DeFi: Your Guide to Decentralized Finance

Everything you need to know about the financial system powering Web3.

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June 14, 2022
Updated: June 15, 2022

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The first time Erin Holloway encountered the world of decentralized finance, she had the same question as almost everyone else: What exactly is it?

Even with nearly 20 years of financial experience working for JP Morgan, the industry puzzled her at first and piqued her curiosity. On the one hand, DeFi — as it's called for short — is a field brimming with promise, envisioning a more egalitarian financial future run on blockchain. In it, anyone — especially those underserved by the banking industry — can take out a loan or invest in a company without going through a financial institution.

WHAT IS DEFI?

Decentralized finance is cryptocurrency's answer to the traditional financial system. It ecnompasses any blockchain-based application that facilitates peer-to-peer financial transactions, allowing users to trade digital assets on crypto exchanges, lend and borrow crypto, purchase goods and more. Transactions are then registered, encrypted and stored across a distributed ledger, thus preventing centralized control over assets.

On the other hand, one of the more popular cryptocurrencies — the blockchain-based digital currency that DeFi depends on — started as a joke (Dogecoin) and there are countless stories of coins that could portend the future or descend into scandal.

So, which is it? The reality is somewhere in the middle. It's still considered the Wild West of technology and finance, but its future potential also can't be ignored.

"I did have that healthy sense of skepticism, but at the same time, I could also see what was happening," said Holloway, who now works for Prime Trust, which provides the financial infrastructure for DeFi applications. "It was a revolution, and there were things about the traditional finance world that needed to change and change for the better."

What Is DeFi?

First, let's take a step back and define what DeFi means.
DeFi is a broad term used to describe any blockchain-based application that allows users to process a financial transaction outside of a traditional financial institution. It's the backbone of Web3, and allows users to take out a digital loan, lend cryptocurrency, buy an NFT, invest in other cryptocurrencies, become a voting member of a decentralized company or dive into one of the many play-to-earn blockchain-based games.

Since it's blockchain-based, data is stored across a distributed network of systems, what's known as a distributed ledger, and can't be updated, deleted or controlled by a central entity.

HOW DOES IT WORK?

Traditionally, any financial transaction you want to complete — from buying a cup of coffee to taking out a loan — has to go through an accredited institution like a bank. They're there to confirm that your account exists and that you meet the rules necessary to complete the transaction.

Decentralized finance changes that equation. Instead of banks storing and controlling your funds, you store your digital assets (cryptocurrency, tokens and NFTs) in a crypto wallet, which you have complete control over. This means anyone can open an account and no entity can freeze your funds or charge you for failing to maintain a minimum balance.

Decentralized apps (known as dApps) built on the blockchain then facilitate peer-to-peer transactions thanks to what's known as smart contracts, self-executing code that ensures a fair transaction. Smart contracts are the key behind DeFi. Just as the bank needs to verify that your account has the funds necessry to execute a transaction, smart contracts do the same thing.

If you wanted to borrow $50 in a token, for example, the smart contract would contain the parameters to receive those funds, setting the interest rate and collateral required to borrow the cryptocurrency. When the code runs, it verifies that those conditions are met and then releases the loan. And once the loan is repaid, the code will execute again and release the collateral assets back to the borrower.

In essence, it operates as a third party governing a peer-to-peer transaction, creating trust in the transaction.

WHERE DID DEFI COME FROM?

If it feels like DeFi came out of nowhere in 2020, that's because it sort of did.

The basic ingredients of DeFi can be traced back to the foundation of Bitcoin, which was created to facilitate safe, peer-to-peer financial transactions without bank involvement. Its goal was to replace traditional fintech payment systems that connect bank account to bank account to transact, like PayPal or Venmo.

Ethereum, an open-source blockchain platform and the second most popular cryptocurrency, took it a step further, providing the infrastructure for programmable smart contracts. Because of this, most decentralized apps today are built using Ethereum's software.

Still, the potential to revolutionize existing financial practices remained largely theoretical as the technology developed, said James Wang, head of tokens for Amun, a DeFi index firm.

“A few years ago, crypto was really a vigorous debate about what money is and blockchain ... There weren’t any applications that people could use.”

Cryptocurrency previously had to be purchased from digital exchanges that relied on clunky background checks. When those companies got hacked, people’s accounts got exposed, causing them to lose money.

“A few years ago, crypto was really a vigorous debate about what money is and blockchain,” Wang said. “There weren’t any applications that people could use.”

That all changed during what Wang called the “Summer of DeFi” in 2020. Suddenly, DeFi smart contracts went from $700 million to $15 billion, according to cryptocurrency news website Decrypt.

In addition, Ethereum-based platforms like Maker, Aave and Compound matured, allowing crypto lending and borrowing to happen on the blockchain at scale, Wang said.

Cryptocurrencies gain value the more people adopt it because there is a limited supply. Coins that are more useful, meaning they can be exchanged on a wide-variety of dApps, tend to have the most value. As a result, these developments expanded the functionality of crypto and created a booming market around it.

It also made conducting a safe, peer-to-peer transaction more accessible to the average person. Similar to how we use our smartphones without needing to know how they work, it became possible for people to buy, sell and trade cryptocurrency without needing to understand the nuances of it, Wang said.

“All of a sudden, people not interested in crypto or having an opinion on monetary policy could participate,” Wang said. “Crypto really became usable.”

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What Are the Benefits of DeFi?

If DeFi encompasses all the same functionalities as traditional finance, why bother with it?

For people with an extensive banking history and strong financial background, DeFi’s primary benefit is as a way to diversify your funds. You can play the cryptocurrency market or participate in decentralized autonomous organizations, or DAOs, which are the community-based governing entities that pool resources together to work toward the success of a project, by purchasing governance tokens. Those tokens are what give you voting power and influence in the community.

You can then move your digital assets to other exchanges and crypto platforms without going through a clearing house or other arcane processes as you would for moving your stocks or opening up another bank account, said Eric Chen, founder of Injective Protocol, which provides a platform for users to build dApps.
Moving credit and assets between platforms is much smoother than traditional finance, Chen added.

DeFi’s biggest impact, however, lies in the ways it can serve those who the traditional financial institutions overlook, according to Merav Ozair, a fintech professor at Rutgers University’ business school and blockchain technology expert.

For starters, decentralized apps give users complete control over their funds. Traditional financial institutions can freeze your account, preventing you from making any withdrawals or sending preauthorized payments (like your scheduled rent bill payment). They also require multiple forms of identification, credit scores and other documents to get started for some services.

Decentralized finance apps require no such things and don’t have the power to touch your funds. They also lower the barrier for services like loaning money.

“[DeFi] opened the doors and [does] not limit the unbanked and underbanked from having a means of transacting.”

Earlier in Holloway’s career at JPMorgan, she was the banker who’d accept or reject people for loans. She’d analyze their financial statements, review their credit scores and calculate their risks before approving the funds. It’s a process meant to protect banks from undue risk, but it can also leave out the people who most need the loans.

“I used to be the banker who told people ‘no.’ The banks consider you a low credit risk because you have collateral, and you’re high credit risk [if you don’t] ... It’s counterintuitive,” Holloway said. “[DeFi] opened the doors and [does] not limit the unbanked and underbanked from having a means of transacting.”

DeFi transactions don’t care about your financial history, Holloway said. All that matters is that you have a smartphone and the required assets on hand to put up as collateral. Interest rates to pay back that loan also tend to be much lower because there’s no third party involved taking a cut.

DeFi also makes it easier to transfer large sums of money around the world. If a person wanted to send money to a family member in another country, they’d likely have to send it over the wire, which can take weeks to process, and pay a wire fee. With crypto, the user can send it instantly and pay a flat processing fee, Wang said. “And the user doesn’t need a bank.”

DeFi, though, isn't completely frictionless. As of right now, most companies don't accept crypto as a valid form of payment because of its volatility, which limits its use case to digital transactions with other people who deal in crypto. This makes its main value like that of a stock or asset that you hold onto for its perceived value.

That said, users can turn their crypto into fiat currency through decentralized exchanges or get a crypto debit card. The debit card syncs with a crypto wallet and can be used in normal transactions. Some will require the user to load a prepaid amount onto it by exchanging the crypto into cash ahead of time, others will operate like a traditional debit card, pulling the digital funds from your account and doing the exchange when you swipe.

For these reasons, Ozair believes DeFi adoption will start in countries without stable financial institutions. In 2021, El Salvador became the first country to accept Bitcoin as legal tender to help the majority of its citizens who don't have access to traditional financial services. Venezuela also launched a state-backed coin called Petro as an alternative to the highly inflated value of the bolívar. Its success, however, remains limited.

The Philippines is fast becoming a hub for crypto adoption and development thanks to a mix of crypto friendly laws and the fact that most citizens aren't served by traditional financial institutions. Currently, people can purchase bitcoins with cash at more than 3,000 7-Elevens and one in seven people use some form of crypto application, according to crypto publication *Cointelegraph Magazine*.

Philippines-based decentralized apps like PDAX, SendFriend and Coins.ph have grown in popularity because they make it easier for people to pay bills, transfer money and buy goods, and charge a much lower transaction fee than traditional banks, Ozair said.

More recently, crypto has become a valuable resource for the Ukrainian government during the war. In 2021, the government began soliciting crypto

donations online, and have since used those funds to purchase military gear like bulletproof vests, night-vision goggles and medical supplies. And crypto allowed the government to access the funds faster than cash donations, according to the Center For Strategic and International Studies.
It's not hard to see the promise of DeFi, but it's also not without its problems.
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Risks of DeFi

Of course, DeFi isn't perfect. There's a reason some people think of it as a fad and others are hesitant to dive in.
There are the risks associated with being a nascent technology. Since anyone can create a cryptocurrency, it can be difficult to parse through what's serious and what's a joke. Meme coins, in particular, are incredibly volatile. Designed after a meme, they're meant to go viral one day — skyrocketing its value — then disappear the next.

Bitcoin and Ethereum remain the most stable bets, but prices for crypto still fluctuate dramatically as the technology develops. Most recently, Terra's Luna coin collapsed in value causing the company to hemorrhage billions of dollars and investors to lose money.

In addition, DeFi doesn't offer the same security a financial institution can. Research from blockchain analytics platform Elliptic found that users lost $10.5 billion in thefts and scams over the course of 11 months in 2021. The industry is also rife with phishing scams. Common scandals include phishing attempts that direct users to fake websites where they can enter their credentials, and people posing as crypto wallet help centers on Twitter offering assistance to users in exchange for their private keys, according to Wang.

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Then there are rug pulls, or scams in which a person launches a cryptocurrency, builds up the price and then takes off with the money, plummeting the value of the coin to zero.

Ultimately, DeFi's biggest advantage — providing users with complete control over their funds — is also its biggest risk for the average person, Wang said. With no central authority to turn to for help, once funds leave your account, they're gone.
"This is one area where the crypto community has to rethink how it [lets] the average person use this stuff and have the equivalent of an undo button to help them overcome personal errors," Wang said.

What Can You Do in DeFi?

Getting a crypto wallet and putting some cryptocurrency in it is the simplest step to get involved in DeFi.

Bitcoin is the most popular cryptocurrency, but there are a number of other digital assets that can be bought, sold and traded through DeFi. The most common digital assets fall into a few different categories:

- **Altcoins:** This is an umbrella term used to describe any digital coin that isn't Bitcoin. You might have heard of the altcoin Ether, but there are 13,000 others to choose from.
- **Stablecoins:** These are coins whose value is pegged to another asset — be it a fiat currency like the U.S. dollar, another crypto asset or algorithm that controls its supply — as an effort to reduce its market volatility. Tether USDT is one example. Despite being backed, their value may not hold if the market drops, as seen with Terra's stablecoin Luna.
- **Governance tokens:** These tokens are DeFi's primary means for developing a governing community of individuals to shape the direction of a project or dApp. Getting a DAO token, for instance, is an investment in a project and gives you a voting share on decisions.
- **Non-fungible tokens:** NFTs are media assets that range from digital art to the first Tweet to sports highlights that are tied to the blockchain. Users can purchase these to

own digital media outright. One of the most common examples of an NFT project is the Bored Ape Yacht Club.

There are also several actions that can be completed via DeFi:

- **Crypto exchanges:** This involves buying, selling or trading cryptocurrency based on market prices on decentralized exchanges like Coinbase or Gemini.
- **Staking:** Holding a large amount of a specific cryptocurrency that relies on a proof-of-stake model in your wallet. In a proof-of-stake model, your holdings then become a validator for that coin, allowing new blockchains to be built on top of it. In exchange, you can generate a passive income. Common cryptocurrencies that allow staking include Ether, Cardano and Polkadot.
- **Yield farming:** This involves lending a portion of your cryptocurrency to generate income. Users will often lend one form and borrow another to keep investing while their assets continue to generate interest.
- **Engaging in GameFi**: This involves playing blockchain-based games to earn digital funds.

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Will DeFi Catch Up to Traditional Finance Worldwide?

Will we one day be able to purchase a Coke with Dogecoin and pay college tuition in Shiba Inu? Maybe. (You can buy a Tesla with Dogecoin after all.) And crypto has already become mainstream in some countries like El Salvador and the Philippines.

But DeFi still has a long way to go before it can compete with traditional finance.

“The current infrastructure of decentralized finance has enabled a lot of early discovery and exploration of what’s possible, but we’re still very far from seeing the full potential,” Chen said.

For starters, the market is too volatile. If the value of a cryptocurrency can swing from one day to the next, most companies aren’t going to accept it as a main form of currency — aside from outliers like Tesla and SpaceX.

And people are starting to develop a healthy dose of skepticism regarding what coins to invest in after events like the Luna collapse. The dust should eventually settle, and it'll be clear which coins are here to stay, Holloway said.

But there are a couple other advancements that could help DeFi mature. There needs to be more customer protection if DeFi is going to attract more mainstream adoption, Ozair said. She advocates for the development of a DAO that would authorize dApps similar to the way Apple vets applications in its store. Doing so would reduce the number of bad actors trying to scam investors with fake projects.

In addition, DeFi lending applications need to be able to assess risk more effectively. Right now, a user might have to put up $100 in Ether to borrow $50 in another coin, which isn't efficient, Wang said. One solution would be for a program that could link an individual to their other wallets and more properly assess their financial risk. This would allow them to process undercollateralized loans, he said.

The most likely future will involve some form of hybrid finances, in which some DeFi services merge with traditional finance. Already, solutions have launched to allow users to place some of their retirement investments into digital currencies and have some of their savings accounts in crypto, according to Wang.

Whether you think DeFi will ultimately be a fad or you believe in its radical potential, one thing is for certain — it pays to know what it is.