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Decentralized Finance (DeFi) Guide

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Check out our DeFi guide, whether you're a beginner, already trading or a real DeFi Expert.

Decentralized finance is the talk of the town in crypto today, and while this has mostly been due to its seemingly absurd growth in recent years, DeFi is making waves under the surface that could fundamentally change the way both local and multinational businesses operate.

One of the most important reasons why humans have been able to dominate the planet for centuries is our ability to adapt to environments and automate laborious processes. Human survival has hinged on delegating the most repetitive, creatively draining tasks to a machine, and since the advent of electronic computers and software engineering, our machines have become a whole lot better.

Financial markets are constantly evolving, and decentralized finance is the industry's most current evolution, pulling power away from intermediaries and distributing it across disparate, unrelated people.

Today, DeFi enables the world to trade and access banking services like lending and borrowing in a peer-to-peer ecosystem, and while only time will tell what the technology will be capable of tomorrow, its potential is startling.

DeFi — for Beginners

Before diving into decentralized finance, it's essential to understand the concept of decentralization. Traditionally, financial transactions are performed through a trusted third party (usually a bank or financial institution). While this allows for incredibly efficient operations, it does leave a massive attack vector open to hackers — a single point of failure.

The concerned investor has a lot to worry about, but even the most laid-back traders worry about security. Money might not be capable of buying happiness, but it can buy many things, and no one is happy when it's taken away from them.

Decentralization guarantees that even if a single point on the network is attacked, it can continue to function through a majority consensus between other people, keeping everyone's funds safe. It also ensures that actions cannot be censored since no central body controls the network.

Today's most popular decentralized network and cryptocurrency is Bitcoin, which runs on [blockchain technology](#) — a fancy phrase for a distributed ledger of transactions. Though Bitcoin is the most popular, it's still one of the most basic cryptocurrencies in existence, allowing for peer-to-peer transactions and few other (if any) financial applications.

DeFi instead hinges on another blockchain network called Ethereum (for the most part), which allows for certain additional features like running decentralized applications. Almost every decentralized finance application runs atop the Ethereum blockchain, and not for lack of options.

Ethereum and Smart Contracts

Launched in 2015, Ethereum introduced the world to “smart contracts.” These are snippets of code running on the Ethereum Virtual Machine, a runtime environment for decentralized blockchain applications. They can also automate certain financial processes and encode financial contract terms into a transaction.

For example, suppose someone borrowed money after putting down a certain amount as collateral. In that case, a smart contract could ensure the lender retains custody of the collateral until the loan is repaid. Being able to run applications atop a decentralized network has dubbed Ethereum the “world computer,” and while it still has a long way to go before living up to that title, the DeFi space thrives on its existence.

Using smart contracts, developers have created all kinds of decentralized applications (DApps), which are like regular financial applications, except they run on a network of distributed computers instead of a central server.

Decentralized Applications (DApps)

Unlike [Bitcoin](#), the Ethereum network allows DApps to issue their own tokens for in-app payments, which adhere to what is known as the ERC-20 token standard. There are thousands of these ERC-20 tokens on Ethereum, and though practically anyone can create them, they accrue value depending

on their utility and the DApps they serve.

However, to run code on the network, users are required to pay a fee called “gas.” This “gas” is measured in Ethereum’s native ETH token, and it essentially covers the cost of computation for the code being run. Think of it as a transaction fee, but for performing any action on the blockchain.

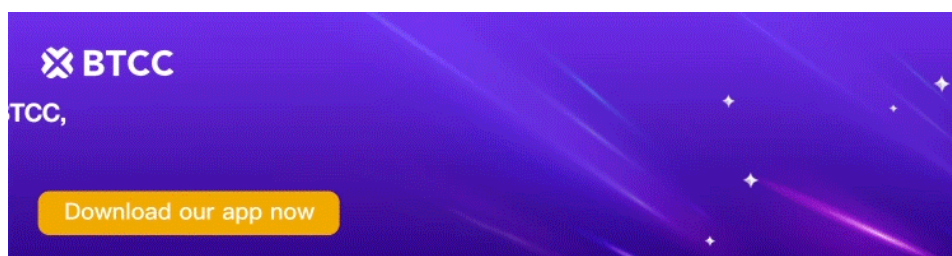
There are all kinds of DApps out there, from gambling machines to development platforms. Decentralized finance is a subset of these DApps that caters explicitly to lending and borrowing funds, longing or shorting a particular digital asset, and trading and staking tokens.

DeFi offers

practically anyone with just a smartphone and an Internet connection access to banking services. Additionally, due to its decentralized architecture, DeFi works around the various limitations and pitfalls of centralized financial services, such as having no single point of failure, resistance to censorship, and fundamentally distributed control frameworks.

Running on blockchain networks, DeFi enables all kinds of use-cases, including ones that weren’t possible before. Blockchain networks are also immutable, making it impossible to manipulate the system to falsify transaction records.

DeFi could potentially change the way our global economic systems function, making them more secure, efficient and accessible. However, not everyone is convinced, and there’s still a lot of research and development to be conducted before it can reach a more mainstream audience. That being said, if DeFi’s growth over the last few years is anything to go by, a decentralized future could be closer than expected.



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DeFi — for Intermediates

Decentralized finance, at its core, is a system that enables disparate parties to trade without any intermediaries. This means no middlemen like banks, transfer services and other financial institutions take a cut of your transactions, and these lower overheads enable a more accessible and affordable experience for end-users.

Many of the problems DeFi sets out to solve are the same issues blockchain is trying to tackle. However, where blockchain offers the infrastructure to distribute financial services to a decentralized user-base, DeFi is what users actually interact with.

If blockchain is the bank, then DeFi protocols are its services, but it's a lot simpler to think about the blockchain like you would the Internet, with DeFi products representing online services like PayPal and LendingClub.

However, despite the heavy focus on decentralization, most digital assets are still traded through centralized intermediaries. These are similar to stock exchanges, where investors, brokers, and traders place bids and asks to interact with the market.

These systems are incredibly efficient, handling millions of transactions worth billions of dollars on a regular basis, but it does introduce some issues. For one, a centralized exchange opens the market up to a single point of failure. This isn't just a theoretical problem either, with obscene amounts of capital being siphoned from exchanges using attacks, hacks and exploiting other vulnerabilities.

Decentralized Exchanges

When DeFi was first introduced to the world a few years ago, it was hard to get excited about. The concept of a decentralized exchange was novel, but didn't work all that well in practice. Centralized exchanges use an orderbook to keep track of the multitudes of market orders conducted on the platform, and emulating this model in a decentralized environment proved to be clunky, inefficient and unattractive to even blockchain's biggest proponents.

These difficulties are mainly because decentralized exchanges (DEXs) lack the liquidity offered by their centralized counterparts, which ensure orders go through by enlisting market makers that profit from filling gaps in the orderbook. However, with the introduction of automated market makers (AMMs) on decentralized exchanges last year, these platforms have become a lot more usable.

Unlike regular market makers, AMMs are not individuals or firms, but smart contracts managing a

liquidity pool of two or more tokens. Instead of finding gaps to profit from within an order book's bid-ask spread, AMM-based DEXs function in a unique way, allowing users to deposit and withdraw tokens into liquidity pools, where prices are decided based on the ratio between the tokens in the pool.

Contributors to the pool are known as liquidity providers or LPs and are incentivized to continue providing liquidity with a cut of the platform's trading fees. This makes DEXs a much more attractive proposition, enabling a wide range of services that were previously deemed infeasible, such as lending, borrowing, and even services that have no parallel in the centralized world - like flash loans.

Risk Involved

The market capitalization of the global stock market — that is, the total value of all the stocks, bonds, and other assets sold in financial markets — currently sits at around \$80 trillion. This is still 40 times larger than the total cryptocurrency market capitalization and over a thousand times bigger than the total value of ETH locked into DeFi.

Investing in anything is bound to incur some form of risk, and DeFi is no different. Digital assets are notoriously volatile, and the possibility of losing your entire investment can, at times, be just as likely as making a small fortune from it. For liquidity providers on AMM-based DEXs, volatility can be an even bigger problem, potentially leading to something called “impermanent loss.”

Since AMMs find the value of a token based on its ratio against another token in the same pool, sudden drops in price can cause untold losses for LPs staking tokens over simply holding them. For example, in the year since March 2020, Chainlink's LINK token rose in value by over 700%, while LPs for the LINK/ETH AMM pool reported a -50% APR.

Further, there's also the risk of newer users being scammed into investing in flashy projects, putting a bitter taste in their mouths, and spreading the wrong message about the space.

DeFi — for Experts

Decentralized finance may allow people to trade with each other in a completely trustless environment, but its real power lies in how it affords control over the network's market characteristics to its participants. Governance is a large part of DeFi protocols and lets the people involved determine various network attributes, including interest rates, staking parameters, and more.

In March 2020, the total value of ETH locked (TVL) into DeFi platforms was just shy of \$700 million. Today, there's close to \$81 billion in assets locked into decentralized platforms (April 2022), and much of this growth can be attributed to the hype generated by "yield farming" — a method exclusive to the decentralized finance space that can be incredibly profitable when done correctly.

In June last year, the Compound DeFi credit market started distributing its native COMP token to both borrowers and lenders on the platform. As demand for this token rose, people quickly understood that loaning out the COMP token could generate even more profits on top of the trading fees they had already been making from providing the platform with liquidity. This was where yield farming (sometimes called liquidity mining) all began.

Liquidity Mining and Yield Farming

To understand this better, let's re-explore the concept of liquidity pools. On AMM-based decentralized exchanges, anyone can create a pool using a pair of tokens by depositing an equivalent value of both into the pool.

For instance, let's say there's a pool for the ETH/USDT pair. Ideally, the pool would contain equal value of USDT and ETH, meaning if you wanted to buy 1 ETH, you would have to deposit USDT equivalent to 1 Ether token.

This tips the pool's value in USDT's favor on a small scale, making each Tether token slightly more valuable than before since it represents a smaller amount of ETH. In pools with limited liquidity, this can allow for all kinds of arbitrage opportunities, which is precisely why AMM-based DEXs try to incentivize liquidity providers as much as possible.

By offering governance tokens, DeFi platforms further incentivize their users to provide liquidity for the platform. By creating larger pools, the effect that a single purchase or sale can have on token prices is muted. However, they are still susceptible to whales that hold more significant positions, but this also depends on the size of the liquidity pool.

Cross-Chain Communication in DeFi

Interoperability is the next frontier for DLT, and already the industry is seeing focused efforts with projects like Cardano, Polkadot and Polygon creating systems that enable decentralized networks to exchange both information and value without involving a trusted third party.

However, every attempt to make DeFi platforms interoperable approaches the problem differently, and there are still many kinks that need ironing out. An interoperable web of blockchains would help

distribute capital across multiple networks and protocols, further decentralizing the market and making it more accessible.

Interoperability is a crucial feature that will eventually find its way into blockchains. Just like how TCP/IP created a standardized protocol for computers to communicate over the Internet, leading to the incredible number of online products and services we know and love today, an interoperable standard will only be the start of the industry's journey to making DeFi the dominant platform for financial transactions and services worldwide.

Governance Tokens and DAOs

Governance tokens are not a new concept, having been used since the ICO boom of 2017. Besides affording holders voting rights to proposals made on a particular platform, they also enable users to propose changes to the protocol and allow for the creation of Decentralized Autonomous Organizations or DAOs.

DAOs are decentralized networks that hold a treasury of capital and are akin to a fund managed by a group of distributed and unrelated individuals. Participants can vote on how the treasury allocates the network's money, and the DAO itself can contract work from other individuals, private companies, or even other DAOs.

The DeFi ecosystem is expanding faster than investors can react. However, almost all DeFi platforms are launched on Ethereum, which gives a significant first-mover advantage over the competition. While this doesn't necessarily raise eyebrows, almost all of the money in DeFi platforms is concentrated on one network because Ethereum cannot interoperate with other blockchain networks.