

MiCA and DeFi (“Proposal for a Regulation on Market in Crypto-assets” and “Decentralised Finance”)

MiCA and DeFi (“Proposta de Regulamento sobre mercados de criptoativos” e Finanças descentralizadas”)

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ABSTRACT: This paper aims to analyse the relationship between the proposal for a Regulation on Markets in Crypto-assets (MiCA), an element of the Digital Finance Package of the European Commission presented on the 24th September 2020, and DeFi (Decentralised Finance), an ecosystem of decentralised applications (dapps) that provide financial services built on top of peer-to-peer and trustless networks. To this end, it also analyses what could be a decentralised protocol. After that, this paper intends to propose solutions to align DeFi applications within legal frameworks and with the state intervention in the economy (particularly the protection of investors and financial stability).

KEYWORDS: Crypto-assets; Decentralised Finance; DeFi; Blockchain; Fintech; MiCA.

ABSTRACT: Este artigo visa analisar a relação entre a proposta de Regulamento sobre Mercados em Criptoativos (MiCA), um elemento do Pacote Financeiro Digital da Comissão Europeia apresentado em 24 de Setembro de 2020, e DeFi (Finanças Descentralizadas), um ecossistema de aplicações descentralizadas (dapps) que fornece serviços financeiros desenvolvidos sob de redes sem intermediários. Para este efeito, visa-se analisar também o que poderá ser considerado um protocolo descentralizado. Seguidamente, este artigo pretende propor soluções para alinhar as aplicações DeFi com o quadro legislativo e com a intervenção do Estado na Economia (particularmente, a protecção dos investidores e a estabilidade financeira).

PALAVRAS-CHAVE: Criptoativos; Finanças Descentralizadas; DeFi; Blockchain; Fintech; MiCA.

TABLE OF CONTENTS

1. What is MiCA?
 2. What is DeFi?
 - 2.1. DeFi Architecture
 - 2.2. DeFi Categories
 3. How does MiCA address DeFi?
 4. What is a decentralised protocol?
 5. How to regulate decentralised protocols?
- Reference List

1. What is MiCA?

The European Commission published a proposal for a Regulation on Markets in Crypto-assets (MiCA), on 24th September of 2020, as an element of the Digital Finance Package, adopted at the same date and including a Digital Finance Strategy as well¹, a renewed Retail Payments Strategy² and legislative proposals on market infrastructures based on distributed ledger technology and digital resilience. This Digital Finance Package aims to support the European Union's ambition for a recovery that embraces the digital transition. By making rules more digital-friendly and safe for consumers, the European Commission aims to leverage synergies between high innovative start-ups and incumbents in the financial sector while addressing associated risks.

MiCA results from an extensive and long-standing market monitoring and participation in international policy work since the rise of Initial Coin Offerings in 2017 and 2018, from the advice received from the EBA (European Banking Authority) and ESMA (European Securities and Market Authority), on 9th January of 2019, and from the public consultation of the European Commission on an EU framework for markets in crypto-assets, which occurred between 5th December of 2019 and 19th March of 2020. It also seems to respond to the policy debate about global stablecoins caused by Facebook's Libra proposal in June 2019.³

MiCA is a bespoke regime for all crypto-assets not covered elsewhere in European Union financial services legislation, for their issuers and their service providers, providing a single licensing regime across all European Union member states. MiCA has the purpose of providing legal certainty and instilling appropriate consumer and investor protection levels, financial stability, and market integrity to a growing, innovative, and previously unregulated market without posing obstacles to the application of new technologies.

The draft regulation has an extensive scope by defining the term "crypto-asset" broadly as "a digital representation of value or rights which may be transferred and stored electronically, using distributed ledger technology or similar technology". Although the crypto-assets covered in European Union financial services legislation are excluded from MiCA, other exemptions exist, mainly in public offers of crypto-assets.

The Regulation establishes a taxonomy for the different types of crypto-assets. They can be designed in a variety of ways and entail the ownership of a variety of rights, financial and non-financial.⁴ This exclusion of crypto-assets covered in European Union financial services legislation and the taxonomy of crypto-assets covered in MiCA can be summarised as follows:

¹ EUROPEAN COMMISSION, *Communication on a Digital Finance Strategy for the EU (Communication) COM 591 final*, in <https://ec.europa.eu/transparency/regdoc/rep/1/2020/EN/COM-2020-591-F1-EN-MAIN-PART-1.PDF>, 2020.

² European Commission, *Communication on a Retail Payments Strategy for the EU (Communication) COM 592 final*, in <https://ec.europa.eu/transparency/regdoc/rep/1/2020/EN/COM-2020-592-F1-EN-MAIN-PART-1.PDF>, 2020.

³ DIRK A. ZETSCHE, FILIPPO ANNUNZIATA, DOUGLAS W. ARNER AND ROSS P. BUCKLEY, "The Markets in Crypto-Assets Regulation (MiCA) and the EU Digital Finance Strategy" in *European Banking Institute Working Paper Series No. 2020/77*, University of Luxembourg Law Working Paper Series No. 2020-018, University of Hong Kong Faculty of Law Research Paper No. 2020/059, 2020, p. 4.

⁴ *Ibid.*, p. 5.

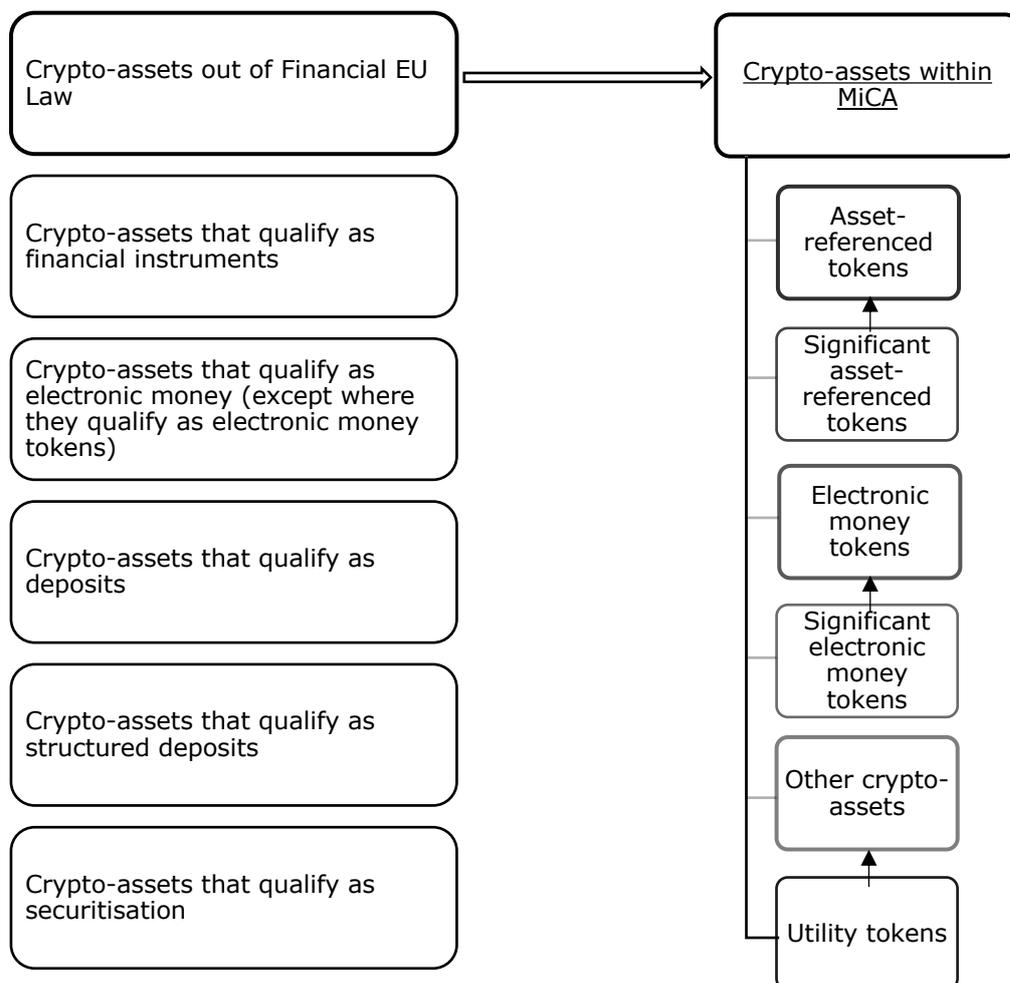


Figure A - Taxonomy of crypto-assets in MiCA

Firstly, it should be noted that the issuers of crypto-assets shall explain why the crypto-asset is not covered in European Union financial services legislation in the information provided in a public offer, accordingly to MiCA. This obligation can be, in some cases, very challenging. It may create harmonisation difficulties, mainly due to the open concept and the different transpositions from the Member States of transferable securities in MiFID II (Directive 2014/65/EU), which will require an important coordination work from the competent national authorities and ESMA (European Securities and Markets Authority).

Regarding the taxonomy of crypto-assets, two categories of crypto-assets were established for the so-called stablecoins: asset-referenced tokens and electronic money tokens (e-money tokens). This distinction of stablecoins was made due to their widespread adoption and potential to be used as a payment method and a store of value.⁵

⁵ "(...) stablecoins have the potential to reach globally systemic dimensions from a financial stability perspective", *ibid.*

Asset-referenced tokens mean a type of crypto-asset that purports to maintain a stable value by referencing several currencies that are legal tender, one or several commodities, one or several crypto-assets, or a basket of such assets and electronic money tokens means a type of crypto-asset the primary purpose of which is to be used as a means of exchange and that purports to maintain a stable value by referring to the value of a fiat currency that is legal tender. This latter category shall be deemed to be electronic money as defined in Article 2(2) of Directive 2009/110/EC, with the specificity of electronic money tokens being issued, transferred, and stored using a distributed ledger technology, which justified the creation of specific rules for them in MiCA.

Two sub-categories have been created in MiCA, significant asset-referenced tokens and electronic money tokens, to respond to the risks to the financial stability that an asset-referenced token or electronic money token may pose if they reach a large scale in terms of market capitalisation, number, and value of transactions and other factors. The rules foreseen in the draft regulation regarding these sub-categories of crypto-assets, deemed as significant, consist of additional obligations, such as remuneration policies, governance arrangements, and the participation in a college of issuers chaired by EBA (European Banking Authority) that aims to facilitate the exercise of the supervisory tasks of this authority.

The remaining category of crypto-assets is delimited by the negative as they are composed of all crypto-assets covered by MiCA that are not asset-referenced tokens nor e-money tokens. Within this catch-all category, we find the sub-category of utility tokens, a type of crypto-assets intended to provide digital access to a good or service, available on a distributed ledger technology, and are only accepted by the issuer.

This taxonomy defines the way MiCA is structured. However, the subject of this draft regulation is mainly related to the disclosure requirements for the offering and admission to trading of crypto-assets and the authorisation and supervision of crypto-asset service providers and issuers of asset-referenced tokens and issuers of electronic money tokens. For this reason and the quasi-financial nature of crypto-assets, posing many of the same risks as financial instruments, MiCA is inspired by MiFID II, Prospectus Regulation, Market Abuse Regulation, Payment Services Directive, and Electronic Money Directive. Nevertheless, the framework established in MiCA tries to be proportionate and support innovation by not being so demanding as the above-mentioned financial legislation.

An easy demonstration that MiCA is inspired by financial legislation is to observe that most of the crypto-assets services are the same as most of MiFID II services, namely, custody and administration, placing, reception and transmission of orders, execution of orders, providing advice and operation of a trading platform.⁶ The only crypto-assets services that were not mentioned are related to the payment services: the exchange of crypto-assets for fiat currency that is legal tender and the exchange of crypto-assets for other crypto-assets.

⁶ "(...) portfolio management of cryptoassets – an activity undertaken by many emerging crypto-asset funds – is missing", *ibid.*

MiCA requires anyone seeking to provide crypto-asset services in the European Union to have been authorised in a Member State for the services it wishes to undertake. For this purpose, it needs to establish a registered office in that State. An authorisation provided by one Member State will be valid across the European Union.

The proposal is now going through the ordinary legislative procedure of the European Union, and the aim is to have a Regulation in full effect by 2024. In the meantime, many market participants will consider the impact of MiCA on their business models and structures.

2. What is DeFi?

DeFi (Decentralised Finance) is an ecosystem of decentralised applications (dapps)⁷ that provide financial services built on peer-to-peer and trustless networks, meaning they do not need a central authority,⁸ which began to be relevant in size in 2020⁹. DeFi is usually described as an open, permissionless, and highly interoperable protocol stack built on public distributed ledger technologies to replicate existing financial services more transparently and openly.¹⁰

DeFi may comprise a provision of financial services by multiple participants, intermediaries, and end-users across various jurisdictions, with a purely technological infrastructure to facilitate interactions between agents.¹¹ "As blockchain technology matures and evolves to process more transactions, the technology could provide a platform to run code-based systems that are increasingly untethered from human control".¹²

In this chapter, we give an overview of the DeFi ecosystem by describing the technical infrastructure of the technology and the different applications within the financial industry.

2.1. DeFi Architecture

This sub-chapter illustrates a simplified version of DeFi's structure by providing a general and non-technical overview of its layers. DeFi uses a hierarchical multi-layered architecture with

⁷ "dapps are programs running on a decentralised network that can execute automatically when certain conditions are met, where transactions are affected in a secure and verifiable way, and legitimate state changes persist on a public blockchain.", Ethereum Foundation, 2020, "What are dapps?" in <https://ethereum.org/en/dapps/#what-are-dapps>. Accessed 29th April 2021.

⁸ TAMÁS KATONA, "Decentralized Finance - The Possibilities of a Blockchain «Money Lego» System", in *Financial and Economic Review*, Magyar Nemzeti Bank (Central Bank of Hungary), vol. 20(1), 2021, p. 76.

⁹ "The value of funds that are locked in DeFi related smart contracts recently reached USD 10 billion", FABIAN SCHÄR, "Decentralized Finance: On Blockchain and Smart Contract-based Financial Markets", in *Federal Reserve Bank of St. Louis Research Paper Series*, 2020, p. 2.

¹⁰ Ibid. p. 1.

¹¹ DIRK A. ZETZSCHE, DOUGLAS W. ARNER AND ROSS P. BUCKLEY, "Decentralized Finance (DeFi)" in *IIEL Issue Brief 02/2020*, *European Banking Institute Working Paper Series 59/2020*, University of Hong Kong Faculty of Law Research Paper No. 2020/010, University of Luxembourg Faculty of Law, Economics & Finance WPS, *Journal of Financial Regulation - forthcoming*, 2020. p. 4.

¹² PRIMAVERA DE FILIPPI AND AARON WRIGHT, *Blockchain and the Law - The Rule of Code*, Harvard University Press, Cambridge, 2018, p. 147.

different purposes. It differentiates between three main layers, as shown in Figure 2: the settlement, the protocol, and the interface layers.¹³

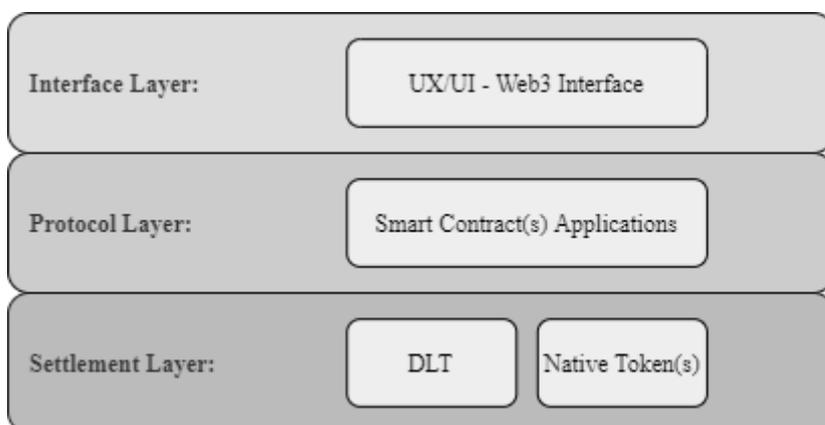


Figure B - DeFi Layered System

a) The Settlement Layer (Layer One)

Layer One consists of the distributed ledger technology (DLT)¹⁴ and its native asset, containing the basic operating rules of the ecosystem.¹⁵ Ideally, the DLT comprises the hardware layer where a peer-to-peer network of computers is required to compute transactions and store them in order in a distributed database. In a blockchain,¹⁶ each agent in the network is a “node”, and it validates and organises incoming transactions into blocks that are broadcasted to the network. These transactions may contain value and information. The value is expressed in the network's native asset, and the information is code that can pass data and trigger actions. The native token is used to transfer value, be used as a means of exchange, run applications, and incentivise “nodes” to maintain neutrality.¹⁷

¹³ For a technical conceptual framework based on a OSI Model, please see 11. The proposed framework in this article was strongly influenced by Fabian Schär model, but for simplicity reasons we have opted for a different approach.

¹⁴ DLT is used in Figure 2 for a technologically agnostic approach. However, for “decentralised finance” to be effective it is required for a DLT to be decentralised by default. For our study, decentralisation is only achieved if (1) the architecture of the system is distributed (2) and if no individual or entity controls the system. The distribution of network governance is only possible if there is a distributed architecture. For a better understanding see <https://medium.com/@VitalikButerin/the-meaning-of-decentralization-a0c92b76a274>. Accessed 2 May 2021.

¹⁵ TAMÁS KATONA, “Decentralized Finance - The Possibilities of a Blockchain “Money Lego”” *System Financial and Economic Review*, Magyar Nemzeti Bank (Central Bank of Hungary), vol. 20(1), pp 74-102, 2021, p. 81.

¹⁶ As defined by KEIR FINLOW-BATES, “Blockchain comprises a time-stamped hash-linked list distributed over a peer-to-peer network with a consensus algorithm for incentivizing data consistency and utilizing asymmetric key cryptography for identity and access management.” See KEIR FINLOW-BATES, *Move over brokers here comes the blockchain*, Thinklair, TMI.2020, p. 16. Blockchain is the most used sub-category of DLTs for DeFi applications according to <https://defipulse.com/>. Accessed 2 May 2021.

¹⁷ For a better understanding, see <https://medium.com/@micheledaliessi/how-does-ethereum-work-8244b6f55297>. Accessed 2 May 2021.

b) The Protocol Layer (Layer Two)

Layer Two comprises the compiler and the ability to create Application Programming Interfaces (API). A compiler is a program that converts current high-level to low-level programming languages.¹⁸ In this layer, developers may write code, compile it into bytecode (machine language) and deploy it onto the DLT. Additionally, developers may create an API that will allow other developers to interact with the deployed code. An API is a set of definitions and protocols for building and integrating application software that lets a product or service communicate with other products or services without understanding how they are implemented.

Layer 2 includes the programming languages that may be compiled, such as Solidity or Python, smart contract¹⁹ standards, and any assets issued on top of the settlement layer. Furthermore, all standards used for specific applications, such as those described in subsection 2.2 and aggregators that may connect several applications and protocols, are included.

c) The Interface Layer (Layer Three)

Layer Three creates user-oriented applications that allow users to interact with an application through a web page. The purpose of interfaces is to enable the program to enforce the properties embedded in the code via objects familiar to most users, such as text boxes, buttons, or any interaction found on a web page.²⁰

2.2. DeFi Categories

This sub-section aims to describe the current major applications of DeFi. There are categories termed “stablecoins” and “derivatives”, which formally refer to the representation of a particular instrument; however, the scope of this sub-section is to determine the applications at a protocol level. As a result, those terms are merely used for technical ease of reference.

Currently, Decentralised Finance has seven major classes²¹:

¹⁸ ABINAYA PERUMAL, G. DEEPICA AND V. JYOTHIR BINDU, “Simulation of Compiler Phases” in *Indo-Iranian Journal of Scientific Research (IIJSR)*, Peer-Reviewed Quarterly International Journal, Volume 2, Issue 2, 2018, pp. 100-104.

¹⁹ Regarded herein as self-executing programmes, with no human interaction and carried through computer-running codes, see MAX RASKIN, “The Law and Legality of Smart Contracts” in *1 Geo. L. Tec. Rev.*, 2017, p. 306.

²⁰ <https://www.cs.utah.edu/~germain/PPS/Topics/interfaces.html>. Accessed 2 May 2021.

²¹ DARREN LAU, DARYL LAU, SZE JIN THE, KRISTIAN KHO, ERINA AZMI, BENJAMIN HOR, LUCIUS FANG, AND WIN WIN KHOR, *How to Defi*, Coin Gecko, 2020, pp. 13-16.

a) Stablecoins

Stablecoins are crypto-assets that typically transact on a distributed ledger and rely on cryptographic validation techniques to be transacted, intending to achieve stable value relative to fiat currencies. In principle, stablecoins allow users to protect the nominal value of their holdings.²² There are three types of stablecoins; the fiat-backed stablecoins, the asset-backed stablecoins, and the algorithmic stablecoin.

- Fiat-backed stablecoins aim to maintain a stable value by being collateralised by the fiat currency that they may represent.²³
- Asset-backed stablecoins aim to maintain a stable value via collateralisation of several fiat currencies, one or more commodities, other crypto-assets, or a basket of such assets.²⁴
- Algorithmic stablecoins aim to maintain a stable value via inbuilt stabilisation functions that provide for the increase or decrease of the supply of such crypto-assets in response to changes in demand.²⁵

There may be some use-cases where a stablecoin may be a hybrid.²⁶

Decentralised stablecoins (b., c.) aim to solve the trust issue that may arise from fiat-backed stablecoins (a.). Ideally, decentralised stablecoins are created in a decentralised manner via an over-collateralisation or algorithmic method, operate fully on decentralised ledgers, are governed by decentralised autonomous organisations, and anyone can publicly audit their reserves. Thus, one can conclude that the core components of a decentralised stablecoin are as follows:²⁷

- Collateral: This is the store of primary value for a stablecoin. The collateral per se can be exogenous and primarily used in other protocols; endogenous, where the collateral was created to be collateral within the protocol; or implicit, where the design lacks an explicit collateral store.
- Agents: The collateral providers and the stablecoin users.
- Governance: The functions and parameters that govern the protocol.
- Issuance: A mechanism to control the issuance of stablecoins.
- Oracles: A mechanism to import external data onto the blockchain, such as price feeds.

²² <https://www.bis.org/cpmi/publ/d187.pdf>. Accessed 3 May 2021.

²³ <https://tether.to/wp-content/uploads/2016/06/TetherWhitePaper.pdf>. Accessed 3 May 2021.

²⁴ <https://makerdao.com/en/whitepaper/#notes>. Accessed 3 May 2021.

²⁵ <https://www.ampleforth.org/papers/>. Accessed 3 May 2021.

²⁶ Terra is a blockchain protocol that supports stable programmable payments and open financial infrastructure development. It is supported by a basket of fiat-pegged, seigniorage share style stablecoins which are algorithmically stabilized by its native crypto-asset, Luna as described in https://terra.money/Terra_White_paper.pdf. Accessed 3 May 2021.

²⁷ ARIAH KLAGES-MUNDT, DOMINIK HARZ, LEWIS GUDGEON, JUN-YOU LIU AND ANDREEA MINCA, "Stablecoins 2.0: Economic foundations and risk-based models", in *Proceedings of the 2nd ACM Conference on Advances in Financial Technologies*, 2020, pp. 59–79.

b) Lending and Borrowing Markets

These protocols aim to provide lending and borrowing services to anyone who collateralises their crypto-assets and uses them to obtain loans. Additionally, lenders can also earn a yield on their assets by contributing to lending pools and earning interest in such assets.²⁸ However, these markets are not comparable to peer-to-peer lending since the crypto-assets are not directly lent between individual agents but are borrowed against the smart contract reserves: crypto-funds aggregated and pooled together by lending agents.

Due to the nature of DeFi and blockchain, where borrows are pseudo-anonymous, there are no mechanisms to identify the agent, access his credit score and ability to repay the loan, and enforce any legal proceedings against a default. To prevent borrowers from defaulting their debt obligation and creating a credit risk for the loaners, borrowers must collateralise their position to cover the debt value. Due to the historical volatility and illiquidity of the various crypto-assets, an over-collateralisation is required. If the underlying asset's market price crashes, it will not affect the lending market funds since sufficient collateral would cover the borrower's debt value. The debt is usually issued against USD or stablecoins representing USD.

The borrower must ensure that the collateral value is always above a pre-determined liquidation threshold set by the protocol, or the "liquidators" can purchase the locked collateral at a discount and close the borrower's debt position.²⁹

c) Exchanges (DEXs)

DEXs "were born from the desire to address the vulnerabilities of centralised platforms³⁰," so they aim to provide an exchange between one or more crypto-assets with non-custodial solutions. As a result, users are under complete control of their assets and do not need to transfer and store crypto-assets on an exchange. Based on the mechanism for price discovery, there may be different variants, such as:³¹

d) Order Book DEX

Maintaining the state of an order book is a computationally expensive task, and, given the design of trustless and public distributed ledger technologies, it is not feasible to host it on-chain. Consequently, a user wanting to execute an order will sign a transaction allowing the

²⁸ [https://github.com/aave/aave-protocol/blob/master/docs/Aave Protocol Whitepaper v1 0.pdf](https://github.com/aave/aave-protocol/blob/master/docs/Aave%20Protocol%20Whitepaper%20v1%200.pdf). Accessed 3 May 2021.

²⁹ DANIEL PEREZ, SAM M. WERNER, JIAHUA XU AND BENJAMIN LIVSHITS, *Liquidations: Defi on a knife-edge*, 2020, p 4.

³⁰ ESMA, *Advice Initial Coin Offerings and Crypto-Assets*, 2019, p 44.

³¹ SAM M. WERNER, DANIEL PEREZ, LEWIS GUDGEON, ARIAH KLAGES-MUNDT, DOMINIK HARZ AND WILLIAM J. KNOTTENBELT, *SoK: Decentralized Finance (DeFi)*, 2021, pp 3-4.

DEX to execute the trade on his behalf when certain conditions are met. Orders are matched either manually or algorithmically; however, this will always involve a degree of trust in off-chain mechanisms³² that may be susceptible to manipulation.³³

e) Automated Market Maker (AMM)

AMM is a decentralised protocol that relies on a mathematical formula to price assets. The AMM does not require an order book since the assets are priced according to a pricing algorithm. The liquidity to create the market is provided by the liquidity providers.

The liquidity providers provide funds to a liquidity pool, where reserves for two or more assets are locked into a smart contract. Each liquidity provider receives newly minted liquidity tokens to represent their share of a pool's liquidity. A trade may occur when a user deposits an asset, thus providing more liquidity for that particular asset, and withdraws the reserves of one or more other tokens deposited in the pool.

As the reserve ratios for a pool's assets change as liquidity is withdrawn and added, a liquidity provider may receive a different token ratio upon his liquidity share than the ratio he initially deposited. This risk is known as impermanent loss.³⁴

f) Derivatives

Derivatives are contracts that derive their value from the performance of an underlying asset, event, or outcome. Without an underlying to derive its value from, derivatives per se are valueless.

Since the development of derivatives contracts to help reduce the risk for farmers, the uses and types of derivatives contracts and the derivatives market size have increased significantly. Derivatives can be used to manage risks associated with the underlying, but they may also result in increased risk exposure for the other party to the contract. Nowadays, derivatives are no longer just used to reduce risk but are also part of the investment strategies of many fund managers and retail investors.

— Typical Derivatives: Typical derivatives contracts, where futures and options are included, can be defined by having an underlying size and price, an expiration date, and a settlement mechanism.

³² <https://idex.io/document/IDEX-2-0-Whitepaper-2019-10-31.pdf> . Accessed 4 May 2021.

³³ PHILIP DAIAN, STEVEN GOLDFEDER, TYLER KELL, YUNQI LI, XUEYUAN ZHAO, IDDO BENTOV, LORENZ BREIDENBACH AND ARI JUELS, *Flash boys 2.0: Frontrunning, transaction reordering, and consensus instability in decentralised exchanges*, 2019, p 1.

³⁴ <https://uniswap.org/docs/v2/advanced-topics/understanding-returns/>. Accessed 4 May 2021.

— Perpetual Swaps: These contracts are a mix of future contracts and contracts-for-difference, where there is no set expiry date, and the settlement may be satisfied via the delivery of the underlying asset. Furthermore, traders may decide to keep their position by providing a funding transaction if their position is underfunded.³⁵

— Synthetic Assets: are collateral-backed tokens whose value fluctuates depending on the underlying asset reference index without directly taking a position in that asset. Some platforms allow the creation of crypto-backed synthetic assets that provide on-chain price exposure to commodities, stocks, indices, or other assets.³⁶

g) Portfolio Management

DeFi protocols allow the automation of on-chain assets portfolio management. Crypto-assets are deposited and pooled into smart contracts and allocated according to an investment strategy encoded in the smart contract or managed by a pool manager. The investment strategy may vary from a rebalancing of the portfolio³⁷ to yield aggregating strategies³⁸.

h) Payments

Blockchain allows anyone to send value without a trusted intermediary or depository; however, a transaction may take up quite some time to be confirmed and irreversible in the blockchain. DeFi payment protocols allow for processing instant, high-volume micropayments that may remove the risk of delegating custody of the crypto-assets to trusted third parties.³⁹

i) Insurance

Insurance is a risk management strategy in which an individual receives financial protection or reimbursement against losses from an insurance company in an unfortunate incident. DeFi insurance protocols are, so far, restricted to on-chain risk coverage, where any agent may purchase cover for unintended uses of code in any smart contract offered from the list of the insurance protocol. When an event similar to “The DAO” hack happens, the agent would be covered from any financial losses resulting from such hacking.⁴⁰

³⁵ <https://www.bitmex.com/app/perpetualContractsGuide>. Accessed 4 May of 2021.

³⁶ <https://synthetix.io/>. Accessed 4 May 2021.

³⁷ <https://www.dhedqe.org/>. Accessed 4 May 2021.

³⁸ <https://yearn.finance>. Accessed 4 May 2021.

³⁹ <https://matic.network/>. Accessed 4 May 2021.

⁴⁰ <https://nexusmutual.io/>. Accessed 4 May 2021.

3. How does MiCA address DeFi?

MiCA does not expressly refer to DeFi, as it is an emerging technological trend in a very early state to be institutionalised by the Law. Notwithstanding, it is still possible and helpful to analyse whether the categories of DeFi correspond to activities that are covered by MiCA or not.

Regarding stablecoins, the type of crypto-assets that correspond to stablecoins, i.e., asset-referenced tokens and electronic money tokens, was already mentioned above. MiCA only refers to stablecoins in the recitals, which is understandable because it is not a very rigorous and objective term. The fiat currencies, commodities, and crypto-assets whose value crypto-assets refer to may be stable over a given period but no longer in another period. In this sense, the stable value is stable as it always refers to the value of those particular fiat currencies, commodities, and crypto-assets, although they can be highly volatile in macroeconomic terms.

MiCA, in its recital (26), states that *"So-called algorithmic 'stablecoins' that aim at maintaining a stable value via protocols that provide for the increase or decrease of the supply of such crypto-assets in response to changes in demand should not be considered as asset-referenced tokens, provided that they do not aim at stabilising their value by referencing one or several other assets"*. This recital is incomprehensible and contradictory because if a crypto-asset does not aim at stabilising its value by referencing one or several other assets, it would never be qualified as an asset-referenced token. According to MiCA, it does not seem to us that the aim of an asset-referenced token or an electronic money token is related to the assets that crypto-asset is backed, but rather to the assets this crypto-asset is pegged. If our interpretation is correct, any algorithmic stablecoins would be covered by MiCA, they would be qualified as asset-referenced tokens or electronic money tokens, depending on the assets their value aims to reference, and this recital should be amended.

In accordance with MiCA, the issuers of asset-referenced tokens shall only be legal entities established in the Union⁴¹, except if the offer does not exceed EUR 5 000 000 over a period of 12 months or is solely addressed to qualified investors. These issuers are subject to several obligations. For instance, they shall always provide holders of asset-referenced tokens with clear, fair, and not misleading information. Therefore, the crypto-asset white paper on asset-referenced tokens shall include information on the stabilisation mechanism, the investment policy of the reserve assets, the custody arrangements for the reserve assets, and the rights provided to holders.

In relation to electronic money tokens, as they are electronic money, only credit institutions and electronic money institutions are authorised to issue them. Issuers of electronic money

⁴¹ MiCA only provides a legal framework for a regional stablecoins, not solving many issues from cross-border payments. For instance, MiCA does not establish cooperation rules where EBA or national competent authorities sit in supervisory colleges set up by authorities of third countries, see DIRK A. ZETZSCHE, FILIPPO ANNUNZIATA, DOUGLAS W. ARNER AND ROSS P. BUCKLEY, "The Markets in Crypto-Assets Regulation (MiCA) and the EU Digital Finance Strategy" in *European Banking Institute Working Paper Series No. 2020/77*, University of Luxembourg Law Working Paper Series No. 2020-018, University of Hong Kong Faculty of Law Research Paper No. 2020/059, 2020, p. 27. Nevertheless, a lot of international work is underway as regards global stablecoins, see ELIZABETH NOBLE, *Crypto-assets - Overcoming impediments to scaling: A view from the EU*, 2020, p. 19.

tokens shall also produce a crypto-asset white paper and notify their competent authority, except if the electronic money tokens are only held by qualified investors or the average outstanding amount of electronic money tokens does not exceed EUR 5 000 000 over a period of 12 months.

Regarding derivatives, some of them are qualified as financial instruments, namely the ones defined in point (44)(c) of Article 4(1) of Directive 2014/65/EU and referred to in Annex I, Section C (4) to (10) thereto. These derivatives are out of the scope of MiCA, pursuant to its article 2, paragraph 2 (a). However, there is still a set of derivatives that do not fulfil the criteria of Directive 2014/65/EU (mainly related to the reference underlying, whether the instrument is over-the-counter or exchange-traded and the settlement method of the instrument) to be qualified as financial instruments. If those derivatives are crypto-assets, they shall be subject to MiCA and be qualified as asset-referenced tokens, electronic money tokens, or other crypto-assets (the “catch-all” category), depending on the characteristics of those instruments.

As regards DeFi services, most of them are not covered by MiCA, such as portfolio management, insurance, lending, and payments, although in this latter case, the payment services of electronic money tokens are regulated by Directive (EU) 2015/2366, as they are deemed as electronic money. The only case covered by MiCA is DEXs, which can be framed as the service of exchange of crypto-assets for other crypto-assets or the operation of a trading platform for crypto-assets. In the first case, the business model is similar to a currency exchange, where the service provider freely determines the price for exchanging crypto-assets against fiat currency or other crypto-assets. In the second case, operating a trading platform, the service provider manages a multilateral system that brings together third-party buying and selling interests for crypto-assets.

To comply with MiCA, service providers must be legal entities with a registered office in a Member State and authorised by the competent national authority of the Member State. In terms of the duties of crypto-assets service providers, they are very similar to investment firms and crowdfunding service providers. Crypto-assets providers should always act honestly, fairly, and professionally in the best interest of their clients, provide their clients with clear, fair, and not misleading information, warn them about the risks associated with crypto-assets, and comply with some prudential requirements.

In light of the above, a problem arises with the relation between DeFi and MiCA, which is the fact that, in DeFi, the operation of services is supposed to be decentralised and not controlled by one entity or a small group of entities and the obligation of always having an issuer or service providers that are legal entities responsible for complying with MiCA provisions. MiCA only applies to natural and legal persons and the activities, issuances, and services performed

and provided by them. In some DeFi projects, it seems a stretch to consider that exists a natural or legal person who performs or provides those activities⁴².

As noted by Organisation for Economic Co-operation and Development (OECD) and the Financial Stability Board (FSB), most DeFi projects often exist along a spectrum of centralisation, depending on the stage of development of the application⁴³, which generally means having an identifiable intermediary that would be the liable entity within MiCA. As stated in the latest recommendations of the Financial Action Task Force (FATF), DeFi *"applications or platforms are often run on a distributed ledger but still usually have a central party with some measure of involvement, such as creating and launching an asset, setting parameters, holding an administrative "key" or collecting fees"*⁴⁴.

Additionally, DeFi applications are likely to evolve into increasingly centralised platforms with the market pressure, i.e., the emergence of new intermediary operators and new potential incumbents in the DeFi space⁴⁵.

In other cases, DeFi projects are purely decentralised models that rely only on smart contracts and, therefore, are not within the scope of MiCA since its provisions would not apply if there is no legal or natural person to be held accountable. For this reason, it is essential to know when we are facing a decentralised protocol so when MiCA does not apply to a DeFi project. DeFi is not composed of watertight compartments⁴⁶, so it is paramount to understand its specificities regarding decentralisation.

4. What is a decentralised protocol?

The term "decentralised" is used in several different senses across the DLT industry. Firstly, the term is used in the Settlement Layer, where a network of nodes comprises a permissionless blockchain through peer-to-peer connections between unrelated and independent agents, rather than relying on a central server or a central organisation. This axis of decentralisation is referred to as the architectural distribution.⁴⁷ This article assumes that the Settlement Layer in which the DeFi protocols are built is always sufficiently distributed.⁴⁸

Secondly, the term may refer to the decentralisation of custody of crypto-assets (non-custodial of crypto-assets by an intermediary). In traditional finance, custody is a core financial service

⁴² MICHAEL SCHILLIG, *Lex Cryptographia, 'Cloud Crypto Land' or What? – Blockchain Technology on the Legal Hype Cycle*, 2021, p. 37.

⁴³ OECD, *Why Decentralised Finance (DeFi) Matters and the Policy Implications*, 2022, p. 20; FSB, *Assessment of Risks to Financial Stability from Crypto-assets*, 2022, p. 16.

⁴⁴ FATF, *Updated Guidance for a Risk-Based Approach to Virtual Assets and Virtual Asset Service Providers*, 2020, p. 27.

⁴⁵ PRIMAVERA DE FILIPPI AND XAVIER LAVAYSSIÈRE, *Blockchain Technology: Toward a Decentralized Governance of Digital Platforms?*, 2020, p. 204.

⁴⁶ FERNANDO ZUNZUNEGUI, *¿Cómo regular las plataformas financieras digitales?*, 2022, p. 11.

⁴⁷ <https://medium.com/@VitalikButerin/the-meaning-of-decentralization-a0c92b76a274>. Accessed 5 May 2021.

⁴⁸ For further details pertaining the "decentralisation" discussion of the Settlement Layer, see ANGELA WALCH "Deconstructing "Decentralisation": Exploring the Core Claim of Crypto Systems" in *Brummer C (ed) Chapter in Crypto Assets: Legal and Monetary Perspectives*, Oxford University Press, 2019.

in which the custodian holds in safekeeping assets on behalf of the client. Usually, this type of service is endorsed by the custodian's reputation and the legal and regulatory framework. The core reason for using custodians is the security of not having the assets lost or stolen. As a result, security and trustworthiness become symbiotic pertaining to the safekeeping of assets. With the technological forthcoming of DeFi applications, the solution for proving trustworthiness without endorsement from central authorities is via a robust, resistant, and transparent technical implementation of a set of functions. The client/user is the only party with access to the assets deposited in the smart contract.⁴⁹ In the Application Layer, a non-custodial protocol allows users to have complete control of their crypto-assets deposited in a smart contract address for a specific finality of a protocol without relying on a centralised party. The interaction between the protocol and the user is autonomous and automatic, without contact with the development team, thus, transferring the responsibility from the intermediaries to the users.

Thirdly, the term is referred to the decentralisation of management, organisation, and ownership of a protocol. Even though this type of decentralisation is fundamental across all Layers, there is a clear "decentralised governance" trend across DeFi protocols. Organisations that seek to emulate the operation of a corporate entity through code and integrate decentralised governance features within their protocols are usually known as Decentralised Autonomous Organizations ("DAOs"),⁵⁰ where the stakeholders hold voting rights via tokens that determine an autonomous execution of the nexus of smart contracts when certain conditions are met. The tokens representing the possibility for token holders to be part of a DeFi protocol are known as governance tokens and may give the token holder control (voting rights)⁵¹ and ownership (cashflow rights) of the organisation.

In DeFi, political decentralisation is similar, at first sight, to shareholder voting for corporations, but, in substance, they are considerably different. In traditional corporate governance, shareholders may only part-take in macro/structural decisions, whereas in DeFi, a token holder may potentially influence any protocol element, from high-level direction to aspects of its daily operation.

A deeper understanding of what type of control is granted to the token holders is required to understand the extent of the political decentralisation of the DeFi protocols. To achieve proper governance decentralisation, governance decisions and administrative privileges over the smart contracts that sit behind a protocol would have to be distributed to a dispersed network of independent token holders who have equal access to information and the ability to propose and vote to change any aspect of the protocol.

⁴⁹ ESMA, *Advice Initial Coin Offerings and Crypto-Assets*, 2019, p. 44.

⁵⁰ "A DAO may be defined as a smart contract conceptualized as a relatively autonomous and self-sufficient for-profit organization, which is jointly held by token holders and may share its earnings." See ANTÓNIO ROLO, "Challenges in the Legal Qualification of Decentralised Autonomous Organisations (DAOs): The Rise of the Crypto-Partnership?" in *Revista de Direito e Tecnologia*, Vol 1, no. 1, pp 33-82, 2019, p. 59.

⁵¹ "Instead of asset ownership, governance token ownership applies to voting rights, as the name suggests", CAMPBELL HARVEY, ASHWIN RAMACHANDRAN AND JOEY SANTORO, *DeFi and the Future of Finance*, 2021, 21.

In this context, a project's solution for decentralisation may include a distribution of governance tokens to early adopters and everyday users (sometimes accomplished through "airdrops"). Consequently, protocol developers would need to implement a system in which all aspects of governance and maintenance would be relinquished to the token holders, who are mostly technologically illiterate and cannot build or maintain code.⁵²

As an alternative to developing a completely decentralised system, developers allow token holders to participate in the management of the protocol by creating a mechanism in which any stakeholder may propose, discuss and vote for any improvement to be deployed by the master key holders. The control is exclusive to the developers since they are responsible for implementing any proposed changes. Consequently, the token holders' proposals, votes, and decisions are non-binding. It is common for the developers to hold the master keys of the system that allow them to shut down or disable the dapp and proceed with upgrades or emergency shutdowns.

For the reasons supra-described, the governance tokens merely represent a non-binding voting right associated with specific procedures or features, where such right cannot be compared to the control rights of the shareholders of legal entities. At the time of this article, DeFi protocols are yet to achieve complete decentralisation, and as such, they only offer a non-custodial financial solution built on top of a decentralised Settlement Layer.

It is our understanding that the term decentralised protocols should only apply for systems built on a decentralised Settlement Layer (architectural decentralisation), with no control over the user's assets (non-custodial) and in which all aspects of the decision making, code maintenance responsibilities, and rights associated with control and ownership of the protocol are held by the token holders (political decentralisation). The code is run automatically and cannot be stopped by an entity.

For the qualification of a protocol as decentralised, other criteria can also be relevant, such as the economic benefits of the developers or other persons responsible for any part of the protocol's operation. If they are entitled to any fees, the protocol cannot be deemed as decentralised. Someone who receives a remuneration acts professionally within a business activity, so someone provides a service.

Also, to be considered decentralised, a protocol cannot have any entity providing an interface to it since it would benefit from that prospection of clients, and it would be responsible for the effects that protocol reflects on the public. Additionally, there are crypto-assets services in MiCA that only entail a simple interaction with the clients, namely the reception and transmission of orders on behalf of third parties, defined in MiCA as the reception from a person of an order to buy or to sell one or more crypto-assets or to subscribe for one or more crypto-assets and the transmission of that order to a third party for execution. Creating an interface

⁵² IGOR MIKHALEV, KAJ BURCHARDI, PAUL-EMMANUEL TASIAUX, KENDRICK LAU AND ERIK LIE, *The Sudden Rise of DeFi: Opportunities and Risks for Financial Services*, 2020.

to a protocol that allows orders to buy or sell crypto-assets entails that the entity operating is a crypto-asset provider and is obliged to be authorised under MiCA.

Hence, a decentralised shall be presumed to exist when there are no fees attributed to one entity or a small group of entities, and there is no interface controlled by one entity or a small group of entities. Following finding out some criteria to help us identify when we might be facing a decentralised protocol and, therefore, activity out of the scope of MiCA, one final question remains to be answered. We still aim to scrutinise how the Law should treat DeFi, which means projects that use a decentralised protocol, as we qualify it here.

5. How to regulate decentralised protocols?

Intermediation is fundamental for finance operation, as commercial banks, investment banks, stockbrokers, mutual funds, insurance companies, and stock exchanges form the fabric of all frameworks of modern financial structures.⁵³ As a functionally interconnected institutional structure is inherent to the financial system, the financial regulatory frameworks are always based on an *ex-ante* intervention (authorisation procedures) and the creation of rules of conduct for intermediaries. However, this idea must be adapted following the advent of decentralised protocols that enable financial services without intermediaries⁵⁴, an ideal that brings benefits and should be promoted by the Law.

It makes no sense to disregard these new applications, despite their still small dimension. Risks (cybersecurity, money laundering, fraud, high leverage, amongst others.) and opportunities (transparency, accessibility, efficiency, celerity, amongst others.) may not be addressed if there is no proper integration into the legal system. Moreover, the lack of legal certainty forces the promoters and participants of these applications to move to non-cooperative jurisdictions, taking advantage of the pseudonymisation new technologies provide. First and foremost, it is necessary to concede that a financial regulatory framework as we have today would not be enforceable to a decentralised protocol. The wide geographical diversity of users and the lack of central entities responsible for service provision in the decentralised financial networks make it very difficult to identify a point of access and supervisory control.

Afterwards, from the moment MiCA enters into application, and if the growth of DeFi is accentuated at that time, an alternative form to enhance the benefits of DeFi, namely, its openness and transparency, and to mitigate its risks must be urgently found, as DeFi “*serves as the ultimate form of 'code is law' with technology replacing state-based legal systems*”.⁵⁵

⁵³ TOM LIN, “Infinite Financial Intermediation” in *Wake Forest Law Review*, Vol. 50, No. 643, Temple University Legal Studies Research Paper No. 2016-06.2015, 2015, p. 1.

⁵⁴ “The traditional model of regulation is coming under strain in the face of increasing globalization and technological change”, PHILIP J. WEISER, “Entrepreneurial Administration” in *Colorado University Legal Studies Research Paper Series, Paper Number 17-1.2017*, 2017, p. 2017.

⁵⁵ DIRK A. ZETZSCHE, DOUGLAS W. ARNER AND ROSS P. BUCKLEY, “Decentralized Finance (DeFi)” in *IIEL Issue Brief 02/2020, European Banking Institute Working Paper Series 59/2020, University of Hong Kong Faculty of Law*

The primary approach that the European institutions have recently chosen for regulation is based on proportionality and risk. Such are the cases of MiCA and the proposal for a Regulation on a European Approach for Artificial Intelligence from the European Commission (announced on 21st April of 2021).⁵⁶ While the former adopts rules that seek to promote innovation while protecting investors and financial stability risks – based on existing financial legislation for financial instruments –, the latter segments artificial intelligence systems into risk categories: (i) an unacceptable risk, (ii) a high risk, and (iii) low or minimal risk.

Although the proportionality and risk-based approaches have unquestionable virtues, given the greater objectivity it offers, we still do not find any solution for automation and decentralisation in these proposals, given that they are also based on the accountability of entities.

Hence, the «true decentralised applications» of DeFi will remain unregulated if the proposals remain so, which can be understood, for the time being, in view of the constant evolution of the ecosystem and the need to understand it better – not only the technical aspects but also the motivations of its developers.

When a solution is vital, due to the dimension reached by DeFi, it will perhaps come primarily from the community. It is the case of the creation of DAOs. This type of entity makes it possible to develop a community and materialise network effects, creating value. The institutionalisation of DAOs could be a solution for the legal framework of decentralised finance through the creation of a new type of entity in the legal system, amenable to rights and obligations, that the decentralised finance ecosystem considers appropriate for its business models, for its scalability (close monitoring by developers is necessary for this) and for users' trust.

Additionally, institutionalisation may solve some problems associated with DAOs, such as the lack of legal certainty, the unlimited liability of their founders, developers, and users, as well as the lack of economic benefits of decentralisation for all these agents, which may encourage them to seek jurisdictions that offer this type of institutionalisation. This is what has been happening with the state of Wyoming, which put forward a legal action for this type of entity in July 2021⁵⁷.

In addition to DAOs, the alternative to our legal frameworks should also be supported by a combination between the Regulatory State and the Entrepreneurial State.⁵⁸ Besides establishing incentives for self-regulatory contributions, public entities determine public debt management policies and others that provide funding for projects that help achieve public

Research Paper No. 2020/010, University of Luxembourg Faculty of Law, Economics & Finance WPS, *Journal of Financial Regulation* – forthcoming, p. 22.

⁵⁶ https://ec.europa.eu/commission/presscorner/detail/en/IP_21_1682. Accessed 5 May 2021.

⁵⁷ That legal act is available at: <https://www.wyoleg.gov/2021/Introduced/SF0038.pdf>.

⁵⁸ "The idea of an entrepreneurial state suggests that one of the core missing links between growth and inequality (or to use the words of the EC 2020 strategy, between 'smart' and 'inclusive' growth) lies in a wider identification and understanding of the agents that contribute to the risk-taking required for that growth to occur", MARIANA MAZZUCATO, *The Entrepreneurial State*, Demos, London, 2011, p. 67.

aims.⁵⁹ All of them act in the market just like any private entity, so it makes sense to have a public entity on these terms for DeFi since there is no possibility of having a public entity with sovereign power (*jure imperii*) within DeFi.

DeFi, in principle, does not pose severe risks to investors' protection as there are no significant issues related to asymmetric information, as all participants have access to the same information, and there is no client-intermediary relationship, so the approach must be different from traditional regulation. Although DeFi can pose severe risks to the financial stability, public intervention cannot be excluded; therefore, the primordial function of that public entity for DeFi must be the prevention of those risks, such as cyber risks, frauds, price manipulation, front end issues, credit risks, exchange risks, and liquidity risks. In summary, DeFi appears to present many similar risks to financial stability as do other financial products and services, and it also poses specific and unique risks and challenges for regulators to consider⁶⁰.

That prevention can be done through an active intervention from that public entity in safe, reputable, compliant, and adequate decentralised protocols to benefit good public management. To determine that a particular protocol is secure, reputable, and adequate, that public entity must have the proper expertise (e.g., cybersecurity expertise) and must only choose to participate and invest in decentralised protocols that comply with anti-money laundering legislation (at least the minimum standards set by the FATF⁶¹), by purchasing governance tokens.

This latter rule would also reward the developers that create a decentralised protocol with those necessary restrictions, apart from the good governance promoted by the referred public entity within those communities, integrating its efforts with private bodies who have expertise in the field and ensuring the quality of publicly disclosed information.

A critical role of this public entity must be to provide advice and disseminate information and the best practices on DeFi, instead of mandating a one-size-fits-all regulatory scheme, that is, horizontal modelling to the detriment of a hierarchal direction.⁶² This role must always regard technological neutrality in the meaning that the advice, information, and best practices should focus on the financial processes that technology enables and only on the risks that technology can pose to those processes.⁶³

With MiCA in application and crypto-assets service providers authorised by competent authorities, more helpful information about the crypto-assets ecosystem will be available for the assessments that this public entity needs to know which decentralised protocols to choose.

⁵⁹ RICHARD B. STEWART, "Administrative Law in the Twenty-First Century" in *N.Y.U.L. Rev.* 78.2003, 2003, p. 450.

⁶⁰ IOSCO, *IOSCO Decentralized Finance Report*, 2022, p. 4.

⁶¹ FATF, *International Standards on Combining Money Laundering and the Financing of Terrorism & Proliferation*, 2022.

⁶² PHILIP J. WEISER, "Entrepreneurial Administration" in *Colorado University Legal Studies Research Paper Series, Paper Number 17-1.2017*, 2017, p. 2022.

⁶³ DIRK A. ZETZSCHE, DOUGLAS W. ARNER, ROSS P. BUCKLEY AND JANOS NATHAN BARBERIS, "Regulating a Revolution from Regulatory Sandboxes to Smart Regulation" in *23 Fordham Journal of Corporate and Financial Law* 31-103 2017, *European Banking Institute Working Paper Series 2017 - No. 11*, *University of Luxembourg Law Working Paper No. 006/2017*, *University of Hong Kong Faculty of Law Research Paper No. 2017/019*, *UNSW Law Research Paper No. 17-71*, *Center for Business and Corporate Law (CBC) Working Paper Series 001/2017*, 2017, pp. 54-55.

This would also be an opportunity to foster innovation in the financial sector for, in a broader view, to promote economic growth, taking into account the principles of public management, mainly related to, among other things, principles of efficiency and rationality in the management of resources, maximum transparency in reporting on their activity, maximisation of citizen participation, equity and long-term consideration in decisions and having reasonable means for service performance.⁶⁴

Notwithstanding, there could be the case of some serious systemic risks to the financial system that affect the financial stability severely can be identified in those decentralised protocols. Therefore, the public entity that we propose must monitor those risks and share them with the financial regulatory authorities, such as prudential supervisors, central banks, and market authorities, for these regulatory authorities to find jointly the best way to tackle those systemic risks, eventually and tentatively with international support. These protocols typically have a global scale and are not restricted to a single country, so an international approach to the systemic risks of DeFi is the optimal approach. In this sense, this topic should be promoted in international *fora*, for instance, in IOSCO (International Organization of Securities Commissions), IMF (International Monetary Fund), and WBG (World Bank Group).

As in the proposal for a Regulation on a European Approach for Artificial Intelligence from the European Commission, in which the operator of a high-risk AI system shall be subject to strict obligations to prevent any danger to fundamental rights, the creators of decentralised protocols that arise high risks to financial stability should also comply with preventive measures and held responsible if those measures fail and cause any damage to the financial system as whole or fundamental rights. One example could be a DEX that does not have any AML/CFT (anti-money laundering/combating the financing of terrorism) and KYC (know your customer) controls. Therefore, these DeFi projects that arise with high risks should be obliged to be registered and authorised by a financial regulator as their developers and token holders to ensure accountability.

In sum, as MiCA and financial regulatory authorities will be the cornerstones of the supervision of crypto-assets issued and traded in protocols with some degree of centralisation, a new public entity must competent to deal with financial activities provided in decentralised protocols, having the following missions:

- Prevent risks to consumers and investors by the good governance promoted in those communities by integrating efforts with private bodies who have expertise in the field and ensuring the quality of publicly disclosed information.
- Prevent risks to financial stability by monitoring decentralised protocols and inform promptly financial regulatory authorities and international organisations of any serious signs of those risks, so these entities can determine if a specific decentralised protocol must be considered a high-risk protocol and, therefore, if its creators must comply with preventive measures to prevent any danger to financial stability and fundamental rights.

⁶⁴ J. PATRICK DOBEL, "Public Management as Ethics" in *The Oxford Handbook of Public Management*, Oxford University Press, 2006, pp. 161-181.

- Foster responsible innovation and economic growth by investing in safe, reputable, compliant, and adequate decentralised protocols, considering public management principles.
- Provide advice and disseminate information and the best practices on DeFi.

In conclusion, MiCA is an excellent first step to addressing many issues of the crypto-assets market, but DeFi is growing fast, and it will require a quick and effective response from the European institutions due to the demanding legal and regulatory challenges DeFi poses. It will also be paramount to have a harmonised approach to avoid national initiatives that fragment the DeFi market, which only makes sense with scale and an international approach. For these reasons, we present our contribution to clarify better the interaction between MiCA and DeFi and a possible way forward in regulatory vacuum areas.

MiCA and new legislation will undoubtedly address DeFi. The Law always tries to follow innovation and will find the right balance between centralisation and decentralisation. Until then, we consider that it is best to have an open mind *vis-à-vis* the institutionalisation of DAOs and the role the State may have regarding decentralised solutions that circumvent legal requirements, due to the risks that they pose for our society but also due to the aspirations we have for a fairer, more accessible and less unequal society.

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