DMI JOURNAL

OMFIF Digital Monetary Institute

JULY 2024

TOKENISATION

The new rails of finance

Also inside: Digital money summit 2024 review

OMFIF

Official Monetary and Financial Institutions Forum
6 Snow Hill, London, EC1A 2AY
T: +44 (0) 20 700 27781
enquiries@omfif.org
omfif.org

DMI OMFIF Digital Monetary Institute

Where the public and private sectors meet to shape the digital future of finance

AUTHORS

Lewis McLellan
Editor, Digital Monetary Institute

Julian Jacobs
Senior Economist

Katerina Liu
Research Analyst

EDITORIAL

William Coningsby-Brown
Production Manager

Clive Horwood
Managing Editor and Deputy CEO

Simon Hadley
Director, Production

Janan Jama
Subeditor

Sarah Moloney
Chief Subeditor

CONTENTS

Company number: 7032533. ISSN: 2398-4236

GAINING PULL AND PLAUSIBILITY

Excitement around tokenisation is sweeping through the financial world. But excitement alone is not enough, writes Lewis McLellan, editor of the Digital Monetary Institute.

'Financial markets may soon look like a patchwork of different tokenisation projects.'

ALMOST EVERY week, someone releases a new estimate of how many trillions of dollars of assets will be tokenised in the next few years. But breathless optimism around the promise of a new technology is hardly rare in the tech world, and it doesn't always pan out as expected. For tokenisation, the excitement has spread well beyond the boardrooms of Silicon Valley venture capitalists. More renowned institutions like the Bank for International Settlements have planted their flag in the camp that holds that tokenisation should become the plumbing of the financial systems of the future.

In its 'Finternet' paper, the BIS lays out a vision of an ecosystem where assets from an enormous variety of classes are tokenised, allowing them to be seamlessly exchanged for tokenised versions of cash without settlement delays and the risks and costs they entail.

But excitement alone is not enough. Delivering a tokenised ecosystem will take a great deal of work. Fortunately, years of experiments and proofs-of-concept have proven that the basic functionality of tokenisation – representing an object as a token on some version of a ledger (often shared or distributed) between network participants – is not especially difficult technically.

However, the technology stack of a fully tokenised ecosystem requires much more than the basic functionality and, as new asset classes are tokenised, many of these problems will become more complex. Scalability, interoperability between ledgers, integration with existing systems and, perhaps most importantly, security will all require extensive development and testing to prove they are suitable for financial markets.

The governance considerations involved in delivering a tokenised ecosystem will perhaps be even more challenging. For such a system to be valuable, it must operate across borders to ensure that liquidity is not trapped in siloes. That means agreeing on governance standards for the trading of a broad variety of instruments. Developing that kind of commonality will not be easy.

However, although the challenges are daunting, tokenisation will not be an all-or-nothing proposition. The journey to a tokenised ecosystem will be made up of incremental steps – tokenising another instrument, building another functionality, onboarding another stakeholder – each of which will be required to have its own justification and generate business value.

These are already emerging. Both the private and public sectors – often in collaboration – are building tokenisation use cases. Pockets of tokenised value are emerging. Repurchase agreements have been a particularly fertile ground, but signs of tokenisation springing up in other markets are emerging. Financial markets may soon look like a patchwork of different tokenisation projects. From there, if inter-ledger interoperability is solved, we will be closer to the BIS' vision of the 'Finternet'. But while challenges remain, it is undoubtably an immensely exciting time for financial market infrastructure.

In this edition of OMFIF's Digital Monetary Institute Journal, our expert members give their opinions on where tokenisation is heading, where the process is taking us and how to approach outstanding issues along the way.

But first, we break down the discussions that took place at the 2024 Digital money summit, our annual flagship event where experts and policy-makers discussed the future of money.

TOKENISATION
The new rails of finance

New challengers entering the payments landscape may prompt central banks to embrace newer business models, writes Lewis McLellan, editor of the Digital Monetary Institute at OMFIF.

‘Is the business of banking, complete with lending and fractional reserves, inextricably linked to payments or is there room for alternative models?’

CENTRAL BANKS and commercial banks have long held exclusive rights to the provision of money. The central bank issues cash and commercial banks create other forms of money, but only under the strict supervision and licensing of the state. A banking licence – with all the restrictions and scrutiny that entails – is a prerequisite.

But with the advent of distributed ledger technology, issuers of new forms of private money are emerging. For instance, stablecoins are cryptoassets pegged to an underlying asset, usually a fiat currency. By maintaining that peg, they can function as a proxy for conventional money used within blockchain environments.

Should policy-makers embrace these challengers or do they introduce new risks that should be curtailed? These questions were discussed at OMFIF’s Digital money summit 2024.

Stablecoins versus other forms of money

First, it is important to examine the ways in which stablecoins differ in substance from other forms of money. The answer is not that they are tokenised and appear on blockchains. As tokenisation becomes more widespread, the importance of and demand for a version of cash represented on blockchain is growing. While stablecoins fill this niche, they are not the only possibility. It is perfectly possible for commercial bank deposits to be tokenised and appear on blockchains as well. Many central banks are also working on creating tokenised versions of central bank money.

They differ in other respects, however. Stablecoins are bearer instruments. Holding the instrument means holding the legal claim on the issuer. When stablecoins and other bearer instruments change hands, there is no need to update the issuer’s ledger of ownership.

Deposits, whether tokenised or not, are not bearer instruments. When Bob pays Alice with tokenised deposits, if they are banked by the same institution, it simply updates its record of who owns which tokens. If Bob and Alice are banked by different institutions, the sender’s tokens will be burned and the receiving institution will mint new tokens in the recipient’s name, with the interbank settlement taking place in central bank reserves.

Stablecoins and tokenised deposits also have different risk profiles – both are claims on the issuer’s credit. Tokenised deposits are just like bank deposits, in that they are backed by fractional reserves but protected by deposit protection insurance and government-backed bank resolution frameworks. Without banking licences, stablecoins cannot benefit from deposit protection insurances and must keep their tokens fully backed, typically by short-dated, high-quality assets like government bills. Partly as a result of this difference, stablecoins typically do not pay interest, unlike most commercial bank deposits.

Stablecoin issuers want to compete with commercial banks to offer transaction services. While tokenisation is not the key differentiating factor because commercial banks can also tokenise their deposits, stablecoin issuers nevertheless offer a new business model for transaction services.

If central banks want to embrace this model, thereby enhancing competition for transaction services, they could consider offering accounts at the central bank to stablecoin issuers. This would allow the issuer to hold some or all of their reserves and handle wholesale settlement directly, rather than relying on banking relationships.

It’s vital central banks set strict prudential rules around the composition and auditing of the reserves backing stablecoins. Beyond that, there are risks that stablecoins might be used to circumvent sanctions or enable illicit finance.

The broader question remains: is the business of banking, complete with lending and fractional reserves, inextricably linked to payments or is there room for alternative models?

THE TOKENISATION WAVE IS WELL UNDERWAY

The future is already in view, writes David Anderson, strategic positioning and global thought leadership at Circle.

'The growth of stablecoins into a $150bn market indicates the tokenisation wave is already well underway.'

FIFTEEN YEARS SINCE the appearance of the first digital assets, the future of blockchain is only just beginning to come into focus. New use cases that complement those offered by traditional finance are gaining momentum. Governments, institutions and businesses are rapidly recognising that the tokenisation of traditional assets can become a major innovation to help make commerce faster, safer and more efficient, drive financial inclusion and move global finance forward.

The World Economic Forum, Citigroup and Boston Consulting Group estimate that trillions of dollars' worth of economic activity will take place on the blockchain in the coming years, based on the speed, cost, transparency and scale benefits it can deliver for many types of financial transactions.

The growth of stablecoins into a $150bn market indicates the tokenisation wave is already well underway. Stablecoins are blockchain-native representations of government obligations – essentially tokenised cash. They equip traditional fiat currencies with the advantages offered by the internet so that it's possible to send stable value in the same fashion as other forms of internet data – across borders, almost instantly and at miniscule cost.

Beyond the surge of tokenised cash, there are unmistakable signs that other types of tokenised assets are also poised to scale. The notional value of tokenised US Treasuries tripled from June 2023 to June 2024, with involvement from some of the world's biggest asset managers – many of whom now also offer spot digital currency exchange-traded funds. Many central banks are considering the issuance of digital currencies, and there is also growing dialogue around commercial banks issuing tokenised bank liabilities.

While stablecoins are the dominant form of tokenised assets today, it's possible to envision a future in which we begin interfacing with other types of non-financial assets – real estate, intellectual property and even personal identity – via the blockchain.

Why is tokenisation appealing?

Most tokenised cash today is tied to the dollar, driven largely by its central role in global trade. Dollar stablecoins like Circle's USDC are an easy, convenient way for businesses and individuals outside of the US to access and use the dominant currency for cross-border commerce. There is heavy demand especially for tokenised dollars in countries that are beset by inflation and political instability.

Humanitarian payments are another area where tokenised cash is in demand. Some of the world's most significant aid organisations are choosing to disburse aid in the form of dollars on the blockchain. Tokenised dollars can also be an effective tool for getting desperately needed assistance to innocent civilians who live under repressive and authoritarian regimes.

There is an emerging roadmap to harness the benefits of dollar stablecoin usage outside the US without sacrificing local monetary sovereignty, with appropriate controls on foreign exchange and taxes. Blockchain monitoring tools are key, since transactions on these networks offer significantly more transparency and easier real-time monitoring than traditional payment systems and cash. This model makes it easier to root out tax avoidance, sanctions evasion, trade in illicit goods and corruption while exposing 'black markets' and enabling taxation.

The bottom line is that stablecoins are open-source and programmable, making it possible for local governments to tailor their usage in-country.

How this future might play out

New rules are emerging around the world that bring this form of tokenised cash within the regulatory perimeter, led by the Markets in Crypto-Assets Regulation in Europe and several regimes in Asia Pacific. The underlying technology is also improving, with blockchains becoming more resilient and wallets growing easier to use. Some of the world's leading banks have begun working with stablecoin providers to enhance their own product offerings and facilitate institutional and retail access globally.

Based on these factors, we foresee a future in which billions of people could soon begin using tokenised cash both in daily commerce and to protect their personal wealth. Beyond this direct usage, the programmability of stablecoins could make them a natural fit for creating a new, interoperable technology layer that works in the background to help other forms of tokenised value – commercial bank liabilities, sovereign bonds, central bank digital currencies and more – work together and settle across different platforms.

COLLABORATION IS KEY

Nick Kerigan, managing director and head of innovation at Swift, speaks to OMFIF about the vital lessons learned from recent sandbox testing.

OMFIF: The technology behind tokenisation has been around for several years now, but it seems to have really captured the attention of market participants in the last 12 months or so. Why is this?
Nick Kerigan: Yes, it is getting a lot of attention, particularly in securities and capital markets circles. Tokenising non-traded securities can make them more investible, but people are starting to see much broader potential in tokenising almost anything: real estate, commodities, invoices for supply chains… But if you want to transact whatever you tokenise, you also need a payments leg or a representation of cash.

OMFIF: Where do you expect that to come from?
NK: Central bank digital currencies are one option. While we don't take a view on them, Swift has been exploring how they would be implemented for three years now. We published the results of phase two of our CBDC sandbox testing in March 2024, which was one of the largest global collaborations in this sector to date – involving 38 organisations from around the world. We explored some complex use cases, including delivery versus payment of tokenised assets and cash in multiple currencies.

OMFIF: The Bank for International Settlements has articulated its vision for the future of the tokenised financial system with its Finternet concept paper. Does that match your vision?
NK: It's an interesting and exciting concept. It's not yet clear what will be the final state of tokenised capital markets, but the Finternet does highlight the potential that shared ledgers have for delivering increased programmability, settlement efficiency and a shared single view of state. We're one of the participants exploring these concepts in the Regulated Liability Network project, and the latest proof of concept, the Regulated Settlement Network.

A messaging layer – for the exchange of rich, structured data about a transaction – would be a critical component of something like the Finternet. Data need to be passed alongside assets, and distributed ledger technologies are not good at that – both for reasons of bandwidth and because their transparent and immutable nature means they are not a sufficient repository for sensitive information. That kind of messaging layer is something that Swift would be well-equipped to provide.

'A messaging layer – for the exchange of rich, structured data about a transaction – would be a critical component of something like the Finternet.'

OMFIF: What are the other technical challenges involved in the delivery of this kind of tokenised ecosystem?
NK: One of the major conclusions from our sandbox was that interoperability is hard to deliver – but absolutely essential. It doesn't matter whether you believe there will be hundreds of ledgers or just a few. As long as there is more than one, delivering seamless settlement will require work to ensure assets can move between different platforms. That's what we demonstrated in our securities use case in the sandbox. We were able to achieve delivery-versus-payment settlement of a tokenised security versus tokenised money across two different platforms.

One of the outcomes of our sandbox was that participants came up with a set of interoperability principles that should be observed in the designing of new digital networks. One of those principles is that the industry should focus on interlinking networks, rather than individual participants.

Also, it's unlikely that institutions would have the resources or capacity to stand up nodes for all the possible different networks on which assets they may wish to hold are being traded. If that limits an institution's ability to hold assets, then liquidity will be compromised. So there needs to be a single point of access and we're working with our community – custodians and asset managers – to enable them to use their existing Swift infrastructure as a single point through which they can access the digital asset ecosystem.

Finally, from our own sandbox and participation in other industry experiments, it's clear that global collaboration on these topics is vital. Many organisations have conducted different experiments and sharing what they've learned with other participants can lead to better questions and better answers – to take us towards an ever faster and more connected financial system.

FINANCIAL SERVICES CAN FIND INNOVATION IN TOKENISATION

Tokenisation stands to completely revamp legacy market infrastructure, writes Dom Ghazan, managing director at Global Trade Finance.

'The process of tokenisation also democratises investing, making it more accessible and cost-effective for small investors.'

THE RIGHTS to various assets can be converted into digital tokens by virtue of distributed ledger technology. This process enhances accessibility and liquidity and can apply to all title-based things, both tangible and intangible in nature. The most prominent use cases include real estate, legacy financial instruments, commodities, intellectual property, art and digital assets.

Tokenisation enables fractional ownership – making investments more accessible – while increasing transparency and reducing transaction costs. This innovative approach has the potential to restructure asset ownership and trading, offering a more efficient and inclusive investment landscape.

There are questions concerning where the cash leg of tokenised asset transactions can come from. This can range from wholesale central bank digital currencies, tokenised commercial money or private sector stablecoins. Wholesale CBDCs, issued by central banks, offer high security and efficiency for large transactions. Tokenised commercial money, managed by commercial banks, provides familiarity and integration with legacy banking services, ideal for retail and business use. Private sector stablecoins, pegged to stable assets, enable fast, low-cost transactions and are suited for global and decentralised finance applications.

The choice depends on regulatory factors, transaction scale and the need for security and efficiency. Interoperability is key to countervail potential market fragmentation, thereby enabling the next iteration of global liquidity provision.

Bearer assets

Tokens can either be bearer assets or represent claims upon an asset. Bearer assets, which directly equate to ownership, indicate that possession of the token is sufficient to claim ownership – akin to physical cash or bearer bonds. This simplifies transactions by eliminating intermediaries.

On the other hand, tokens that represent claims provide a legal entitlement to the underlying asset, often managed by a custodian or intermediary, ensuring regulatory compliance and legal protection. The design and legal framework of the token determine its nature, with bearer assets offering immediacy and tokens as claims ensuring regulatory adherence.

Investors can hold tokens in digital wallets, either custodial (managed by third-party services) or non-custodial (self-managed). Deposit services are provided by traditional financial institutions, specialised crypto custodians like PolySign or Uphold and various DLT platforms. Measures such as robust private key management, cold storage solutions, regulatory compliance and insurance collectively ensure the safe and secure holding and management of tokenised assets. The inherent security features of DLT, such as immutability and decentralised consensus, further protect token transactions and ownership records.

Changes to market infrastructure

By streamlining asset issuance, trading and settlement through DLT, tokenisation stands to completely revamp legacy market infrastructure. As settlement becomes near-instantaneous, and custody shifts to digital wallets and specialised crypto custodians, there is less reliance on trusted intermediaries, which increases efficiency.

While the role of central securities depositories may also diminish, they can remain relevant by incorporating DLT, offering tokenisation services and ensuring regulatory compliance. This adaptation allows CSDs to bridge traditional and tokenised markets, supporting a smooth transition while maintaining trust and adherence to regulatory standards.

This approach to innovation does not just serve financial markets. Tokenisation also benefits retail users by enabling fractional ownership, increasing liquidity and lowering transaction costs. It offers access to new investment opportunities like real estate, art and private equity, previously limited to institutional investors.

The process of tokenisation also democratises investing, making it more accessible and cost-effective for small investors to better diversify portfolios and participate in a wider range of markets. This will enable a more inclusive, fair and equitable financial system.

'Interoperability is key to countervail potential market fragmentation.'

THE LOGICAL NEXT STEP FOR SECURITIES?

In the markets of the future, we can issue and trade financial assets with ease, writes Lars Hupel, chief evangelist of CBDC at Giesecke+Devrient.

AS WE INCREASINGLY move towards digitalisation and decentralisation, tokenisation has gained much traction in the financial world. But how is tokenisation related to securities and what else is missing to make markets more efficient?

Securities, according to one definition, are tradable financial assets and can come in many different forms, whether as equities, such as stocks, or debt, such as bonds. The concepts behind securities date back as early as antiquity, when debt instruments were also known to be traded. Since then, modern-day markets have contributed to a staggering growth in trading volume – the World Economic Forum reported that the global bond market reached $133tn in 2022.

'Tokenisation of money could advance the economy even further, by giving an instant settlement instrument for the cash leg.'

Yet, buying and selling securities is still fraught with inefficiencies. To this day, most bonds are not traded in exchanges and even those securities traded on exchanges suffer from frictions, like delayed settlement. In the US stock market, settlement could historically take up to five business days, which has now been reduced to just one.

What does that have to do with tokenisation? Issuing securities helps both the public and private sector to raise funds for investments. Trading securities also provides additional liquidity and helps to manage risks. Tokenisation is simply the logical next step – by improving the efficiency of both issuance and trade, such as capital and money markets, through further digitalisation.

Recent examples

Take the German Electronic Securities Act. Before its passage in 2021, securities had to be physically embodied as deeds. In short, the act allows for fully digital issuance of (certain classes of) bonds and shares. In particular, there is a focus on bearer instruments, specifically assets that are under the full custody of the current owner and that can be freely traded in a peer-to-peer fashion.

The act does not prescribe a particular technology – both 'central' and 'crypto' registers are allowed. This serves to illustrate that the law aims to support a broad scope of digitalisation, instead of needlessly restricting it to blockchain. As of May 2024, over 90 issuers have opted to issue electronic securities. Prominently, Siemens, in 2023, successfully issued a €60m bond.

No matter the underlying platform choice, merely digitalising the securities does not solve paying for them. In traditional securities trading, there is a dual settlement risk: the seller may not provide the securities in time, whereas the buyer may not pay in time. The goal is to allow for both legs to settle in real-time and simultaneously – a property often referred to 'delivery versus payment'. Tight integration between central securities depositories and real-time gross settlement systems, such as the TARGET2-Securities facility in the European Union, have already begun to address this challenge.

Central bank digital currencies

Tokenisation could advance the economy even further by providing an instant settlement instrument for the cash leg. A wholesale CBDC, designed as a bearer token and as a central bank settlement asset, could be used by financial institutions to move funds instantly and irrevocably. Currently, some market participants, such as dealers, could not have direct access to central bank reserves: they had to rely on bank deposits carrying counterparty risk.

But a bearer CBDC – a risk-free asset – could enable dealers to hold and pay in central bank money directly. Regulated stablecoins (as through the Markets in Crypto-Assets Regulation in the euro area) could also function as the underlying payment rail.

In the markets of the future, we can issue and trade financial assets with ease. Tokenisation of securities and a CBDC or other private forms of tokenised monies for payments can be provided on various platforms and need not be bound to one technology. They must be designed as bearer instruments, which would eventually help retail investors to participate using a variety of wallets.

CASH-ON-CHAIN IN ACTION

The proliferation of additional use cases indicate that pieces are coming together, write Basak Toprak EMEA head of Coin Systems, and Wee Kee Toh, head of business architecture, Coin Systems, Onyx by JP Morgan.

ONGOING PROGRESS in developing blockchain technologies for commercial applications, such as asset tokenisation, is creating demand for blockchain native 'cash equivalents' that act as liquid means of payment and store value in blockchain-native environments.

The growing adoption of blockchain for complex commercial transactional activity, including institutional activity, has brought into focus the question of what form of digital money may be needed to continue to support blockchain payments at scale. Commercial bank money on-chain and central bank digital currencies have especially come to the forefront in examining the optimal future state of digital money.

Commercial bank cash-on-chain are blockchain-based deposit claims against a licenced depository institution for stated amounts recorded on blockchain. They are economic equivalents of existing deposits recorded in a novel form used to pay for assets, settle trades between digital assets and generally act as a store of value and means of exchange on blockchain ledgers.

Applying blockchain technology in this manner allows payments made with commercial bank money to benefit from programmability, instant and atomic transaction settlement, and improved transparency as to the status of transaction. These features help to address common pain points in liquidity management and cross-border payments.

'Partior aims to achieve end-to-end atomic settlements in multiple currencies.'

Settlement synchronisation

JP Morgan clients can open blockchain deposit accounts on a private, permissioned blockchain-based deposit ledger and payment rail to facilitate transactions 24/7, in near real-time, across borders via the JPM Coin System. This can offer significant improvements when moving money across geographies or systems among accounts held with one institution globally. With programmable payments available for blockchain deposit accounts, users can optimise and automate their treasury flows by using an intuitive 'if-this-then-that' interface.

In the context of settlements of repurchase transactions, JPM Coin System supports the cash component of such transactions. Settlement of each leg involves the near-simultaneous exchange of cash held in a blockchain deposit account for tokenised securities, with the balance of each recorded on the Onyx digital assets blockchain, thereby reducing settlement and counterparty risk.

Blockchain deposit accounts can also be a cash settlement option on other platforms that desire real-time settlement by leveraging JP Morgan's settlement synchronisation solution. Such settlement synchronisation can support additional use cases such as loan payments, dividend payments and supply chain payments.

Unified ledgers

Shared ledgers, sometimes referred to as unified ledgers, bring multiple institutions onto the same network to seamlessly interact with a common set of digital assets and operational protocols and share in increased transparency of transactions. These platforms require coordination and agreement on common standards and governance from the network's participants.

Partior, for instance, is a unified ledger platform and a global, inter-bank network that leverages blockchain technology to enable real-time multicurrency cross-border value transfer on a single, shared ledger. As a solution, Partior aims to achieve end-to-end atomic settlements in multiple currencies and replace the sequential approach to payments settlement, enabling faster and more efficient payment settlement for banks and their clients.

Developments in the blockchain space, including efforts on asset tokenisation and digital securities, are increasing demand for blockchain-based payments that can better integrate and support the needs of these new use cases. We believe commercial bank cash on-chain is well-positioned to support this growth and provide smarter means of digital payments.

The progress that is already being made to cash on-chain applications and the proliferation of additional use cases indicate that pieces are coming together to allow for the steady growth of meaningful commercial applications.

Furthermore, commercial bank cash on-chain can play a valuable role within the overall ecosystem and can have a symbiotic relationship with blockchain-based wholesale CBDCs. This helps to further the two-tier banking system in place today and bridge the integration of CBDCs into the banking system. With global industry initiatives underway such as Project Agorá, the industry will build a framework to support a superior financial system, building on the experience gained from the live commercial bank money applications and use cases.

DMI OMFIF ® Digital Monetary Institute

BECOME A MEMBER

Get in touch to join our exceptional network and shape the future of money and capital markets.

Folusho Olutosin

Commercial Director, Digital Monetary Institute
Folusho.olutosin@omfif.org

RISKS ON THE RISE AS DIGITAL FINANCE ADVANCES

There may be more readily available options for stable digital cash, writes Rajeev Bamra, senior vice president and head of digital economy strategy at Moody's Ratings.

THE INCREASING USE of digital assets and distributed ledger technology is driving a transformation in global finance. Digital bonds are emerging as a significant innovation in the financial sector due to their capacity to record transactions simultaneously across multiple locations, with lower transaction costs, enhanced liquidity, easier access to capital markets and reduced settlement time.

Although issuance of digital bonds is small compared to conventional bonds, it is accelerating among public entities and banks that are leveraging this technology to enhance their services.

However, with digital bond issuance, there can be a lack of interoperability among blockchain systems. Problems also arise with the integration of digital and legacy financial infrastructure, cybersecurity risks and regulatory compliance considerations in regions with stringent data privacy laws. Some market participants may be reluctant to adopt this technology due to potential disintermediation, despite its promise of making bond markets faster, cheaper and more efficient. In Moody's view, as the digital bond ecosystem matures, the associated risks will most likely gradually align with those of traditional bond infrastructure.

'As the digital bond ecosystem matures, the associated risks will most likely gradually align with those of traditional bond infrastructure.'

Meanwhile, tokenised funds are also gaining traction. Issuance of fixed-income tokenised funds is being largely driven by the tokenisation of funds investing in government securities – an asset class that is more appealing at a time when interest rates are higher in many markets. Established financial institutions alongside crypto companies offering tokenisation services are facilitating such issuances.

Novel risks

Managing tokenised funds, however, involves risks and requires specific expertise, given the complexities associated with DLT. Novel risks such as regulatory uncertainties, technical challenges and the need for seamless integration between on-chain and off-chain operations pose significant barriers, impacting the development of a robust secondary market.

Beyond the question of expertise, the tokenisation market faces challenges related to experience. The limited track record of tokenisation platforms compared to the well-established conventional issuance infrastructure makes it necessary to examine these investments much more closely. The development of a fully functional tokenisation market is also hindered by the lack of DLT-compatible stable digital settlement assets (or stable digital cash), which are essential for on-chain payment processing. While tokenisation can democratise access to some extent, it must still operate within the bounds of regulatory frameworks to ensure investor protection and market integrity.

In the not-so-distant future, there may be more readily available options for stable digital cash, from mobile money, unbacked cryptocurrencies, stablecoins, tokenised bank deposits and central bank digital currencies. Although some unbacked cryptocurrencies offer round-the-clock transferability and programmability, their volatility make it difficult for any of them to serve as a reliable medium of exchange. One solution has emerged in the form of stablecoins, which peg their value to reference assets to provide stability. However, despite their popularity, stablecoins like Tether and USD Coin have struggled to maintain a consistent peg to the dollar, raising concerns about their reliability.

Bridging traditional and decentralised finance

Nonetheless, stablecoins are likely to play a significant role in a burgeoning digital economy by bridging traditional finance and decentralised finance. However, they face competition from more stable alternatives such as CBDCs and tokenised bank deposits. Currently, CBDCs are still largely in the proof-of-concept phase as various governments test them. Central banks are likely to design them to enhance payment efficiencies without undermining credit provision, crucial for the functioning of the economy. While it will take time for governments to work out final design and operational guidance for CBDCs, stablecoins are likely to remain a significant force in shaping the future of digital money until then.

Despite the many obstacles, the rise of digital bonds, tokenised funds and digital cash options signals a major shift in the financial sector. To overcome regulatory hurdles and technological complexities, collaboration among the many stakeholders will be key. As the ecosystem matures, digital finance has the potential to drive efficiency, transparency and accessibility in global markets, ultimately reshaping the future of finance.

SHAPING THE FUTURE OF PAYMENTS

We can lead the charge towards a more connected and inclusive financial future, write Hugues Marie, product manager, CBDC and digital currencies, and Jerome Ajdenbaum, vice president, fintech at IDEMIA.

AS CENTRAL BANKS introduce digital currencies, they aim to replicate the behaviour of cash, including its offline capabilities. This critical function ensures that transactions can occur without network connectivity, addressing coverage gaps and ensuring financial inclusivity. IDEMIA's vision for offline payments is not just about enabling offline transactions in disconnected environments; it's about creating a robust, secure and inclusive financial ecosystem.

Despite the ubiquity of network availability, many regions, especially in emerging economies, suffer from inadequate data services and frequent network disruptions. These interruptions can result from natural disasters, technical failures or malicious attacks. Consequently, a robust financial system must guarantee transaction capabilities any time and anywhere – even during network outages.

Beyond enabling constant access to payments, offline payments are also crucial for financial inclusion. With approximately 1.7bn people lacking access to financial services, there is a significant need to provide accessible financial solutions. Central bank digital currency payment solutions must be able to cater to individuals without smartphones, using alternative devices like feature phones, plastic cards and wearables. Implementing this ensures universal access to digital financial services.

'Beyond enabling constant access to payments, offline payments are also crucial for financial inclusion.'

Secure offline payment solution for CBDCs

IDEMIA has developed a secure offline payment solution for CBDCs – a state-of-the-art platform designed to address the key challenges of offline transactions. This offline layer integrates with any CBDC system, whether centralised or decentralised, account or token-based, developed directly by the central bank or by a third party, ensuring broad compatibility and flexibility.

To mimic the behaviour of cash, the solution must be designed to ensure instant finality. Transactions are completed and confirmed immediately to allow for unlimited number of offline retransfers, if the central bank wishes so.

When designing a CBDC solution, security and privacy are paramount. Offline payments must prevent double-spending and ensure transaction integrity without network verification. Central banks, in alignment with IDEMIA's vision, believe that the use of secure elements, embedded in various devices, is mandatory for offline payments. These elements provide a tamper-resistant environment for executing sensitive operations and storing cryptographic keys.

Privacy is not just a critical concern for users, it's also a concern for regulators. IDEMIA's solution allows for a configurable level of privacy – including cash-like privacy – allowing central banks to adopt the system to their policy and technical needs.

Pay as you are

User adoption is key to the success of any payment system. 'Pay as you are' embodies IDEMIA's commitment to delivering the best user experience by enabling secure and convenient payments through a diverse range of devices. Whether you prefer using a smartphone, payment card or wearable, the solution adapts to the user's personal needs. We prioritise inclusivity by offering options for individuals with low income, low technical literacy and disabilities, ensuring that everyone can access our payment solutions comfortably and effortlessly.

This versatility also ensures that users across different demographics and regions can benefit from CBDC payments. Moreover, the solution supports various transaction scenarios, including peer-to-peer, consumer-to-business and machine-to-machine payments.

An essential part of our work is the focus on developing quantum-safe solutions. As quantum computing technology advances, it poses potential risks to traditional cryptographic methods. IDEMIA recognises the importance of future-proofing financial systems against these emerging threats. Therefore, the secure offline payment solution for CBDCs incorporates quantum-resistant algorithms to protect against the computational power of future quantum computers. By integrating these advanced cryptographic techniques, offline CBDC transactions remain secure and resilient in the face of evolving technological landscapes.

The vision for offline payments is centred on creating a secure, inclusive and resilient financial system. By addressing the challenges of offline transactions, IDEMIA is paving the way for the widespread adoption and success of CBDCs and leading the charge towards a more connected and inclusive financial future. Through robust collaborations and a commitment to quantum-safe solutions, IDEMIA is dedicated to securing the future of offline CBDC payments for generations to come.

EMBRACING THE MARKETS 3.0 PARADIGM

The future of money and payments is unfolding at pace, write Ollie Carew, fintech consulting, and Fran Clausen, global regulatory network strategy lead at EY.

'Regulators must develop a robust regulatory framework that balances innovation with market stability and consumer protection.'

INTEREST IN the use of blockchain or distributed ledger technology across financial services has grown in recent years, especially in relation to tokenisation. A flurry of public and private sector initiatives, as well as regulatory reforms, is in motion and these projects are setting the stage for a fundamental shift in how markets operate.

In 'markets 3.0' – a landscape with new forms of digital money and assets – this shift could deliver quicker, safer and automated settlement, 24/7 availability, greater transparency and traceability and, where appropriate, a reduced role for intermediaries. These benefits and a range of new payment use cases can be unlocked through new technology underpinning tokenisation, such as smart contracts and programmability in addition to a unified ledger.

Switzerland, Brazil, South Korea and Singapore have demonstrated the importance of public-private partnerships in developing the financial market infrastructure needed to capitalise on the potential of tokenisation in financial markets. After all, innovation requires collaboration. Connecting the dots across various initiatives ensures a holistic approach that delivers on innovation and benefits the ecosystem of market participants and end users.

How can this vision be brought to fruition?

First, assets need to be tokenised. This involves converting traditional securities into digital tokens that can be easily issued, traded and settled on blockchain-based platforms. This reduces the time and cost associated with these processes, opening new opportunities for asset classes and investment strategies. Investors are particularly interested in tokenised alternative assets.

Second, programmable and tokenised money must be developed, whether that is retail or wholesale central bank digital currency, tokenised commercial bank money or private stablecoins. The tokenisation of money and assets can enable delivery versus payment, which allows transfers to happen at the same time or after payment has been made. This functionality can be applied to a huge number of use cases across retail and wholesale finance, offering significant benefits.

Third, regulators must develop a robust regulatory framework that balances innovation with market stability and consumer protection. The UK Treasury has set out a future regulatory regime for cryptoassets in the UK for this reason. The development of such a framework requires a deep understanding of the technology involved and a willingness to collaborate with industry participants to develop appropriate regulations.

Finally, new types of FMIs built on blockchain are needed to help facilitate the transaction of both tokenised money and assets. This could involve single networks with multiple participants or linking different networks together. These FMIs could look like the ones we have today, where money and assets are segregated. There is also a potential to create new FMIs where both tokenised money and assets sit on the same ledger. Some examples include the Regulated Liability Network in the UK, Regulated Settlement Network in the US, Project Helvetia in Switzerland, Drex in Brazil and Project Agorá, which spans seven countries..

The future of money and payments, and financial markets more broadly, is unfolding at pace. These innovations are the harbingers of a new era where finance is more accessible, efficient and interconnected than ever before. Policy-makers and industry professionals should embrace this change and consider how they can shape its course.

Digital assets

A long-awaited revolution

OMFIF's Digital assets report will feature a unique survey of market participants, uncovering both their current frustrations with market infrastructure and their beliefs about and hopes for improvements driven by new technology, particularly distributed ledger technology and tokenisation.

This should provide an immensely valuable window into the challenges facing those participating in capital markets and how they intend to address them.

DMI OMFIF Digital Monetary Institute

DOWNLOAD BROCHURE

CONFIGURING ON-CHAIN ASSETS IN A TOKENISED ECONOMY

A tokenised future is not a case of technology for the sake of technology, write Christoph Hock, head of tokenisation and digital assets, Union Investment, and Frank Scheidig, global head of senior executive banking, DZ BANK.

'Blockchain is the catalyst behind the token economy.'

THE TOKEN economy, which provides the foundation for assets and cash on the blockchain, can be seen as part of the internet's evolution since the early 1990s.

Historically, Web 1.0 focused on the transmission of information, with the 'read' function of search engines gaining popularity at the time. Web 2.0 then ushered the next step in the internet's journey – the platform economy. Companies like Amazon and Facebook, which recently crossed the $1tn barrier, exemplify this period from the end of the 1990s and the beginning of this century.

From Web 1.0

Slow initial user adoption was characteristic of both Web 1.0 and Web 2.0. A similar trajectory awaits Web 3.0, the era of the token economy where, on top of writing and reading, the functionalities of 'own' and 'execute' will be implemented.

These modes are what makes this new era so attractive for the financial industry. If we are to see the token economy as the next step in the internet's evolution, with the potential to reshape the financial sector, it then becomes a crucial catalyst for industrial change.

Many areas of the financial industry could be affected – such as post-trade processes, including settlement and clearing in combination with custody. Processes between the involved market players will also increasingly be mapped on the blockchain. As well as a much higher level of automation going forward, value will be created by the setup of new roles in the ecosystem. On the other hand, oligopolies in the existing world of finance might be questioned and some intermediaries might partially lose the importance they have today.

Another second area that could be affected is the product space. Tokenisation will be a more sophisticated electronic wrapper for investable

'Slow initial user adoption was characteristic of both Web 1.0 and Web 2.0. A similar trajectory awaits Web 3.0, the era of the token economy.'

products, for what is now known as securitisation in the form of physical global certificates. Combined with the fractionalisation of tokens, this will go hand-in-hand with further democratisation and individualisation of investing.

Payment mechanisms will also most likely shift to blockchain as a platform. Take central bank digital currencies and stablecoins. Looking at opportunities in data management, the acceptance of blockchain as a single source of truth will lead to efficiency gains, greater transparency, easier accessibility and significantly lower costs.

Regulatory clarity in the token economy, a clearly defined governance structure and guardrails for the financial industry are key elements for further evolution. Financial stability and investor trust are the main characteristics of the industry as we know it today. In this new era of the token economy, these elements must be maintained and preserved. The European Securities and Markets Authority and its national regulatory bodies, along with ministries of finance, have created a regulatory framework for cryptoassets, which also includes blockchain-based traditional securities. This offers market participants the opportunity to get involved in these products, keeping financial stability and trust in mind.

The life cycle of a traditional bond (Figure 1) from origination in the primary market, trading in the secondary market, post-trade processes and maturity are shown in comparison with a blockchain-based, tokenised bond. Pain points in the current environment are addressed. Possible solutions for these based on blockchain technology with not only assets on the blockchain, but also required cash on the blockchain, are provided. Central banks will play a major role in this context.

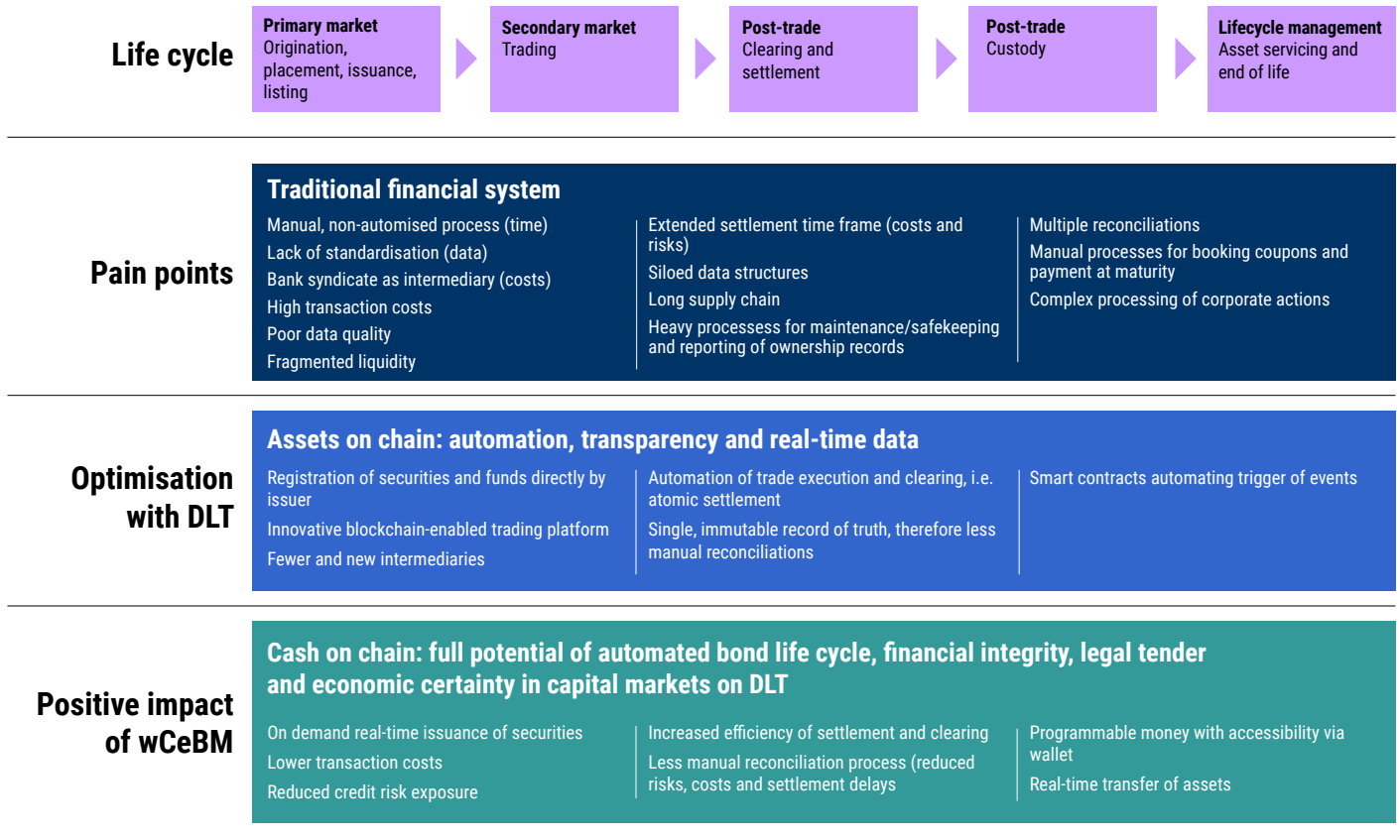
What benefits can the new ecosystem deliver

For clarification, it is not about technology for the sake of technology. When combining assets and cash on the blockchain, innovation and competition will lead to higher speed, lower costs and reduced risk. A higher level of automation will simplify administrative processes and a real-time golden source for data will provide a higher level of transparency.

Settlement and clearing will benefit from higher speed; atomic settlement, meaning instantaneous settlement, will be a possibility going forward. Smart contracts as the brain behind blockchain technology will allow new features.

Blockchain is the catalyst behind the token economy. The ability of tokenisation to make processes more efficient in terms of speed, costs, risks and enabling new business models makes it a key force for change in the financial industry. Now, the focus in 2024 must include central banks' implementation of digital currencies and the setup of distributed ledger technology-based secondary market trading platforms and regulatory initiatives like the go-live of the Markets in Crypto-Assets Regulation.

1. Pain points range from lack of data standardisation to siloed data structures
The life cycle of a traditional bond



Source: Union Investment, Axa Investment

THE FUTURE WILL RELY ON AMBITION AND ADOPTION

While the focus is on the future of tokenised money, the market is already beginning to take shape, writes Thibault Pelé, product lead of CBDC at Worldline.

'In the US, stablecoins dominate, while in Europe, their adoption has been slower.'

OFTEN REFERRED to as the 'killer use case' for blockchain technology, tokenisation is here and is rapidly gaining traction. A study by Roland Berger projects that the market for tokenised assets will surge by 2030, reaching an estimated value of $10tn, up from $300bn in 2022. While the focus is on the future, the market is already beginning to take shape.

In this evolving landscape, the public sector is keen to support innovation. In Europe, the DLT Pilot regime was launched in 2022 to provide regulatory clarity for institutions exploring the benefits of distributed ledger technology and tokenised assets. However, a recent report by the European Securities and Markets Authority highlighted the lack of a satisfactory solution for the cash leg of transactions.

Central banks and public institutions have been actively exploring solutions. The Bank for International Settlements has launched various projects worldwide. For example, Project Ensemble, unveiled in 2024, focuses on the settlement of tokenised assets using wholesale central bank digital currencies. Similarly, Project mBridge aims to enhance cross-border transactions.

Earlier this year, the European Central Bank also launched trials to explore different approaches to the settlement of tokenised assets. This follows experiments by Banque de France, which explored various models for tokenised assets, including an integrated model where both legs (cash and securities) of a transaction are settled on the same platform.

Another model the French central bank explored is an interoperable model where different DLTs are used for securities and cash, which are interoperable with each other. It also explored a distributed model where securities and cash legs are on different DLTs, but a digital representation of the cash leg is created on the securities' DLT.

At this stage, we are still in the exploration phase. While public institutions are pursuing wholesale CBDCs, the private sector is not lagging behind. Many commercial banks are developing approaches based on tokenised commercial bank deposits.

Private sector offerings

Tokenised commercial bank deposits are digital representations of traditional bank deposits, using blockchain technology. These tokens can be transferred quickly and securely, offering a promising solution for the cash leg in tokenised asset transactions. As this technology matures, it could provide an alternative to wholesale CBDCs. However, one could wonder: what would be the benefits of DLTs if all the commercial banks are running their own DLT? It would be very similar to the existing system.

A solution in stablecoins

Stablecoins are digital assets on a blockchain designed to maintain a stable value – most often by pegging the value to fiat currencies (for instance, USDC and USDT). Launched on public blockchains, stablecoins offer the promise of native interoperability, making them suitable for use in decentralised finance.

However, the adoption of stablecoins varies significantly across regions. In the US, stablecoins dominate, while in Europe, their adoption has been slower. This discrepancy is partly due to cultural differences in the perception of cryptocurrencies and Web 3.0 technologies. European markets tend to be more cautious, favouring private blockchains.

Issues concerning trust also harm the wider adoption of stablecoins, particularly following the Terra/Luna collapse. Leading players like Tether and Circle have made significant efforts to foster transparency and to reassure users about their pegs, but uncertainties remain. The market for tokenised assets is fragmented, with no perfect solution yet available. The choice between wCBDCs, tokenised commercial bank deposits and stablecoins involves trade-offs in interoperability, innovation and trust. This complexity is currently restricting market growth and future exploration will be crucial in determining the best model.

An answer may emerge from Project Agorá – a joint initiative involving seven central banks as well as the private sector – which aims to explore the seamless integration of tokenised commercial bank deposits with tokenised wholesale central bank money. However, governance remains a key question. If such a model were implemented, how would the system be governed and could it operate without centralised oversight?

As the technology develops, the focus shifts to policy and use cases. Whether through wholesale CBDCs, tokenised deposits or stablecoins, the future will rely on ambition and adoption.

FUTURE OF PAYMENTS

A new generation of payments takes shape

OMFIF is excited to present our latest Future of payments report, featuring an extensive survey of central banks uncovering their beliefs about cross-border payments and the various solutions being proposed.

DMI OMFIF Digital Monetary Institute

REGISTER HERE

NEW ENGINES, NEW RULES

Experts gather in London to discuss the future of finance, writes Lewis McLellan, editor of the Digital Monetary Institute at OMFIF.

'There was broad agreement that a robust digital identity system is the missing link for retail CBDC.'

AS DEVELOPMENTS in digital money gain traction, the future of our financial systems stands to look radically different. To discuss these developments and more, experts on central bank digital currencies, payments, tokenisation and artificial intelligence gathered in Knightsbridge for OMFIF's 2024 Digital money summit.

Against a lively atmosphere – with frank views and differing opinions exchanged between the public and private sectors – participants gained some immensely valuable insights into the trajectory of technological innovation in finance and payments.

Tokenisation – representing ownership of an asset on a digital ledger (usually a blockchain) – has found a level of momentum that it has never had before, with Jon Cunliffe, the Bank of England's former deputy governor for financial stability, examining its potential in his keynote speech. The technology itself is not new. The first blockchain bonds were issued around seven years ago, but a confluence of factors has spurred interest in the concept.

First, Agustín Carstens, Bank for International Settlements governor, has made it a central tenet of the BIS' vision for the future of financial markets with his 'Finternet' paper. The paper calls for a completely interconnected network of financial ecosystems, on which a broad range of financial and non-financial assets would be represented in tokenised format and able to be atomically swapped for tokenised versions of cash in various currencies.

The vision is, to put it charitably, ambitious – one panellist at the summit referred to it more bluntly as 'utopian'. The challenges involved in agreeing shared standards and principles for such a platform would be enormous. Not to mention, the added technical challenge of ensuring that a system of such immensely concentrated systemic importance remains secure and operationally resilient will most likely be dwarfed by the problems involved in determining the governance of such a platform.

Reflecting this, a poll revealed that 34% of the audience felt that governance would be the biggest challenge in building such a system (Figure 1), beating legal and regulatory compliance with 26% and interoperability with 22%.

The work is beginning, however. The Regulated Liability Network – a partnership between several banks, Swift and other institutions – is among the most exciting projects exploring this aim.

As ambitious as the eventual vision appears, incremental changes, such as building tokenisation-powered issuance and trading platforms, asset class by asset class, might move us gradually towards a reality that looks more like the vision of the Finternet.

Projects making these changes are another reason why interest in tokenisation is accelerating. From the World Bank's seven-year digital bond in Swiss francs launched in May, to the Hong Kong Monetary

Clockwise from left: John Orchard, OMFIF; Sheila Mmbijjewe, Central Bank of Kenya (2015-23); Arif Ismail, International Monetary Fund; Claudine Hurman, Banque de France and Thammarak Moenjak, Bank of Thailand; Andrew Kawere, Bank of Uganda

From left to right: Bénédicte Nolens, BIS Innovation Hub Hong Kong Centre, and George Chou, Hong Kong Monetary Authority

Authority's four tranche digital green bonds in February, digital bonds are moving from proof-of-concept to legitimate funding instruments.

Cash remains among missing links

Realising the potential of tokenised assets requires the tokenisation of a means of payment. While possible contenders for this already exist – such as stablecoins, experimental wholesale CBDCs and synthetic versions like Fnality – the question of how to provide tokenised cash already has technical answers. What the market is waiting for is monetary authorities to provide a policy answer around which they can coalesce and start to build on.

'The vision is, to put it charitably, ambitious – one panellist at the summit referred to it more bluntly as 'utopian'.'

Cash is a key missing link, but it is not the only one. Many of the technical questions on tokenised capital markets have already been solved, but building the full infrastructure, allowing clients to be seamlessly onboarded and interact with a new form of asset, is not yet complete.

Perhaps more fundamentally, policy-makers and market participants have yet to come to a conclusion on the roles of infrastructure providers. The UK's Digital Securities Sandbox and the European Union's DLT Pilot Regime are exploring the ability of distributed ledger technology-powered infrastructure to fulfil the roles of central securities depositories.

While the technology might be able to deliver a robust enough system to provide a satisfactory approximation of settlement finality, it is not yet clear that this will entirely remove the need for a central financial market infrastructure to deal with edge cases, failed trades, enforcement and supervision.

No matter who is operating the infrastructure, most of the audience was confident that DLT would underpin settlement systems in the future. In a session about the future infrastructure of capital markets, 43% of the audience felt that settlement would take place on DLTs operated by CSDs, while 30% felt that DLT settlement systems would make CSDs redundant. Only 10% felt sure that DLT will not provide settlement infrastructure.

CBDCs not the only option for retail payment developments

Market participants are eagerly awaiting the arrival of wholesale CBDCs to address their cash settlement needs, but retail CBDC projects are still in progress in many jurisdictions.

For some central banks, the rationale for retail CBDC issuance is less obvious than for wholesale. Domestic payments have been improving steadily and, with the advent of instant payment systems and projects to interlink across borders, CBDC may prove to be just one of a suite of options for the continued advancement of payments technology. In a session at the summit, 51% of the audience believed that interlinking fast payment systems was the most promising avenue for improving cross-border payments, beating multi CBDC platforms with 30%.

Delivering offline payments and privacy will most likely prove to be key functions of CBDCs. However, the policy decisions as much as technology will be key to preventing abuse, either by individuals for the purpose of crime or states for the purpose of surveillance and control.

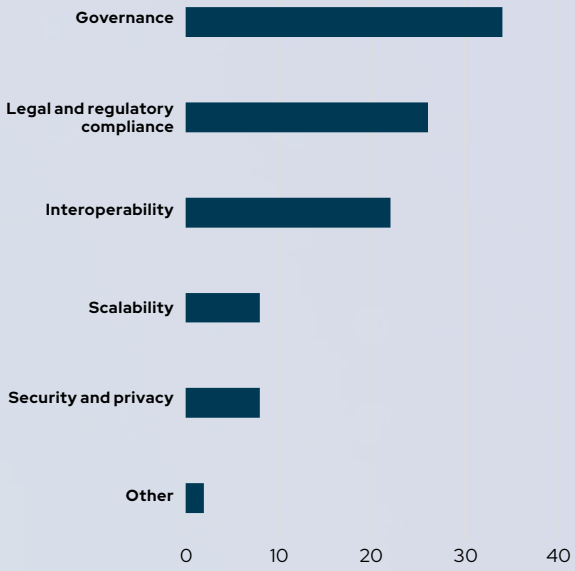
In any case, while provision of tokenised money may be the missing link for tokenisation, there was broad agreement that a robust digital identity system is the missing link for retail CBDC.

States might be asked to make another decision regarding the provision of payments services. In his speech, Jon Cunliffe also suggested that the possibility of new entrants to the business of transaction services and money provision might mean greater competition and innovation. Opening access to central bank accounts for non-banks, perhaps including stablecoin providers, might be an avenue to deliver this competition, but it will require policy decisions and frameworks to be introduced to ensure they are sufficiently robust.

Some jurisdictions might provide new payment provision services regulation that enables this activity without permitting a full banking balance sheet. By broadening the potential universe of payment services providers, this might deliver a more competitive and innovative payments sector.

1. Which of the following is likely to be the most difficult challenge when trying to build a unified ledger system?

Number of respondents, %



Source: OMFIF analysis

THE FUTURE OF PAYMENTS: A NEW ENGINE?

Jon Cunliffe, former deputy governor for financial stability, Bank of England, and former chair of the Bank for International Settlements committee on payments and market infrastructures, spoke at the summit.

'Regulation matters not just for operation risk and consumer protection, but also for stimulating competition and directing innovation.'

THE UK GOVERNMENT took its time to adopt the jet engine. Its inventor, Frank Whittle, believed that improvements to the piston and propellor engines that dominated aircraft propulsion were firmly limited in the performance they could produce because of their complexity.

He conceived of the simpler and more powerful jet propulsion system, but it was many years before the UK government woke up to the innovation and adopted it. Today, it powers the vast majority of aircraft.

Can we draw an analogy to payments? Perhaps. Our payments system is complicated and, like the piston and propellor systems, involves many components and moving parts. Coordinating these components requires many participants to amend and reconcile their records and often recipients wait a day or more for their money. This complexity, although it is largely abstracted from the user, still comes with risks and costs.

The question we face is: how much further can these complex systems be developed to improve performance and keep up with the increasing digitalisation and automation of our lives? Are they, like the piston and propellor systems, facing a ceiling on performance improvements?

The jet engine, in this analogy, might be the developments loosely referred to as 'tokenisation' – a process that enables the encrypted representation of money and other assets in digital form, integrated with code that governs their use, transfer and ownership.

One conception of this would be the 'unified ledger' – a single record to which all parties have access and on which transactions in a variety of assets, including money, are recorded. Such a system would support 'atomic settlement', allowing two parties to simultaneously exchange delivery of an asset with payment without using a central trusted intermediary.

This has obvious applications in wholesale markets, but there are use cases for retail as well. Imagine paying for an Amazon package when the package is photographed by the delivery driver on your geolocated doorstep, but not before.

'Public authorities, whether by action or inaction, will have a major impact on the future of payments. Their regulatory decisions will go beyond tokenisation approaches.'

This kind of technology is opening up new ways of representing money and assets, but will it be the future of all types of payments? Or will existing systems, or upgraded versions thereof, remain the more appropriate choice for some categories of payments, much as the piston engine has remained preferable to the jet engine for road transport?

Forecasting technological progress and adoption is perilous, but we should acknowledge that there is not, as yet, extensive real evidence that tokenisation can work robustly at the necessary very large scale to deliver the claimed benefits in the economy at large. Without forecasting, I will make a few general observations.

First, development of existing payment systems, both wholesale and retail, is not exhausted, as Whittle described development of piston engines when developing the jet engine. Central banks are introducing greater capabilities into existing payment systems, which may support more automation of payment services and enable a much wider set of players to interact with the central bank ledger. Bringing faster or instant payment systems to peer-to-peer and point of sale is an example.

The development of application programming interfaces is allowing systems to talk to each other more easily. The Open Banking protocol offers great scope for improving cross-border payments.

It is unlikely that one new system will replace our existing variety of payment systems. Newer systems will come in at different speeds for different use cases and ensuring interoperability will be key.

Second, while tokenisation requires money to be represented in a different form, it does not require new types of money. We should distinguish between the settlement asset – money used for payments – and the systems for transferring it and recording changes of ownership.

Stablecoins, issued by non-banks have been important developments in the crypto world, but the tokenisation approach can just as well be applied to commercial bank deposits and central bank money.

Third, the technology does open up the possibility of new entrants with different business models and the possibility of greater competition for provision of payment services and in the issuance of money.

Whether we allow non-banks to issue tokenised money is a policy, rather than a technical question. In the UK, the Bank of England has proposed a framework designed to ensure stablecoins are as resilient as commercial bank money, and to ensure they preserve the singleness of money.

Fourth, the tokenisation of wholesale financial transactions in capital and currency markets is likely to be the first to see the widespread use of tokenisation, but it would be a mistake to ignore the promise that tokenisation has nothing to offer retail. Consider the example of the Amazon parcel for one.

Finally, public authorities, whether by action or inaction, will have a major impact on the future of payments. Their regulatory decisions will go beyond tokenisation approaches. The rapid evolution of digital payment systems, which has enabled new cross-border trade activity, has left behind regulation and supervision capacity as well as the development of robust international standards. As a result, cross-border payments still have a great deal of friction. Tokenised payment systems are no exception to this.

Regulation matters not just for operation risk and consumer protection, but also for stimulating competition and directing innovation. It's interesting to note that take-up of faster payment services is stronger in jurisdictions that allow non-banks direct access to central bank payment rails.

There is a range of possible ways in which central banks might embrace tokenisation of cash and these questions touch on some fundamental issues. Should the public have a right to the safest money in the economy – central bank-issued money? Does the ability of citizens to exchange privately issued monies for central bank money, at par and on demand, underpin public confidence in money? Would a publicly operated CBDC platform open to bank and non-bank payment service providers stimulate competition and innovation in payments? The answers to these will differ between jurisdictions.

Frank Whittle needed private venture capital to develop the jet engine and the UK government only adopted it many years later. In payments, the situation is very different. Policy-makers are enormously engaged with the sector's trajectory.

I have tried to set out some of the considerations that are likely to shape the future payments landscape rather than trying to forecast any particular future. There is one thing, however, that I think I can predict with some certainty. More, and more extensive, change is coming.

WILL GROWTH IN REGIONAL PAYMENT SYSTEMS SPUR DE-DOLLARISATION?

Tech development to drive dollar decline does not necessarily mean it will occur, writes Julian Jacobs, senior economist, Digital Monetary Institute at OMFIF.

THERE IS AN EMERGING belief that regional payment systems may propel de-dollarisation as well as a regional clustering of economic activity. Despite serious technical and geopolitical hurdles, such systems may have the potential to shift the global balance of financial power. There are, however, many reasons to be doubtful. Regional payment systems continue to be plagued by implementation challenges. Evidence also suggests many countries are looking to diversify their currency holdings, rather than de-dollarise.

Predictions about the potential decline of the dollar's dominance in the global monetary system have been long-standing. Pronouncements about imminent de-dollarisation are often fuelled by the wish of some countries to bring economic activity closer to their borders and wane off US reliance. A shift of this kind would be significant for global financial markets and economies, and it is why discourse on de-dollarisation has featured prominently in OMFIF's research – including the Global Public Investor and Future of payments reports. This theme was prominent again at the 2024 Digital money summit, where Douglas Arner, Kerry Holdings professor in law, University of Hong Kong, and Elliot Hentov, head of policy research, State Street Global Advisors, spoke about the potential role of repayment systems in diversifying global currency holdings.

Knock-on effects on US hegemony

Make no mistake, the implications of de-dollarisation are considerable. For the US, it could mean diminished geopolitical leverage and elevated borrowing costs – the consequences of which, both on American hegemony and on its domestic socio-economic affairs, would be extremely damaging.

On the other side, countries seeking alternatives to the dollar may be able to insulate themselves from US-originated shocks, sanctions and events. In theory, this could strengthen countries' economic sovereignty while decreasing the US' global influence. As Arner emphasised on a panel at the summit, there have been a 'significant number of technological developments in the last 15 years… but in the last four years, we have seen a political push to trigger a rethinking of the dollar's role in the global economy'. This convergence of technological innovation and shifting geopolitical dynamics is creating fertile ground for the surfacing of regional payment systems and alternative currencies.

'Regional payment systems continue to be plagued by implementation challenges.'

What do these regional systems look like? As discussed in OMFIF's 2023 Future of payments report, projects like mBridge – a cross-border payment platform using central bank digital currencies – exemplify the growing interest in establishing financial infrastructure outside of the traditional dollar-centric model. The founding members of mBridge include the Hong Kong Monetary Authority, the Central Bank of the United Arab Emirates, the Digital Currency Institute of the People's Bank of China and the Bank of Thailand.

Other regional payment systems have emerged with the aim to create regional clusters of financial infrastructure, such as the Pan-African Payment and Settlement System, enabling cheap, instant and efficient payments denominated in local currencies. The arrival of these systems as an effective vehicle to reshore economic activity and currency holdings may coalesce with new political thinking on US global power to spur a shift away from the dollar.

Still, there are many reasons to be sceptical that regional payments will spell the decline of the dollar. First, the dollar remains deeply entrenched as the world’s primary reserve currency, accounting for 58% of global reserves. This dwarfs the Chinese renminbi, which sits at just 2.7% of reserves. As Arner commented, the dollar continues to play a role as the global ‘store of value, financial instruments and liquidity’. However, the emergence of the ‘technological capacity’ to create regional payment systems and move away from the dollar, Hentov commented, does not mean that there will be adequate demand for such a shift.

There remain significant technical and geopolitical barriers to regional payment systems. The dollar, for all of its flaws, provides a way for many countries to insulate themselves from those issues. As Arner mentioned, many countries ‘don’t want to trade one dominant instrument, with its issues, for potentially another dominant instrument with a new set of issues’. Regional payments continue to suffer from weak implementation, infrastructure and complex geopolitical obstacles among participatory economies.

Rise of the euro

This is why the emergence of the technological capacity to drive de-dollarisation does not necessarily mean de-dollarisation will occur. Of course, de-dollarisation has already been underway for years, with the currency’s global share of reserves slipping downward each five-year period. Yet this is caused in large part by the rise of the euro. The euro, Arner remarked, has been ‘remarkably stable, serving as the world’s second reserve currency’.

OMFIF research has previously suggested that the greatest threat to the dollar’s continued majority share of global reserves comes not from the renminbi or regional payment systems, but rather from the euro. Unlike many other currencies or regional contexts, the euro has excellent liquidity and infrastructure. Still, as Hentov noted, the evidence suggests countries are looking primarily to diversify their holdings, rather than replace one dominant currency with another.

The summit served as a useful vehicle to re-examine the current state of the dollar. Although country exhortations for de-dollarisation are nothing new, the digitalisation of global finance underscores how innovations have given new life to dollarisation debates.

THE NEXT GENERATION OF CAPITAL MARKETS

Policy-makers are examining the challenges on the road to DLT-powered capital markets, writes Katerina Liu, research analyst, Digital Monetary Institute at OMFIF.

MARKET PARTICIPANTS have been talking about using distributed ledger technology to improve capital markets infrastructure for at least a decade. But despite numerous pilots and experiments, few DLT-based capital markets systems have reached production-grade scale. If these systems are as promising as they seem, what's taking so long, asked panellists at OMFIF's Digital money summit.

Reducing settlement times is generally agreed among market participants to reduce risk and improve capital efficiency. Whether DLT can provide a safe and compliant means of doing so is being tested. The aim, as Jennifer O'Rourke, executive director, innovation strategy at the Depository Trust & Clearing Corporation, puts it, should be that 'everyone needs to be able to settle confidently at the time that they want to'.

Financial markets are regulated spaces, so while building the technology is important, convincing regulators of its soundness is equally so. Regulators are providing the opportunity to conduct the necessary tests under their supervision. In 2023, the European Union began the blockchain pilot regime, providing the legal framework for the trading and settlement of transactions with financial instruments as tokenised assets, aiming to preserve 'investor protection, market integrity, financial stability and transparency, while avoiding regulatory arbitrage and loopholes'.

The Bank of England and the Financial Conduct Authority set out to introduce the Digital Securities Sandbox, enabling firms to issue, trade and settle securities using DLT and other developing technologies. The sandbox would provide regulators with the opportunity to 'design a permanent technology-friendly regime for the securities market'.

'Everyone needs to be able to settle confidently at the time that they want to.'

Jennifer O'Rourke, executive director, innovation strategy, Depository Trust & Clearing Corporation

Technical barriers

Panellists highlighted technical interoperability as a key issue. Despite many players, their infrastructures are not sufficient in linking up various systems. Interoperability is important for avoiding fragmentation. It can ensure a seamless flow of data while upholding trust and security across different systems. The ecosystem players will need to consider whether interoperability would occur within the same technical stack but with different applications, or as full interoperability among different applications and different technical stacks. These include other factors such as data storage and how these systems communicate with each other.

Without interoperability, these systems run the risk of liquidity fragmentation, creating 'digital islands' where the system can only function within itself. New systems will need to consider access to established payment rails, and to each other, to prevent this. Both the pilot regime and the DSS impose strict limits on the volume of assets that can be transacted. Scaling up for a full marketplace, however, may not simply be a question of removing these limits. Though some believe they have solved the challenge of scalability, demonstrating that a system that worked for a few assets in a sandbox can also work for trillions of euros of financial instruments will be an important prerequisite before advancing to widespread adoption.

Capital markets should operate as globally as possible for maximum efficiency and liquidity. Frictions across borders may be important for policy reasons regarding the flow of capital and funds. But new form factors should not introduce new constraints. This will require globally cohesive regulatory frameworks. Working on these projects on a national basis makes sense initially, but for these markets to function internationally requires collaboration on operating standards.

Panellists also raised the shifting responsibilities of settlement from intermediaries and custodians to platforms, asking, could platforms be held accountable in the same way as current financial market infrastructure? While 73% of the audience believed that settlement would take place on DLT rails in the future, they were split on whether these rails will be operated by central securities depositories (43%) or if DLT would make those institutions redundant (30%). Part of the work now will involve deciding on which roles market participants will play in these new ecosystems.

OMFIF DIGITAL MONETARY INSTITUTE AT

IMF-World Bank meetings

OMFIF's Digital Monetary Institute hosts a series of events alongside the International Monetary Fund-World Bank annual meetings 2024 in Washington DC. Key stakeholders unite for roundtables addressing key issues in the future of cross-border payments, financial inclusion in the Middle East and Africa and next steps for central bank digital currencies and digital public infrastructure.

OMFIF roundtable with the Bank of Ghana, April 2024

OMFIF

DIGITAL MONEY SUMMIT 2025

IN-PERSON, LONDON
20-21 MAY 2025

The Digital money summit 2025 represents an unparalleled opportunity for key stakeholders across government, central banking, financial services and technology to connect and collaborate. Together, we will capitalise on innovations in digital money and push the industry towards practical actions for an inclusive, secure and regulated digital financial future.

OMFIF.ORG/DMS2025