DEFI (DECENTRALIZED FINANCE) WILL LEAD TO A REVOLUTION IN THE WORLD OF FINANCIAL SERVICES

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Abstract

A financial system is a network of institutions, regulations, and financial products and services available on a given market. We have local law as a basis. We have institutions that create and enforce them. Important entities are centres that provide financial services, such as banks, stock exchanges and brokers. After all, we have different products and services. From simple ones as bank accounts and deposits, through various forms of loans, to derivatives. Finally, we have clients who use this financial booth. On the one hand, all this is done to provide capital where it is needed and can be used best. On the other hand, provide a profit to the capital providers. The third important function of the financial system is to eliminate the risk of various economic activities. A developed, healthy financial system is the basis for the development of a strong economy. DeFi, on the other hand, is a decentralized financial system, which means that it does not have one central organization or institution that would be responsible for the entire system or its individual elements. Decentralization is possible because DeFi is based on a public blockchain using smart contracts. This article will present both the DeFi mechanism and the overall issue of finance-technology and its impact on the world of traditional finance, in particular that at the moment in the COVID-19 era, cashless services, e-commerce and the search for capital investment opportunities in new funded sources has become the number one topic among researchers / scientists and investors. This article will present both the DeFi mechanism and the overall issue of finance-technology and its impact on the world of traditional finance, in particular that at the moment in the COVID-19 era, cashless services, e-commerce and the search for capital investment opportunities in new funded sources has become the number one topic among researchers / scientists and investors. It should be emphasized that virtual finance, including the virtual circulation of money, minimize the need for interpersonal contacts to zero. This is important because the use of funds and shopping in the comfort of your own home reduces the need for interpersonal contacts, which at the same time contributes to the spread of the virus among people. On the other hand, the DeFi market is still in its infancy and is largely undervalued given its potential to disrupt the traditional financial sector - hence its enormous growth potential.

Keywords: *decentralized finance, blockchain, cryptocurrencies, financial service, virtual finance, flat finance*

THE MECHANISM OF DEFI

The whole idea of DeFi started with cryptocurrencies. Bitcoin was the first cryptocurrency to be the best investment of the decade. If you had invested $ 1 in it 10 years ago, today your investment would have been around $ 90,000. This means that to be a millionaire today, 10 years ago it was enough to invest a small amount of money. The prices of Bitcoin and other cryptocurrencies in the last decade have literally gone into space. And it was this strong growth, these astronomical profits, that attracted more and more investors to this market. Such large increases also mean tremendous volatility in the crypto market. The price of Bitcoin in one day can change by a dozen or even several dozen percent. And while the long-term trend was upward, the short-term changes also apply to decline in value. Now imagine that you have sold your flat for Bitcoin. You'll be delighted if Bitcoin's price rises in half during the week. Suddenly, selling the apartment became an even better deal. But Bitcon's price may as well drop in half during this time. Then suddenly a good deal becomes tragic. And we never know which way the cryptocurrency prices will move in a given week. Nobody can afford such short-term uncertainty when it comes to typical economic activities. Therefore, cryptocurrencies are a great instrument for

speculation or long-term investment. But it is terrible for day-to-day business and short-term value retention.

The centralization of the traditional financial sector is primarily centralization at the regulatory level. A given country has a specific set of laws and rules regarding the functioning of the financial world. Its execution is supervised by centralized institutions such as the Polish Financial Supervision Authority. Central banks, in turn, deal with monetary policy.

And in the case of DeFi, the biggest difference is that in the traditional world, each country has its own financial system. This means that it is based on its own laws and its own regulatory and supervisory centres. DeFi, on the other hand, is global. This is due to the fact that it is based on a public blockchain. It is available to anyone, anywhere in the world. Regardless of the citizenship or country of residence of the participant. Since blockchain itself is decentralized, no jurisdiction can be imposed directly on it. So we do not have central entities in DeFi that define rules that everyone must follow. Various projects, often called protocols, propose specific rules or patterns for their establishment by the community. Smart contracts are responsible for their compliance- at the moment it is usually Ethereum.[1]

Security is a key factor when writing smart contracts. After all, we are dealing with programs that control cash flow. Sometimes really large amounts. Not infrequently in the tens or hundreds of millions of dollars. During the several years of Ethereum and other smart contract platforms in existence, we've had some spectacular security flaws. There were even those that cost tens or hundreds of millions of dollars. The positive news is that with each such attack, the likelihood of future attacks decreases. Programmers draw conclusions, learn to write more secure programs. For the sake of security, it goes a long way before a smart contract starts managing real funds. First, it is created by the team of developers involved in the project. They have good code writing practices and tools for creating automated tests. This is the first line of concern for safety. The next line is open source code. Anyone can read it, analyze it and try to find a bug in it. This is often accompanied by an official bug-checking program. Where the project materially rewards people for bugs and security gaps found. What's more, a security audit is also commissioned to specialized external companies. Finally, for weeks, and sometimes even months, to test the operation of smart cotracts in the test network. All these phenomena mean that the risk of critical errors is negligible.

But participation in them is completely voluntary, i.e. if someone likes a given financial product, they meet the agreed rules, they can get involved in it, but if not, then go ahead and consider other projects. DeFi is a voluntary, global, open financial system that is immune to government regulations and cannot be blocked by them. It is a system in which our funds are constantly under our control. Neither service providers, nor even governments, are able to lay a hand on our resources against our will. Neither a law, nor a court judgment, nor even a papal encyclical will help. This is guarded by smart contracts, i.e. special computer programs stored on the blockchain, which are, just like the blockchain itself, unchangeable. This means that what they did yesterday, they are doing the same way today, and will also be doing the same tomorrow. The immutable principles of operation are written in the blockchain, and no one, including the creators themselves, can change it.[1]

In the crypto space, it is said: "A system is decentralized only as its most central component." This is partly true, since decentralization exists in sequence and on multiple levels. The degree of decentralization in DeFi services varies as not all components can and should not be decentralized.

Grade 0: Also known as CeFi. Centralized Finance (CeFi) products are custodial in nature, use centralized pricing feeds and initiate margin calls, provide liquidity for your margin calls, and centrally determine interest rates, all centrally. Examples: BlockFi, SALT, Celsius, Nexo.

Grade 1: These DeFi product categories are non-custodial, but instead utilize centralized pricing feeds, initiate margin calls centrally, provide liquidity centrally, centrally determine interest rates, and centrally manage platform updates and developments. Example: Dharma.

[1] Ethereum is a global, open-source platform for decentralized applications. On Ethereum, you can write code that controls digital value, runs exactly as programmed, and is accessible anywhere in the world- https://ethereum.org/en/

Grade 2: DeFi products are non-custodial, but have an additional decentralized component of the listing, while the rest are centrally operated. Examples: Expo, Nuo, ETHLend.

Grade 3: DeFi products are also non-custodial and have margin call start without permission and margin call liquidity provision, while the rest are centrally managed. Examples: MakerDAO, Comound.

Grade 4: DeFi: What is different about these types of DeFi products is that in addition to having no custody, having margin calls without permission and provision of margin call liquidity, their prices are decentralized, while the other two are centralized. Examples: dYdX, Fulcrum.

Grade 5: Here, the interest rate determination is decentralized along with the first three components in Grade 4 DeFi, but the control of platform developments and updates is centralized. Examples: bZx.

Grade 6: In the last category, all components of DeFi should be decentralized. But as of now no DeFi protocol is completely decentralized.[2]

DEFI USERS

Anyone who has the Internet connection and an Ethereum wallet with some funds, the so-called tokens. What's more, using DeFi is anonymous, which means that no registration or compliance with KYC[2] and AML[3] procedures is required. You also do not need to introduce yourself to anyone, present proof or explain where you get the money from. All operations are performed from within your portfolio. For the network, you are only the address of your wallet. , if this wallet was associated in any way, used in the traditional financial system (e.g. withdrawal of funds from the stock exchange that required KYC), state authorities are able to connect us with it and take consequences for us. An example is the enforcement of a tax payment on profits earned in DeFi.

At the moment, it is said that the group that will benefit most from using DeFi will be:

1. people from countries with underdeveloped financial systems
2. people with cryptocurrencies who want to make more profit from them
3. people who want to keep their assets beyond the reach of the system, without cryptocurrency exchange rate risk
4. people who want to protect their assets against inflation (deposits in DeFi have much more favourable conditions than those in the traditional banking system. We will talk about it in one of the next e-mails)
5. people who want to have full control over their capital, invest it without having to rigidly freeze it
6. people looking for new investment opportunities and news from the world of finance

It is also worth emphasizing that the main benefits of DeFi include: easier access to financial services reducing social exclusion. Furthermore, decentralized finance applications exclude intermediaries, usually banks or financial institutions, from the transaction system DeFi can be used in banking, credit and loan services, and decentralized capital markets and exchanges (DEX). At the moment, the market for decentralized finance is worth $ 2.5 billion. However, it should be remembered that DeFi takes its

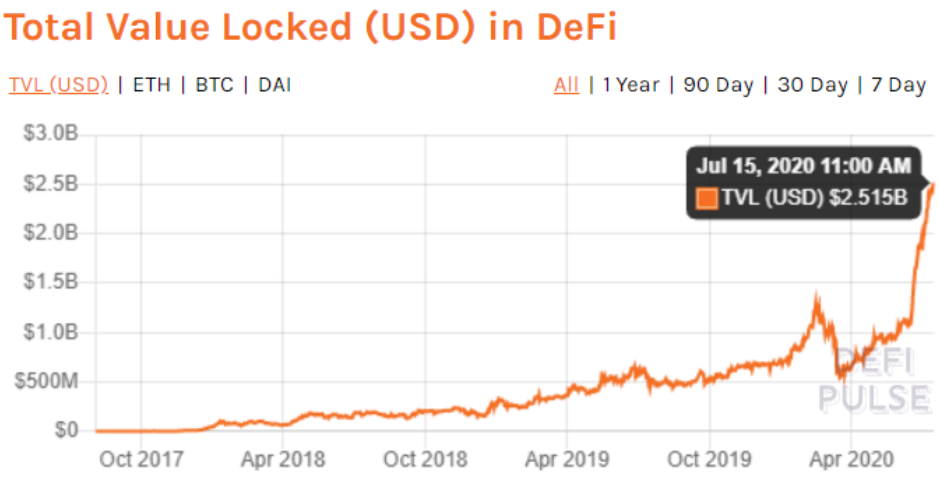
[2] KYC (Know Your Customer) is today a significant element in the fight against financial crime and money laundering and customer identification is the most critical aspect as it is the very first step to better perform in the other stages of the process - https://www.thalesgroup.com/en/markets/digital-identity-and-security/banking-payment/issuance/id-verification/know-your-customer

[3]AML - Anti-money laundering refers to the laws, regulations and procedures intended to prevent criminals from disguising illegally obtained funds as legitimate income. Though anti-money laundering laws cover a limited range of transactions and criminal behaviour, their implications are far-reaching. For example, AML regulations require banks and other financial institutions that issue credit or accept customer deposits to follow rules that ensure they are not aiding money-laundering- Financial Crimes Enforcement Network:" History of Anti-Money Laundering Laws" Accessed July 31, 2020.

first steps all the time. The largest projects, however, raised hundreds of millions of dollars. In addition, DeFi is to be for the world of financial services what Bitcoin is for money: a fully decentralized alternative that allows users to take advantage of direct peer-to-peer operations, i.e. to insure themselves for life, make deposits, trade financial instruments, take out loans or transfer funds.

It is worth noting that at the beginning of April 2020, the total value of funds invested in DeFi was estimated at around $ 500 million. However, the coronavirus pandemic has clearly accelerated the development of this new branch of finance for the cryptocurrency market, putting its current valuation at $ 2.5 billion which can be seen in the chart below.[3]

Chart 1. Total Value Locked (USD) in DeFi



Source: Defipulse http://www.defipulse.com

DEFI CAPABILITIES AT THE MOMENT

Although this is only its beginning, and the range of possibilities is much poorer than in the traditional financial sector, very interesting possibilities are already available. Which often outperform their centralized counterparts. First of all, let's start with the stablecoins. These are special cryptocurrencies that maintain a constant rate to traditional values. Most often for traditional currencies, with the US dollar at the forefront. They are necessary to maintain value on the blockchain without the cryptocurrency exchange rate risk.

The most popular stablecoins are: Tether and USDC, this is due to a 1 to 1 exchange guarantee with the reference currency. This means that we can go to the issuer with our stablecoin at any time, and he declares that he will pay us a real dollar in return. And this issuer and its guarantee of convertibility is a problem. Because we can never really be sure of it. There will always be doubts as to whether the company creates new tokens only based on new dollar contributions. Transparent, because it is present on the blockchain, is only the result of such an operation. We know how many coins exist on the blockchain, but we do not know the status of the corresponding bank account. We have to take the issuer's word for it. Or based on an audit of external companies that we must trust at their word. Let's be aware that in front of the issuer of such a stablecoin, there is a huge temptation to reprint without cover. It's free money, after all. Free money that is mainly used for crypto trading. As if we were creating 10 percent more coins than we receive. We could then actually buy Bitcoin 10 percent cheaper than the market. Thus, the uncertainty about the issuer and its declaration of convertibility is the first and greatest threat. It would seem that the solution could be regulation and greater control by financial regulators. Perhaps they would help to mitigate the risks associated with the issuer. But it would introduce a number of new ones. Starting with the introduction of the need to pass KYC (identity verification) by stablecoin holders. Through the possibility of blocking, confiscating funds of individual users. Until the freezing, banning the entire system.

Another area of decentralization is decentralized exchanges and trading platforms. Initially, they only allowed crypto trading, now there are also derivatives of securities from the traditional financial system. The advantage of decentralized exchanges is security. The funds are still in your wallet and only you have access to them. You are immune to an attack on the stock exchange, the bad intentions of its creators and all actions of regulators. Another segment is term deposits and associated loan systems. In this context, smart contracts replace banks in their primary role. On the one hand, the safe storage of value with interest. On the other hand, lending the capital so invested to people who are ready to give it back together with interest. At the same time, taking care to protect the interests of both parties.

Predictive markets are another interesting example. They deal with determining the probability of certain phenomena in the future. People use their means to bet on whether an event will take place in the future. On the one hand, these platforms can be used for risk analysis. On the other hand, they can be considered decentralized betting platforms, where the system of smart contracts and oracles has replaced the bookmaker. Although the landscape of available solutions is not yet amazing, DeFI already offers us a number of possibilities. On the one hand, we are able to generate additional profit on the cryptocurrencies we have. On the other hand, we can earn interest on stablecoins. So completely no cryptocurrency exchange rate risk.

Currently, one of the most popular decentralized exchanges, DEXs, is the Balancer project, worth nearly $ 200 million. Unlike the traditional cryptocurrency exchange, such as BitBay, which originates from Poland, the user does not have to deposit funds in the exchange's accounts, and the exchange is not responsible for their storage. Instead, transactions are made directly between investors' portfolios.[4]

SUMMERY

The traditional financial market is centralized. The central authorities issue the regular currency that drives our economy and is used for every business, such as the government and banks. Therefore, the power to manage and regulate the flow and supply of such currencies in the market resides in them. We also pass control of our assets to various financial organizations, such as banks, with the expectation of obtaining higher returns. The funds are centralized, the risks too.

Bitcoin and other cryptocurrencies have offered a form of secure peer-to-peer trading without the need for intermediaries, such as a bank, for trade settlement. This gives users complete control over their assets. However, keep in mind that these cryptocurrencies have not really decentralized the financial system. They have just decentralized the issuance of money and its storage. There are a couple of issues that prevent blockchain from making the financial system truly decentralized. While cryptocurrencies are decentralized, they can mostly be accessed through centralized access points like exchanges. In turn, the projects are managed through centralized companies.

The DeFi market is small compared to traditional finance, but it has picked up pace rapidly since last year. With more projects and financial dApps, we can hope to achieve a genuinely decentralized financial reality where the traditional financial market inter-operates with digital assets and blockchain in perfect synchronization.[5]

We must remember that all connected with DeFi is new and unknown so we need time to discover it, develop, trust it and maybe use it in future.

REFERENCES

1. Allen, D. W., The institutional revolution: Measurement and the economic emergence of the modern world, University of Chicago Press, 2011
2. Bitcoin Mexico- http://www.bicoin.com.mx
3. Böhme R., Christin N., Edelman B., & Moore T., ‘Bitcoin: Economics, technology, governance’, Journal of Economic Perspectives, 29(2): 213–38, 2015

4. Bresnahan, T. F., & Trajtenberg, M., 'General purpose technologies 'Engines of growth'?' Journal of econometrics, 65(1): 83–108, 1995
5. Burda M., Wypolsz Ch., Makroekonomia, podręcznik europejski, PWE, Warszawa 2000
6. Chuen, D. L. K., Handbook of Digital Currency: Bitcoin, Innovation, Financial Instruments, and Big Data, Academic Press, 2015
7. De Filippi, P. , Bitcoin: a regulatory nightmare to a libertarian dream', Internet Policy Review, 2(2): 1–11, 2014
8. Dwyer, G. P., 'The economics of Bitcoin and similar private digital currencies', Journal of Financial Stability, 17: 81–91, 2015
9. Ellerman, D. ,Parallel experimentation: a basic scheme for dynamic efficiency, Journal of Bioeconomics,16(3): 259–287, 2014
10. Evans D., 'Economic aspects of Bitcoin and other decentralised public-ledger currency platforms', Coase-Sandor Institute for Law and Economics, 2014
11. Ferguson, N., The Ascent of Money: A Financial History of the World, Penguin Books, 2008
12. Franco, P. ,Understanding Bitcoin: Cryptography, Engineering and Economics, Wiley, 2014
13. Gali J, Monetary policy, inflation and the business cycle, Princeton University Press, New Jersey 2008
14. He, D., Habermeier, K., Leckow, R., Haksar, V., Almeida, Y., Kashima, M., Kyriakos-Saad, N., Oura, H., Sedik, T.S., Stetsenko, N., & Verdugo-Yepes, C.,Virtual Currencies and Beyond: Initial Considerations,International Monetary Fund, 2016
15. Hendrickson, J. R., Hogan, T. L., & Luther, W. J., 'The political economy of bitcoin', Economic Inquiry, 54(2): 925–939, 2015
16. Hileman D., Rauchs M., Global Cryptocurrency Benchmarking Study, University of Cambridge, London 2007
17. Hodgson, G. M., Economics and Utopia: Why the Learning Economy is not the End of History, Psychology Press, 1999
18. Kazimierczak A., Polityka pieniężna w gospodarce rynkowej, PWN 2003
19. Klinger B., Szczepański J.: Blockchain – historia, cechy i główne obszary zastosowań. Człowiek w Cyberprzestrzeni, 2017, 1, 11-27.
20. Kostakis, V., & Giotitsas, C.,The (a)political economy of Bitcoin', Communication, Capitalism &Critique: Open Access Journal for a Global Sustainable Information Society, 12(2): 431–440, 2014
21. Kubiak J., "Bitcoin jako narzędzie wspierające oszczędzanie ", http://www.bitcoin.pl, 10/06/2020
22. Lipsey, R., Carlaw, K., & Bekhar C. ,Economic Transformations: General Purpose Technologies and Long Term Economic Growth, Oxford University Press, 2005
23. Misiur P. "O co naprawdę chodzi w bitcoinie", [online] available at: https://www.zrozumiecbitcoina.pl/2019/06/27/o-co-naprawde-chodzi-w-bitcoinie/., 2019
24. Nakamoto S. ,'Bitcoin: A peer-to-peer electronic cash system', [online] available at: https://bitcoin.org/bitcoin.pdf., 2008
25. Rak A.," DeFi: Blockchain w służbie zdecentralizowanych finansów. Czym jest decentralized finance?'
26. Szabo N., Formalizing and Securing Relationships on Public Network , University of Illinois, Chicago 1997

27. Walsh C.,Monetary theory and policy, 2nd ed., MIT Press, Cambridge 2003
28. Władyka T., Polityka Gospodarcza, Wolters Kulwer, Warszawa 2007,
29. Wójcik-Czerniawska A., Cryptocurrency as a main factor of financial changes in the Global Monetary Policy", Zeszyty Naukowe Wyższej Szkoły Bankowej w Poznaniu 2018, Poznań, t.79 , nr. 2