Congressional Research Service
Informing the legislative debate since 1914

An Overview of Decentralized Finance (Defi)

Updated April 17, 2026

Congressional Research Service
https://crsreports.congress.gov
R48883

CRS REPORT
Prepared for Members and
Committees of Congress

Congressional Research Service
Informing the legislative debate since 1914

SUMMARY

R48883

April 17, 2026

Paul Tierno
Analyst in Financial Economics

An Overview of Decentralized Finance (Defi)

Decentralized finance (or *defi*) refers to the suite of financial activities and services that are facilitated by cryptocurrency and intended to be conducted without any sort of reliance on traditional financial tools or intermediaries. The range of activities encompassed under the heading of defi range from certain activities that are fundamental to the functioning of blockchains on which cryptocurrencies, such as mining and validating, are transacted to cryptocurrency-backed services that mimic traditional financial activities, such as lending and trading.

The defi environment is built on cryptocurrency and smart contracts. Smart contracts are pieces of code that self-execute when certain requirements are met. They are essential to the variety of services offered—including borrowing and lending protocols, defi exchanges, and mixers, which may shield digital asset ownership—and take the place of the intermediary in traditional finance. As of March 2026, total value locked, a popular measure that constitutes the amount of value parked in all defi protocols, is about $98 billion.

While defi has evolved to provide services that roughly resemble those in the traditional financial system, it is still much smaller than the traditional financial services markets, and environments (uses and conditions) frequently differ significantly from traditional finance. Whereas services in the traditional financial sector experience various degrees of regulation, defi, like self-custodied crypto, is permissionless and its technical features may create challenges for compliance with and enforcement of regulations. The traditional financial system has also constructed certain parameters—such as credit scores, financial thresholds, and underwriting standards—on which the provision of certain financial services hinges. Defi eschews these customs and instead relies on technological tools and collateralization for all transactions. Also, while financial institutions are integral to the intermediation of financial transactions in the traditional financial system, smart contracts do not rely on companies and allow individuals to participate directly in the financial transaction without the need for further intermediation or input.

Defi's regulatory treatment is unsettled. Various policy issues stem from a lack of clarity regarding the industry's regulatory treatment. After a period in which certain activities were presumed to be subject to existing regulation but whose compliance and enforcement experienced challenges, regulatory expectation seems to be shifting. Whether such services are regulated—and if so, how—may have consequences for the proliferation of potential benefits and certain risks. These issues include regulatory arbitrage and the potential buildup of financial risk in less-regulated financial sectors, the outlook for financial technological innovation in the United States, and challenges for implementing anti-money laundering rules for defi platforms and at the intersection of centralized and decentralized crypto. To date, much of the discussion about defi revolves around its role as infrastructure for crypto transactions. However, as more traditional financial products become eligible to use the infrastructure through tokenization or other technological means, the focus of the defi debate may expand to include traditional financial institutions and products.

Because of the overlap of the defi and crypto industries, H.R. 3633, the crypto market structure-focused Digital Asset Market Clarity Act of 2025 (or CLARITY Act) that the House passed in July 2025 and related bills being debated in the Senate would inevitably have consequences for defi. While the primary aim of these bills would be to establish a new regulatory framework for cryptocurrencies, both the CLARITY Act and various versions of bills in the Senate appear mostly to not apply to defi. Some of these exclusions would seemingly applying to mixers—some of the sectors of the defi industry that have historically been tied to illicit finance. Congress may also consider alternative standalone and separate regulatory structures.

Contents

Introduction 1
Defining *Defi* 1
The Building Blocks of Defi 2
Cryptocurrency 2
Smart Contracts 5
Oracles 6
Defi Applications 6
Validating and Staking 8
Mixers 8
Decentralized Exchanges 9
Lending Protocols 11
Yield Farming 12
Differences with Traditional Finance 12
Regulated vs. Permissionless Environments 12
Credit vs. Collateral 14
Intermediation 14
Use Case Differences 16
Regulatory Policy Issues 16
Regulatory Arbitrage and Innovation 16
Defi and Illicit Financial Activity 19
Grey Area: Centralized to Decentralized Transactions 21
Magnitude of Risk 22
New Solutions 22
Other Issues 23
Preparing for the Future 23
Feasibility and Legality of Potential Future Regulation 24

Figures

Figure 1. Transactions Between *Unhosted* Wallets 3
Figure 2. How Centralized Platforms Work 4
Figure 3. The Intersection of Centralized and Decentralized Activities 5
Figure 4. Example of a Smart Contract Liquidity Pool 10

Contacts

Author Information 24

Introduction

Decentralized finance (defi) represents an evolution of the alternative financial system that started with cryptocurrency (or "crypto"). It is a collection of financial goods and services that operate across computer programs referred to as *smart contracts* that may be offered and used by any person (with the requisite technical know-how). According to proponents, defi allows consumers to further disintermediate, automate, and democratize financial services.[1] That is, they believe it removes the need to use financial companies, provides faster services, and makes financial services and products available to more people. Whereas traditional finance has come to be dominated by large financial institutions that some argue may limit access to financial goods and services through formal and informal means, defi is open to anyone with the appropriate software and some quantity of cryptocurrency. Smart contracts, which are automated and self-executing pieces of software, facilitate transactions based on certain conditions—irrespective of the user. While defi operates parallel to traditional finance, intersections between the two systems have increased over time.

This report will provide a brief overview of some of the building blocks of the defi environment, including cryptocurrencies and smart contracts, a description of some of the key services defi offers, a limited comparison of some of the areas where defi and traditional finance diverge, and a discussion of defi's regulatory treatment and certain key policy issues.

Defining *Defi*

Defi generally refers to the use of cryptocurrency and certain programs that create a financial system with little, if any, use for intermediaries. This version of financial services uses public, permissionless, and decentralized blockchains, distributed ledgers, and smart contracts to group, execute, and publish transactions in lieu of the traditional financial infrastructure provided by intermediaries—such as banks, brokers, exchanges, and clearing houses—subject to certain regulatory requirements. For example, a user who wants to borrow funds through a defi transaction connects to a lending protocol (a program that allows users to borrow and lend cryptocurrency) using a compatible piece of software and provides collateral in the form of some other cryptocurrency. The customer in this case is not required to provide personal details or a credit history for approval, as is required in many forms of traditional underwriting. There is an implicit tradeoff: Defi's openness and wide availability limit the types of transactions that are available (generally requiring collateral in lieu of credit history) but require few if any nontechnical requirements for services offered. By one account, "the defining feature of defi enterprises, projects, and ecosystems is that they are characterized by highly automated financial networks that have no single point of failure, do not rely on a single source of information, and are not governed by a central authority that is capable of altering or censoring this information in order to perform tasks central to delivery of one or more financial services."[2]

[1] Dirk A. Zetzsche et al., "Decentralized Finance," *Journal of Financial Regulation*, vol. 6 (September 30, 2020), p. 183, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3539194.

[2] Commodity Futures Trading Commission, Subcommittee on Digital Assets and Blockchain Technology Advisory Committee, *Decentralized Finance*, January 8, 2024, p. 6, https://www.cftc.gov/media/10106/TAC_DeFiReport010824/download.

The Building Blocks of Defi

Various technological components are required for the operation of a defi ecosystem. This section describes three of defi's key components: cryptocurrency, smart contracts, and oracles.[3]

Cryptocurrency

In its simplest form, defi is cryptocurrency: All on-chain cryptocurrency activity (see below for definition) is decentralized. Defi is underpinned by transactions being approved by decentralized and unaffiliated miners or validators. Bitcoin, the first cryptocurrency—which was introduced in 2008 and began operating in 2009—was originally intended to serve as an alternative payment and financial system that would disintermediate central and commercial banks and blunt the impact of government intervention in monetary affairs.[4] Since then, thousands of other cryptocurrencies have emerged—including those such as Ethereum, which some consider more compatible than the Bitcoin network with smart contracts—and serve as hubs for defi activity.[5]

On-chain refers to cryptocurrency transactions conducted across decentralized blockchains or networks by users who hold their cryptocurrency in software (called *wallets*). (By contrast, *off-chain* crypto activity is conducted by intermediaries on centralized platforms, wherein the platforms conduct the transactions on users' behalf. *Off-chain* activity is generally not considered defi. See textbox below.) In a public, permissionless, and decentralized system, the network does not reside on and propagate from a central server or series of servers managed by one specific centralized company or individual. Rather, it is composed of discrete and often unaffiliated computers (or groups of computers) that represent *nodes* of the network. Participants engaging in the on-chain activity hold crypto in pieces of software called *self-custody* or *unhosted* wallets.

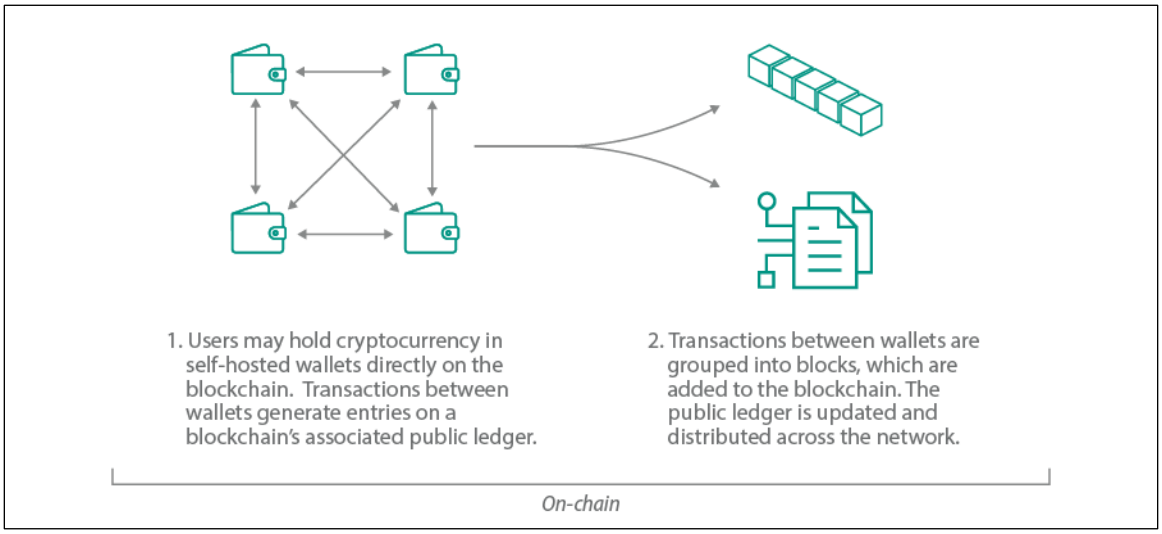
These wallets are pseudonyms for their users and are associated with addresses on a blockchain that can transact directly with each other without an intermediary, as seen in **Figure 1**. All transactions are publicly available, but the pseudonyms may be difficult to link to users. For this reason, cryptocurrency may be interpreted by some as providing relatively greater privacy than traditional financial applications. On-chain transactions may also appeal to users who are opposed to centralized platforms for ideological reasons or concerns about platform solvency, among others. In addition, they may make it easier to conduct and conceal illicit financial activity. Various resources, including mixers and blockchain analytics (described below), have developed to obfuscate and track transactions, respectively.

[3] Cryptocurrency is itself composed of numerous different building blocks, some of which will be discussed elsewhere in this report. For an overview of cryptocurrencies' various components, see CRS Report R47425, *Cryptocurrency: Selected Policy Issues*, by Paul Tierno.

[4] The Genesis Block (or the first mined block of bitcoin) includes a cryptic message alluding to a bank bailout and has fueled speculation of the political ideology behind the technology. Bryce Elder, "Happy Birthday to a Giant Ponzi Scheme,' from Bitcoin's Accidental Co-Creator," *Financial Times*, January 3, 2023, https://www.ft.com/content/465fb224-3fc9-4b37-81d4-39eece1041df. See also Satoshi Nakamoto, "Bitcoin Open Source Implementation of P2P Currency," stored at Satoshi Nakamoto Institute, originally published at P2P Foundation, February 11, 2009, https://satoshi.nakamotoinstitute.org/posts/p2pfoundation/threads/1/.

[5] Vitalik Buterin, "A Next-Generation Smart Contract and Decentralized Application Platform," Ethereum, 2014, https://ethereum.org/en/whitepaper/.

Figure 1. Transactions Between *Unhosted* Wallets



Source: CRS.

Notes: This diagram does not depict all blockchain-related operations that occur when transactions and blocks are validated.

While such on-chain activity is one of the most basic forms of defi, the term *defi* has come to mostly describe a subset of transactions that use crypto to engage in some more complex activities in which crypto is the central factor. Self-custody or unhosted wallets that enable this activity have attracted the interest of some Members of Congress. For example, in the 119th Congress, certain provisions in the CLARITY Act (H.R. 3633), Senate draft legislation, and standalone bills would aim to prevent federal regulatory agencies from limiting use of unhosted or self-custody wallets to self-custody digital assets for lawful purposes.[6]

Stablecoins and tokenization—two other technologies closely linked with and enabled by cryptocurrency—also have roles in defi.[7] Stablecoins may be downloaded to public blockchains, allowing them to interact with defi protocol, where they are part of liquid trading pairs.[8] In July 2025, Congress passed the GENIUS Act (P.L. 119-27), which sought to establish a regulatory regime for stablecoin issuers. The law requires issuers to monitor suspicious activity and to maintain the "technical capabilities, policies, and procedures to block, freeze, and reject specific or impermissible transactions."[9] Stablecoins are usually bought and sold on centralized platforms, such as exchanges. These platforms are typically required to comply with customer identification requirements and may exhibit greater control over users and transactions relative to defi settings. Once purchased, however, the stablecoins may be transferred to decentralized wallets, where there is less control over who holds and transacts with them. Therefore, an issuer's ability to block, freeze, and reject certain transactions is presumably necessary in environments with fewer controls over screening customers and transactions.[10] Tokenization, a process of establishing a blockchain-based version of assets, is not, strictly speaking, a defi tool. However, conceptually,

[6] See for example H.R. 148 and S. 2284, companion bills called the Keep Your Coins Act of 2025.

[7] For more on stablecoins and tokenization, see CRS In Focus IF12984, *Key Issues in Stablecoin Legislation in the 119th Congress*, by Paul Tierno and Marc Labonte; and CRS In Focus IF12670, *Tokenized Assets*, by Paul Tierno.

[8] See https://www.coingecko.com/en/exchanges/uniswap-v3-ethereum for volume traded on Uniswap, a popular defi exchange.

[9] P.L. 119-27 §4(a)(5).

[10] P.L. 119-27 §4(a)(5).

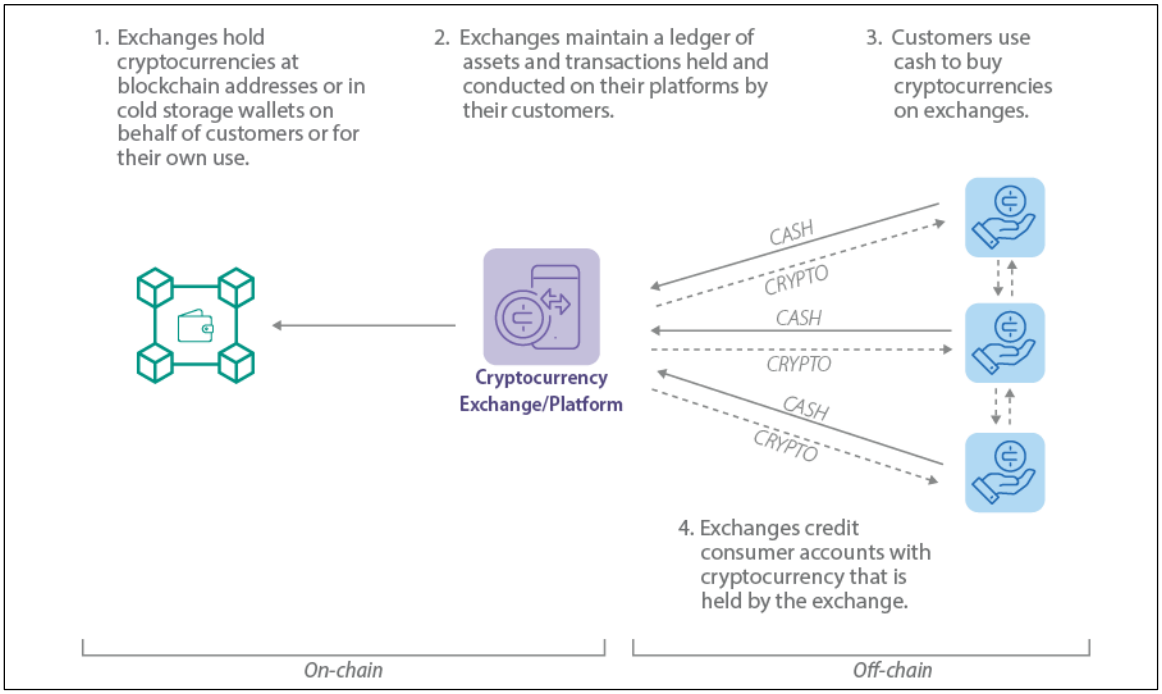
once any asset is on a public blockchain, there is no reason it cannot be traded in a decentralized fashion.

Centralization in a Defi World

Shortly after crypto originated, centralized crypto platforms, such as exchanges, formed. Centralized platforms provide familiar interfaces, allowing customers to register for accounts. Exchanges "host" or hold crypto in custody for users, allowing them to avoid interacting with the blockchain, offering a parallel (and perhaps more user-friendly) way to interact with crypto. See **Figure 2** for a depiction of this relationship.

Activity occurring among customers solely on centralized platforms does not generate on-chain activity and is not considered defi. Still, exchanges sell customers the cryptocurrencies used in defi and provide the on- and off-ramps that allow users to download crypto to or remove crypto from blockchains, as seen in **Figure 3**. In addition to conducting centralized crypto activities, platforms may operate and/or offer access to other services that interact with defi. Therefore, while exchanges' primary services are not defi, they have emerged as key stakeholders in defi based on their broader involvement in the industry. A chief aim of the CLARITY Act and a Senate Agriculture, Nutrition and Forestry Committee draft is regulating the various activities and stakeholders in centralized crypto.[11]

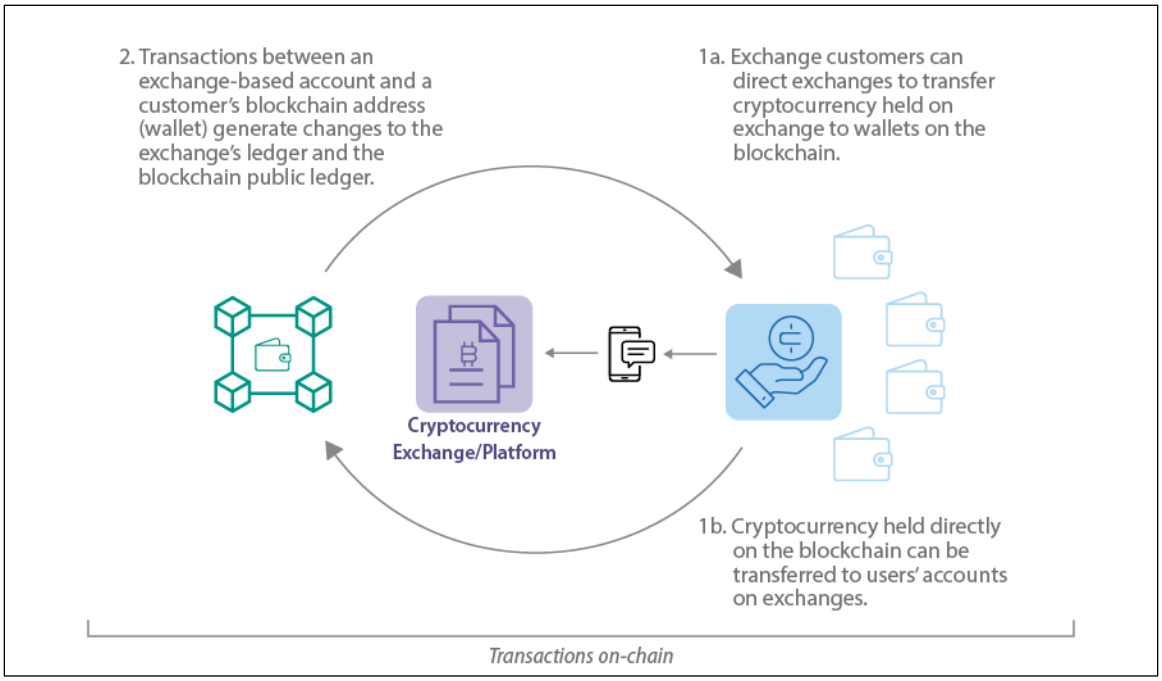
Figure 2. How Centralized Platforms Work



Source: CRS.

[11] See S. 3755.

Figure 3. The Intersection of Centralized and Decentralized Activities



Source: CRS.

Smart Contracts

Various blockchains operate like computer networks on which individuals or companies may develop programs and protocols that execute various functions—including financial services—across the network. The primary building blocks for such protocols deployed on blockchains are *smart contracts*. A smart contract is a program or software that can self-execute when a participant interacting with it meets some predetermined set of criteria, such as depositing a certain amount of cryptocurrency.[12] In this alternative system, "users interact with smart contracts, rather than with an institution."[13] These programs "reside" at specific addresses with balances of cryptocurrency that may be the target for transactions.[14] They facilitate relatively more complex financial transactions.

For example, suppose the owner of some cryptocurrency wishes to lend it for interest. That prospective lender would deposit or send some quantity of cryptocurrency to a specific blockchain address (with a "receipt" to retrieve it). Meanwhile, someone wishing to borrow the cryptocurrency would deposit at the same address some quantity of collateral (in the form of a different cryptocurrency) and withdraw the desired cryptocurrency from the same address.

Ethereum, the blockchain of the cryptocurrency ether, emerged after the Bitcoin network as an "alternative protocol for building decentralized applications … allowing anyone to write smart contracts and decentralized applications where they can create their own arbitrary rules for

[12] Nick Szabo, "The Idea of Smart Contracts," 1997, https://web.archive.org/web/20140406003401/szabo.best.vwh.net/idea.html.

[13] Raphael Auer et al., "The Technology of Decentralized Finance (DeFi)," Bank for International Settlements, January 17, 2023, p. 4, https://www.bis.org/publ/work1066.pdf.

[14] Ethereum.org, "Introduction to Smart Contracts," last updated February 12, 2025, https://ethereum.org/en/developers/docs/smart-contracts/.

ownership, transaction formats and state transition functions."[15] Ethereum has emerged as the most popular blockchain on which various smart contracts operate and financial services take place.

Oracles

Oracles are applications that link blockchain applications with data not stored on blockchains. Smart contracts are formatted to operate on particular blockchains or networks, and, as such, distinct parts of transactions are by definition interoperable (or compatible) with the smart contracts. A wallet configured to work on the Ethereum blockchain holding Ethereum-compliant tokens can deposit those tokens in an Ethereum-based smart contract. In this way, many smart contracts are self-contained—that is they do not require any inputs not natively provided by blockchain-based entities. However, some smart contracts enable transactions that are based on relationships that may not be endogenous (or native) to those technologies or blockchains. For example, suppose an investor is holding USDC, a dollar-backed stablecoin, and wants to borrow ether. While both coins are blockchain-based, their price relationship is instead driven by some external market. In cases when such exogenous (or non-native) information is required, defi applications rely on oracles, which "provide a link between off-chain and on-chain data" that supply and verify external data to applications.[16] Off-chain data expand the use of blockchains, which otherwise "would only have access to data from within their networks."[17]

Collateral in the Defi Environment

Collateral plays an important role in defi, and certain defi transactions, including borrowing, require that users deposit collateral into smart contracts that can be reclaimed when transactions are complete. Collateral used in defi are other cryptos native to or formatted to operate on the protocols' blockchains. The amount of collateral is based on the relationship of any two or more currencies in a transaction: for example, the cost of currency A in terms of currency B and vice versa. Moreover, lending generally requires over-collateralization to limit losses and prevent defaults.[18] Relationships that are market-based and not included in blockchain data rely on oracles to fill the information gap, supplying off-chain data to on-chain contracts. As price relationships between two assets change, a collateral-based contract may issue an automatic margin call, requiring that a user increase collateral. The oracle is not the data source itself—which may be a centralized exchange or some other centralized repository of current cryptocurrency data—"but rather the layer that queries, verifies, and authenticates external data sources and then relays that information."[19]

Defi Applications

Defi may refer to different activities that take place in different parts of the crypto environment. For example, mining and validating, which are blockchain activities approving basic transactions, can arguably be described as defi. However, *defi* also describes complex series of financial activities that include trading on and operating decentralized exchanges and lending and borrowing, among others.

[15] Buterin, "A Next-Generation Smart Contract and Decentralized Application Platform."

[16] Abdeljalil Beniiche, "A Study of Blockchain Oracles," INRS, July 14, 2020, p. 1, https://arxiv.org/pdf/2004.07140.

[17] Beniiche, "A Study of Blockchain Oracles," p. 1.

[18] Lioba Heimbach and Wenqian Huang, "DeFi Leverage," Bank for International Settlements, March 2024, pp. 18-19, https://www.bis.org/publ/work1171.pdf.

[19] Beniiche, "A Study of Blockchain Oracles," p. 1.

Defi Layers

The technological underpinnings of crypto and defi discussed above are often described as comprising a framework, or *stack*, composed of layers. Layers are associated with specific software or hardware that facilitates different functions. Certain defi activity may occur on different layers. Different researchers and market participants may describe the defi layers somewhat differently. One classification of the stack includes the settlement, application, and interface layers[20]:

- **Settlement layer.** The settlement layer is described as being "responsible for completing financial transactions. In DeFi, this functionality is typically provided by" distributed ledger technology.[21] Native tokens (such as ether) convey value in transactions on the settlement layer.
- **Application layer.** Smart contracts on the application layer may consist of crypto assets—including fungible and nonfungible tokens—and defi protocols, such as decentralized exchanges (or DEXes). The Ethereum network has established the ERC-20 standard and ERC-721 token standards, which are smart contracts consisting of standards that developers use to mint (or create) fungible and nonfungible tokens, respectively, that operate on the Ethereum network.
- **Interface layer.** "Front end" applications are interfaces through which users interact with the programs built on underlying layers.

Different researchers and market participants may also describe the defi layers somewhat differently. For example, an advisory committee convened by the Commodity Futures Trading Commission (CFTC) described an expanded stack, including physical/hardware (devices) up through protocols, networks, data, application user, asset/market and governance layers.[22]

Total value locked (TVL), a common industry measure of the value of all assets deposited in the various defi protocols, is approximately $98 billion across all blockchains as of March 2026.[23] At the height of the last crypto boom, in late 2021, TVL had reached nearly $180 billion before dropping precipitously to below $40 billion.[24] While TVL accounts for defi across blockchains, protocols on the Ethereum network are most popular with TVL of around $56 billion as of March 2026.

A recent draft crypto market structure bill would mandate that Treasury issue guidance regarding the sanctions and anti-money laundering requirements obligations required of "distributed ledger applications layers."[25] According to the definition of *distributed ledger applications layers* offered in the bill, however, the term refers to an application that permits creation or submission of an "instruction, communication, or message" and expressly excludes from the definition components of defi addressed in this report, including a distributed ledger, a decentralized exchange (referred to as a "decentralized finance trading protocol"), validators, and other nodes.[26]

The remainder of this section discusses various types of activity often described as defi.

[20] Auer et al., "The Technology of Decentralized Finance," pp. 3-4. This DeFi stack reference refers to the BIS report's characterization.

[21] Auer et al., "The Technology of Decentralized Finance," p. 4.

[22] CFTC, *Decentralized Finance*, p. 26.

[23] DeFiLlama, "Total Value Locked," last accessed on March 10, 2026, https://defillama.com/. For a definition of TVL, see Lucas Nuzzi et al., "Understanding Total Value Locked (TVL)," 2021, https://coinmetrics.substack.com/p/coin-metrics-state-of-the-network-0c0.

[24] DeFiLlama, "Total Value Locked." This reflects a drop in cryptocurrency values.

[25] H.R. 3633, 119th Cong. § 302(b) (amendment in the nature of a substitute intended to be offered by Sen. Tim Scott).

[26] H.R. 3633, 119th Cong. § 302(a)(1)(B) (amendment in the nature of a substitute intended to be offered by Sen. Tim Scott).

Validating and Staking

Traditional finance relies on a system of trust to ensure the smooth delivery of financial products and services. Trust in this context includes features such as licensing, regulation, oversight, supervision, and enforcement. Conversely, defi and crypto are often described as being trustless[27]—users engage in activities without needing to trust anyone else. In lieu of trust, crypto uses various technological features, including consensus mechanisms for mining and validating transactions.

Consensus mechanisms are models used to verify blocks of transactions, thereby allowing disparate participants in a blockchain to agree on the state of the blockchains ledger and hence the ownership of assets.[28] Consensus mechanism participants (such as miners or stakers) approve transactions, establishing ownership of assets and the status of the blockchain and distributed ledger. In the *proof of work* consensus mechanism, miners engage in onerous and energy-intensive computer operations required to approve blocks of transactions. The costs of the required hardware and energy are intended to deter miners from verifying blocks with illegitimate transactions. In the *proof of stake* consensus mechanism, those digital asset holders charged with maintaining the blockchain must "stake"—deposit or lock up—their crypto into smart contracts in order to validate transactions and thus earn rewards as compensation for their role in the blockchain's upkeep. Staking usually requires a significant outlay—for example, 32 ether (or more than $64,000 as of March 2026) on the Ethereum platform. Failure to correctly verify a transaction or engaging in activity deemed detrimental to the blockchain may result in a staker's assets being slashed or forfeited.[29]

To the extent that such participants form the backbone of the system—operating and maintaining the necessary infrastructure—the roles they play are an analogous to traditional financial system infrastructure such as credit card and clearinghouse networks. They arguably meet the definition of *defi* because they are conducted by unaffiliated participants according to rules-based protocols. In addition, staking protocols have evolved such that a user can deposit certain funds in a staking protocol in return for a token that acts as a "certificate of deposit" for the amount staked.[30] This digital IOU essentially acts a new cryptocurrency, and users can invest this in still other defi protocols.

Mixers

All transactions on cryptocurrency blockchains are pseudonymous and public. Identifying cryptocurrency users may require significant effort, but it is not impossible, and governments and blockchain analytics firms have developed techniques for tracking transactions and identifying users. Mixers are applications that help users hide their ownership of assets by breaking the chain of custody.[31] According to one Department of the Treasury report, mixers allow users to

[27] The sense of trustlessness is based on defi and crypto being open-sourced, with code that can be audited by all users, cryptographically secured digital ledgers, and consensus mechanisms.

[28] Dylan Yaga et al., "Blockchain Technology Overview," National Institute of Standards and Technology, October 2018, p. 50.

[29] Securities and Exchange Commission, "Statement on Certain Protocol Staking Activities," press release, May 29, 2025, https://www.sec.gov/newsroom/speeches-statements/statement-certain-protocol-staking-activities-052925#_ftn7.

[30] Sylvain Carré and Franck Gabriel, "Liquid Staking: When Does It Help?," SSRN, September 19,2024, pp. 3-4, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4961555.

[31] Alex Wade et al., "How Does Tornado Cash Work?," CoinCenter, August 25, 2022, https://www.coincenter.org/education/advanced-topics/how-does-tornado-cash-work/; and Chainalysis, "Understanding Tornado Cash, Its (continued...)

"obfuscate the source, destination, or amount involved in a virtual asset transaction."[32] To use the application, a user deposits funds from one wallet or address into a smart contract address and then withdraws the same amount to a different wallet or address. Mixers may institute certain requirements to be more effective. For example, mixers may require that funds be deposited in specific denominations to standardize inputs and outputs to further obscure ownership. Also, a sufficient quantity of users may be required for greater privacy.

Mixers may be centralized or based on smart contracts. Smart-contract-based mixers are considered defi because they do not rely on custodial services and users are not required to relinquish their private keys. While specific individuals or companies may develop mixer smart contracts, once deployed they exist on decentralized blockchains and are reportedly unalterable and may limit human interaction.[33]

The Financial Crimes Enforcement Network (FinCEN) published guidance in May 2019 that addresses whether different types of cryptocurrency services are subject to its regulations, including the Bank Secrecy Act (BSA), which establishes the federal framework for anti-money laundering (AML) laws (often referred to collectively as BSA/AML).[34] The guidance has been interpreted as applying to custodial mixers—which are operated by individuals or companies and take custody of funds—but not to decentralized mixers that do not control funds.[35] Provisions from various market structure drafts would seemingly codify the exemption of certain decentralized applications (such as mixers) from registration requirements.[36] In recent correspondence sent to the Senate Banking, Housing, and Urban Affairs Committee, the chairman and the ranking member of the Senate Judiciary Committee addressed certain jurisdictional and substantive issues regarding such registration exemptions.[37]

Decentralized Exchanges

Decentralized exchanges (or DEXes) are platforms where individuals can trade cryptocurrency. DEXes resemble centralized exchanges in that they permit users to exchange one cryptocurrency for another and "purport to allow users to self-custody" their assets.[38] However, centralized exchanges intermediate users and transactions, holding assets in custody and executing users'

Sanctions Implications, and Key Compliance Questions," August 30, 2022, https://www.chainalysis.com/blog/tornado-cash-sanctions-challenges/#how-it-works.

[32] Department of the Treasury, *Illicit Finance Risk Assessment of Decentralized Finance*, April 6, 2023, p. 10, https://home.treasury.gov/system/files/136/DeFi-Risk-Full-Review.pdf.

[33] Wade et al., "How Does Tornado Cash Work?" Certain mixers may allow greater company management.

[34] The BSA was established before the advent of cryptocurrencies. FinCEN, a bureau within the Department of the Treasury primarily charged with administering the BSA, has enforcement authority to bring administrative actions for failure to meet BSA requirements (see 31 U.S.C. §310 and 31 C.F.R. §1010.810(a)). FinCEN, "Application of FinCEN's Regulations to Certain Business Models Involving Convertible Virtual Currencies," May 9, 2019, https://www.fincen.gov/sites/default/files/2019-05/FinCEN%20Guidance%20CVC%20FINAL%20508.pdf.

[35] Department of the Treasury, *Report to Congress from the Secretary of the Treasury on Innovative Technologies to Counter Illicit Finance Involving Digital Assets*, March 2026, pp. 7-8, https://home.treasury.gov/system/files/246/GENIUS-Act-Illicit-Finance-Innovation-Congressional-Report-March-2026.pdf; Chainalysis, "Crypto Mixers and AML Compliance," August 23, 2022, https://www.chainalysis.com/blog/crypto-mixers/.

[36] H.R. 3633, §109; S. 3755, §207; and H.R. 3633, §604(c)(1)(B) (2026) (amendment in the nature of a substitute intended to be offered by Sen. Tim Scott), https://www.banking.senate.gov/imo/media/doc/market_structure_draft.pdf.

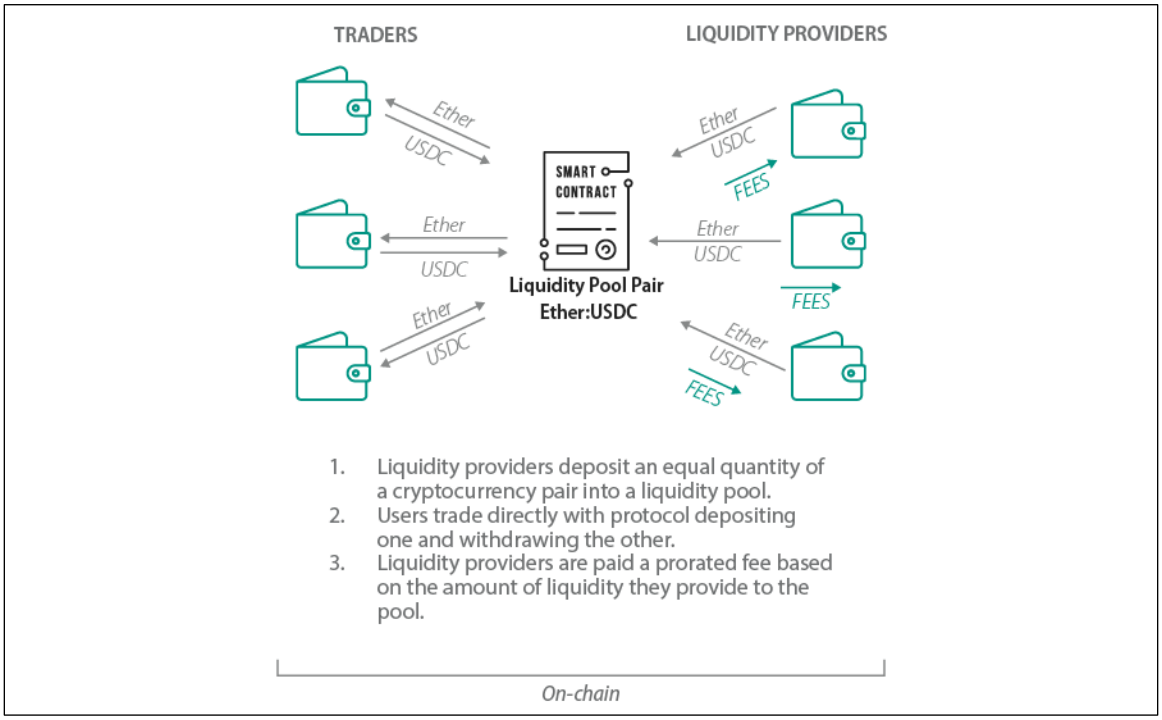
[37] Letter from Charles E. Grassley, Chairman, and Richard J. Durbin, Ranking Member, Senate Judiciary Committee to Tim Scott, Chairman, and Elizabeth Warren, Ranking Member, Senate Banking Housing and Urban Affairs Committee, January 14, 2026, https://www.politico.com/f/?id=0000019b-c7e8-dd3c-a5df-effa74800000.

[38] Department of the Treasury, *Illicit Finance Risk Assessment of Decentralized Finance*, p. 15. In some instances, according to reports, operators of a protocol may retain access to the funds.

commands on their behalf. DEXes employ new mechanisms, such as liquidity providers and automatic market makers, to provide continuous liquidity, fulfilling all orders from the same pool of assets.

Automated market makers (or AMMs) and *liquidity providers* are integral parts of the defi trading protocols. AMMs are smart contracts that manage liquidity of trading pairs (two cryptocurrencies) and whose algorithm define the relative price of digital assets.[39] Unlike in traditional exchanges (including centralized crypto exchanges)—where traders are matched based on the quantities and prices at which they are willing to buy or sell as recorded in a central order book—DEX users trade directly with the AMM protocol. Liquidity providers deposit the two assets of a trading pair at predetermined ratios into a liquidity pool smart contract, thereby creating the liquidity that platform users trade with, as seen in **Figure 4**.[40] (The assets are crypto assets, such as ether or a stablecoin, for example.) Trades are priced according to a preexisting price algorithm based on the supply of each asset in the pool and some algorithm defining their relationship.[41] Trades consist of depositing one token and withdrawing the other based on that price. The AMM smart contract is coded to automatically update the prices of the assets based on a predetermined mathematical equation, of which users are aware. As one token becomes scarcer, a user must deposit greater amounts of the other.

Figure 4. Example of a Smart Contract Liquidity Pool



Source: CRS.

[39] Andrey Sergeenkov, "What Is an Automated Market Maker?," CoinDesk, August 20, 2021, https://www.coindesk.com/learn/what-is-an-automated-market-maker/.

[40] Sergeenkov, "What Is an Automated Market Maker?"

[41] Jiahua Xu et al., "SoK: Decentralized Exchanges (DEX) with Automated Market Maker (AMM) Protocols," ACM Computing Surveys, March 14, 2023, pp. 1, 3, https://arxiv.org/pdf/2103.12732.

Liquidity providers are compensated in the form of fees that are generally paid in a proportion to the amount of liquidity they provide.[42] (For example, a liquidity provider that provides 1% of the assets in a pool earns 1% of the fees generated.) This fee is intended to compensate liquidity providers for the fact that the cumulative value of their pairs may be less when removed.[43]

Uniswap is the largest DEX by volume (at around $52.5 billion over a 30-day period) and had approximately $3.1 billion in TVL as of March 2026, according to an industry source.[44] The DEX reportedly lists over 1,000 coins and more than 1,000 trading pairs.[45] While it originated on the Ethereum blockchain, it provides for trading and access to other blockchain-based cryptocurrencies through various tools.

Dynamic Pricing

Certain defi protocols are coded to automatically update the price relationship between two assets based on a predetermined mathematical equation, sometimes referred to as a constant product formula. Users are aware of the equation, which is hardcoded into the smart contract. One such pricing equation is represented as $x*y=k$, in which x and y are the quantities of the two assets in the AMM and k is some constant that never changes. Because k cannot change, as the quantity of one asset goes down, the amount of the other token must go up. To trade against the pair, a trader deposits one asset and withdraws the other at current prices (relative quantities). When the quantity of one side in a pair is reduced, it becomes scarcer (and more valuable) relative to the asset that was deposited; conversely, the asset that was deposited becomes relatively more plentiful (and cheaper) in terms of its trading partner. When trading for one currency (removing it from the pair), a trader must deposit a quantity of the other that will keep k constant. As transactions are processed, the prices adapt dynamically based on the pool's ratios.[46]

Lending Protocols

Lending/borrowing protocols allow users to temporarily lend or borrow cryptocurrency, similar to DEXes. Once a protocol is published and live, a liquidity provider may deposit a given asset into the lending protocol. Users who borrow from a specific asset lending protocol must first provide collateral (usually in over-collateralized quantity) in the form of some other token.[47] The funds are deposited and withdrawn from a smart contract. The amount of collateral required to maintain the transaction is subject to change and may be automatically updated if the price relationship between the two cryptocurrencies—both the amount provided as collateral and that which was borrowed—drives the permitted loan-to-value ratio above contract limits. It also calculates the amount of interest to be paid by the borrower on both the token borrowed (withdrawn from the protocol) and loaned (deposited into the protocol as collateral).[48] In certain protocols, lenders receive tokens as proof of the liquidity provided (LP)—representing the claims on the depositors'

[42] Xu et al., "SoK: Decentralized Exchanges," p. 3; and Sergeenkov, "What Is an Automated Market Maker?"

[43] Joe Weisenthal and Tracy Alloway, "Tom Schmidt Explains What You Need to Know About DeFi," *Bloomberg*, June 28, 2021, https://www.bloomberg.com/news/articles/2021-06-28/tom-schmidt-explains-what-you-need-to-know-about-defi. Not all DEXes are based on AMMs, and some mirror traditional exchanges using order books. Xu et al., "SoK: Decentralized Exchanges," p. 5.

[44] DeFiLlama, "DEXs Volume," last accessed on March 10, 2026, https://defillama.com/dexs.

[45] CoinGecko, "Top Decentralized Exchanges Ranked by 24H Trading Volume," March 10, 2026, https://www.coingecko.com/en/exchanges/decentralized.

[46] For an explanation, see Faisal Khan, "Formulas for Automated Market Makers (AMMs)," The Money Wiki, last updated on January 30, 2026, https://faisalkhan.com/knowledge-center/payments-wiki/f/formulas-for-automated-market-makers-amms/.

[47] Sirio Aramonte et al., "DeFi Risks and the Decentralisation Illusion," Bank for International Settlements, June 14, 2022, p. 1, https://www.bis.org/publ/bisbull57.pdf.

[48] Jiahua Xu and Nikhil Vadgama, "From Banks to DeFi: The Evolution of the Lending Market," *Enabling the Internet of Value*, vol. 53, no. 66 (December 20, 2022), https://arxiv.org/pdf/2104.00970.

share of the pool—while borrowers receive tokens for the collateral provided.[49] These wrapped tokens serve as IOUs, without which the original liquidity or collateral cannot be retrieved. Market participants, referred to as "keepers," regularly monitor protocols in the event that a price move renders initial collateral insufficient to cover the initial amount borrowed (i.e., the loan-to-value ratio rises above the threshold). A keeper can repay a portion of the borrowed position in exchange for a portion of collateral.[50] TVL in lending protocols is approximately $54 billion as of March 2026.[51] The largest lending protocol is Aave, with approximately $27 billion in TVL, according to a site that aggregates market data.[52]

Yield Farming

Yield farming is the practice in which crypto asset holders maximize their returns, or yield, by participating in various forms of defi at the same time. Yield farmers generally engage in multiple forms of defi discussed above, such as providing liquidity for trading and lending.

In various forms of defi, those who provide liquidity to lending protocols or DEXes are rewarded with LP tokens. The tokens function as receipts that identify the holders as having provided liquidity in some decentralized applications and allows them to unlock or remove that liquidity. The LP token holder is due fees, interest, the right to redeem the cryptocurrency, or some combination thereof. There may be demand for the LP tokens themselves, and holders can deposit the LP coins to establish liquidity.[53] Users may deposit those tokens in standalone protocols or in aggregators or "farming" protocols that maximize yields.[54]

Differences with Traditional Finance

While defi aims to provide services similar to those offered by the traditional financial sector, such as lending and the trading of assets, it has some notable differences. This section provides a limited comparison of the provision of financial services across traditional and decentralized financial industries.

Regulated vs. Permissionless Environments

One primary point of comparison between the two financial systems is the role played by regulators and the extent to which participants must follow rules or established precedent. In traditional finance, financial institutions are subject to a variety of laws and regulations from various jurisdictions through chartering, licensing, or registration requirements. Institutions with international footprints may also be subject to foreign jurisdictions. As a result, institutions face a host of regulatory requirements and, in many cases, ongoing supervision and enforcement by their regulators. Moreover, before customers can use many types of financial goods and services, they must provide proof of identification, and institutions must confirm their identities performing the appropriate risk-based due diligence.

[49] Xu and Vadgama, "From Banks to DeFi," p. 6.

[50] Auer et al., "The Technology of Decentralized Finance," p. 14.

[51] DeFiLlama, "Lending TVL Rankings," last accessed March 10, 2026, https://defillama.com/protocols/lending.

[52] DeFiLlama, "Lending TVL Rankings," last accessed March 10, 2026, https://defillama.com/protocol/aave.

[53] Nat Eliason, "Field Guide to the Curve Wars: DeFi's Fight for Liquidity," Nat's Crypto Newsletter, February 17, 2022, https://crypto.nateliason.com/p/curve-wars; and Gemini Trust, "How Liquidity Provider (LP) Tokens Work," February 26, 2025, https://www.gemini.com/cryptopedia/liquidity-provider-amm-tokens.

[54] Auer et al., "The Technology of Decentralized Finance," p. 19.

This experience contrasts with the defi sector. At its core, defi aims to be permissionless and censorship resistant. Defi entities, individuals, and protocols require only the appropriate technical standards, software, and know-how to access and/or publish code and smart contracts.

Since the introduction of defi, regulators and legislators have not written regulations or passed laws that specifically address defi's legal requirements. In the absence of specific rules of the road, regulators have had to determine whether and how to apply existing laws and regulations—sometimes issuing guidance—and participants have had to decide whether or how to comply. Regulators could then take action against an entity they considered in violation of rules. The sequence applied to both centralized cryptocurrency activity and defi. For example, both centralized and decentralized platforms engaged in money transmission must register with FinCEN to comply with the BSA/AML laws.[55] In addition, both may be subject to registration and other laws related to securities, commodities, and derivatives depending on the assets and services offered on the platforms.

Despite the requirements, according to U.S. Department of the Treasury, a "small number" of defi entities have registered with federal regulators.[56] Moreover, in a November 2023 term sheet of proposed legislative solutions to loopholes or gaps, Treasury seemed to acknowledge the lack of compliance by defi applications, suggesting that these firms do not believe they are subject to requirements (despite Treasury's insistence that they are) and recommended solutions that would strengthen their authority.[57]

Since the beginning of the second Trump Administration, the Department of Justice has deprioritized enforcement actions related to digital assets and indicated a willingness to use "innovation exemptions" for business models that do not neatly fit withing the existing regulatory framework.[58] The Securities and Exchange Commission (SEC) has also reportedly dropped pending enforcement actions.[59] Thus, the extent to which regulatory treatment of defi differs from that of traditional finance appears to be largely a matter of custom or practice that may continue to shift absent clarifying legislation.[60]

Treatment of the protocols and participants has been subjective and, as discussed above, shifted from the Biden Administration to the Trump Administration. However, according to an activities-

[55] The BSA was established before the advent of cryptocurrencies. Neither the statute defining financial institutions covered by the BSA's AML requirements (31 U.S.C. § 5312) nor the implementing regulations have been amended to specifically address cryptocurrency platforms. However, FinCEN issued guidance in 2013 stating that a cryptocurrency "administrator or exchanger ***is*** [a money services business] under FinCEN's regulations, specifically, a money transmitter, unless a limitation to or exemption from the definition applies to the person." FinCEN subsequently issued updated guidance in 2019, noting that such rules applied irrespective of business model, which meant decentralized applications are covered. See FinCEN, "Application of FinCEN's Regulations to Persons Administering, Exchanging, or Using Virtual Currencies," March 18, 2013, https://www.fincen.gov/sites/default/files/shared/FIN-2013-G001.pdf; and FinCEN, "Application of FinCEN's Regulations to Certain Business Models Involving Convertible Virtual Currencies."

[56] Department of the Treasury, *Illicit Finance Risk Assessment of Decentralized Finance*, p. 13.

[57] Department of the Treasury, "Potential Options to Strengthen Counter-Terrorist Financing Authorities," November 28, 2023, p. 3, https://www.coincenter.org/app/uploads/2023/12/11.28.2023-Counter-TF-Legislative-Proposals.pdf.

[58] Office of Deputy Attorney General Todd Blanche, "Ending Regulation by Prosecution," Department of Justice, April 7, 2025, https://www.justice.gov/dag/media/1395781/dl?inline; and Paul S. Atkins, "American Leadership in the Digital Finance Revolution," SEC, June 9, 2025, https://www.sec.gov/newsroom/speeches-statements/atkins-digital-finance-revolution-073125.

[59] For example, see Uniswap, "A Win for DeFi—SEC Closes Investigation into Uniswap Labs," February 25, 2025, https://blog.uniswap.org/a-win-for-defi.

[60] See, for example, H.R. 148 (119th), the Keep Your Coins Act of 2025, and S. 2669 (118th), the Digital Asset Anti-Money Laundering Act of 2023.

based view of risk and regulation—which holds that similar services generating similar risks should be regulated similarly—defi platforms and participants should ostensibly be regulated like their centralized crypto and traditional financial industry counterparts. Under such a framework, protocols, participants, or some combination thereof could conceivably be subject to legislation. Applications and protocols are analogous to exchanges, while users in the defi ecosystem—those that interact with smart contracts—take on the roles of banker (lender) and broker. In traditional finance, lenders face certain requirements, and trades are processed through intermediaries that are registered as brokers and/or dealers and subject to regulation. A steadfast application of the same-risk-same-regulation view could have far-reaching consequences for all in the defi ecosystem.

Credit vs. Collateral

The traditional financial system includes formal and informal processes that may limit who can access financial services. For example, banking services generally require identification and proof of residence. Certain types of bank accounts may also require that customers hold minimum balances or make a minimum number of monthly transactions. In addition, whether someone qualifies for a loan, and at what cost, may hinge in part on having a credit history and the quality of that history. Access to certain complex transactions or asset classes may require that users have a minimum net worth and/or a base level of financial sophistication. In addition, human and algorithmic biases employed in the provision of services may present additional challenges to certain groups seeking financial services.[61]

Defi does not include these limiting factors, which helps explain why some have suggested that defi has the potential to "democratize" finance.[62] Known and identified strictly by wallet addresses, users are limited solely by their ability to access blockchain networks. Additionally, because transactions often require over-collateralization and may include automated margin calls and liquidations, services are not contingent on users' credit profiles or other underlying attributes but on their ability to meet these thresholds.[63] Finally, protocols pool funds and pay liquidity providers proportionate to the amount of liquidity provided. As such, defi does not establish participation thresholds. Instead, users may participate at whatever level they choose.

In practice, the need to collateralize all loans may create hurdles of their own and limit potential uses. That is, while such loans may be used to fund financial transactions, loans fully collateralized by currency limit uses for the underserved or those otherwise lacking adequate collateral. Further, many consumers may lack the technical know-how and equipment to access defi.

Intermediation

The traditional financial system and defi are also distinguished by the level of centralization and the role that intermediators, such as financial institutions, play in the provision of services. For example, banks make loans and safeguard deposits, but the borrowers and savers of one

[61] Consumer Finance Protection Bureau, "CFPB Targets Unfair Discrimination in Consumer Finance," March 16, 2022, https://www.consumerfinance.gov/about-us/newsroom/cfpb-targets-unfair-discrimination-in-consumer-finance/; and Office of the Comptroller of the Currency, "OCC Releases Preliminary Findings from Its Review of Large Banks' Debanking Activities," press release, December 10, 2025, https://www.occ.gov/news-issuances/news-releases/2025/nr-occ-2025-123.html.

[62] Igor Makarov and Antoinette Schoarr, "Cryptocurrencies and Decentralized Finance," Bank for International Settlements, p. 3, December 2022, https://www.bis.org/publ/work1061.pdf.

[63] Makarov and Schoarr, "Cryptocurrencies and Decentralized Finance," p. 37.

institution are not direct counterparties of each other. Rather, both are clients of a bank that intermediates the services. Even when buyers and sellers are matched, such as with a traditional exchange, an institution has invested in the mechanisms that facilitate the transaction. These institutions must also comply with a host of other requirements, including registrations and vetting participants. Moreover, when a user wants to purchase an asset—for example, shares of stock in a particular company—some institution (usually a broker) conducts the trade through some form of exchange or other trading system that joins buyers and sellers, with other companies responsible for tracking stock ownership. A company's decision to offer stock for public consumption in an initial public offering involves still more intermediaries.

The role of a central entity in defi is incidental. Companies may create and upload smart contracts to a blockchain, but any individual may do so as well. In most instances smart contracts are immutable when published, and whether they function depends on users' ability and desire to interact with them. Such smart contracts thus permit peer-to-peer transactions in which the software alone—and no intermediary, such as a bank or a broker—sits between borrowers and lenders, for example. The function normally performed by that intermediary in traditional finance is performed by automated smart contract software. Operationally, defi transactions are self-custodied. In some defi applications, customers are said to retain control of their assets during various transactions.[64]

Proponents often argue that defi can lower transaction costs that come from interacting with intermediaries. However, whether defi can deliver on lower costs remains an open question. First, defi protocols, such as DEXes, also charge fees. While a portion of the fee is claimed by the liquidity provider—another defi user—it is still a cost that a borrower or trader incurs. Also, some protocols may charge fees in addition to those paid to liquidity providers. There are other fees as well: All transactions that occur on blockchains must pay transaction fees for the services to be executed.[65] Concentration among miners and validators—who perform the necessary steps of confirming transactions—may lead to transaction costs on the network remaining higher than necessary.[66] Moreover, some research has found that blockchains limit the number of transactions in each block to ensure that validators receive "sufficient rewards."[67]

The potential disintermediation and the reduction or elimination of fees are linked, as fewer middlemen require fewer fees, and open-source code may increase transparency. However, it may not be sufficient to eliminate asymmetric information to lead to more informed customers—technical capacity (such as the ability to read code) among participants may be required. Similarly, arguments that the simple nature of smart contracts can eliminate litigation do not account for the uncertain legal characterization of smart contracts and whether they are subject to contract law.[68] Instead, where consumers are uninformed, they may seek intermediaries.[69] Relatedly, where intermediaries perform necessary functions, they may charge fees.[70]

---

[64] Wade et al., "How Does Tornado Cash Work?"

[65] See "Ways to Interact with Crypto" and "Inclusion and Scalability" sections of CRS Report R47425, *Cryptocurrency: Selected Policy Issues*, by Paul Tierno.

[66] Makarov and Schoarr, "Cryptocurrencies and Decentralized Finance," p. 30.

[67] Frederic Boissay et al., "Blockchain Scalability and the Fragmentation of Crypto," Bank for International Settlements, June 7, 2024, p. 3, https://www.bis.org/publ/bisbull56.pdf.

[68] Josias N. Dewey, "Blockchain and Cryptocurrency Regulation," Global Legal Insights, October 23, 2019, p. 156, https://www.skadden.com/-/media/files/publications/2019/11/legalissuessurroundingtheuseofsmartcontracts.pdf.

[69] Makarov and Schoarr, "Cryptocurrencies and Decentralized Finance," p. 38.

[70] See Christopher J. Waller, Member of the Board of Governors of the Federal Reserve System, "Centralized and Decentralized Finance—Substitutes or Complements?," speech at the Vienna Macroeconomics Workshop, organized by the Institute of Advanced Studies, Vienna, Austria, October 22, 2024, https://www.bis.org/review/r241021c.htm.

Use Case Differences

The two systems are also contrasted by their uses. Arguably, some large percentage of financial activity in traditional financial markets is linked to activity in the "real economy" (nonfinancial uses). Companies may borrow money to invest in research and development; an individual may borrow money to purchase a house or other large item or to bridge one pay period to the next. Defi overwhelmingly operates in a closed loop of purely crypto financial transactions, and it is rare for defi transactions to have uses that are not crypto-finance in nature.

Elements of the defi environment may intersect with the real economy (via stablecoins and tokenization, for example) that may be tied to non-crypto assets, yet the share is significantly smaller than in traditional financial markets.[71] Moreover, while defi's intersections with traditional finance have increased and lines between the two are blurring, characteristics of certain defi elements addressed in this report—such as mixers and DEXes—reside at one end of the decentralized continuum (less oversight and centralization), with tokenization and stablecoins at another (greater oversight and centralization).

Regulatory Policy Issues

The chief policy issues surrounding defi stem mostly from a relative lack of regulatory clarity regarding the industry. The clarity issue seems particularly pronounced in defi and decentralized components of cryptocurrency in circumstances where applications are non-custodial and are intended to execute without an intermediary in part because existing statute and regulations had not previously considered that possibility. The resultant regulatory uncertainty creates and may exacerbate potential risks—which include regulatory arbitrage, systemic risk, and illicit finance. The industry may also create certain benefits, which may include promoting innovation and potential for greater accessibility to certain financial services.

Currently, there is not an overarching legislative or regulatory framework for defi.[72] As with cryptocurrency, various regulators have applied laws and regulations where they had interpreted their authorities as applying to certain defi transactions, services, or platforms. Since the start of the current Administration, that interpretation has generally shifted, leading regulators to rescind guidance or withdraw enforcement actions aimed at defi.

In this context, Congress may consider whether or not to conduct oversight or legislate on defi. If Congress decides to legislate, it may consider whether to do so in dedicated legislation or include defi within broader cryptocurrency legislative efforts. It may also decide whether legislation should establish certain requirements for defi that mirror those it seeks for cryptocurrency or whether to codify certain exemptions.

Regulatory Arbitrage and Innovation

The evolving regulatory and legislative environment has created confusion regarding whether certain defi applications—notably exchanges—are subject to regulation. For example, in April 2024, Uniswap Labs, the developer behind largest decentralized exchange, reportedly received a Wells Notice from the SEC Enforcement Division notifying the platform of the regulator's

[71] TVL in defi applications—around $98 billion as of March 2026—remains relatively low compared to the traditional financial system. TVL is 0.1% of global equity market capitalization of $127 trillion as July 2025. See DeFiLlama, "Total Value Locked"; and SIFMA, "Capital Markets Fact Book," July 28, 2025, https://www.sifma.org/resources/research/statistics/fact-book/.

[72] Notwithstanding the GENIUS Act (P.L. 119-27), which touches defi only tangentially.

intention to bring legal action against Uniswap, in part for operating as an unregistered exchange.[73] However, in February 2025, Uniswap reported that the SEC closed its investigation into the app.[74] Therefore, whether a defi exchange must register with various regulatory agencies such as the SEC and the CFTC appears to be subject to the current legal interpretation and policy of leadership at the agency at a given time.

Congress may decide to pass legislation applicable to all platforms that allow crypto trading—irrespective of whether they are centralized or decentralized—requiring that they register with some market regulator. Alternatively, Congress could explicitly exclude DEXes from registration requirements. Should Congress choose not to legislate on crypto or defi, regulatory treatment would presumably revert to the agencies and their presidentially appointed leadership. As previously discussed, the current Administration has indicated a shift from the policies of the previous Administration, broadly taking a more permissive position toward defi and cryptocurrency. For example, in a speech on defi in June 2025, the chair of the SEC said he was exploring the viability of an innovation exemption for on-chain developers, which could include defi.[75]

From industry's perspective, some participants believe that enforcing compliance with rules required of certain traditional entities would "chill the kind of innovation on US soil that benefits individual consumers" and discourage future innovators.[76] In addition, some industry proponents believe that codifying exemptions would establish regulatory clarity and stop the slide in open-source software development occurring in the United States, which one estimate claims has fallen from 25% in 2021 to 18% in 2025.[77] A recent report by the President's Working Group on Digital Asset Markets noted that reversing such a decline was key to its goal of making the United States the cryptocurrency capital of the world.[78]

Exempting defi platforms such as DEXes from registration with market regulators while establishing the requirement for centralized platforms—either in new legislation or in some guidance from market regulators—would codify a different regulatory treatment for similar activities. In such an instance, whether a platform is regulated would depend not on the type of activity but on the nature of the platform or participant. This approach would run counter to certain recommendations to regulate similar financial activities and risks similarly.[79] Such

[73] Uniswap, "Fighting for DeFi," April 10, 2024, https://blog.uniswap.org/fighting-for-defi; and Uniswap, "Wells Submission on Behalf of Uniswap Labs," May 21, 2024, https://blog.uniswap.org/wells-notice-response.pdf. According to the SEC's 2017 Enforcement Manual, "A Wells notice is a communication from the staff to a person involved in an investigation that (1) informs the person the staff has made a preliminary determination to recommend that the Commission file an action or institute a proceeding against them; (2) identifies the securities law violations that the staff has preliminarily determined to include in the recommendation; and (3) provides notice that the person may make a submission to the Division and the Commission concerning the proposed recommendation." See SEC, Division of Enforcement, *Enforcement Manual*, February 24, 2026, p. 17, https://www.sec.gov/divisions/enforce/enforcementmanual.pdf.

[74] Uniswap, "A Win for DeFi."

[75] Paul S. Atkins, "Remarks at the Crypto Task Force Roundtable on Decentralized Finance," SEC, June 9, 2025, https://www.sec.gov/newsroom/speeches-statements/atkins-remarks-defi-roundtable-060925.

[76] Uniswap, "Wells Submission on Behalf of Uniswap Labs."

[77] Letter from DeFi Education Fund to Senate Committees on Banking and Agriculture, August 27, 2025.

[78] President's Working Group on Digital Asset Markets, Strengthening American Leadership in Digital Financial Technology, July 30, 2025, p. 23, https://www.whitehouse.gov/fact-sheets/2025/07/fact-sheet-the-presidents-working-group-on-digital-asset-markets-releases-recommendations-to-strengthen-american-leadership-in-digital-financial-technology/.

[79] "The [Financial Stability Board] will continue to facilitate cross-border and cross-sectoral cooperation among national financial authorities and international standard-setting bodies as they work towards developing a common (continued...)

divergent regulatory treatments could have the effect of leading market participants to engage in a form of regulatory arbitrage, whereby a firm engages in certain business activities—such as choosing a certain corporate or organizational structure or charter—based on regulatory treatment. Such differential treatment could encourage providers to engage in defi applications in lieu of or in addition to centralized activities. Crypto customers may also change how they interact with cryptocurrency. Both could potentially drive up activity and TVL in defi protocols. If TVL in defi grows, potential financial risks could occur in sectors with less regulatory oversight. In addition, a focus on the business model could shift supervisory focus from the legitimacy of market activity to proving or disproving business labels.

In a scenario where defi applications are omitted from a potential crypto regulatory framework—for example, if decentralized exchanges were not subject to potential rules applied to their centralized counterparts—assets, providers, and customers on one type of platform would be subject to registration and other requirements not applied to another. Such a juxtaposition might raise philosophical questions of whether other assets (such as securities)—which can also be tokenized and made to be traded on public blockchains and DEXes but whose issuance and trading are subject to regulation—may also be traded on decentralized and unregulated exchanges. Similarly, an argument could be made that loans offered on decentralized protocols are not subject to the Truth in Lending Act (5 U.S.C. §§1601 et seq.) and other requirements, including if they came to be offered by traditional banks.

Over the past couple of years Congress has been engaged in various interconnected but somewhat distinct conversations on stablecoins, market structure, and defi. The bills that have seen action in the 119th Congress treat defi and crypto market structure somewhat separately. This highlights the degree to which crypto has been re-intermediated—in that legislation would mostly apply to centralized intermediaries—and that, despite proposed legislation, the primary debate of whether and how to regulate decentralized assets and systems that are categorized as defi remains.

In July 2025, the House passed the CLARITY Act, a bill that would establish a regulatory framework for the issuance and trading of cryptocurrencies. The bill states that defi activities would not be subject to the act. Specifically, activities such as "compiling" and "validating" transactions and "providing computational work" would not be subject to the provisions of the bill. Similarly, "[d]eveloping, publishing, constituting, administering, maintaining, or otherwise distributing a blockchain system or a decentralized finance trading protocol" would not be subject to regulation. The bill would also require that the CFTC, the SEC, and the Treasury jointly conduct a study of defi, including use, benefits, and risks. The bill would require the Government Accountability Office to perform a separate study.

In addition, pieces of standalone legislation that address components of defi have been incorporated into the CLARITY Act. As mentioned above, the bill expressly addresses self-custody wallets (see "Cryptocurrency"). Also, a provision of the bill states that a "non-controlling blockchain developer or provider of a blockchain service" would not be treated as a money transmitter, a provision that likely captures some defi services. This provision was introduced in H.R. 3533, the Blockchain Regulatory Certainty Act.[80] Similar language was adapted for certain Senate drafts. Proposed legislation in the Senate would also exclude most elements of defi with language that exempts "software developers," including those that operate defi protocols or

understanding of the wide spectrum of crypto-assets as well as regulatory and supervisory policies that are risk-based technology-neutral, and grounded in the principle of 'same activity, same risk, same regulation.'" Financial Stability Board, "FSB Statement on International Regulation and Supervision of Crypto-Asset Activities," July 11, 2022, https://www.fsb.org/uploads/P110722.pdf. See pp. 1-2.

[80] H.R. 3533, §109

liquidity pools, from the bill's provisions.[81] Alternatively, in previous Congresses, some Members have introduced legislation that would treat various features of the defi ecosystem—including miners, validators, and unhosted wallet providers, among others—as financial institutions and thus subject to the BSA.[82]

Defi and Illicit Financial Activity

Although transactions that occur on defi protocols are public, criminals may exploit the pseudonymity that such protocols provide—a user is known by a string of alphanumeric characters with no obvious ties to a person's identity—to facilitate illicit financial activity.[83] Key regulatory policy considerations include whether the existing BSA/AML framework is appropriately calibrated to address illicit finance concerns arising from defi protocols. Whether and how Congress decides to legislate defi could have implications for how much illicit financial activity occurs on defi platforms.[84]

Currently, at the federal level, certain categories of cryptocurrency firms (including exchanges, payment platforms, and ATMs) are considered money services businesses and must register with FinCEN.[85] They must comply with BSA/AML laws, which require financial institutions to establish customer identification programs and abide by certain reporting and recordkeeping requirements. FinCEN applies the requirements to platforms based on the nature of the business model employed and the function performed irrespective of whether they are centralized or decentralized. In May 2019 guidance, FinCEN noted that money services business regulations apply to a "money transmitter if that person's activities include receiving one form of value (currency, funds, prepaid value, value that substitutes for currency—such as [convertible virtual currency or cryptocurrency], etc.) from one person and transmitting either the same or a different form of value to another person or location, by any means."[86] FinCEN regulations, according to the guidance, apply to "any business model that fits the same key facts and circumstances

[81] S. 3755, Section 207, states, "'Notwithstanding any other provision of this Act, except as provided in subsection (b), a person shall not be subject to this Act and the regulations promulgated under this Act based on the person directly or indirectly engaging in any of the following activities, whether singly or in combination, in relation to the operation of a blockchain system or in relation to a decentralized finance trading protocol…. Constituting, administering, or maintaining a decentralized finance messaging system or decentralized finance trading protocol, or operating or participating in a liquidity pool with respect thereto, for the purpose of executing a spot transaction for the purchase or sale of a digital commodity.'" A similar provision in the Senate Banking, Housing, and Urban Affairs draft introduced in January 2027 would relieve developers from certain registration requirements and penalties for failing to register.

[82] See, for example, S. 2669 (118th) and S. 2355 (118th).

[83] All transactions may be traced, but there are significant challenges to linking a wallet or address and associated transactions with an individual's identity.

[84] The use of blockchains in facilitating illicit activity has been ardently debated for some time. An academic paper from 2022 suggested that less than 3% of Bitcoin-related activity may be illicit in nature. Blockchain analytics firms estimate on-chain illicit activity as low as 0.15% or a figure that is likely to surpass $51 billion. See Igor Makarov and Antoinette Schoar, *Blockchain Analysis of Bitcoin Market*, National Bureau of Economic Research, October 2021, https://www.nber.org/papers/w29396. (It is not clear whether use for fraud is standardized across blockchains or whether these finding may also be similar across blockchains.) See also Chainalysis, "2025 Crypto Crime Trends: Illicit Volumes Portend Record Year as On-Chain Crime Becomes Increasingly Diverse and Professionalized," January 15, 2025, https://www.chainalysis.com/blog/2025-crypto-crime-report-introduction/; FinCEN, "Requirements for Certain Transactions Involving Convertible Virtual Currency or Digital Assets," 85 *Federal Register* 83840, December 23, 2020, p. 83841, https://www.federalregister.gov/documents/2020/12/23/2020-28437/requirements-for-certain-transactions-involving-convertible-virtual-currency-or-digital-assets.

[85] FinCEN, "Application of FinCEN's Regulations to Persons Administering, Exchanging, or Using Virtual Currencies."

[86] FinCEN, "Application of FinCEN's Regulations to Certain Business Models Involving Convertible Virtual Currencies," p. 8.

described in the guidance, regardless of its label."[87] The guidance addressed defi applications (sometimes referred to as DApps) specifically, stipulating that "when DApps perform money transmission, the definition of money transmitter will apply to the DApp, the owners/operators of the DApp, or both," and they will be subject to applicable BSA regulations.[88]

In 2022, President Biden issued Executive Order 14067, which, in describing that Administration's digital asset policy priorities, highlighted the importance of "preventing crime and illicit finance."[89] Despite this executive order and other regulations, Treasury had implied in an April 2023 report that there was likely limited compliance among defi entities with respect to BSA/AML regulations such as registration.[90] A small number of defi entities have reportedly registered with a regulator of any kind, and it is unclear whether any have registered with FinCEN and to what extent they comply with such sanctions and BSA/AML laws.[91] In that context, in November 2023, Treasury recommended circulated a series of legislative requests that included, among other proposals, the creation of a new category of financial institutions, explicit requirements that certain defi software and platforms be subject to the BSA, and provision of Treasury with authority to sanction specific blockchain nodes or networks—presumably to target specific smart contract-based applications.[92]

In August 2022, the U.S. Treasury's Office of Foreign Assets Control sanctioned Tornado Cash, a defi application, and certain on-chain crypto wallet addresses.[93] It removed the designation in March 2025.[94] The delisting notice cited the "evolving technology and legal environments."[95] This delisting and a related court decision raise the issue of whether a smart contract that self-executes without human input and alleges not to take customer funds can even be sanctioned.[96]

As with other regulatory priorities, this policy stance changed under the Trump Administration. First, in January 2025, President Trump issued Executive Order 14178 related to the incoming Administration's digital asset policy, which revoked Executive Order 14067, among other things.[97] In April 2025, the Deputy Attorney General wrote a memorandum to staff at the Department of Justice, the agency that prosecutes violations of the BSA, that stated it would "no longer pursue litigation or enforcement actions that have the effect of superimposing regulatory

[87] FinCEN, "Application of FinCEN's Regulations to Certain Business Models Involving Convertible Virtual Currencies," p. 2.

[88] FinCEN, "Application of FinCEN's Regulations to Certain Business Models Involving Convertible Virtual Currencies," p. 18.

[89] Executive Order 14607, "Ensuring Responsible Development of Digital Assets," 87 *Federal Register* 14143, March 14, 2022, https://www.federalregister.gov/documents/2022/03/14/2022-05471/ensuring-responsible-development-of-digital-assets.

[90] Department of the Treasury, *Illicit Finance Risk Assessment of Decentralized Finance*, p. 9.

[91] Department of the Treasury, *Illicit Finance Risk Assessment of Decentralized Finance*, p. 9.

[92] Department of the Treasury, "Potential Options to Strengthen Counter-Terrorist Financing Authorities."

[93] Department of the Treasury, "U.S. Treasury Sanctions Notorious Virtual Currency Mixer Tornado Cash," press release, August 8, 2022, https://home.treasury.gov/news/press-releases/jy0916. For more on sanctions, see CRS In Focus IF12390, *U.S. Sanctions: Overview for the 119th Congress*, by Liana W. Rosen.

[94] Department of the Treasury, "Tornado Cash Delisting," press release, March 21, 2025, https://home.treasury.gov/news/press-releases/sb0057.

[95] Department of the Treasury, "Tornado Cash Delisting."

[96] The court decision can be found at https://www.ca5.uscourts.gov/opinions/pub/23/23-50669-CV0.pdf.

[97] Executive Order 14178, "Strengthening American Leadership in Digital Financial Technology," 90 *Federal Register* 8647, January 31, 2025, https://www.federalregister.gov/documents/2025/01/31/2025-02123/strengthening-american-leadership-in-digital-financial-technology. See also CRS In Focus IF11064, *U.S. Efforts to Combat Money Laundering, Terrorist Financing, and Other Illicit Financial Threats*, by Rena S. Miller and Liana W. Rosen.

frameworks on digital assets."[98] It also directed prosecutors to "not charge regulatory violations in cases involving digital assets—including but not limited to unlicensed money transmitting … unless there is evidence that the defendant knew of the licensing or registration requirement at issue and violated such a requirement willfully." This was construed by some as de-prioritizing regulatory compliance.[99]

It is unclear whether the shift in attitude regarding defi will translate to legislation that exempts defi from compliance with sanctions and BSA/AML requirements or specifically applies certain requirements to defi. Investors and trade groups in the crypto and defi community favor legislation that would explicitly protect developers from enforcement actions for violations of such regulations.[100] A draft bill on cryptocurrency market structure released by the Senate Banking, Housing, and Urban Affairs Committee in January 2026 included a provision that stated that a "non-controlling developer or provider" would not be treated as being engaged in money transmitting for the purposes of a statute that prohibits illegal money transmitting businesses.[101] However, shortly after Senate Banking Committee cancelled a markup of the bill for other reasons, the chairman and ranking member of the Senate Judiciary Committee sent a letter to the Senate Banking Committee raising, among other issues, concerns that the draft provision would weaken the U.S. government's BSA/AML enforcement capabilities. Namely, it noted that the draft provision would "create a significant enforcement gap for decentralized digital asset platforms" that could attract illicit actors seeking to obscure unlawful transactions.[102]

Grey Area: Centralized to Decentralized Transactions

The intersection of decentralized activities with centralized activities represents another policy issue. Centralized intermediaries, such as exchanges, are required to comply with AML laws and regulations, presumably including transactions between a firm's customers and certain aspects of the decentralized ecosystem, such as self-custody wallets. However, it is unclear how closely such requirements are enforced. In 2020, FinCEN proposed a rule that would have required platforms to "verify the identity of customers in relation to transactions above certain thresholds involving [cryptocurrency] wallets not hosted by a financial institution."[103] While the rule was never finalized, its introduction highlights the gap in requirements. As crypto grows and becomes further intertwined with the traditional financial system, the amount of capital and the number of people who have access to less-regulated systems is likely to grow.

[98] Office of the Deputy Attorney General Todd Blanche, *Memorandum for All Department Employees: Ending Regulation By Prosecution*, Department of Justice.

[99] Kelly A. Lenahan-Pfahlert et al., "A New Era for Digital Assets: The Impact of DOJ's Shift Away from Regulation by Prosecution and Its Implications," Ballard Spahr, April 15, 2025, https://www.moneylaunderingnews.com/2025/04/a-new-era-for-digital-assets-the-impact-of-dojs-shift-away-from-regulation-by-prosecution-and-its-implications/.

[100] Letter from DeFI Education Fund to Senate Committees on Banking and Agriculture, August 27, 2025, https://www.defieducationfund.org/post/def-110-partners-submit-coalition-letter-on-developer-protections-in-market-structure.

[101] 18 U.S.C. §1960.

[102] Letter from Charles E. Grassley, Chairman, and Richard J. Durbin, Ranking Member, Senate Judiciary Committee to Tim Scott, Chairman, and Elizabeth Warren, Ranking Member, Senate Banking Housing and Urban Affairs Committee, January 14, 2026.

[103] Department of the Treasury, "The Financial Crimes Enforcement Network Proposes Rule Aimed at Closing Anti-Money Laundering Regulatory Gaps for Certain Convertible Virtual Currency and Digital Asset Transactions," press release, December 18, 2020, https://home.treasury.gov/news/press-releases/sm1216.

Magnitude of Risk[104]

Application of existing regulations and codifying certain exemptions for defi may have significant consequences. Discussions of uneven BSA/AML and sanctions compliance generally acknowledge that some level of illicit activity—including sanctions evasions—is occurring via defi applications. The pervasiveness of the use of blockchains in facilitating illicit activity has been ardently debated for some time. According to a notice of proposed rulemaking in 2020, FinCEN reported that it had received suspicious activity reports of approximately $119 billion associated with crypto, or what it said would equate to 11.9% of U.S.-based cryptocurrency industry activity.[105] Blockchain analytics firms estimate on-chain illicit activity as low as 0.15%, or a figure that is likely to surpass $51 billion.[106] However, those firms generally do not include activity in centralized platforms and are limited to counting activity from wallets connected to parties already known to them. While there is not a consensus regarding the magnitude of use of digital assets for illicit activity, U.S. Treasury noted in its 2024 National Money Laundering Risk Assessment:

> While the use of virtual assets for money laundering continues to remain far below that of fiat currency and more conventional methods that do not involve virtual assets, U.S. law enforcement agencies have observed virtual assets being misused for ransomware, scams, drug trafficking, human trafficking, and other illicit activities.[107]

New Solutions

Various researchers and policymakers recommend that regulatory agencies and Congress continue to monitor developments and remain engaged with industry participants so as to possibly identify novel solutions to some of the compliance challenges posed by the technology.[108] There may be solutions that limit the risk of the technology without eliminating the benefits. Certain solutions—such as requiring miners, validators, or others in the supply chain to screen addresses against lists of sanctioned wallets or wallets previously associated with illicit activities—may help bring certain parts of the defi ecosystem into greater compliance than they currently are. (Because Treasury publishes sanctioned wallet addresses, and wallet addresses are public and an integral identifying element of all transactions, willing participants can filter out sanctioned wallets.)

Engaging with the industry may lead to more technologically advanced solutions, such as *zero knowledge proofs*, a concept that aims to prove that a statement is truthful (say, that a transactor is not sanctioned) without revealing who the individual is.[109] While these solutions are likely not directly BSA/AML compliant, dialogue between industry participants and regulators may help determine if such technological solutions may achieve similar goals for defi application.

Congress may also consider legislation that approves such solutions for BSA/AML purposes. In 2025, the GENIUS Act (P.L. 119-27) included a provision that requires Treasury to provide a

---

[104] This subsection includes various estimates of illicit crypto activity. The estimates may vary regarding the amount of defi activity included.

[105] FinCEN, "Requirements for Certain Transactions Involving Convertible Virtual Currency or Digital Assets," p. 83841.

[106] Chainalysis, "2025 Crypto Crime Trends."

[107] Department of the Treasury, *2024 National Money Laundering Risk Assessment*, February 1, 2024, p. 59, https://home.treasury.gov/system/files/136/2024-National-Money-Laundering-Risk-Assessment.pdf.

[108] Makarov and Schoarr, "Cryptocurrencies and Decentralized Finance," p. 40.

[109] National Institute of Standards and Technology, Computer Science Resource Center, "Privacy-Enhancing Cryptography," January 3, 2017, https:/csrc.nist.gov/projects/pec/zkproof.

report to the Senate Banking and House Financial Services Committees on "legislative and regulatory proposals to allow regulated financial institutions to develop and implement novel and innovative methods, techniques, or strategies to detect illicit activity, such as money laundering and sanctions evasion, involving digital assets."[110] In response to that requirement, Treasury published a report in March 2026 regarding such "innovative" technologies in which it stated that it would promote the "latest technologies by financial institutions for compliance."[111] The report addresses the potential for artificial intelligence, digital identity, and blockchain monitoring and analysis to satisfy compliance requirements. At the same time, it is unclear whether blockchain participants would be willing to take the necessary steps that such solutions require and/or how the rest of the community might perceive such actions.[112]

Other Issues

Preparing for the Future

Current TVL in defi applications is around $98 billion.[113] For the sake of comparison, this figure is roughly the market capitalization of one large publicly traded corporation, such as Accenture (a consultancy firm), Bristol-Myers Squibb (pharmaceuticals), or Progressive (insurance). Nonetheless, this figure remains relatively low compared to the overall cryptocurrency market ($2.49 trillion as March 2026) and the traditional financial system, whose global equity market capitalization alone was around $127 trillion as of a July 2025 report.[114]

While future regulatory and legislative decisions may have ramifications for the future of the cryptocurrency and defi markets, defi may be poised to grow regardless of whether Congress chooses to regulate defi or cryptocurrency. According to Treasury Secretary Scott Bessent, stablecoins alone—which may be used in on-chain transactions and defi applications—may grow into a multitrillion-dollar industry following the passage of the GENIUS Act (P.L. 119-27), which created a regulatory framework specifically applied to those assets.[115] A digital asset market structure bill with a clear legislative and regulatory framework would serve as a governmental stamp of approval of crypto use more broadly that could encourage the issuance of new crypto that could further expand defi, particularly if defi is subject to more permissive treatment under such legislation. Risks that develop in defi because of potential regulatory arbitrage may spread quicky to the traditional financial system, with greater integration of crypto in the traditional financial system serving as the conduit.

[110] See P.L. 119-27, §9(e). The GENIUS Act also requires Treasury to seek public comment and to publish research and a risk assessment on the novel methods, techniques, or strategies. FinCEN is also required to issue guidance or rulemaking on the novel methods, techniques, or strategies.

[111] Department of the Treasury, *Report to Congress from the Secretary of the Treasury on Innovative Technologies to Counter Illicit Finance Involving Digital Assets.*

[112] Sam Kessler, "Ethereum's 'Censorship' Problem Is Getting Worse," CoinDesk, December 6, 2023, https://www.coindesk.com/tech/2023/12/06/ethereums-censorship-problem-is-getting-worse.

[113] DeFiLlama, "Total Value Locked."

[114] SIFMA, "Capital Markets Fact Book," press release, July 28, 2025, https://www.sifma.org/resources/research/statistics/fact-book/.

[115] Department of the Treasury, "Statement from U.S. Secretary of the Treasury Scott Bessent on Enactment of the GENIUS Act," press release, July 18, 2025, https://home.treasury.gov/news/press-releases/sb0197.

Feasibility and Legality of Potential Future Regulation

Some government regulation of defi might be challenged under the Free Speech Clause of the First Amendment to the U.S. Constitution.[116] For instance, the creators of defi technology might claim an expressive interest in communicating through their chosen computer code, or users might claim an expressive interest in using this particular medium to donate to political or charitable causes.[117] Even if a person does engage in protected expression by using defi, however, laws that affect speech are not necessarily unconstitutional. Instead, courts analyze First Amendment challenges by looking to what type of speech the government is regulating and how.[118] Generally, government actions are more likely to be ruled unconstitutional if they target speech based on its expressive content.[119] The First Amendment might not bar the application of laws focused on nonspeech conduct, such as decryption of DVDs,[120] or unprotected speech, such as fraud.[121]

Apart from the legality of regulations, certain conditions in the industry may make strict enforcement of regulations challenging. The open source and the permissionless nature of defi would allow a steady and constant stream of new entrants to take over in cases where enforcement threatens existing actors.

Author Information

Paul Tierno
Analyst in Financial Economics

[116] E.g., Van Loon v. Dep't of Treasury, 688 F. Supp. 3d 454, 470–71 (W.D. Tex. 2023) (concluding plaintiffs failed to present sufficient evidence that government sanctions of Tornado Cash prohibited plaintiffs' speech by restricting their donations to political and social causes), *rev'd on other grounds*, 122 F.4th 549 (5th Cir. 2024); Carman v. Yellen, 112 F.4th 386, 410–11 (6th Cir. 2024) (declining to dismiss claims alleging federal financial reporting requirements infringed on plaintiffs' freedom of association). This paragraph was authored by Valerie C. Brannon, Legislative Attorney. Questions from congressional clients regarding First Amendment issues may be directed to her.

[117] Kyle Langvardt, "Crypto's First Amendment Hustle," *Yale Journal of Law & Technology*, vol. 26, no. 1, p. 142 (2023), https://yjolt.org/sites/default/files/langvardt_26yalejltech130.pdf.

[118] CRS Report R47986, *Freedom of Speech: An Overview*, by Victoria L. Killion.

[119] E.g., Green v. U.S. Dep't of Justice, 54 F.4th 738, 745–46 (D.C. Cir. 2022).

[120] E.g., Universal City Studios v. Corley, 273 F.3d 429, 454 (2d Cir. 2001) (rejecting claim that First Amendment prevented applying Digital Millennium Copyright Act to prohibit posting or linking to DVD decryption technology). See also, e.g., Def. Distributed v. Att'y Gen., 167 F.4th 65, 82 (3d Cir. 2026) ("Purely functional code with no expressive purpose, use, or intent is simply not covered by the First Amendment.").

[121] E.g., FTC v. Dluca, No. 0:18-cv-60379-KMM, 2018 WL 4794518, at *3 (S.D. Fla. Sept. 5, 2018) (rejecting First Amendment defense where speech promoting cryptocurrency platform was "deceptive commercial speech" and therefore unprotected). For an overview of the so-called unprotected categories of speech, see CRS In Focus IF11072, *The First Amendment: Categories of Speech*, by Victoria L. Killion.

Disclaimer