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DECENTRALIZED FINANCE AND NEW LENDING PROTOCOLS

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ABSTRACT

Purpose- Satoshi Nakamoto initially proposed the most well-known blockchain technology application after financial crisis in 2008 as the technology underlying Bitcoin, a virtual currency exchanged within a peer-to-peer network. To fill the trust gap between parties willing to exchange value, new applications have been developed through the blockchain in many different commercial industries, following in the footsteps of Bitcoin. Blockchain has countless potential uses and benefits, but like other innovations such as the World Wide Web, its adoption is a gradual and hard process that is always evolving. In this regard, the academic literature focuses mostly on the technical aspects of the it while the study of its business-related challenges is still in its infancy. By providing a framework that outlines the new lending procedures and its economic potential, study aims to participate the academic literature on finance applications of blockchain in banking sector.

Methodology- To obtain the results of the returns of S&P 500 and DeFi assets, the methodology involves an analysis of decentralized finance assets through a framework that explains the outlining the lending protocols in decentralized finance and a comparison of centralized finance vs. decentralized finance.

Findings- Blockchain technology and smart contracts are two components of the decentralized finance (DeFi) movement, which aims to establish a decentralized, open, and accessible financial system. Unlike traditional financial systems, which are centralized, opaque, and often difficult to access, DeFi is open to anyone with an internet connection. One of the key areas of DeFi is lending and borrowing, where users can exchange cryptocurrencies with fixed or variable interest rates without the need for a central authority or intermediary. Additionally, DeFi eliminates the need for credit history checks and third-party verification because loans are granted based on excessive collateral or other methods of ensuring repayment. The use of blockchain technology also increases the efficiency of transactions and reduces transaction costs.

Conclusion- This study discusses the concept of decentralized finance (DeFi), which is an innovative way of delivering financial services through blockchain technology. It allows for peer-to-peer transactions to be conducted remotely and securely and is considered a paradigm shift in the financial industry. Currently, DeFi mostly replicates traditional financial services, but as it continues to expand, new and innovative applications are emerging. The growth and evolution of DeFi is dependent on factors such as the characteristics of blockchain technology, legal standards, and cultural differences between traditional and decentralized finance. In the future, it is expected that DeFi will continue to grow and potentially disrupt traditional financial institutions.

Keywords: Banking, decentralized finance, blockchain, lending protocols, peer-to-peer lending
JEL-Codes: G23, G14, O31

1. INTRODUCTION

Another blockchain-based financial infrastructure known as decentralized finance (DeFi) is quickly expanding. It alludes to a set of protocols that are open, permissionless, and very interoperable that are constructed on open smart contract infrastructures like the "Ethereum blockchain."(Buterin, 2014). Unlike traditional finance, DeFi does not rely on middlemen or traditional institutions, but instead is constructed on open protocols and decentralized applications (DApps). Code is used to maintain contracts, transactions are carried out firmly and autonomously, and current status changes are evidenced on a public blockchain. Smart contracts, the building blocks of all DeFi protocols and applications, are small algorithms that are performed simultaneously by many validators and stored on a blockchain. These contracts provide high levels of security and transparency, limiting the possibility of manipulation and arbitrary interference. DeFi already offers a wide range of applications, such as buying US dollar pegged assets or stable coins on blockchain platforms, transferring them to a decentralized lending platform to earn interest, and after that adding the interest-bearing securities to an on-chain investment fund or a decentralized

liquidity pool. These protocols were developed a completely transparent, open, and equally accessible financial system with little or no need for custodians, central clearing houses, or trust services.

DeFi is, at its core, a market of decentralized financial applications that compete for users' business and provide various financial primitives such as exchange, save, lend, and tokenize. By merging and recombining DeFi products, these applications benefit from network effects and gain a growing market share from traditional finance. The rise of DeFi has piqued the interest of legislators, researchers, and financial institutions, as it addresses issues of centralized control, restricted access, inefficiency, lack of interoperability, and opacity in traditional financial systems. The article is structured as follows. Having introduced the DeFi at section 1, Section 2 provides literature review, whereas Section 3 explains the difference between traditional and decentralized financing techniques. Section 4 aims to enlighten of the new lending protocols and solutions they provide to traditional finance problems. In Section 5, a concluding section is provided.

2. LITERATURE REVIEW

The majority of blockchain technology-related articles in the scientific literature concentrate on technical usage of blockchain. This paper aims to contribute to an emerging literature on blockchain and decentralized finance. Nakamoto (2008) created the Bitcoin blockchain, which is a decentralized, consensus-governed database made up of cryptographically linked blocks. This technology enables borderless, trustless, and digitally signed peer-to-peer transactions, with the goal of eliminating the need for financial intermediaries. Buterin (2013) expanded on this concept and introduced the use of smart contracts in the Ethereum blockchain. Smart contracts are code-based agreements that execute automatically, without human intervention. The Turing-complete script language in the Ethereum blockchain laid the foundation for DeFi, a financial ecosystem that allows for complex financial products and transactions in a borderless and trustless manner, such as lending and borrowing, and derivatives. While DeFi has the potential to revolutionize the financial industry by providing greater accessibility, choice, and control to individuals and institutions, it also presents new challenges and risks, including regulatory uncertainty and potential security vulnerabilities (Dirk A. Zetzsche et. al. 2020).

Since DeFi is a notably new sector, there is already study on the subject, particularly in lending. Numerous publications describe how DeFi lending mechanisms work. Saengchote et. al. 2021 outlined the users of the compound, their characteristics, and their interactions with the pool. Catalini et al. 2021 highlighted that, like conventional lending methods, collateralized lending platforms allow users to deposit one token in exchange for interest and borrow another token using the first one as collateral. For example, "MakerDAO[1]" allows users to lock up collateral to issue the "Dai stablecoin". Charoenwong B., et al. 2022 explored the new functionality decentralized stablecoins offer, addressed several open questions in the field, and investigated whether it is possible to create a decentralized and capital-efficient stablecoin using smart contracts that algorithmically trade to maintain stability. Token deposits are crucial in other lending systems not just because they offer liquidity that other users may borrow from, but also because they motivate borrowers to repay their debts. On "Compound" and "Aave," for instance, two different users can deposit "Ether" and "USDC," and then the depositor of Ether can borrow USDC while the depositor of USDC can borrow Ether. The lending platform will impose over-collateralization ratios based on the value and volatility of the collateral (Catalini et. al. 2021). This transaction type is renamed as "back-to-back loans" in traditional banking. The "Systemizations of Knowledge (SoKs)" for the DeFi subspaces of loan protocols and yield aggregators, respectively, were presented by Bartoletti et al. (2020) and Cousaert et al. (2021). Their research followed a hybrid strategy, integrating scientific knowledge and doing their own subspace analysis. Moreover, Werner et al. (2021) carried out a "SoK" for the entire DeFi sector, concentrating on security concerns and dividing them into technical and financial ones.

3. TRADITIONAL FINANCE VS DECENTRALIZED FINANCE

In traditional finance, several parties are connected via a network of intermediaries. Taditional finance is built on a network of middlemen that interact varied parties. The traditional intermediaries are financial institutions and other organizations that operate on infrastructures like the stock market. A wide range of financial market actors are involved in these conduits, particularly those who have financial resources (such savers, lenders, and investors) and those who need financial resources (borrowers, entrepreneurs etc). We typically view the intermediaries as the main point when breaking down market-based financial systems into their traditional categories, such as corporate banking, investment banking, retail banking, etc. Major intermediaries that centralize tasks and financial resources are thus what we define as traditional finance. In this regard, between the market based and bank based financial systems were distinguished in their study. (Hardie&Howarth, 2013).

In capitalist economies, the two-tier banking system plays a crucial role in creating the money supply, with a centralized, profit-seeking authority acting as the credit allocator, known as the central bank. The transmission of money created within a financial system to the real sector typically occurs through the private sector, which is burdened with capital standards. This allocation process should yield risk-adjusted returns while preserving capital and is largely driven by the credit rating of the financial institution and its risk appetite. However, this allocation process becomes more challenging when it comes to lending to small and medium-sized businesses (SMEs) in jurisdictions where the banking industry has already consolidated. This financial system is centralized, profit-seeking and under highly competitive pressure that is key factor to allocate the credit facilities to borrowers.

Large banks tend to favor large, high-value deals that provide economies of scale and scope, such as secondary market asset sales and trading, financing mergers and acquisitions, and share buybacks. These loans are typically given to larger clients, rather than small and medium-sized businesses (SMEs), which leads to asset price inflation and financial exclusion for small businesses. Additionally, a large portion of the world

[1]MakerDAO is a decentralized autonomous organization founded in 2014 that operates as an open-source initiative on the Ethereum blockchain.

lacks access to banking and financial services due to various barriers. Decentralized finance (DeFi) attempts to address this issue by providing access to financial services through the internet, without relying on traditional customer due diligence practices and avoiding giving authority to an unelected group of bankers. Around the world, 40% of people lack access to financial services. It is true that a big section of this population is denied access to banking because of their welfare status or geography, but it is also true that the most reputable financial services corporations are not urged to establish themselves in the world's less developed regions (Financial Times Adviser, 2021). DeFi could provide access to financial service with access to the Internet.

4. LENDING PROTOCOLS

Lending protocols are a revolutionary new technology using blockchain to facilitate peer-to-peer lending, eliminating the need for intermediaries and central authorities in the lending process. This technology enables borrowers and lenders to transact directly, thus reducing transaction fees making borrowing more affordable and accessible, especially for those who lack access to credit through traditional channels. Moreover, lending protocols increase liquidity by creating new sources of funds available for financing a wide range of activities which would eventually stimulate economic growth and development. This technology has the potential to reshape the traditional lending and borrowing markets by providing a decentralized, transparent, and efficient way for borrowers and lenders to connect with one another, enabling more people and businesses to access the capital they need to grow and succeed.

Many people may not be eligible for loans since traditional banking institutions may have rigorous lending requirements. Lending protocols can also increase borrowers' access to credit. However, thanks to lending protocols in decentralized finance, people and small enterprises may get in touch with more lenders, thereby improving their chances of getting a loan. By empowering those who may have previously been shut out of the conventional financial system, this can assist to promote financial inclusion. Lending protocols are an innovative new technology that has the capacity to completely change how we borrow and lend money. These protocols might lead to the development of a more egalitarian and effective financial system by lowering transaction costs, raising liquidity, and enhancing loan availability. By giving people and institutions more accessibility, options, and control, DeFi has the potential to completely transform the financial sector.

Decentralized Finance (DeFi) ecosystem heavily relies on loans, which are accessible through a wide range of methods. These decentralized loan systems are unique in that neither the lender nor the borrower is required to provide their identities, providing access to the platform for everyone, who can lend and borrow cryptocurrencies. They are also totally permissionless and reliant on established connections. To mitigate the risk of borrowers running away with the funds, credit is granted with the requirement that loans are returned atomically which means that the loan and its repayment are in one single blockchain transaction. However, it also raises new challenges and risks, including regulatory uncertainty and potential security vulnerabilities (Dirk A. Zetzsche et. al. 2020).

DeFi lending platforms provide an opportunity for lenders to earn a yield on their assets. Cryptocurrency owners can lend their assets to the platform and earn a passive income, and long-term investors can earn higher interest rates than traditional finance. Ethereum-based lending protocols such as MakerDAO, Aave and Compound are three popular options in the DeFi ecosystem, each with their unique features and capabilities. MakerDAO, a decentralized autonomous organization, aims to produce the DAI stablecoin by locking up other cryptocurrencies such as Ethereum as collateral, enabling it to maintain stability even during market volatility. Aave is a decentralized lending protocol that allows users to lend and borrow a variety of digital assets without consent. One of its primary features is flash loans, which allow users to borrow assets without security as long as liquidity is paid back in a single block transaction, useful for arbitrage and portfolio restructuring. Compound is a decentralized lending and borrowing protocol that adjusts interest rates based on supply and demand and allows users to earn interest on their crypto assets and borrow using their crypto as collateral, also users can participate as liquidity providers by supplying assets as collateral for borrowers. In conclusion, DeFi lending platforms provide a new way for individuals and institutions to earn yield on their assets, through lending their cryptocurrencies, and allows for more accessibility, choice, and control in comparison with the traditional finance systems.

5. FINDINGS

The traditional financial system, typically controlled by banks and other financial institutions, is often perceived as complex and challenging for some individuals to access. Decentralized finance (DeFi) on the other hand, is built on blockchain technology and smart contracts, creating decentralized financial applications and services. By being transparent, accessible, and decentralized, DeFi has the potential to be more inclusive and trustworthy in comparison with traditional finance. An early application of DeFi is the lending and borrowing, there is no central authority that decides who participates, it is open, public and permissionless. Unlike traditional finance, credit history or other financial records are not required since loans are granted either with excessive collateral or in a way that guarantees repayment. Decentralized lending and borrowing aims to eliminate middlemen, which increases efficiency and reduces costs, anyone can participate and either earn interest or secure a loan with assets as collateral. Overall, decentralized finance (DeFi) has the potential to disrupt traditional finance by creating a more transparent, accessible, and decentralized financial system that is open to all, regardless of credit history or other financial records. It is seen to increase financial inclusivity and make it more efficient and cost-effective, by eliminating middlemen.

6. CONCLUSION

Decentralized finance offers a paradigm shift in the delivery of financial services and has the potential to be one of the most revolutionary uses of decentralization powered by blockchain. The capacity to conduct peer-to-peer transactions remotely and without any security is a new phenomenon that is currently developing. When compared to the surge of innovation we anticipate soon, the multitude of decentralized finance applications that are presently available. Decentralized finance initially replicated the financial services provided by traditional finance. However, as it keeps expanding, new applications that go beyond traditional financial services have appeared. These developments

are dependent on the distinctive characteristics of blockchains (deterministic, programmable, etc.), the comparably weak legal standards, and even cultural distinctions between decentralized finance and traditional finance. In the future, decentralized finance is likely to continue to grow and evolve, as more and more people discover the benefits of decentralized finance. As the technology and infrastructure behind decentralized finance improvement, it has the potential to disrupt traditional financial institutions and change the way that financial services are provided.

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