at SWIFT; and Mark Raynes, Head of Capital Markets Solutions at Chainlink.

What the Audience Said

What is the biggest obstacle to interoperability?



Key Points Raised in the Panel Discussion

Benefits

• Inter-operability will drive market interest and adoption once delivery versus payment for digital assets, payment versus payment in the FX market and trade versus payment in the supply chain using tokenised orders and invoices can trigger payments programmatically using digital money.

• Designers of new networks in both the digital money and digital asset markets should build interoperability as a design principle into their models from the outset because ease of connectivity is the fastest route to generating the network effects and the liquidity needed for growth.

• Technically, adoption of digital money is hampered not by the need to support different forms of money - cash, bank accounts, cryptocurrencies, Stablecoins, tokenised deposits, central bank digital currencies (CBDC), public money, private money – but by the need to enable them to inter-operate.

• Digital wallets can play a role in interoperability because they equip every owner with a unique but universally accessible address (akin to a web address) in which digital data or value can be held on any network and to and from which digital data or value can be moved on any network, including SWIFT.

• One route to interoperability is programmable "primitives" that enable users to move data, or move value, or move data and value together using different types of transfer mechanisms, such as bridges, atomic swaps and Mint and Burn, to provide a wide range of interoperability solutions.

Issues

• Initial expectations that a single blockchain protocol would prevail were disappointed, and activity is now fragmented across hundreds of protocols and private, public and public permissioned networks, and expectations that a single interoperability solution will prevail will also be disappointed.

• The need for inter-operability is not confined to different forms of digital money but encompasses digital assets, which are purchased with digital money, and the need to link the financial institutions, such as custodians, transfer agents and central securities depositories, that support digital asset transactions.

• Although digital assets and digital money will sometimes co-exist on a single platform such as the Regulated Liability Network (RLN), inter-operability must also facilitate transactions between digital monies and digital asset classes hosted on different platforms.

• Interoperability solutions must find a replacement for the trust conferred by financial intermediaries in terms of validating counterparties, assets and transactions and this can be found in cryptographically impregnable and mathematically proven techniques such as zero knowledge proofs.

• One reason for the slow adoption of blockchain solutions by established financial institutions is fragmentation, with the proliferation of vendors requiring bespoke adaptations of systems and processes to accommodate their services, or reliance on vendors to run nodes in blockchains on their behalf.

Regulation

• If central bank money, in the form of CBDCs, was the only form of digital money on-chain, and a wider range of financial institutions had access to central bank settlement systems 24/7, application programme interfaces (APIs) could enable interoperability with other forms of tokenised and non-tokenised money.

• Traditional financial message standards such as ISO 20022 are widely used, so it makes sense to adapt them to blockchain networks, and their history of securing user-led agreement and adoption of standards provides a model that the currently disparate blockchain standards initiatives could usefully follow.

• The "common" or "unified" ledgers advocated by the Bank for International Settlements (BIS) and International Monetary Fund (IMF) risk suppressing innovation, but are compatible with interoperability between multiple platforms, creating a "virtually" unified ledger that maintains diversity as well.

Is a unified programmable platform for multiple forms of digital money and digital assets a viable objective?

The basic choice in digital asset infrastructure projects is between building linkages between systems or building common platforms. The difficulty the digital money and assets industries have encountered already in developing interoperability between platforms is a reminder that links require widespread if not universal agreement between market participants and introduce additional complexities and costs. Common platforms, on the other hand, can in theory achieve success through market incentives.

An infrastructure provides a common means to many ends. Just as a transport or telecommunications network enables entrepreneurs to develop a variety of products and services, a common blockchain platform would enable entrepreneurs to develop a myriad applications. The obstacle to this is that digital entrepreneurs are currently building closed networks to capture value for their owners, just as Web 2.0 turned the promise of the Dot Com era into a series of monopolistic centralised platforms that use mass market surveillance and data collection to generate rents for their owners.

This is the origin of the interoperability problem. It is also a "market failure." Which implies that a public (or at least public-private) initiative is needed to provide an infrastructure open to all-comers. An open blockchain infrastructure would solve the inter-operability problem by design. It would also foster investment in innovative applications in a way that no blockchain layer one ever can. This is why both the International Monetary Fund (IMF), with its X-C design and the Bank for International Settlements (BIS), with its concept of a “unified ledger,” have both argued for common platforms.

While the X-C platform remains purely theoretical – the IMF is not an operational entity – the BIS “unified ledger” is being developed. Project Agorá is a BIS-led project in which seven central banks (France, Japan, Korea, Mexico, Switzerland, England and the United States) are testing the practicability of putting central and commercial bank money on the same public-private platform as all other digital assets, making possible instant payment and clearing and settlement of any transaction in any digital asset. It uses composable smart contracts coded into tokens and the platform infrastructure to settle transactions in any digital asset (Payment versus Payment and Delivery versus Payment) instantly and atomically.

Cryptocurrency enthusiasts argue that the market has a common public platform on which entrepreneurs are free to build applications already. It is called Ethereum. Unfortunately, the Ethereum blockchain is not scalable, or secure enough for regulated financial institutions to risk using it for mission-critical business such as payments. HyperLedger Besu, which is designed for use with tokens issued on to the Ethereum network as well as private networks, might yet enable Ethereum to develop into a common platform. But institutions are showing more interest in another public-private initiative: the Regulated Liability Network (RLN), which is now seen as the foundation of a wider Regulated Settlement Network (RNS).

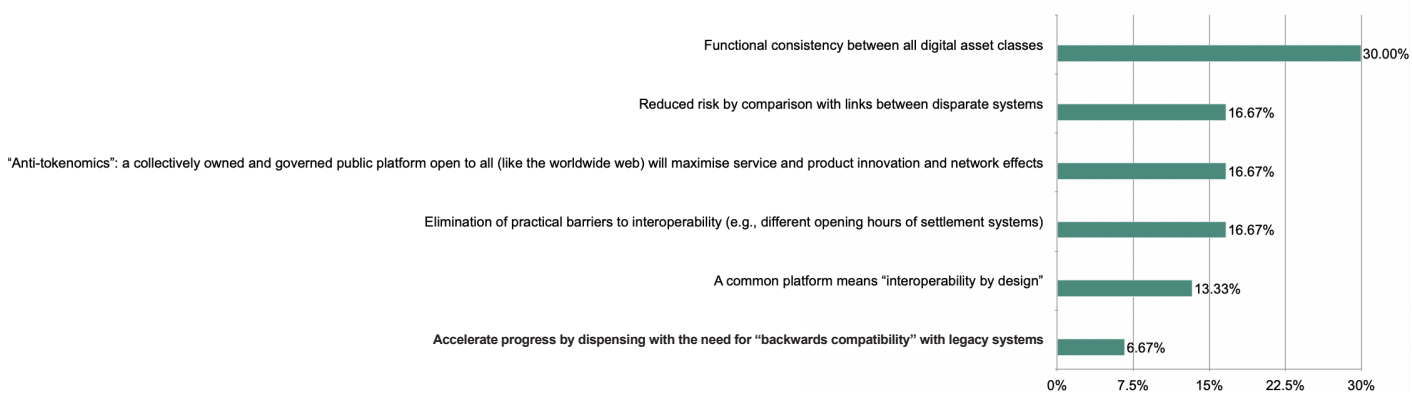
Importantly, all these models are careful to preserve the singleness of fiat currency money and banks as intermediaries, effectively creating a tokenised version of the current monetary system. This creates obvious opportunities for central banks to continue to lead the development of open blockchain infrastructures with private sector funding - including co-ownership – akin to the way they solved Herstatt Risk in the foreign exchange market by building CLS, also after a market failure.

Unfortunately, although central banks already run critical market infrastructures such as Real Time Gross Settlement (RTGS) systems, too many are disinclined in the case of blockchain to interfere with “market forces,” or mistake construction of a blockchain infrastructure for making a technology choice. Until a major central bank overcomes such hesitations, a common platform is unlikely to be developed.

Panellists: Daniel Eidan, Advisor & Solution Architect at the Bank for International Settlements Innovation Hub in Switzerland; Marco Kessler, Business Head of Digital Securities at SIX Digital Exchange (SDX); Lee McNabb, Head of Group Payment Strategy at NatWest; Monica Summerville, Head of Capital Markets Technology Research at Celent; and Gilbert Verdian, CEO of Quant.

What the Audience Said

What is the biggest advantage of a common platform?



Key Points Raised in the Panel Discussion

Benefits

• One reason digital money and assets are not growing is that entrepreneurs are building closed digital islands to capture all the value created for themselves, and this will continue until interoperability makes commercial sense for them and a common platform emerges that achieves interoperability by design.

• The incentive for entrepreneurs to abandon closed islands for a common platform requires a switch from the present assumption that value is created at the platform level and must be captured there to an assumption that value is created at the application level and can be captured there.

• The Bank of England cooperation with the private sector has proved that the principal advantage of a retail CBDC over existing forms of money is programmability, and it is the ability to programme commercial bank money that will create new business opportunities for the private sector.

• It is facile to think of a common platform as a single technical platform or protocol rather than a series of platforms "unified" by standard linkages, not least because different platforms will be built for different use cases, though a "unified" platform is not synonymous with interoperability between platforms.

Issues

• Analogies between the Internet as an open protocol and a common blockchain platform as an open protocol are only partially valid because users of Web 3.0 will be transferring value whereas users of Web 2.0 are transferring data only and the risks of non-delivery are much lower.

• A lesson of the failure of Open Banking is that financial institutions moving from participation in experiments to investing in a common platform need platform services to be commercially viable, in terms of attracting transaction volumes, lowering costs and risks and improving the customer experience.

• There is a risk that common platforms develop using distributed databases rather than blockchain technology, limiting the degree of innovation, and that regulators, despite claims to be technology-agnostic, encourage reliance on legacy technologies by unwarranted sensitivity to the risks of blockchain.

• Disintermediation of banks is a plausible outcome of the development of common platforms with corporates, for example, initiating payments to payees identified by digital identities 24/7 not by instructing a bank but by instructing a common payments platform directly.

• Public common platforms that rely on "oracles" to bring off-chain data on-chain create a risk of discrepancies between the on-chain representation of an asset and off-chain reality leading to, for example, a digital re-run of the mortgage-backed assets crisis in which the securities lost contact with reality.

Regulation

• A common platform must at least match the highest standards set by existing infrastructure because regulated financial institutions will never use infrastructure that has any shortcomings in terms of regulatory and financial crime compliance, operational resilience and client confidentiality.

• The Bank for International Settlements (BIS) is leading a public-private project (Project Agorá) to explore how tokenised deposits can be integrated with a wholesale central bank digital currency (CBDC) on a unified and programmable platform to accelerate and cut the cost of cross-border payments.

• In developing a common platform, there is ample public-private cooperation to build on not only via BIS projects but in the collaboration between, for example, the Swiss National Bank and the Swiss stock exchange group and the Monetary Authority of Singapore (MAS) and numerous private sector actors in Singapore.

• The Regulated Liability Network (RLN) – which is expanding into a Regulated Settlement Network (RSN)- is a good example of public-private collaboration to develop a common platform, or at least an interbank network on which digital versions of commercial and central bank money can be integrated.

• Another public-private collaboration is LACChain, an interbank payments settlement platform open to banks and central banks that uses tokenised deposits in multiple currencies to settle transactions between counterparties in a dozen Latin American countries.

What are the roles of regulated and unregulated Stablecoins now?

It is universally agreed that lack of fiat currency on blockchains is an obstacle to the growth of digital assets. In cryptocurrencies, market forces solved this problem with the invention of the Stablecoin. Though trivial in value (US$172 billion total market capitalisation in September 2024) by comparison with the value of fiat currencies outstanding (US$215 trillion), Stablecoins have in the year to mid-September 2024 been used by about 180 million active addresses in US$4.6 trillion of underlying transactions, according to the Visa Onchain Analytics Dashboard.

US$4.6 trillion is worth nearly two fifths of the US$12.3 trillion volume Visa hosted in its most recent financial year, and more than half the US$9 trillion managed by Mastercard. In other words, Stablecoins have built, in just ten years, a business that is attracting volumes equivalent to a third to a half of the long-established global card payments networks.

True, their value is concentrated in the top ten Stablecoins, and especially the top two, and much of their use is confined to the cryptocurrency markets, where they are used to access the markets and store value between trades. Stablecoins have attracted business from consumers and entrepreneurs in less developed markets that need alternatives to banks and volatile domestic currencies too. In the last two years, according to Chainalysis, Stablecoins have also overtaken Bitcoin as the currency of choice for criminals.

Combatting crime is obviously important to regulators. But it is the threat Stablecoins pose to the stability of the conventional financial and payments systems - something central banks first realised during the ultimately abortive Libra/Diem Stablecoin episode of 2019-20 – that prompted official engagement with Stablecoins. From 2019, a global regulatory consensus on Stablecoins formed remarkably quickly, via the G20 and the G7.[1]

It has been implemented via recommendations of the Financial Stability Board (which ensure Stablecoin issuers are regulated like banks), the Basel Committee on Banking Supervision (which obliges banks from January 2025 to allocate capital to Stablecoins) and the Principles for Financial Market Infrastructures (which tie Stablecoin issuers to the same constraints as payments market infrastructures).[2] A PwC survey of 43 jurisdictions found Stablecoin regulation was in place in 25 of them, under way in another ten and not happening at all in only eight.

The measures taken by regulators are designed to favour banks over non-banks as issuers of Stablecoins, but traditional banks are noticeable by their absence. Only ANZ Bank (which used an A$ Stablecoin to make a payment in March 2022 on an Ethereum blockchain), National Australia Bank (which also tested an A$ Stablecoin on an Ethereum public blockchain in March 2023) and Société Générale (which has issued a EURCoinVertible on Bitstamp) have shown much interest, though other banks are reported to be looking at Stablecoins.

The lack of bank activity reflects several concerns. One is whether Stablecoins will compete with banks to hold the High-Quality Liquid Assets (HQLAs) regulators would like them to hold. Indeed, the Bank for International Settlements (BIS) is running a project (Project Pyxtrial) designed to improve central bank monitoring of the assets backing Stablecoins.

Another concern is the risk that Stablecoins issued by different banks will trade at different prices, undermining the singleness of money. But even if most regulated banks continue to spurn the Stablecoin opportunity, regulators will doubtless count their measures a success if non-bank Stablecoin issuers are persuaded to seek a banking licence.

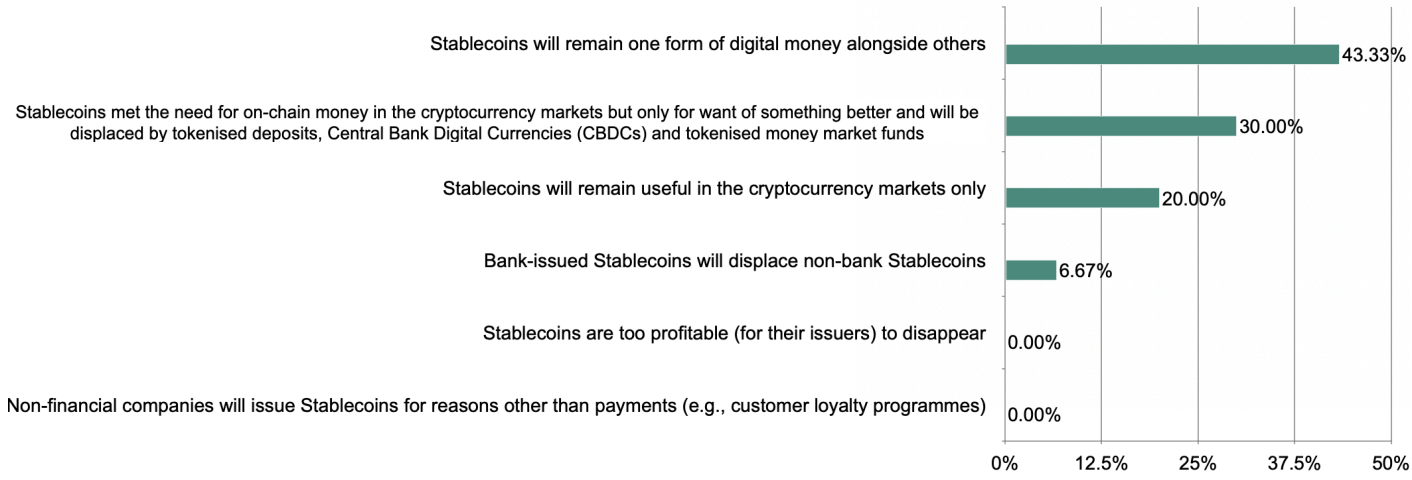
Panellists: Dave Sutter, CEO and co-founder at OpenTrade; Jeet Singh, Partner and EMEA Blockchain Leader at EY; Romin Dabir, Partner at Reed Smith; and Will Lee, Regulatory Affairs Manager at Revolut.

1. See Future of Finance, Stablecoins: *Where They Came From, Where They Are Now, Where They Are Going Next*, June 2023, at https://futureoffinance.biz/stablecoins-where-they-came-from-where-they-are-now-where-they-are-going-next-2/

2. Committee on Payment and Settlement Systems and the Technical Committee of the International Organisation of Securities Commissions, Principles for financial market infrastructures, April 2012.

What the Audience Said

Will Stablecoins endure?



Key Points Raised in the Panel Discussion

Benefits

• The success of a major Stablecoin is explained not by its usefulness in bypassing Anti Money Laundering (AML), Countering the Financing of Terrorism (CFT) and sanctions checks, or in being beyond regulation – which, as a major holder of government debt, it cannot be – but by its distribution networks.

• In 2022 the United Nations High Commissioner for Refugees (UNHCR) ran a pilot test in which the USDC Stablecoin was used as an efficient way for Ukrainians working abroad to send fiat currency remittance payments successfully and at low cost to displaced relatives in Ukraine.

• Stablecoins have encouraged competition in payments, most obviously by stimulating central bank digital currencies (CBDCs) as a regulatory response to the fact that Stablecoins threatened the existing two-tiered model of central bank money and commercial bank money.

• Stablecoins are safer than high-volume but thinly collateralised mobile payments apps and even banks, being akin to "narrow banks" that invest in high quality liquid assets only and do not engage in risky maturity transforming activities such as lending and are likely to be more private than CBDCs.

• Criticism that Stablecoins yield no income are misplaced because lack of yield is an important aspect of their security relative to tokenised deposits and money market funds, and because Stablecoin holders that wish to generate a yield can reinvest their holdings with a variety of income-producing apps anyway.

Issues

• Stablecoins developed initially as on and off ramps and a store of value on-chain for traders in the cryptocurrency markets, and that need will likely disappear over time as it becomes possible for traders to enter and exit cryptocurrencies directly from fiat currencies.

• A second initial function of Stablecoins was to provide payment services and a store of value to consumers that are unbanked or trapped by currency volatility, but this edge will be eroded as tokenised deposits and money market funds offer the same benefits with the additional advantage of generating an income.

• It is not obvious how bank-issued Stablecoins reserved with central bank money can be profitable, though there may be opportunities in emerging markets where the alternatives to Stablecoins are poor, and a consumer-friendly wallet plus links to conventional payments systems could sell well.

Regulation

• To avoid regulatory arbitrage, Stablecoin regulation is settled at the global level and, although it is being implemented with local nuances at the national level, all regulators favour banks as issuers, to encourage non-bank issuers of Stablecoins to seek to obtain banking licences, though they will be free to obtain them in less rigorous jurisdictions.

• The parallels between Stablecoins and money market funds are close, with regulators concerned to protect investors from "runs" that undermine their par value, because neither instrument is backed by deposit insurance, exposing taxpayers to the risk of making good the losses of holders.

• The attitude of Federal regulators in the United States to granting banking licences to Stablecoin issuers has become less accommodating but State regulators that are trying to attract Stablecoin business provide a countervailing force that will eventually alter policy at the Federal level.

• The regulatory preference for Stablecoins to invest in central bank deposits only, as in their exclusion from the Federal Reserve reverse repo programme and the Bank of England proposal that issuers hold £1 in central bank deposits for every £1 of coins issued once they become "systemic," is a barrier to entry.

• Regulators are constraining Stablecoins because they are concerned about several issues, including the risks that the Stablecoins might out-compete the existing banking and payments systems and that there are not enough HQLAs to back Stablecoins as well as commercial bank liquidity ratios.

What are the challenges and opportunities for a major reserve currency issuing a CBDC?

Just four countries have issued a central bank digital currency (CBDC). But the CBDC Tracker suggests that interest in CBDCs is far from moribund. In September 2024 26 central banks had a CBDC at the pilot stage and another 30 at the proof-of-concept stage. A further 103 are researching the idea. The Bank for International Settlements (BIS) website lists 20 CBDC research projects in which central banks have taken part since 2016. Just seven central banks have cancelled their CBDC projects.

As a result of all this work, a great deal of knowledge about CBDCs has accumulated. It is now known that CBDCs are technically possible in terms of code, and in terms of security and resilience, though the range of designs is wide. It is also known that it is possible for central banks to distribute retail CBDCs to banks and make them available to retail consumers on multiple blockchains without compromising their privacy.

In addition, the research projects have proved that wholesale CBDCs can be made available on third party platforms and be used to settle payment versus payment (PvP) and securities and funds transactions by delivery versus payment (DvP). CBDCs have proved interoperable with each other and with existing payment systems. Importantly, the experiments have also proved that CBDCs can make cross-border settlement cheaper and faster without undermining monetary sovereignty.

Which explains why the BIS expects 15 retail and nine wholesale CBDCs to be circulating by 2030. However, only a CBDC in a major reserve currency such as US dollars, euros, Yen or Sterling would be a sufficient catalyst and at present it seems only the European Central Bank (ECB) is committed to issuing a CBDC. In the United States, the issue is (predictably) politically polarised with the House of Representatives passing a vectorially named "Anti-Surveillance State Bill" to block the Federal Reserve from issuing a CBDC as a case of government over-reach.

The CBDCs launched so far do not seem to be getting traction. The Bahamian Sand Dollar, launched in 2020, has attracted less than 0.5 per cent of all cash in circulation. The eNaira in Nigeria accounts for less than 1 per cent of the currency in circulation. Even the Chinese digital yuan, now five years old, has not moved beyond the pilot stage. Nor has the Eastern Caribbean CBDC. The JAM-DEX CBDC in Jamaica has also failed to reach its targets.

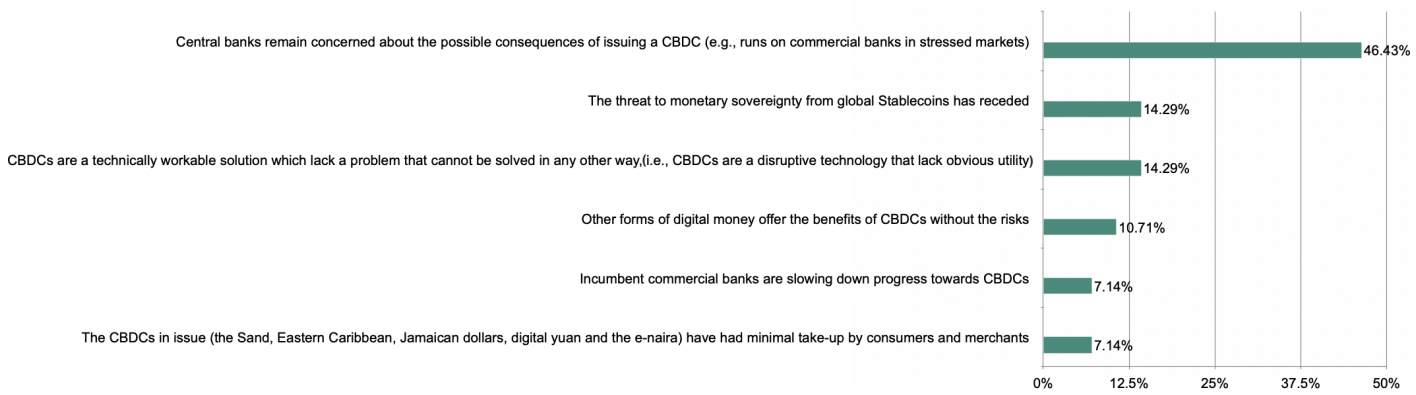
Neither merchants nor consumers are enthusiastic, despite promotional efforts by the central banks. There are many reasons for this, ranging from inadequate electrical and telecommunications infrastructure, through lack of effective marketing by banks, to distrust of the government. But the CBDCs in issue have also struggled to find compelling use-cases. Expectations that CBDCs can promote financial inclusion, for example, are being met but were overblown at the outset.

Which has prompted a crucial question: CBDCs work but are they useful? Cross-border payments are the obvious answer, but this threatens the already fragile eco-system of correspondent banks. The tokenised asset markets, which would flourish if fiat currencies were available on-chain, offer another answer, but present a chicken-and-egg dilemma. If token markets scale, transactions will need to settle in central bank money, so central banks will issue CBDCs - but token markets cannot scale without a CBDC. An inadequate equilibrium prevails in CBDCs, and it is hard to foresee what will upset it.

Panellists: Keith Bear, Fellow at the Judge Business School in Cambridge and Chair of the Digital Asset Research Programme; Daniel Eidan, Advisor & Solution Architect at the Bank for International Settlements Innovation Hub in Basel, Switzerland; Rachel James, Head of Strategy & Transformation at Fnality UK; and Andrea Nobili, Director and Head of Analysis and Database Division at the Bank of Italy in the Retail Payment Instruments and Services Directorate.

What the Audience Said

Why is there no CBDC in a major reserve currency?



Key Points Raised in the Panel Discussion

Benefits

• When commerce is increasingly digital, the use of the only form of central bank money available to the public (cash) is declining, and private monies are proliferating, central banks must consider issuing central bank digital currencies (CBDCs) to maintain public confidence in the monetary system.

• Financial inclusion is one of the benefits delivered by CBDCs and, despite disappointing results in the first markets where CBDCs were issued, an experiment with a retail CBDC in Ghana proved that the unbanked regard it as a secure alternative to holding physical cash.

• The European Central Bank (ECB) sees a euro CBDC as a source of competition for incumbent payment service providers such as the international card networks, which it believes can play an important role in reducing the cost of cross-border payments within the eurozone.

• Problems solved by CBDCs include reducing the cost to merchants (as opposed to consumers) of current retail payments arrangements, the lack of fiat currency on-chain to settle digital asset transactions and the high costs, slow speeds, lack of transparency and inaccessibility of cross-border payments.

• If CBDCs can improve the connectivity of capital markets around the world, they could save commercial banks billions of dollars spent on maintaining cash buffers and sourcing eligible collateral, though these may be easier to deliver by means of synthetic CBDCs than actual CBDCs.

Issues

• A successful CBDC must be based on a cooperative and complementary relationship between central and commercial banks, because there is a risk that a CBDC will strip the commercial banks of their deposit funding and so undermine the credit offered by banks to businesses and households.

• CBDC designs, including the euro CBDC being developed by the ECB, include features designed to mitigate the risks of a CBDC undermining the funding of commercial banks such as not paying interest on holdings of a CBDC and capping the amount that can be held by any one market participant.

• In developed markets with sophisticated and well-entrenched digital payments systems in place already a CBDC must be highly innovative to succeed, whereas in less developed economies with unbanked populations a relatively simple CBDC can play a vital role in financial inclusion.

• The limited success of the CBDCs issued so far reflects the difficulties of take-up in emerging markets with inadequate infrastructure and does not undermine the fact that a CBDC must be judged not by the rate of adoption but by its cash-like function of maintaining the singleness of money in digital form.

• Despite the knowledge they have accumulated through multiple research projects that CBDCs will work, central banks are condemned to proceed cautiously because they need to be confident that the prerequisites for success are in place and the consequences are manageable.

• Introducing a CBDC requires agreement on a design and then an execution process that imposes disruptive technological and operational changes not just on central banks operating the crucial settlement system in every jurisdiction but also on commercial banks and other firms active in making payments.

• The singleness of money might not survive a surfeit of choice, in which cash pays no interest but suffers no caps, CBDCs pay no interest but holdings are capped and CBDCs are programmable, leading to different market values being attached to each, even though each is redeemable at par at the central bank.

Regulation

• The introduction by the Bank of England of an omnibus pooled account, by which private sector institutions can access central bank money without being deposit-taking institutions, suggests that central banks could offer market participants a choice of a CBDC or a synthetic CBDC.

• The development of synthetic CBDCs is constrained by the fact that central banks need to be confident that service providers are operationally resilient and comply with the Principles for Financial Market Infrastructures published in April 2012 by securities and payments market regulators.

• In developing a common platform, there is ample public-private cooperation to build on not only via BIS projects but in the collaboration between, for example, the Swiss National Bank and the Swiss stock exchange group and the Monetary Authority of Singapore (MAS) and numerous private sector actors in Singapore.


Future of
Finance