

DeFi opportunities and challenges

Introduction

The Chair observed that decentralised finance (DeFi) has been marketed as an innovative way to transact without intermediaries, although in practice DeFi platforms are still often decentralised in name only. DeFi offers potential opportunities in terms of efficiency and transparency and also poses new risks related for example to control over protocols, stablecoins and governance. Developments in the DeFi market are being assessed by several international organisations including the OECD. Growth has been seen in the sector over the last few years, both at national and international levels. Many platforms operate without geographic location, requiring a global policy approach to these developments.

1. State of play of the market and main trends

1.1 Characteristics and size of the DeFi market

A Central Bank official stated that, while the Financial Stability Board (FSB)'s definition of DeFi relates to services in crypto markets replicating traditional financial system functions in a decentralised manner, the decentralisation of existing DeFi platforms is partial and regulators sometimes argue it is illusory. Significant points of centralisation exist in several areas including governance and voting rights, financial ownership, development teams and the oracles providing data feeds.

An industry representative explained that DeFi is based on smart contracts primarily located on the Ethereum blockchain that automate business logic so that individuals can transact directly with one another according to pre-determined rules. DeFi activities include decentralised exchanges (DEXs) using decentralised order books, algorithmically collateralised lending and automated market makers (AMMs). They aim to replicate in a decentralised way activities performed by traditional financial institutions such as banks. This means that DeFi is quite different from the more centralised activities of crypto exchanges and cryptoasset services providers (CASPs), which focus more on digital asset transactions, staking and digital asset custody solutions. DeFi is a complex area that remains nascent. Implemented at scale in 2017 it is not growing by volume, but sophistication, performance and safety are increasing. Despite the recent downturn in the crypto market and the failure of several CASPs and stablecoins, DeFi DEXs and AMMs kept running and users did not lose money.

A second industry representative highlighted that DeFi is a niche market with current assets stabilised at about

\$45 billion. The volumes traded on DeFi DEXs represent 16% of the volumes on centralised cryptoasset platforms (CeFi), with the total market cap of DeFi standing at \$12 trillion against the \$250 trillion market cap for traditional financial assets. The main blockchain used to develop DeFi protocols is Ethereum, with a 60% market share and more than 570 DeFi apps, followed by BNB Chain and Tron. Most applications of DeFi are pretty standard financial activities and this is expected to continue. In terms of share of the DeFi market, DEXs represent 22% of the total value of assets on DeFi, liquid staking comprises 15% of market share. Lending protocols that enable the lending of money in the same way as banks also represent a significant share of the market.

1.2 Main opportunities associated with DeFi

An industry representative believed that there is huge potential for innovation with DeFi: reducing the need for intermediaries, introducing new efficiencies for exchanging assets, reducing costs and providing better returns. One example is AMMs, which operate as trading venues without a traditional order book, using mathematical formulas to continuously price transactions based on orders and available liquidity.

A Central Bank official agreed that DeFi is an important source of innovation that promises efficiency, inclusion and a vision for a different type of financial system.

A regulator concurred that DeFi is innovative and has tremendous promise in financial markets and other areas, but the potential economic benefits gained from integrating intermediaries in the markets and centralising activities also need considering. These may include price discovery, price accuracy and price transparency, as well as reduced costs. It would be helpful to understand whether the suggested advantages of DeFi compared to CeFi have materialised and whether there is adequate price accuracy and price transparency in the context of DeFi platforms.

1.3 Main drivers of the DeFi market

An industry representative outlined three main drivers of the DeFi market. First is regulation. Regulators claim that DeFi is decentralised in name only, which means that they can have jurisdiction over it. In reality, all crypto projects have both centralised and decentralised elements and, as regulation continues to seek central entities to regulate, projects may be decentralised further. Second is artificial intelligence (AI), which will drive DeFi as computers can interact directly with each other. And the third is institutional adoption, which should support the future development of DeFi.

A second industry representative agreed that institutional adoption is essential to drive the growth of DeFi. It will help to entrench it within the wider financial system and support its development with positive

feedback loops. Increasing flows from institutional players will help create a wholesale use case for DeFi and as institutions help build services and products for themselves and their customers, they will support the mainstreaming of DeFi. Institutional involvement will bring more emphasis on compliance, safety and stability building confidence in the market and leading to more efficient and safer products, services and processes, which will in turn benefit all users and the overall market. An example of institutional involvement in DeFi experiments is the Monetary Authority of Singapore (MAS)'s Project Guardian which took a number of institutional players to assist with testing DeFi use cases. This includes using a public blockchain and tokenised assets for performing cross-border payments, bridging the gap between traditional and digital financial activity. In addition to institutional adoption, an increasing use of DeFi technology by non-financial firms is expected. Amazon has for example a new Web 3 infrastructure and Google has teamed up with crypto partners in this area.

The complementarities between DeFi, traditional finance (TradFi) and CeFi will also support the mainstream adoption of DeFi, the industry speaker believed. DeFi is an additional way of doing finance using digital assets and automated and decentralised processes that may better answer certain customer needs and provide additional efficiencies. Some users will also use DeFi for the control it allows them and others will prefer to work with an intermediary, utilising the opportunities from DeFi without having to become an expert in it. Ultimately DeFi, CeFi and TradFi should complete each other, providing alternative and complementary mechanisms for performing financial activities.

2. Risks and challenges from DeFi

2.1 Main risks posed by DeFi

An official emphasised that DeFi raises specific issues in terms of safety and security including cyber-risk. The exposure to cyber-risk might arise on cross-chain bridges in particular. Chainalysis statistics for example, highlight the number of hacks and cyber-security issues in the context of cross-chain bridges, that might not be present where custody does not rest with the platform. The simple fact of transferring on and off platform presents risks and prompts decentralised platforms to centralise elements of infrastructure to enable better governance controls around transactions. However if those off-chain elements of infrastructure or operational technology are being integrated it is uncertain whether this remains pure DeFi. Another challenge is the potential for market manipulation in terms of pricing, given the arbitrage opportunities that arise across liquidity pools. That may affect the integrity and long term success of DeFi if unaddressed.

A second official stressed that the rapid expansion of the DeFi ecosystem means that new opportunities and also challenges and risks are constantly emerging. The risks are mostly related to DeFi's dependence on properly-functioning technology. They concern smart

contracts, bridges, oracles and the governance frameworks in place. Oracles in particular are a potential source of operational risks and errors. Manipulations or attacks on oracles may also have negative consequences for several protocols. The reliance of DeFi lending activities on collateral that may be re-used as the lender and borrower are hidden behind the cryptographic digital signature is a further source of risk. This may increase leverage and procyclicality and could trigger sharp adjustments in price. A regulator also highlighted the significant risks associated with the governance of smart contracts.

A Central Bank official emphasised the connectivity risks between DeFi and core financial markets, which are currently limited but may evolve. Big swings in the total value locked into DeFi could lead to swings in the demand for stablecoins, which play a key role in DeFi ecosystems helping market participants avoid the inefficiency of converting between fiat and crypto. Stablecoins hold significant assets in the core credit markets and could produce risks similar to money market funds if they became disorderly in a liquidation sense.

An industry representative noted that traditional finance exposure to crypto remains limited. A 2022 survey found for example that only one-third of traditional hedge funds are investing in digital assets and crypto represents less than 1% of their assets under management. Moreover, the level of security of DeFi protocols appears to be higher than CeFi on average. The five top CeFi losses from hacks, scams and bankruptcies in 2022 amounted to \$178 billion, versus \$3 billion for DeFi, highlighting an improvement in security in the DeFi space.

2.2 Regulatory and supervisory challenges

An official highlighted the main challenges that regulators are facing with DeFi: it does not rely on traditional centralised intermediaries, is technologically native, and operates 24/7 with users all around the world. From a policy perspective, the lack of a legal person and the automaticity of smart contracts make the application, interpretation and enforcement of the law difficult. There are also many entities participating in the market and protocols are constantly being added. Any potential new regulation concerning DeFi should be proportionate however.

A second official emphasised the challenge for regulators of understanding whether current regulatory and supervisory tools are fit for purpose to use in the context of DeFi. Recent enforcement actions in the US have shown that a significant number of existing regulations could map onto the DeFi market infrastructure, for example those concerning fraud and market manipulation. Other elements are not fit for purpose and need further consideration. This includes identifying who is responsible for operational processes in a decentralised infrastructure and who can provide paperwork to begin the enforcement process. In addition, operational risks that arise as a result of the design of DeFi platforms are not easily overcome. This has been observed in the context of AMMs for example. Regulators will moreover have to think carefully about how and when to regulate, as the deployment of platforms continues.

3. Possible policy approach to DeFi

3.1 Objectives of the regulatory and supervisory approach

An official stated that regulators are open-minded towards DeFi. Their objective is to maintain integrity and stability in the market with these new developments.

A regulator agreed that regulators must remain open-minded to developments in the DeFi and CeFi crypto markets. Concerning DeFi, the question is not whether it is fully decentralised, but whether decentralisation will bring value and impact security in the system. There is a tendency to focus on specific use cases of DeFi, but these are quite limited at present. Supervisors therefore need to consider more broadly the potential risks associated with the different components of DeFi systems, including the service layer, where there are often intermediaries and interfaces accessed by the client, the smart contract layer and the infrastructure layer, which is the blockchain where the smart contracts operate. In addition, while regulation should remain technologically neutral it should not be 'technologically blind'. It is important to take into account the specific technical characteristics of DeFi and not simply apply traditional regulation, particularly when technology is replacing parts of current organisations.

A Central Bank official noted that DeFi poses risks that are novel and it is important for regulators to anticipate them while DeFi is small, to get ahead of the curve. Any regulatory proposals concerning DeFi should be proportionate to the size of the market and to the risks posed and aim to achieve the same regulatory outcomes as with equivalent activities in traditional markets. DeFi is not yet a threat to global financial stability. However, it is important to remain vigilant.

An industry representative took the view that regulating such a tiny activity as DeFi in its current stage of development would require disproportionate regulatory effort and run the risk of stifling innovation if the rules are too restrictive. Currently, many options are being considered for regulating DeFi, with no real consensus among stakeholders. An alternative approach is to adopt a more progressive approach starting with the setting up of an observatory for DeFi at a European level involving public and private sector representatives. The aim of this observatory would be to gather knowledge, monitor the development of DeFi protocols and identify the risks they pose and also to evaluate the most appropriate way to regulate such activities based on a shared understanding of the opportunities and risks. Consideration should also be given to whether regulation and supervision can be embedded in DeFi. This could be done for example through the use of soulbond tokens, an NFT that has the KYC of the user embedded to support the monitoring of AML compliance in particular.

A second industry representative stated that it should be possible to agree on how to regulate certain elements of DeFi without harming the sector and suggested three areas to consider. First, intermediaries could be regulated in the same way that CASPs are regulated in the Markets in Crypto-Assets Regulation (MiCAR) regulation. Secondly, it seems difficult to apply regulation to the publication of software used on DeFi platforms. Thirdly, where fraud and intentional misconduct is identified it should be pursued aggressively by regulators and law enforcement. Individual prosecutions can achieve significant results even in a space where volume and activity are limited.

A third industry representative was in favour of a risk-based approach to the regulation of DeFi, which would necessitate an adequate understanding of the risks and efforts on the part of public and private sectors to educate users adequately on the risks of DeFi.

3.2 Possible focus of regulatory measures concerning DeFi in the EU

A regulator highlighted that the Autorité de Contrôle Prudential et de Résolution (ACPR) recently published some proposals to address the regulation of DeFi activities, considering the three layers of DeFi systems. Concerning the infrastructure layer, it is proposed to implement security standards to ensure sufficient stability and safety of the infrastructure for customers transferring money via the blockchain. One of the objectives is to avoid the concentration of transaction validation capacities and reduce hacking risks on the blockchain. For the second layer related to smart contracts, which aim to replicate parts of the traditional financial activity, the idea would be to regulate them as a technological object, when relevant, rather than a financial service provider, with a certification of smart contracts rather than an authorisation process. Regulators and supervisors indeed want to be able to interact with the responsible entity and in some cases the smart contracts are the responsible mechanisms of service on DeFi platforms. The third proposal relates to the service layer and the customer access points, because it is likely to be difficult for ordinary individuals to access DeFi without intermediaries. Although DeFi claims to work without intermediaries, this will probably change if DeFi becomes more mainstream and traditional consumer protection rules could then have a role.

The regulator shared some preliminary output of a consultation led on these proposals. The proposal to implement a certification of smart contracts was well received, indicating that this could be an avenue for future regulation, and many suggestions were made regarding the governance of smart contracts. Many questions were also raised about layer 2 systems¹ and the location of assets on the blockchain showing that the ecosystem is not yet mature. A final issue, mentioned but not developed in the ACPR paper, is the scope of the conduct rules and how to address decentralised

1. Layer 2 protocols or network L2 protocols are a list of communication protocols used by Layer 2 devices (such as network interface cards (NIC), switches, multiport bridges, etc.) to transfer data in a wide area network, or between one node to another in a local area network.

autonomous organisations (DAOs). DAOs are structures with no central governing bodies in which token holders participate in the management and decision-making of the structure. Another working group in the French market has shown there may be a legal way to find a responsible entity within DAOs and further work is underway on this legal basis.

An official agreed that smart contracts should be regulated with a different approach from the corresponding traditional activities, relating more to audit testing or design requirements. Regulation around the governance framework and requirements for oracles that interact with smart contracts would also be beneficial, as they are a major source of risk in the DeFi ecosystem. AML is a further area to consider from a regulatory standpoint because DeFi services might not be subject to AML obligations under the existing Financial Action Task Force (FATF) standard, so potential gaps in the existing framework may need to be filled.

A second official observed that, in the same way as traditional exchanges or clearing houses, DeFi platforms will be expected to report to the public on how they are managing operational and cyber risks and self-police in the management of those risks. In the same way as all well-functioning businesses, DeFi service providers should have adequate corporate governance, internal controls, risk management and oversight in place to ensure independent decision-making and compliance with regulation and avoid market manipulation risks.

3.3 Policy response in other jurisdictions and international coordination issues

A Central Bank official noted the UK focus on the regulation of stablecoins, which play a key role in the DeFi ecosystem. Stablecoins are both a means of payment and a store of value, so require the same levels of protection as in the traditional market for both of those functions. The Bank of England is soon to publish a discussion paper on a regulatory regime for non-bank systemic stablecoins that are used for payments, while the Financial Conduct Authority (FCA) will focus on the non-systemic side. An official agreed with the importance of regulating stablecoins, hoping that there will soon be a similar US initiative with a Government response in this area.

An industry representative highlighted the need for international coordination to implement standards in the DeFi area, with the involvement of international institutions such as the FSB and the OECD.

A regulator felt that it will be possible to reach common critical foundational principles across jurisdictions on minimum standards to ensure the integrity of crypto markets, for example in the AML/KYC area. A number of other areas where common principles can be agreed are identified in the proposals made by the FSB and IOSCO in particular.

The Chair agreed that international regulatory cooperation is needed for DeFi as this is a global development in nature and platforms often also operate without geographical location. The OECD is facilitating cooperation and dialogue in this area in order to promote global consistency, as well as provide technical assistance.