FESE position paper on Decentralised Finance (De-Fi)

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Crypto-asset markets are an innovative and fast-developing cornerstone of digital finance that can both present benefits as well as pose risks to its users. Broadly, crypto-asset markets can be divided into centralised finance (Ce-Fi) and decentralised finance (De-Fi) – besides traditional finance (Trad-Fi). Ce-Fi is coordinated through neo-cryptocurrency trading venues – like Binance and Coinbase – which are acting as an intermediary between buyers and sellers. Although Ce-Fi transactions are also settled on distributed and decentralised ledgers, De-Fi is a decentralised peer-to-peer system where not only settlement but also trading is operated through an automated distributed ledger technology (DLT).

De-Fi aims to replicate the functions of the traditional financial system through a decentralised model of governance, providing functions such as decentralised exchange, lending, borrowing, and investing.[1] The role of intermediaries is replaced by self-executing code, so-called smart contracts, which automatically determine the terms and conditions of the transactions and execute them once the conditions are met. The terms and conditions are defined a priori in De-Fi protocols, which govern various activities and provisions to be included in smart contracts. These protocols also enable the operation of decentralised applications (DApps) which facilitate the intermediation and interactions between users. De-Fi is a competitive system since validators, or miners, compete for settling transactions.[2]

De-Fi can present many innovative solutions to long-standing issues of the financial system and has the potential to foster financial inclusion through its permissionless nature. This allows anyone holding crypto assets to take part in the trading system, based on a DLT architecture which can also increase efficiency in financial and capital markets through i.e., cost savings, speeding up of transactions, high transparency, and immutable auditability. In addition, it represents an infinite playground, fostering innovation and the future viability of the financial services industry. For example, novel clearing arrangements emerge, particularly in the retail crypto asset markets in the US, which can introduce new efficiencies and bring innovation to traditional financial products. Another example is the one related to decentralized exchanges (DEXes), which have been designed to address issues such as security vulnerabilities, central control of assets, and custodian challenges in centralised exchanges. Efforts were also focused to decentralise certain aspects of continuous limit order books through DEXes[3]. Additionally, the use of DEXes in the context of DeFi has been proposed as a potential solution to liquidity supply problems, utilising Automated Market Makers (AMMs) and liquidity providers (LPs)[4]. DEXes represent a new market design that could potentially be applied to traditional financial securities and address some

[1] Financial Stability Board (FSB), February 2023, *The Financial Stability Risks of Decentralised Finance*, FSB Report, available here.

[2] Bank for International Settlements (BIS), January 2023, *The Technology of Decentralized Finance (DeFI)*, BIS Working Papers, available here.

[3] Houman Falakshahi, Matthieu Mariapragassam and Rachid Ajaja, November 2021, 'Automated Market Making with Synchronized Liquidity Pools', available here.

[4] Harvey CR, Ramachandran A and Santoro J, April 2021, *DeFi and the Future of Finance*, available here, p. 104.

inefficiencies of traditional markets. This would be of particular significance from the perspective of transaction-making and liquidity provision, where the AMM mechanism appears to be a particularly promising solution. Another notable characteristic of DEXes is the ability for anyone to offer liquidity to the exchange through LPs in a passive fashion, regardless of their level of sophistication.[5]

On the other side, the concept of De-Fi is still new, and its technological complexity requires further regulatory attention. In particular regarding retail investors, who often lack proper investor protection and financial and technical expertise.[6] Due to its decentralised nature, De-Fi lacks formal legal accountability as it is not clear which legislation is applied to it. The lack of accountability or "lack of a hook" to apply existing legislation, together with its open unverified access to trading, could make De-Fi prone to fraudulent activities and pose new challenges (e.g. how to stop a "smart contract" once in place, if unforeseen "events" happen, how to control collateral or other information coming from the traditional side).[7] Therefore, the De-Fi space needs a proper regulatory framework that ensures investor protection and accountability.

Below is an outline of several policy considerations that we believe are crucial in the regulation of De-Fi and the creation of an efficient international policy framework.

1. Regulation of Decentralised Exchanges (DEXs) and its challenges

De-Fi provides its financial services through protocols that define the terms and conditions of the financial service, later included and executed through automated smart contracts. It is often difficult to delineate various protocols, but broadly they can be divided into three main categories: decentralised exchanges (DEXs), lending protocols, and derivatives protocols.[8]

DEXs are decentralised exchanges that aim to replicate the functions of traditional exchanges. However, while a centralised crypto trading platform is run by an intermediary that monitors the transactions and stores users' private keys, DEX gives the possibility for users to trade using their own self-custodian wallets and keep control of their assets. They operate in a cross-border scenario and are not bound by geographical borders. Various users can access DEXs, including retail clients. For example, Uniswap apps connect clients to the blockchain, allowing them to participate in various kinds of financial activities (e.g. mining, trading, custody, and borrowing, among others).[9] Access to trading is open to any user via the app with the possibility to participate directly in the transaction validation process for users having programming knowledge.

The functioning of the De-Fi system sparks numerous questions as to formal legal accountability in cases of fraud and mismanagement of the system. Given that transactions take place in a cross-border scenario, it is not clear which jurisdiction would apply in the cases of violations. Considering that anyone can participate in the trading in an anonymised manner, it is difficult to establish which party to hold to account in cases of fraud. Smart

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[5] Barbon A and Ranaldo A, December 2021, 'On The Quality Of Cryptocurrency Markets: Centralized Versus Decentralized Exchanges', University of St. Gallen, School of Finance Research Paper Forthcoming, Swiss Finance Research Paper, available here.

[6] International Organization of Securities Commissions (IOSCO), March 2023, *Retail Market Conduct Task Force Final Report,* IOSCO Report, available here.

[7] Demertzis M., Martins C., April 2023, *Decentralised Finance: good technology, bad finance,* Bruegel Policy Brief, available here.

[8] Bank for International Settlements (BIS), January 2023, *The Technology of Decentralized Finance (DeFI),* BIS Working Papers, available here.

[9] "Uniswap ecosystem", available here.

contracts are also often coded by numerous programmers or even an "open source" that potentially allows anyone to change its content. Despite identification issues, there is a lack of legal recourse due to the automaticity of transactions as it is impossible to stop the process once it is initiated.[10] Accordingly, De-Fi functioning raises questions of who is liable in cases of mismanagement of the system and how to ensure there is a legal recourse to bring the responsible parties to account. As a potential solution to increase transparency and compliance, there are initiatives to develop "permissioned" De-Fi models where access to De-Fi platforms is only granted to identified entities or individuals. In the "permissioned" De-Fi, a centralised entity whitelists participants for the De-Fi protocol, while still offering decentralised benefits outside of this function. It does not necessarily imply the use of private DLTs since "permissioning" can happen on the smart contract level on a public blockchain. To support capital markets activities, De-Fi should implement requirements for smart contracts to be "pausable" in case issues arise. It is also crucial for smart contracts to have identified "owner(s)" or "operator(s)" who will be responsible for their management.

There are significant risks of money laundering and terrorist financing as many De-Fi products and services do not have requirements to abide by AML/CFT rules.[11] Additionally, there is always a risk that a traded coin is "tainted" as it could come from a wallet that is connected to illicit activities. In current market practices, firms decide based on their own assessment how much risk they are willing to take, as any coin could become "tainted". Therefore, companies need to develop risk assessment methods when deciding on how to proceed with such "tainted" coins. Additionally, the whole industry would benefit from industry-wide standards and guidance.

Regulation of DEXs will prove to be a difficult task for regulators and policymakers: whether to regulate at the protocol level or the app level and who in reality owns and is responsible for the protocols, smart contracts, and the apps. One of the possible regulatory approaches could be to regulate the issuance and management of smart contracts. However, it would be a challenging task as supervisors will need to control the technology used ("smart contract audits") and the coding skills of programmers. Moreover, it could potentially undermine the technology neutrality principle by prescribing technology-specific parameters. In FESE's view, it is crucial to keep the balance between innovation and safety for financial markets. From an operational perspective, a potential approach should be more detailed but avoid recommending technology-specific parameters. For example, including the disclosure of material information similar to those applicable to TradFi about products, services, and underlying entities in an understandable way.[12] Additionally, the regulatory approach should focus more on the education of users of potential risks stemming from De-Fi rather than restriction of their participation in DEXs trading.

FESE believes that the role of Ce-Fi institutions in the assistance and supervision of the De-Fi systems needs to be realised and enhanced. Regulations like MiCA are needed to establish trusted market players and safeguard the market. Here, it would be helpful to develop common standards for how established regulated players may enter into the public De-Fi space to benefit from technological innovations.

Finally, there is a middle ground between traditional trading and the use of DEXes. In situations where fully-fledged decentralised exchanges are not suitable, there is still a possibility to introduce certain DEX-specific mechanisms to traditional exchanges. They

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[10] Demertzis M., Martins C., April 2023, *Decentralised Finance: good technology, bad finance*, Bruegel Policy Brief, available here.

[11] International Organization of Securities Commissions (IOSCO), March 2022, *IOSCO Decentralized Finance Report*, IOSCO Report, available here.

[12] International Organization of Securities Commissions (IOSCO), March 2022, *IOSCO Decentralized Finance Report*, IOSCO Report, available here.

would benefit from new blockchain-based efficiencies while maintaining regulatory certainty. An example of such solutions could be the use of DEX-specific Automated Market Markers and liquidity pools on a traditional stock exchange to supplement the CLOB model.

2. Ce-Fi institutions as essential regulated gatekeepers of De-Fi

De-Fi applications aim to be an alternative to the current centralised financial industry. However, the economy currently heavily relies on traditional financial institutions and services (figures from the FSB and BIS indicate that the interconnectedness from De-Fi to Trad-Fi is still very small). De-Fi protocols are rather complementary concept that requires a high level of technical understanding and capabilities. Due to their decentralised nature and complexity, the regulation of De-Fi itself is a challenging task that requires careful consideration. FESE supports that regulators take the time to understand the developments and assess at a later stage, and if so, how to regulate De-Fi. Ce-Fi institutions, however, should be allowed to enable easy, reliable, and efficient access (on and off ramping) to De-Fi applications. They would act as trustworthy intermediaries and build a regulated bridge between Ce-Fi and De-Fi. It is important not to "overburden" the requirements for regulated players to enter and test the new space by trying to adapt to the same safeguards known from traditional asset classes. Meanwhile, one could try to facilitate the interactions between regulated players and DEXs. One way to do this could be to allow regulated Financial Market Infrastructures (FMIs – such as regulated markets, multilateral trading facilities, CCPs, CSDs) to interact with DEXs, after validating the "minimum" technical standards of a smart contract in question and involving independent technical auditors. Additionally, since Ce-Fi institutions are able to comply with regulatory standards by fulfilling AML criteria, CFT, and KYC, and ensuring investor protection, they can provide users with security and reliability in using De-Fi applications.

2.1. De-Fi accountability for protocol-related inaccuracies and errors

Ce-Fi institutions using De-Fi protocols should comply with and safeguard the regulatory framework, once developed, around De-Fi. De-Fi use should not be prohibited for regulated players (e.g., forcing them to only use "private permissioned" systems), but rather the liability of Ce-Fi players should be limited to products and services they offer around accessing the De-Fi landscape. Nevertheless, the implementation of De-Fi products and services itself (e.g., decentralized lending protocols and decentralized exchanges) is not in the area of influence of Ce-Fi institutions. Therefore, their accountability must be limited to their offering and must not include protocol-related inaccuracies, omissions, or errors.

2.2. Fostering network integrity

As mentioned earlier, regulated Ce-Fi institutions could provide an array of safeguards and provide reliability to the world of De-Fi. In this regard, activities of Ce-Fi institutions in enhancing the decentralized networks' integrity, e.g., by contributing to the consensus mechanisms or by running nodes for the networks, should be encouraged. It is worth mentioning that consensus mechanisms are not De-Fi products or services and, thus, are free from some of the risks of other financial activities (e.g., counterparty risks). Furthermore, protocol mechanisms are the necessary foundation for blockchains' integrity on which De-Fi products and services are built. Hence, the industry should foster this nascent array of services, policymakers should regulate them, and Ce-Fi institutions should contribute to upholding their integrity.

2.3. Crypto-assets industry vs. poor risk-management

FESE believes that it is crucial to differentiate between crypto assets, as an asset class, from poorly-risk-managed fraudulent crypto activities (as recently seen in off-shore unregulated jurisdictions). For example, in the case of the FTX bankruptcy, there are strong suspicions that investors' assets were used by the exchange's proprietary trading arm. These scandals

should not discredit the crypto-assets industry as a financial concept but rather motivate policymakers and regulators to allow regulated actors to play a more prominent role in the crypto-assets space. It is crucial to differentiate between unregulated Ce-Fi and De-Fi.

3. A De-Fi international regulatory framework

To provide legal clarity on the general principles upon which the De-Fi system should function, there is a need for a De-Fi international regulatory framework or at least some common standards. Such De-Fi financial regulation will require an understanding of the totality of the De-Fi ecosystem and its interrelation with Ce-Fi, TradFi, and other actors. Due to its technological complexity and novel features, De-Fi might present challenges to traditional financial regulation (ex. through the manipulation of the consensus mechanism).[13] However, De-Fi is not free from traditional finance risks either, such as counterparty risks, liquidity risks, and fraud.

Although De-Fi is predominantly a self-referential system and its interrelation with the traditional financial system remains thin, it still can pose risks to financial stability. In the future, there is a possibility of the De-Fi system becoming more interconnected with TradFi through the development of more cross-market products that can be accessed both in De-Fi and Trad-Fi.[14] As a result, greater price fluctuations in crypto asset markets might have a greater impact on the traditional financial system. Therefore, there is a need for an international cross-border framework to address the De-Fi risks and their potential impact on financial stability. For this reason, FESE welcomes the Financial Stability Board (FSB) initiative to create an international framework for crypto-asset regulation.[15] As Commissioner McGuinness pointed out in her recent speech during the plenary debate on the MiCA Regulation, crypto-assets markets are international and, thus, require an international response.[16] Given the decentralised nature of De-Fi and its capacity to traverse national borders, it is crucial to have a high-level framework that will address its risks and, at the same time, opens up its innovation and technological benefits to a greater audience.

FESE believes that the international De-Fi regulatory framework must maintain a technology-neutral approach. Within this approach, existing principles of "same business, same risks, same rules" should apply where possible but, at the same time, should consider De-Fi specifics as well. In doing so, the technology-neutral approach, existing principles and De-FI specifics should positively impact and uphold the values of transparency, fairness, stability, investor protection, and market integrity. In addition, regulators should ensure that the De-Fi framework is aligned with existing regulations (e.g. the MiCA regulation). Duplicated regulations should be avoided, and there should be a tailor-made regulation for De-Fi that is adapted to its specific characteristics and risks. As mentioned above, it is also crucial to enhance the role of Ce-Fi institutions as essential regulated gatekeepers of De-Fi applications. They can assist and supervise De-Fi markets for several forms of "digital assets" in a more secure way, fostering trust in public capital markets in a new digital environment.

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[13] International Organization of Securities Commissions (IOSCO), March 2022, *IOSCO Decentralized Finance Report*, IOSCO Report, available here.

[14] Demertzis M., Martins C., April 2023, *Decentralised Finance: good technology, bad finance*, Bruegel Policy Brief, available here.

[15] Financial Stability Board, "FSB proposes framework for the international regulation of crypto-asset activities", available here.

[16] European Commission, April 2023, *Opening remarks by Commissioner McGuinness at the European Parliament plenary joint debate on crypto-assets,* Press Release, available here.

4. Considerations on energy consumption and sustainability

De-Fi operations can be extremely energy intensive. The proof-of-work (PoW) consensus mechanism has a high level of energy consumption, as multiple validators are working on solving one mathematical problem that leads to the validation of the transaction. Eventually, only one validator among a high number of other validators will be compensated for its "work". PoW, however, is not the only consensus mechanism available today. For example, the proof-of-stake (PoS) consensus mechanism – which is often the underlying consensus mechanism in De-Fi services - is more energy efficient as only a few selected validators can verify the transaction based on the weight of their staked coins. Nonetheless, the shift from PoW to PoS consensus mechanism may lead to concentration risks because bigger players with higher stakes tend to get even bigger as they have higher chances to perform the validation and receive compensation.[17] Although many protocols are moving to more energy-efficient consensus mechanisms such as PoS and Directed Acyclic Graph (DAG), some protocols such as Bitcoin and Dogecoin are still using PoW. Among the most famous, Ethereum switched on its proof-of-stake mechanism in September 2022 because it is more secure, less energy-intensive, and better for implementing new scaling solutions compared to the previous proof-of-work architecture.

FESE believes that regulation should not mandate the use of a specific technology. When analysing the sustainability aspects of De-Fi, it is important to have a broader picture of how energy was produced in the first place (fossil vs. renewable), as energy consumption is not equivalent to carbon emissions.[18] In this respect, it is crucial to consider in an objective and balanced assessment the sustainability aspects of certain De-Fi applications (such as PoW) – which is already foreseen in the Markets in Crypto-Assets Regulation (MiCA) and to be further discussed in the context of EU taxonomy.

5. Conclusions

In general, **FESE recommends a "same business, same risks, same rules" principle** when it comes to a comparison between De-Fi services and services offered in traditional finance. However, the blockchain-technology in some cases can pose higher risks, in other instances, it can lower risks significantly. Hence, it makes sense to implement a tailor-made regulation that addresses those different risk levels.

We consider that FMIs could fulfil important safeguard functions, as not every task can be "outsourced" to a specific technology/tech provider. Many so-called "decentralised protocols" are not actually decentralised since there are centralised actors behind them.

Ce-Fi institutions should be allowed to enable easy, reliable, and efficient access to De-Fi applications. In the same fashion, FMIs should be able to interact in a regulated way with DEXs.

FESE further believes that Ce-Fi institutions can play a crucial role in the supervision of De-Fi, and they can act as its gatekeepers. To provide legal clarity on the international stage, FESE welcomes the Financial Stability Board (FSB) initiative to create an international framework for crypto-asset regulation.

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[17] Demertzis M., Martins C., April 2023, *Decentralised Finance: good technology, bad finance,* Bruegel Policy Brief, available here; The Organisation for Economic Cooperation and Development (OECD), *Why Decentralised Finance (DeFI) Matters and the Policy Implications,* OECD Report (2022), available here.

[18] Michel Khazzaka, April 2022, *Bitcoin: Cryptopayments Energy Efficiency,* available here.