

# Blockchain and DeFi technology in traditional finance

## 1. Opportunities from blockchain and decentralised finance (DeFi) technology

The panellists highlighted the opportunities associated with blockchain and DeFi technology in terms of efficiency, cost reduction and speed. The expected impacts in the securities markets were particularly emphasized.

An official highlighted that these technologies can enable a streamlining of some of the basic activities that happen in securities and derivatives markets. This includes record-keeping, reporting, transaction processing, trading, clearing, settling, reporting, real-time reporting and real-time transparency. An industry representative added that these benefits include greater clarity and reduced operational and commercial dependencies on intermediaries. Another industry representative also noted the potential benefits in terms of liquidity and custody and the greater efficiencies and cost reductions that these technologies allow, which should translate into an increasing use.

### 1.1 Composability and programmability

An industry representative outlined that DeFi technology is still in the business-case-making phase. Multiple uses and concepts for the technology are starting to emerge. For market infrastructures, these include institutional DeFi and on-chain centralised finance applications. It is likely that over the next year, most market infrastructures and financial institutions will be exploring use cases in different areas to find appropriate business cases. A priority will probably be given to use cases that may provide a real impact in terms of balance sheet and use of capital, for example in areas such as collateral management or repo.

The composability of DeFi seems most promising, as it provides an opportunity for offering financial services in a more programmable way. Different data models and business logics can be pieced together to create new processes aligning with market participant needs. This can help to increase automation and straight-through processing for assets that today have complex business rules, are paper-based and might not have made their way into an efficient market structure.

Alternative and private assets present the biggest opportunities in the near term in terms of improvement of transaction execution processes. The technologies behind DeFi, namely smart contracts, can help automate many of the processes related to those assets. Other areas where programmability may have a significant impact include collateral management and repo markets. Project Spruce led by Citi, which explores the tokenisation of private equity

funds, is an example of the application of DeFi technology. The project tested a variety of use cases, including automated securities lending, aiming to increase automation and lower costs for parties involved. It is also a good example of how a market infrastructure is able to operate a lending pool and play a governance role without mandating that the information should flow through the infrastructure. The information can live on a public chain, private chain or a distributed ledger, and different actors in that ecosystem can play different roles. This changes the perspective from a purely centralised system to a private network governed by one institution playing different governance roles across different layers of the stack (e.g. the blockchain itself, applications and assets).

### 1.2 Tokenisation and digital assets

An industry representative stated that tokenisation is a very substantial development that may reduce the cost and facilitate the issuance and transacting of securities and assets. In 2023, Siemens tested the issuance of a digital bond on a public blockchain with a volume of €60 million and a maturity of one year. These bonds were directly distributed to the investors. In the future, tokenisation should allow the issuance of securities in smaller portions which could help medium-sized corporates in particular to finance themselves on the capital markets. Digital assets could also facilitate the execution of cross-border trades in line with the objectives of the capital markets union (CMU).

There are less direct benefits from tokenisation on the investor side. Investors are looking for appropriate investments with a reasonable risk return profile, but do not care whether securities are digital or traditional paper based. It is therefore expected that issuer needs will mainly be driving these developments, but if processes become more efficient, competition will hopefully lead to passing on some cost reductions to the investors. Presently, processing costs along the value chain for investment funds amount to nearly 4%. A reduction to 1% or 1.5% of these costs could make a real difference for investors. There is less benefit for retail investors from the instantaneous settlement of orders that blockchain allows, as most of them invest for the long term. For that to be possible, there is also a need for a digital currency to settle payments in digital form.

The industry representative was more sceptical about the potential of DeFi and smart contracts in the short term. DeFi aims to establish a financial system without any central infrastructures or intermediaries. However, it is unclear how an exchange can be run without a central entity operating it, how complex financing can be undertaken without specialised players judging the counterparty risk and pricing it accordingly, or how liquidity can be ensured without market makers. The use of smart contracts will moreover be limited so long as existing market infrastructures persist in a centralised

form. Another industry representative disagreed, noting that smart contracts are already in operation in the market and allow the provision of liquidity without any central party.

An official concurred that there are many promising use cases from blockchain and DeFi technology including for private assets and bond issuance. It is important to remember, however, that distributed ledger technology (DLT) is mainly a way to improve the efficiency and safety of the execution and recording of transactions, but it is not going to fundamentally change the functioning of markets, the nature of the instruments transacted or user incentives.

For example moving bond issuance and trading to DLT platforms will not have a major impact in terms of market liquidity, because the limited liquidity of bonds comes from inherent characteristics such as the average size of transactions which are many times larger than average equity trades and the nature of the investors who are large institutional buy-and-hold investors. The limits of DLT were observed with proxy voting some years ago. DLT was expected to greatly enhance the paper-heavy and complex proxy voting system, leading to increased shareholder engagement. However, the actual impact was limited because while technology can boost efficiency, it does not change incentives for institutional investor engagement.

A regulator noted that wholesale central bank digital currency (wCBDC) is the safest asset for the settlement of digital asset transactions as CBDC poses no liquidity or counterparty risk.

## 2. Challenges and risks from blockchain and DeFi technology

### 2.1 Operational and technical challenges in terms of scalability, interoperability and customisation

An industry representative outlined scale as the key issue that the industry needs to solve to get value from blockchain and DeFi technology. Experimentation has been conducted on a small scale and standards that may help to drive scale are being elaborated, but the point at which the entire industry can shift to this new technology has not arrived yet. The business cases that can drive sufficient scale still need to be identified. A second industry representative added that improvement is also needed in terms of interoperability of different types of blockchain platforms.

A third industry representative considered that there are no major technological limitations. The technology needed in terms of tokenisation and on- and off-ramp blockchain solutions to support improvements and greater efficiency in the financial sector is available and is continuously progressing. It is up to the industry to build the appropriate applications and use cases on top of the available technical layers. Work is underway to solve technical interoperability issues whether that is through cross-chain, interoperable connections, or through digital identity solutions to make sure that know

your client (KYC) and anti-money laundering (AML) processes function seamlessly. The main challenge is in terms of implementation to make the technology that is at hand usable and accessible in a way that can meet existing and future compliance rules.

A fourth industry representative agreed that the technical challenges associated with the technology are being solved, but there is still a gap in application. The potential advantages of blockchain and DeFi technologies - such as cost reduction, increased speed, transparency, and less reliance on intermediaries - are partly realized in the public blockchain environment, which offers less customization possibilities for specific business needs than permissioned blockchains. Open-source and public infrastructure solutions that allow more customization and interoperability are due to appear in 2024, which should help to bridge this gap. These solutions will enable the coding of specific requirements into smart contracts, catering to different assets and unlocking new use cases for public blockchains. Foreign exchange, especially among medium-sized institutions, is an example of use case that may develop with the ability to customize various elements across the lifecycle of trading - like participation rules, trading hours, and issuance timings - making it easier to leverage DLT and blockchains in this area.

### 2.2 Compliance and accountability challenges

A regulator observed that, while this technology can bring huge opportunities, there are several challenges to overcome for newcomers and traditional finance players trying to enter this field. The first is the need to master this new technological environment and the specific risks that come with it. The second is the ability to enshrine this activity into a legal and compliance environment respecting anti-money laundering (AML), combating the financing of terrorism (CFT) and customer protection requirements.

An official noted that the opportunity of using DLT compared to traditional mechanisms needs to be closely evaluated considering the potential benefits, challenges and cost implications. Some specificities of blockchain technology that have regulatory implications also need to be considered. Firstly, in most cases, traditional financial institutions will be using a third-party provider for providing the blockchain solution. This outsourcing raises questions in terms of operational resilience and accountability. In the US, the basic principle applied is that, when activities are outsourced, the regulated institution has to manage the risks as though they remain in-house and remains accountable vis-à-vis the regulator, even though it is relying on a third-party provider. More generally, this accountability should be maintained whether a traditional or blockchain-based platform is being used, which might require regulated financial institutions to adapt to the specificities of blockchain platforms notably in terms of governance. The accountability of issuers should also be maintained when using a blockchain platform for the issuance of digital assets.

A second aspect to consider relates to the immutability of transactions executed on a blockchain, the official added. While this provides advantages in terms of security and

traceability, it is unclear how a transaction can be reversed if there is a mistake. The third question concerns privacy, which is difficult to ensure in a permissionless blockchain environment, unlike permissioned blockchain platforms, and it is uncertain how this can be done if interoperability between these two types of platforms develops. A fourth question relates to surveillance, which relies on exchanges in the traditional financial markets. A different approach will be needed in the DLT context with the development of smart contracts that execute transactions at a high speed.

### 2.3 Financial stability risks

An official commented that the risk from a widespread implementation of blockchain technology is not fundamentally different from other digital security risks and the tools needed to manage these risks are available. These include effective corporate governance. The 2023 update of the OECD's corporate governance principles specifically mentions that digital security risk is a board responsibility and must be part of the overall risk framework of a company. Currently, market infrastructure providers are not the main source of financial stability concerns. Crucially, that is because they are heavily regulated entities – their centralised presence in the financial ecosystem is a feature and not a bug, and any attempts to disintermediate financial markets must proceed with this in mind. Moreover, the financial stability risks potentially posed by DeFi may be overplayed. The risk that is usually put forward is that a run on stablecoins may disrupt the short-term funding market, similarly to what might happen if there was a run on money market funds. However, stablecoins are a much smaller market, with a market cap of \$140 billion, and total value locked in DeFi protocols amounts to around half of that, compared to money market funds that amount to more than \$9 trillion dollars in assets under management.

Another official noted that a key financial stability risk that could arise from DeFi comes from the speed at which transactions can take place in a DeFi setting with smart contracts, if these platforms become more widespread. The financial stability risks posed by a rapid run were demonstrated in the SVB case. At the same time, DeFi provides greater and faster access to information that may facilitate a quicker detection of financial stability risks before they actually arise. The Chair observed that a corollary of systems being interconnected and more efficient is that risks may spread around the globe very fast.

## 3. Regulatory and supervisory approach to these technology developments

### 3.1 A balance between innovation and risk mitigation

The regulators and supervisors on the panel emphasized that their role is not to constrain or limit technological development, but to provide a framework that can allow innovation to develop while mitigating potential risks. The market should be allowed to seize the opportunities provided by technology within such a framework.

A regulator highlighted that regulators should not hinder these developments but ensure that their potential is realised in a safe way. The European Markets in Crypto-Assets Regulation (MiCA) aims to achieve this balance. The European DLT pilot regime is also a powerful tool for experimenting with practical applications of DLT technology in a safe environment.

An official emphasised elements of a recommendation issued by the OECD in 2022 on blockchain and DLT. One is the recommendation that regulators should create an enabling environment for innovation in general, and for blockchain and DLT in particular, which involves engaging with market stakeholders at an early stage of development of the technology. Self regulation from the industry can also play a role as a first step towards more formal regulation, as regulation always develops at a slower pace than the market. In addition, any new blockchain-specific regulation needs to be coherent with the existing regulatory framework and aim to achieve the same objectives in terms of financial stability, consumer protection, market integrity and fair competition. There should be no compromise on those basic objectives whatever the potential efficiency or economic gains.

An industry representative stated that, although Europe has made positive steps in regulating crypto assets, some clarifications are still needed. Digital securities should come under MiFID regardless of the underlying technology and other digital assets under MiCA. How to define and address DeFi and smart contracts still needs to be clarified. This has not yet been done in MiCA, which has rightly focused on what is currently most significant in the market.

A second industry representative stated that, for a technology business to survive, it needs to serve its consumers and users as safely as possible, which requires mitigating market integrity and financial stability risks. This can be challenging to achieve because different assets and different financial actors have slightly different risks, and adapting on-chain public blockchain technology to those different needs asset by asset is quite hard. However, more open-source software kits are coming out this year that will make it easier to address specific risks such as privacy and scalability issues and provide real-time reporting.

A third industry representative agreed that appropriate regulatory guardrails need to be clearly set out for innovative technologies to develop. A good example is the DLT pilot regime which sets out clear guardrails, providing clarity for market participants as to how they can experiment with and drive forward use cases.

The Chair concluded that there needs to be a common understanding of responsible technology and an informed management of risks. IT risk management should not be confined to specialised departments but really spread around financial institutions. Supervisors must also break their internal silos and work with other authorities in order to leverage existing competences which are in limited supply. For example prudential and AML supervisors should collaborate with the market authorities and central banking departments to tackle these new risks.

### 3.2 Technology neutrality

The Chair suggested that regulators should adopt a neutral approach with respect to technology, but maybe a less neutral attitude with respect to how the governance of technology might be considered, as the way technology is managed might impact the risk.

A regulator stated that, while regulation should be technology-neutral to allow the market to innovate, it should not be technology-blind. The specific risks coming from new technologies must be understood and need to be assessed in order to contain them. MiCA is a useful first step, but there will, at some point, be a need for MiCA 2.0, to take into account the most recent developments. Blockchain and DeFi are evolving technologies that regulators need to remain at the forefront of. For example, specific requirements may be needed for the certification of smart contracts, the concentration of the validation capacity must be monitored and measures may be needed to ensure the reliability of blockchain infrastructures. These different aspects need to be addressed potentially in a review of MiCA.

An official noted that technology neutrality should go both ways. The fact that blockchain and DeFi are intertwined with cryptocurrencies should not create a regulatory bias against the use of those technologies in traditional finance. In addition, when taking stock of experiments to implement DLT platforms, it is important to distinguish between technology and implementation issues.

An industry representative stressed that, while risks in the emerging blockchain and DeFi spaces are not new, the operations are different. The framework and the rules to address them and to manage those risks may need to be adapted, possibly in a minor or technical way to specificities, such as ensuring that reporting requirements are digitally native, which is not the case at present.

### 3.3 International consistency

An industry representative highlighted the dangers of regulatory arbitrage risks in this area. While the risks posed by crypto-asset activities and stablecoins are being addressed in several regions including the EU and certain countries in APAC and Latin America, this is not yet the case in all jurisdictions, including the US. The development of the industry is dependent on an appropriate and consistent regulatory framework. Collaboration should be increased between industry and policymakers to achieve a greater regulatory harmony at the international level

An official agreed with the importance of international cooperation in this area. Beyond technical interoperability, it is also important to think about interoperability in terms of regulation across jurisdictions to facilitate global capital flows.

A regulator stated that to enable the smooth development of this technology there needs to be an international level playing field and an avoidance of regulatory arbitrage between jurisdictions. Several Financial Stability Board (FSB) recommendations that have laid the ground for this level playing field must be followed.

### 3.4 The need for a dialogue between regulators and industry

A regulator stated that these new technologies also present an opportunity to review the way markets are monitored and the supervision of financial markets and financial actors, with a constant dialogue maintained between regulators and industry..

An industry representative suggested that business based on blockchain technology will not develop if there is not enough security and investor protection, which shows that the interests of policymakers and the industry are aligned.

### 3.5 Supervisory implications of public blockchain platforms

An industry representative stated that it is possible to provide supervisors with real-time data when using a public blockchain infrastructure. When using an automated market maker based on a smart contract protocol for example, every transaction that happens is available at the time it settles on a publicly available site.

The Chair queried whether there are boundaries in terms of sharing information and data for public blockchains, between what is proprietary to the infrastructure and what is shared on behalf of clients.

The industry representative acknowledged that there are technical challenges in terms of privacy that are part of what limits the adoption of platforms based on public blockchains. The upcoming improvements of public blockchains should help to alleviate those issues, but that remains an area for technical innovation. Centralised exchanges batch different accounts in a single account and obscure specific details which requires offline off-chain reporting, but it is hoped that more real-time digitally native reporting will be possible with improvements in terms of privacy.