SMU FinTech Publication

Research – Evolution of Alternative Financing

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Centralisation VS Decentralisation

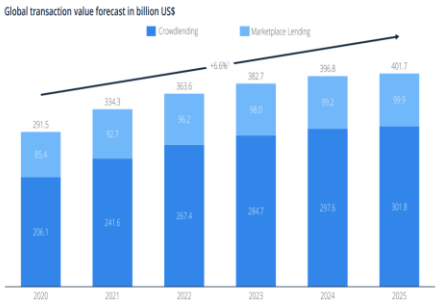
What is the future ahead?

Centralised Finance (CeFi)

Centralised Finance (CeFi) is a form of finance that involves a central intermediary that manages the financial activities of its users. In the past, banks acted as this intermediary to perform all of the financial activities of customers. They provide a secure place for customers to deposit their wealth and offer loans. However, after the 2008 financial crisis, global regulation on banks has become stricter, mainly the access to loans. This puts potential borrowers in a tough predicament, especially start-ups and SMEs that require the capital to tide through its initial phase and carry out further operations to boost growth.

Bank loans to SMEs in Asia only consist of 11.6% of its GDP and 18.7% of total bank lending in the region, with a downward trend of the latter since the 2008/09 global financial crisis.[1] This implies that further support for bank loans to SME finance is needed due to the presence of a funding gap where there is disparity between the funds required to carry out its operations and the funds that are readily accessible.

This leads to the rise of P2P lending platforms where borrowers have a lower entry of obtaining a loan from lenders who are seeking a return of investment upon their loan.

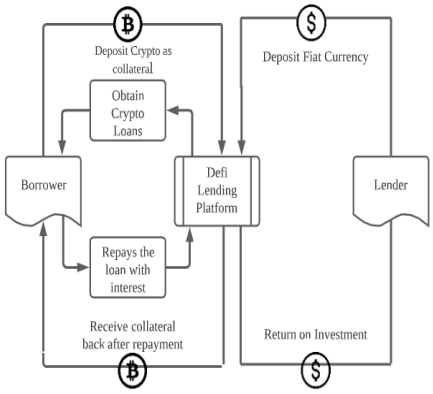


Source: *Statista, 2021*

The global transaction value for the P2P lending market is projected to increase from 291.5 billion USD in 2020 to about 401.7 billion USD IN 2025 (6.6% CAGR)[2]. This increasing trend signals the rapid growth of CeFi lending which seeks to displace incumbent banks and fill the gaps in an underserved credit market.

Rise of Decentralised Finance (DeFi)

Decentralised Finance (DeFi) is a form of finance that eliminates the presence of a central intermediary to control the user's activities. By removing the central intermediary, DeFi platforms are able to be more cost-efficient, more transparent, more secure and more accessible. They rely on technology such as smart contracts and blockchain. Smart contracts are the cornerstone for decentralized finance as they are self-executing and are independent of intermediary governance. Majority of these DeFi applications are established on Ethereum blockchain as Ethereum is the first to introduce the DeFi concept[3].



Source: *LeewayHertz. (n.d.)*[4]

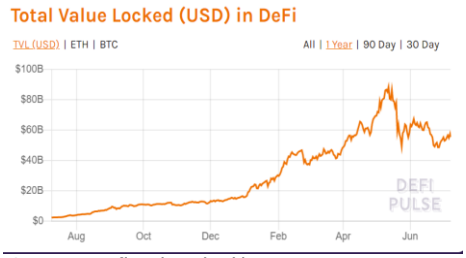
Alternative lending in the DeFi space allows lenders to supply their crypto tokens to borrowers in exchange for interest on their tokens. This process acts in the same way as CEFI lending platforms in which lenders provide a fiat currency in exchange for interest on their supplied loans. Borrowers who are seeking for a loan have to supply their crypto tokens as a collateral that is of a higher value than the loan itself. This reduces the risk of existing lenders to potential defaulters as the designated smart contract will enforce liquidation when such risk occurs.

Evaluation of DeFi lending

Source: *World Bank, 2017*

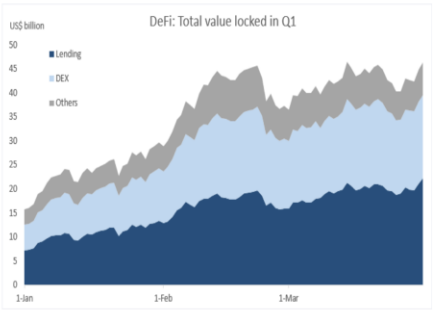
According to the World Bank, institutional financing is inaccessible to about 1.7 billion people globally[5]. Majority of these unbanked individuals are from developing countries such as China and India. However, with the rise of DeFi lending, individuals can have the access to loans and other financial services as long as they have an internet connection. This is one of the advantages of DeFi lending in which it is permissionless. It allows an open and permissionless access to DeFi services regardless of user's income status, race and geographical boundaries. With the advancement of technology, access to technology in developing countries is gradually increasing.

Internet users are currently growing at an annual rate of 7.6 percent, equating to an average of more than 900,000 new users daily[6]. As such there is a huge potential market for DeFi lending as it seeks to make alternative financing accessible to unbanked individuals by tapping on the increasing internet usage in developing countries. This seeks to replace the incumbent traditional banks as the future of borrowing is cryptocurrency itself, the currency owned by its people.



Source: *Defi Pulse. (n.d.)*

Decentralized finance is still in the beginning stages of its evolution. The total value locked in DeFi contracts has increased dramatically from approximately $2 billion to over $50 billion in just a year from July 2020 to July 2021[7].The total value locked is calculated by multiplying the number of tokens in the protocol and their value in USD.



Source: *Lim, M. (2021, July 4)*

In the first quarter of 2021, the total value locked tripled from $15 billion to $46 billion. Majority of this remarkable growth is attributed to lending and decentralized exchanges securing market share up to 85% of the whole DeFi sector. The total borrowing volume of lending protocols nearly quadrupled from $3.6 billion at the beginning of Q1 to $13.14 billion by its end[8]. This highlights the rising growth of DeFi lending in the alternative lending market.

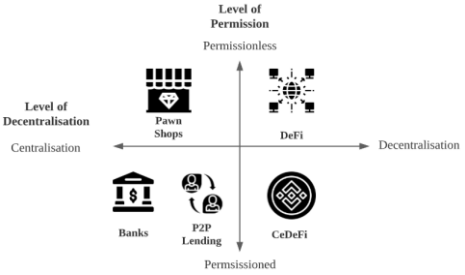
However, despite the rapid growth of DeFi lending, it can be difficult for beginners to understand the process of DeFi lending. As such, DeFi lending can potentially serve as a double-edged sword. Unbanked adults in developing countries are more likely to have lower educational attainment whereby approximately half of the adults have a primary education or less[9]. Such barriers could potentially prevent these individuals from fully optimizing the advantages of DeFi lending and might even lead

to increased vulnerability. Furthermore, there is also a lack of laws in developing countries on DeFi regulation. This poses a great risk to users as there is no law to hold anyone accountable should there be external breaches in the DeFi exchange or massive loss of investment due to speculation. As such, slower adoption of DeFi lending might take place in developing countries. This is similar to when credit cards were first introduced in China, distrust and uncertainty arose as the majority of its people objected to the usage of it as they could not "see" the transfer of money upon their transaction[3].

Introduction to CeDeFi

CeDeFi is a term coined by the CEO of Binance that basically describes a mixed solution between centralized and decentralized finance. It aims to be a complement of DeFi rather than a competitor. CeDeFi seeks to bridge the gap between DeFi and CeFi especially in areas of regulation by facilitating institutions and individuals to partake in DeFi in a complied manner.

Differences in CeDeFi and DeFi

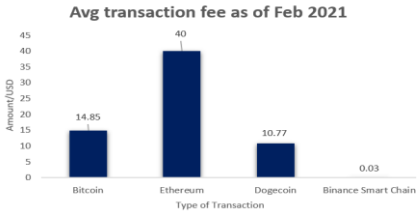


The primary difference between CeDeFi and DeFi is the level of permission. DeFi allows anyone who has an internet access and a crypto wallet to perform transactions anonymously whereas CeDefi requires verification of user's identity. The secondary difference is their degree of decentralisation. Even though both are decentralised, DeFi is undoubtedly more decentralised than CeDeFi. DeFi requires users to solely trust its blockchain-based protocol by directly interacting with the smart contract while CeDeFi requires users to trust the centralised intermediary to carry out DeFi applications by interacting with the smart contracts indirectly.

Is CeDeFi better than DeFi?

CeDeFi seeks to bring out the best of CeFi and DeFi by combining both aspects of it. CeDeFi is able to overcome high barriers of entry for new users by providing a new getaway to explore the various DeFi products such as lending, yield farming and automated money maker (AMM). CeDeFi also offers services such as Know Your Customer (KYC) and Anti-Money Laundering (AML) to optimize and safeguard user's experience by recommending selected DeFi products to match their financial goals. This leads to greater accessibility and compatibility to users who are new to DeFi and are more comfortable interacting with central intermediaries.

CeDeFi provides lower transaction costs and faster transaction speeds than what DeFi platforms have to offer. The transaction fees tend to be relatively high and volatile especially in the DeFi market leader Ethereum. The vast adoption of DeFi protocols and Dapps on Ethereum has weighed down the Ethereum network such that cheap fees are no longer sustainable. The average transaction fee on Ethereum has jumped from below $5 in 2020 to about $40 in February 2021[11]. Such fees on DeFi platforms are simply exorbitant especially for beginners who want to experience DeFi products.



Source: *Statista. (2021b, April 14)*[12]

CeDeFi platforms such as Binance Smart Chain (BSC) offer almost negligible fees as compared to DeFI products. This highlights the vast difference between transaction fees of DeFi and CeDeFi which could potentially be the main reason for the shift in users' interest from a DeFi platform to a CeDeFi platform.

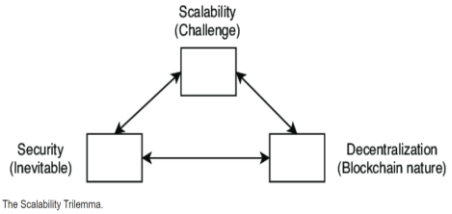
Other than lower transaction fees, CeDeFi also offers faster transaction speeds as compared to DeFi. DeFi products such as Bitcoin and Ethereum have a transaction per second (TPS) of 4 and 20 respectively[13]. CeDefi platforms such as BSC compete with DeFi by placing TPS to around 57.8[14]. Faster transaction speeds allow users to feel more secure and helps minimize money hanging problems during transactions. This is crucial as if crypto were to be normalized as a payment method similar to traditional centralised payments, the transaction speed of it has to match. On average, Visa has about 1700 transactions per second[15]. This shows that despite faster transaction speeds in CeDeFi, the whole crypto ecosystem still has plenty of room for improvements.

Binance smart chain

Binance Smart Chain (BSC) is an example of a CeDeFi platform as it is a blockchain network that facilitates smart contract-based applications (DeFi) that runs on a centralized platform called Binance (CeFi). It is created to run parallel with Binance's native Binance Chain (BC), which allows users to benefit from the high transaction capacity of BC and the smart contract functionality of BSC. BSC allows developers to build decentralized applications (DApps) by creating an ecosystem that supports and collaborates with many DeFi projects. Ethereum Virtual Machine (EVM) is also implemented to allow BSC to run Ethereum-based applications, this means that developers will be able to import their projects from Ethereum to BSC that is easier and cheaper.

Additionally, BSC provides services for investors by managing their digital assets. BSC offers staking capabilities that allow BNB token holders to earn a yield on the Binance coin. BSC also provides a variety of Dapps options for users to choose from. Applications such as PancakeSwap allow users to exchange trustless assets similar to Uniswap, participate in yield farming, and vote on proposals. DApps such as Venus and Cream.Finance offer lending and borrowing services. Bridges such as Binance Bridge allow seamless peg tokens to the BSC ecosystem and use them in smart-contract applications[16].

Trade Offs- Scalability/Blockchain Trilemma

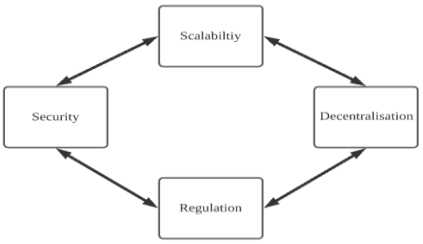


Source: Hafid, A., Hafid, A. S., & Samih, M. (2020, July)

The blockchain trilemma showcases the tradeoffs between three properties of the blockchain- Scalability, Security and Decentralisation. It was first described by Ethereum founder, Vitalik Buterin where the scalability trilemma states that a blockchain can only achieve two of the either[17]. This trilemma remains a huge barrier for blockchain as the ultimate goal is to achieve all three properties at the same time but unfortunately such tradeoffs are unavoidable. DeFi products such as Bitcoin and Ethereum are able to achieve both security and decentralisation but they face scalability challenges. This is largely attributed to slow transaction speed due to their proof of work (PoW) consensus model. In order to overcome this trilemma, solutions such as the Layer-1(Sharding) and Layer-2(Lighting Network) have been implemented to improve the transaction speed of DeFi products in order to overcome scalability issues. DeFi products such as Ethereum have also moved ahead towards Ethereum 2.0 which favors the Proof-of-Stake (PoS) consensus model, this helps tackle energy consumption issues and the slow transaction speeds PoW has to offer.

However, the exponential growth of DeFi has alerted regulators around the world and some of them have already taken action by adopting a framework to regulate DeFi. Larger entities such as the Financial Action Task Force (FATF) encourage countries to enforce restrictions to control money laundering activities and terrorist financing arising from DeFi. The European Commision also implemented Markets in Crypto-assets (MCiA) to regulate crypto assets issuers and crypto assets service providers[18]. The need for regulation arises due to the potential risks DeFi carries. External breaches such as hacks and exploits can occur. A cryptocurrency platform known as Kucoin suffered a cyber breach and the hackers stole US$200 million by using decentralised exchanges (DEX) to cover up their tracks[18]. Such risk emphasizes the need for more government regulation in the DeFi space.

With the new update on FATF updated draft guidance for Virtual Asset Service Providers (VASP), Decentralised exchanges (DEX) are now considered VASP. This means that they will be regulated the same way as centralised financial institutions on Anti-Money Laundering (AML), Counter Terrorist Financing (CTF) and Know Your Customer (KYC)[19].The sanctioning of crypto exchange BitMEX by the US Commodities and Futures Trading Commission (CFTC) has sent a clear signal that regulators are not going to tolerate decentralised exchanges and other DeFi platforms to operate without KYC[20]. Such regulations are imminent in the future for DeFi. As such the blockchain trilemma might translate into blockchain tetralemma where DeFi has to operate under strict government regulations.



Blockchain Tetralemma

Future of CeDeFi -Is CeDeFi the utopia for alternative financing?

CeDeFi could potentially be the solution to the blockchain tetralemma.

Regulation

CeDeFi is able to solve the issue of rising government regulation as centralized finance institutions are largely regulated as compared to DeFi. This allows better governance of" DeFi" as there is a central entity to regulate. Regulations such as monitoring and approving of the operations on the CeDeFi platform can help to mitigate the risk of DeFi.

Scalability

CeDeFi is also able to overcome scalability issues as CedeFi platforms such as Binance Smart Chain adopt a Proof of Staked Authority (PoSA) consensus model which is able to achieve 3s block time compared to 13s of Ethereum. This leads to faster transaction speed, eliminating the scalability issues of high gas fees and slow transaction speeds.

Security

The security teams and the project leaders on binance smart chain itself are incentivised to solve any bug or security issues to make BSC a better ecosystem. Binance rolled out their Most Valuable Builder (MVB) Programme in February 2021[21]. Projects in this program compete with one another for different prices. This encourages project leaders to build projects that are safe and of high quality. Binance also provides audit services for each project from a leading blockchain audit and security firm - Certik[21]. This highlights the multiple layers of security protocols put in place to build a safer CeDeFi ecosystem.

Decentralisation

The achievement of the 3 properties of the tetralemma comes at a fraction of a cost of decentralisation. Being a centralized institution that is in charge of Defi projects eliminates the idea of a fully decentralized system that DeFi provides. This aspect of it removes the benefit of total decentralisation - a permissionless system. Despite being controlled by a centralized institution, CeDeFi is still able to provide decentralised services to users but at a lower degree of decentralisation as compared to DeFi

Conclusion

The evolution of CeDeFi has been one of the rising trends in the financial landscape. It is able to transform the way users look at digital currency by combining both aspects of CeFi and DeFi into one. However, it is too early to guarantee the success of CeDeFi but there has been strong expectations of mass adoption of CeDeFi. Ultimately, it is the evolution of trust. CeDeFi is able to provide services suitable for beginners who are interested in blockchain financing away from traditional institutions. Once the users are familiar with the various DeFi tools on CeDeFi platforms, they will likely shift their trust to DeFi[2222]. This allows both ecosystems to co-exist in the ever-changing financial landscape.

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