

Technical Standards Short Paper Series: Decentralized Finance (DeFi) and Regulation

Introduction

Decentralized finance (DeFi) is an umbrella term for various applications that provide financial services with the goal to replace traditional intermediaries by running smart contracts on a blockchain. Since the summer of 2020, DeFi has grown substantially in both scale and scope. Central banks and regulators have raised concerns about the vulnerabilities of DeFi (e.g., leverage and pro-cyclicality), its growing linkages with traditional financial markets and institutions, and the implied spillover effects.¹

DeFi Concept

Decentralised finance (DeFi) refers to financial applications, which are run on a permissionless blockchain and use smart contracts automating the provision of financial services without the need for intermediaries. The use of smart contracts and the decentralised nature of the operation and governance of the platform are the two main features that distinguish DeFi from centralised blockchain systems.²

Ethereum was the first smart contract blockchain and is now the leading blockchain layer for DeFi platforms. It offers two popular standards, ERC20 for creating fungible tokens and ERC721 for creating non-fungible tokens (NFTs). One particular feature of smart contracts is composability. Smart contracts deployed on Ethereum can be pieced together like lego blocks to create more complicated contracts that are called protocols.³

The financial services available through DeFi applications share similarities with those offered by conventional financial institutions. The distinction lies in the method of delivery, which is decentralized and relies on smart contracts, as well as the reliance on crypto assets.

In addition, Stablecoins are used as collateral or for the payment of interest in DeFi protocols and are therefore essential to the functioning of DeFi markets facilitating fund transfers between users and across platforms. Stablecoins avoid multiple conversions to and from fiat money for DeFi market participants and also act as a bridge between crypto and traditional financial systems.

¹ <https://www.oecd.org/daf/fin/financial-markets/Why-Decentralised-Finance-DeFi-Matters-and-the-Policy-Implications.pdf>

² Decentralized Finance (DeFi): opportunities, challenges and policy implications, Note written by Marc Truchet, EUROFI with input from Jeff Bandman, Bandman Advisors

³ Understanding DeFi Through the Lens of a ProductionNetwork Model

How DeFi Standards are relevant to DeFi regulations

Due to their decentralized nature, DeFi applications pose a challenge to both regulators and the industry itself. Traditional financial services are subject to numerous regulations and standards that have been developed over decades. Despite the evolution and diversification of traditional financial services and their increased reliance on modern technologies, their fundamental delivery principles have not undergone significant changes, unlike the transformative shift happening in DeFi products.

To ensure that services provided through DeFi applications maintain the same level of trust, security, and accountability exists in traditional services, collaborative efforts are required to establish the foundations that guarantee these qualities. This should take into account the unique characteristics of DeFi applications, including their universal accessibility, decentralization, transparency, data privacy, information security, and other aspects aimed at safeguarding the participants in this industry.

As these applications rely on eliminating intermediaries and utilizing smart contracts to automate their operations and processes, it is crucial to consider the necessity of standards or regulations that enhance the efficiency of these operations without compromising the general principles of service provision, such as transparency, reliability, integrity, confidentiality, and security. This requires that the characteristics of these standards align with the inherent features of DeFi services.

Given that this industry is still relatively new, the experiences available to regulators and standard setting bodies may not be sufficient to establish comprehensive standards. Therefore, collaboration with the participants in this market, the creators of these applications, becomes essential. They are the ones who are most familiar with DeFi applications and capable of accurately defining its characteristics. Since this is a self-operating and self-managing industry, it can also be self-regulated and self-standardized.

What to standardize?

Developing suitable standards for DeFi applications hinges on recognizing their potential, from both the technological or regulatory standpoint. On the technological aspect, it must base on the core components of these applications. In its report, the International Organization of Securities Commissions (IOSCO) specifies that, the DeFi operate in a stack of technologies that interact with each other. Products and services are offered at each level of the stack, this stack is presented in four “layers” as well as a grouping of external, off-chain inputs that connect to multiple layers:

- The “settlement layer” – blockchains and “Layer 2” solutions where the consensus state of the blockchain is maintained, i.e., transactions are recorded, and participants and smart contracts have addresses that can hold crypto-assets and interact with other participants and smart contracts.

- The “asset” layer – crypto-assets (coins and tokens) that participants and smart contracts create and transfer on a blockchain.
- The “smart contract” layer – smart contracts (and auxiliary software) used to provide functionality to DeFi products and services.
- The “application” layer – front-end user interfaces, APIs, and other code that allow participants to interact with the smart contracts. Today, these applications are primarily hosted off-chain.
- Key off-chain inputs that make up a “DeFi supply chain” of information, services and assets that can affect the application, smart contract or asset layer.⁴

These components should be considered as the building blocks for the standards that tackle DeFi. Dividing DeFi applications into these main building blocks can facilitate the establishment of standards. This involves examining the elements within each layer and their unique attributes individually. Additionally, it is important to take into consideration the nature of these aforementioned applications.

Furthermore, one must also take into consideration the services offered by applications developed on DeFi platforms and how we can adapt existing centralized standards to suit these applications in decentralized settings.

As for the legislative aspect, developers of DeFi applications can automate regulatory requirements within the programming of these applications. The introduction of certain self-regulatory standards for DeFi market participants (dApps developers) is important. Such standards should be introduced primarily for the purpose of protecting market participants, not for regulatory purposes. These might include standards for capital, standards for integrity and openness of operations, standards for the quality and security of smart contracts, and standards in the field of auditing.⁵

In this regard, it may be more appropriate for the automation process to adhere to specific standards that all participants can adopt and implement. Among the key issues that should be subject to standardization are the following:

1. Governance

The term “Governance” refers to the system that controls and directs the organization, typically organized by regulators through enacted legislation or internationally recognized standards. Governance in traditional organizations relies on defining roles, responsibilities, associated powers and accountability for all functional levels within the organization.

In DeFi systems, the situation is different. While these communities aim to maintain the governance principles, without affecting decentralization they embrace. To address this,

⁴ IOSCO (2022), IOSCO Decentralized Finance Report.

⁵ <https://trace-illicit-money-flows.eu/defi-regulation-in-the-eu-should-we-act-now/>

these communities typically rely on what are known as "**Governance Tokens**" to make critical decisions within the community. These decisions may include modifying the protocol, altering the system's program, or even changing the governance system itself. These tokens are usually distributed at the beginning of the project, either to early participants, organizers, developers, or investors in the project. These tokens are later used for voting on important decisions in the project.

Governance tokens are typically based on the ERC-20 token standard, and usually they must be staked — or held as collateral — to provide holders with the right to vote or to make a proposal. Governance tokens are typically distributed to platform users as a reward for using the protocol, and cannot be initially purchased, though they may eventually trade on exchanges after distribution. DeFi platforms have relied on governance token awards to attract liquidity and users to their projects, and the tokens have often become objects of speculation⁶.

Recently, the International Organization of Securities Commissions (IOSCO) issued its report on DeFi, which includes a set of recommendations that should be taken into consideration by legislators in member countries. Recommendation number (2) related to Identifying Responsible Persons, A regulator should aim to identify the natural persons and entities of a purported DeFi arrangement or activity that could be subject to its applicable regulatory framework (Responsible Person(s)). These Responsible Person(s) include those exercising control or sufficient influence over a DeFi arrangement or activity. Guidance Responsible Person(s) generally are persons and entities that provide or actively facilitate the provision of products or services. Responsible Person(s) include those that maintain control or sufficient influence over a particular DeFi arrangement or activity. Regulators can consider, for example, those with design and maintenance control; financial and economic control; and formal and legal control, among other things. In many cases, those who have control or sufficient influence over a particular activity at the enterprise level will also be Responsible Persons.⁷

The above recommendation may potentially redirect the characteristics of decentralized systems towards centralizing decision-making. In this context, it is necessary to explore the possibility of establishing appropriate standards for automating governance mechanisms. Regulators can rely on creators and participants in these communities to develop these standards, ensuring that they are gradually agreed upon, adopted, and updated in a manner that consistently allows regulators to supervise, audit, and hold these communities accountable in case of any failure to protect customers' funds or data.

⁶ <https://www.gemini.com/cryptopedia/defi-solutions-decentralized-governance-meaning>

⁷ <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD744.pdf>

2. AML/CFT Procedures

In 2019, The Financial Action Task Force (FATF) extended its anti-money laundering and counter-terrorist financing (AML/CFT) measures to virtual assets (VA) and virtual asset service providers (VASPs) to prevent criminal and terrorist misuse of the sector. Since then, FATF has produced three reviews on implementation of its standards on VAs and VASPs. This report provides an update on country compliance with FATF's Recommendation 15 and its Interpretative Note (R.15/INR.15), including the Travel Rule, and updates on emerging risks and market developments, including on Decentralized Finance (DeFi), Peer-to-Peer transactions (P2P), and Non-Fungible Tokens (NFTs), unhosted wallets, and stablecoins.⁸

As the international standards set by the FATF require countries to regulate the activities of virtual assets and virtual asset service providers, it is sometimes difficult for countries to identify and regulate DeFi entities due to their decentralized nature, which limits the ability to determine the entity controlling or influencing these entities. Jurisdictions consider various factors, such as administrative key holders, governance structures, application managers, promoters, and profit/fee structures, to determine control or influence over DeFi arrangements.

While AML/CFT rules are due to apply to DeFi platforms, the potential lack of a central entity to implement these rules raises some questions in terms of enforcement. The FATF suggests that where a legal person has sufficient influence on the operation of the protocol and the provision of services offered by it, then such person may be considered a VASP (virtual asset service provider), however how this may be implemented in a decentralised DeFi platform remains to be clarified⁹.

DeFi project developers can independently raise the standards of the DeFi market. Developers can independently include in their software programs the need to undergo KYC and due diligence for their clients, and the possibility of checking compliance with AML/CFT requirements. In addition, the introduction of certain standards in the DeFi market will have a positive effect not only on the developers of DeFi programs, but on all market participants. In the vast majority of cases, a DeFi project will have better development if it conforms to generally accepted industry standards¹⁰.

Standards in the DeFi market can have regulators and market participants to comply with AML/CFT requirements including KYC and due diligence requirements, Travel rule requirements, and provide them with ability to monitor suspicious transactions.

⁸ <https://www.fatf-gafi.org/en/publications/Fatfrecommendations/targeted-update-virtual-assets-vasps-2023.html>

⁹ Decentralized Finance (DeFi): opportunities, challenges and policy implications,

¹⁰ <https://trace-illicit-money-flows.eu/defi-regulation-in-the-eu-should-we-act-now/>

3. Smart contracts and Oracles

As previously mentioned, DeFi applications heavily rely on smart contracts, and these contracts may require interaction with the external world to be triggered, such as obtaining information about dates, exchange rates, and other data or indicators. Smart contracts require external information sources (oracles), that raise the chance to foster the scale tokenisation of real-world assets, and to ensure the tokenized asset are protected against both corruption and malicious manipulation, the ownership of tokenized asset must be guaranteed, that could be through standardization.

Standards for smart contract, oracles, or even for bridges can help in mitigating different operational risks arise at the next layer of tokens and smart contracts hosted on blockchains in DeFi systems. Standards must be developed and applied to ensure business continuity, security against hack targeting smart contracts (as they represent a critical point), or even from bugs and fraudulent statement within contract code.

Regulators and supervisors can benefit from these standards to ensure that risks associated with DeFi application are under control through requiring DeFi applications to comply with these standards, that include requiring a verification that smart contracts code meet minimum reliability and cybersecurity standards prior to use and on an ongoing basis. Regulators and supervisors could also consider whether they need a means of level of assurance provided by qualified auditors.

Conclusion

Considering the developments in the DeFi market, global trends towards conducting in-depth and comprehensive studies of these applications, beside the increasing interest of regulators in these applications, whether due to their benefits or the associated risks, it can be said that it is time to embrace the new features that distinguish these applications. We should also accept the idea that traditional legislative systems are not sufficient to maintain the larger financial market by mitigating the risks of these applications and enhancing their opportunities.

Many steps need to be taken to introduce performance standards for many participants of this market, and since the concept of self-regulation has been previously proposed to give this type of applications the opportunity to regulate itself by allowing sufficient time to establish rules and standards and gradually adopt them across all applications. It is essential to concurrently adopt this concept while studying, researching, and supporting the development of these standards. Moreover, promoting the adoption and implementation of standards on an international level in a way that ensures the compatibility of these standards with the DeFi applications they target.