Understanding Cryptocurrency

What Banks Need to Know

American Bankers Association®

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Summary

This report provides a high-level overview of cryptocurrency (crypto), including its origins and technological underpinnings, and the industry built to support it. The report attempts to map crypto-related business activities to comparable products and activities in the banking space, including: existing, ongoing and emerging regulatory issues related to the sector and what to expect in the next six to 18 months. Finally, the report provides considerations for banks as they approach the crypto sector either generally or commercially.

Introduction

Cryptocurrencies, such as Bitcoin, rely on blockchain technology ("blockchain"). Blockchains represent a transparent and decentralized way of recording transactions, both financial and non-financial, but their use for the creation, storage, transfer, and trading of cryptocurrencies has grown exponentially over the past few years. At the same time, the crypto industry itself, while novel to many, has reached all-time highs in terms of market size, public interest, and company valuation.

There are many terms of art used to describe cryptocurrencies and they are often used interchangeably. These include digital assets (a term that also includes assets other than cryptocurrencies), virtual currencies, crypto assets (which also includes more than cryptocurrencies), and tokens. For the purposes of this paper, we will use the term cryptocurrencies or crypto to mean transferable digital units, operating on open blockchains. A full glossary of terms is provided at the end of this report.

What is Cryptocurrency?

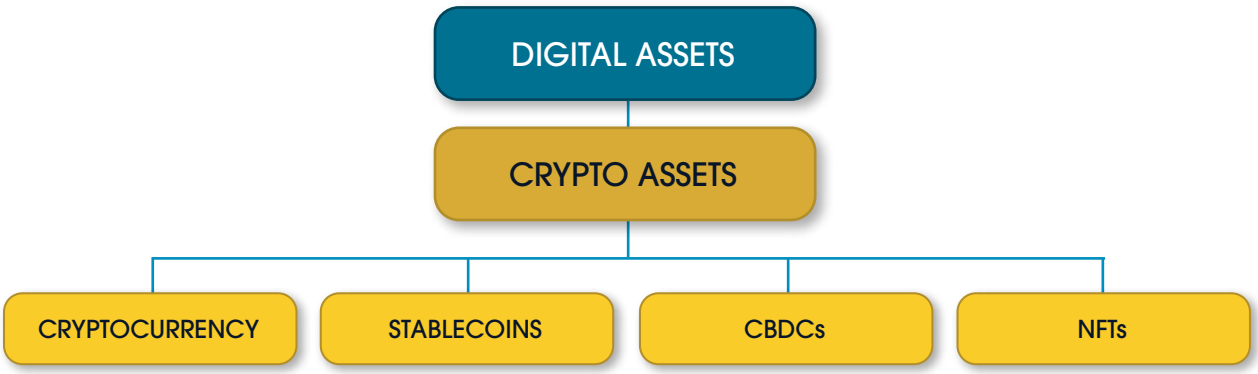
In 2009, the first bitcoin was mined, and in 2010, the first centralized cryptocurrency exchange was launched. In 2021, the market capitalization of all cryptocurrencies reached an all-time peak of $2 trillion and there are almost 10,000 different cryptocurrencies.[1]

Crypto is inherently decentralized. This means it has no intermediaries when conducting transactions, and crypto transactions are independent and peer-to-peer. Traditional assets are often "held" as entries in ledgers maintained by trusted intermediaries like a central bank or a local courthouse. By contrast, crypto assets[2] are held as entries in a public blockchain ledger that is collectively maintained by the participants on the network.

Cryptocurrencies were initially intended to be used to facilitate payments transactions. While there are some companies that accept cryptocurrency as payment for goods or services, the volatility of these assets has limited adoption for payments use cases. The primary use case for cryptocurrencies today is as an investment in a scarce asset. As the market develops, new use cases are emerging. In some networks crypto can be used as a utility to pay for services (like file storage) within a broader network.

There is significant uncertainty related to the regulation of cryptocurrencies, which is explored further below. This uncertainty makes it difficult to identify how a cryptocurrency is treated by law. Some regulators treat crypto like money, while others classify it as property. Some cryptocurrencies may also be classified as securities, a designation that has serious impacts for those who interact with it.

Despite these uncertainties, crypto assets (of which cryptocurrencies are one type) generally fall into the following four broad categories:



1 CoinMarketCap.com

2 See "crypto assets" in the Glossary

1. **Cryptocurrencies** (sometimes referred to as crypto coins) like Bitcoin and Ethereum are the leading "coins" in the crypto space. Their value is derived by the markets set up to facilitate their sale and transfer. In short, their value at any given time is determined by what people are willing to pay. New developments and advancing technologies are quickly broadening the space, leading to new cryptocurrencies.

2. **Stablecoins** were designed in response to the significant price volatility in traditional crypto coins like Bitcoin. Stablecoins are structured to minimize price volatility and are typically pegged 1-to-1 to a fiat currency, though exceptions exist. The stable value allows these assets to serve as a medium of exchange and a store of value. In March 2021, Visa announced it completed its first transaction involving the stablecoin USD Coin ("USDC").[3] The transaction, which was valued in USDC, was sent directly to Visa for settlement.

3. **Central Bank Digital Currencies** ("CBDCs") are a concept being explored by central banks around the world in an effort to "digitize" traditional fiat currency. Unlike other digital assets explored here, CBDCs are a central bank liability[4] that would carry full currency status. There are a number of models for CBDCs being evaluated globally. The way a CBDC is designed determines how economic actors interact with it, and the impact on banks and the economy. CBDCs are beyond the scope of this report and will be explored further in other ABA research.

4. **Non-Fungible Tokens** ("NFTs") are cryptographic assets on blockchain with unique identification codes and metadata that distinguish them from each other. Unlike cryptocurrencies, they cannot be traded or exchanged at equivalency and, therefore, cannot be used as a medium for commercial transactions. NFTs are blockchain supported and offer a certificate of authenticity for a digital asset such as artwork, music or a video.

3 Forbes. "Bitcoin Payments are Great, but Stablecoins are the Future of Crypto." March 31, 2021. https://www.forbes.com/sites/seansteinsmith/2021/03/31/bitcoin-payments-are-great-but-stablecoins-are-the-future-of-crypto--visa-is-just-the-beginning/?sh=6650b5e21277.

4 Though many of the models under consideration would involve the CBDC itself as a central bank liability, there is the possibility that banks and other holders on behalf of customers could act either as depositories (receiving CBDC from customers and having a liability to repay it on demand or at a stated future time, like ordinary deposits today) or as custodians (holding CBDC for customers but not as a liability of the custodian, and not on its balance sheet).

There are several other important terms related to cryptocurrency, including:

Decentralized Finance[5] ("DeFi") is a concept whereby more financial products are available on a public, decentralized blockchain network. Decentralized applications (dapps) allow for the recreation of traditional financial services such as payments, lending, trading, insurance, and asset management without the need for central intermediaries such as a bank or brokerage firm. DeFi software makes it possible for buyers and sellers and lenders and borrowers to interact peer to peer or with a strictly software-based middleman.

Cryptocurrency Activities in Market Today

There is a diverse, complex, and rapidly evolving ecosystem of companies offering crypto-related products. The digital and programmable nature of crypto means that it can be used to facilitate a variety of financial activities that increasingly mirror the products and services offered by traditional financial institutions. A single asset (e.g., Ether) can be used to facilitate multiple activities, often at the same time.

Because financial regulation is typically related to the service being offered, we organized the table below by activities being offered in the market today. The following table outlines the most prominent categories of activity being offered today, but it is important to note the market is quickly evolving and new use cases will continue to emerge.

Use Case	Business Model	Revenue Model	Regulation
Store of Value	Digital scarcity makes cryptocurrencies unique assets with a finite supply. For example, Bitcoin's supply growth has grown 1.92% in the year ending April 20, 2021.[6] The store of value theory relies on the following attributes associated with most cryptocurrencies: scarcity, decentralization, durability, fungibility, portability, and divisibility. (The supply of Bitcoin and similar cryptocurrencies is relatively inelastic.)	For many users, cryptocurrencies function as a store of value. They are held by exchanges, brokerages, or other third parties on the customer's behalf. In some cases, they are held by the customers themselves via hardware or software wallets, though this is increasingly rare. Individuals who hold onto crypto frequently keep it for speculative purposes and view it as a long-term investment. Stablecoins could be held as a store of value but typically are held as a settlement layer for trading cryptocurrencies or, in more limited cases, as a payments mechanism. In the latter example, while currently small in terms of market use, this use case is expected to grow. Companies who facilitate the store of value use case typically earn revenue by also facilitating the buying and selling of cryptocurrencies on their platforms (exchanges and brokerages).	In the U.S., companies that facilitate the use of crypto for storage of value must register with FinCEN as a Money Services Business (MSB). They must also receive Money Transmitter Licenses (MTLs) in certain states. While most states require licenses for storage of value in U.S. dollars, fewer states require such licenses if a company is only storing value for customers in cryptocurrencies. These companies are also under the broad jurisdiction of the CFPB and State Attorneys General for consumer protection issues. The SEC and CFTC will begin to regulate as these cryptocurrencies are traded in the securities or derivatives markets.

5 Additional information on DeFi https://wifpr.wharton.upenn.edu/wp-content/uploads/2021/05/DeFi-Beyond-the-Hype.pdf

6 YCharts. "Bitcoin Supply." April 20, 2021. https://ycharts.com/indicators/bitcoin_supply

Use Case	Business Model	Revenue Model	Regulation
Custody/ Wallet Provider	Crypto custody solutions are created by third-party providers to store and secure users' crypto assets. Third-party custody solutions come in two forms: online ("hot wallets") and offline ("cold wallets"). Online systems store encryption "keys" (to provide account security) in internet-connected systems, while offline solutions store keys in hardware devices with no internet connectivity.[7]	A majority of crypto companies allow users to store their cryptocurrencies in a digital wallet. While most crypto companies usually offer additional services, a basic custodial wallet provider could, in theory, charge fees for safely securing a user's cryptocurrencies.	The regulator depends on the activities and underlying entity. For example, banks that are holding crypto assets for their clients will be regulated by their prudential regulators. For non-banks, these services are typically unregulated unless custodians begin to operate in the securities or derivatives markets, in which case the SEC and CFTC, respectively, will regulate based on their role in the marketplace.
Interest Bearing Accounts	Individuals who wish to earn interest can "lend out" their crypto to interested borrowers. If an individual uses a centralized company, the company will facilitate these loans on their platform. The company may set the interest rate, determine the length of the loan, and require specific collateralization minimums. Additionally, DeFi products exist that allow crypto holders to lock up assets for a period of time in exchange for a payment that is often marketed similarly to interest on a savings account. Unlike savings accounts, the account holder is subject to the credit risk of the ultimate borrower of these funds.	Companies that offer interest bearing crypto accounts can charge users a fee for their services. This can be a flat fee or a percentage of the interest earned by the user. Crypto asset holders wishing to earn a return on their assets (lender) will lock-up their assets via smart contracts in an asset pool. These assets will then be loaned to one or more borrowers. At the end of the loan period, the crypto assets that were lent are returned to the lender with an additional "interest" payment.	CFPB, state lending licenses
Payments	Cryptocurrencies can be used for traditional P2P and B2B transactions. Crypto payment services act as an intermediary between the payer and receiver for processing the payments. The transaction is then recorded on the blockchain public ledger. Crypto payment processors document these transactions internally as well.	Crypto companies that offer payment services can charge fees, similar to those paid for debit and credit card transactions, to ensure the secure transfer of funds. If the payment issuer allows customers to convert crypto to fiat currency via a traditional debit card, they may also charge an additional exchange fee. Crypto payment processors, on the other hand, receive crypto payments and charge a fee to the merchants. Depending on the payment processor, the payment received can either be held in crypto or converted to fiat.	Reg E/Consumer Protection/State MTL/FinCEN MSBs

7 Additional information on crypto custody https://www.gemini.com/static/documents/guide-to-crypto-custody.pdf

Use Case	Business Model	Revenue Model	Regulation
Lending	A common use case of DeFi is open lending platforms. These are usually simple, decentralized applications (dapps) that allow you either to lend your digital assets to other users to earn interest or borrow digital assets from other users and pay interest. [8] Crypto lending can also come in the form of centralized platforms, which act more like traditional fintech companies responsible for KYC processes, custodial systems to protect assets, and negotiation of specific loan agreements.[9]	Borrowers typically need to deposit collateral worth substantially more than the loan amount and maintain this collateral above a certain value threshold to protect the lender. Failing this, the collateral will usually be sold to reimburse the lender if the collateral falls below a certain threshold.	CFPB, state lending licenses
Exchange Trading	Crypto exchanges are online platforms used to buy and sell cryptocurrencies. Centralized crypto exchanges use third parties to help conduct transactions. Centralized exchanges can be used to conduct trades between two different cryptocurrencies and from fiat to crypto (or vice versa). Decentralized cryptocurrency exchanges allow for users to control and trade their funds without a third party or central authority. Decentralized exchanges have safety benefits since all exchanges are tracked in the form of an on-chain order book[10], off-chain order book[11] or smart contract-managed reserve[12]. These may take the form of Automatic Market Makers (AMMs) like Uniswap or Curve, which use simple mathematics to set the price of tokens in a liquidity pool, or they might have a bid/ask system, where traders set their own order prices.	The main sources of revenue for this business model are: utilizing transaction fees, listing charges for adding crypto to a platform, and deposit fees.	The SEC only regulates the trading of cryptocurrencies that are securities. The CFTC regulates the trading of derivatives on commodities that are not securities as well as certain retail commodity transactions involving digital assets. There is a gap in the regulation of the trading of crypto in the cash market, except that the CFTC has antifraud authority over cash commodity transactions.

8 Of course, there are also platforms that exist to facilitate decentralized lending of traditional currencies.

9 Additional info on crypto lending https://www.coindesk.com/wp-content/uploads/2020/01/CryptoLending101_CoindeskResearch.pdf

10 See “on-chain order book” in the Glossary

11 See “off-chain order book” in the Glossary

12 See “smart contract-managed reserve” in the Glossary

Use Case	Business Model	Revenue Model	Regulation
Broker-dealer	Broker-dealers facilitate trades on behalf of their customers, interact with the exchanges and monitor the transaction from start to finish.	Broker-dealers collect the spread on transactions, the difference between the price of the asset when the brokerage purchases the asset, and the price at which they are willing to sell. They also can charge a transaction fee for every purchase and sale of crypto.	Broker-dealers for cryptocurrencies that are securities are typically regulated and registered with the SEC and FINRA. Under the Commodity Exchange Act, there are many intermediaries that act as a facilitator for derivatives trading for cryptocurrencies that are commodities that are not securities.[13] In these cases, these intermediaries are regulated and registered with the CFTC and the National Futures Broker-dealers for cryptocurrencies that are securities are typically regulated and registered with the SEC and FINRA. Under the Commodity Exchange Act, there are many intermediaries that act as a facilitator for derivatives trading for cryptocurrencies that are not securities. In these cases, these intermediaries are regulated and registered with the CFTC and the National Futures Association.
Insurance	Traditional insurance companies have recently ventured into the crypto space and offer different insurance policies for crypto companies. These insurance plans can be tailored to the specific needs of the crypto company based on its activity. The DeFi industry has found a way to create decentralized insurance products. There are a range of DeFi platforms to insure against practically any unfortunate or unforeseen event. These can be used to hedge against rare or potentially devastating events. The focus of most DeFi insurance products today is related to crypto specific risks like a market crash, hack, or smart contract failure.	As with traditional insurance policies, insurance providers may charge an annual rate and premiums based on the insurance plan agreement. Unlike with traditional insurers, decentralized insurance allows a pool of investors (known as underwriters) to share the risk among themselves in return for the insurance premium. These platforms are built using publicly visible smart contracts, which means the terms of payout are available for all to see.	As with all insurance, the companies are regulated within each state. The National Association of Insurance Commissioners is the standard-setting body for insurance.

13 CFTC. Industry Oversight; Intermediaries. https://www.cftc.gov/IndustryOversight/Intermediaries/index.htm

Use Case	Business Model	Revenue Model	Regulation
Network Utility	Cryptocurrency can be used as a utility within a broader application or decentralized finance protocol. Used in this context, cryptocurrencies are often referred to as "utility tokens" and are intended to give users access to a future product or service. These tokens can only be used for the utilities in which they are provided.	The utility token provides instant revenue for the entity creating the token and selling it, since it receives either a different form of crypto asset or a payment in a traditional currency. Examples include tokens provided within video games for the user to use at a later date. Tokens are also provided to pay for specific utilities, such as electricity or file storage. The best-known example of the latter is Filecoin, offered by Protocol Labs.	While there is some debate about whether these tokens constitute a security (given that it's an investment into that specific utility) or a derivative (given that the purchase is based on an expected future investment), there is currently no regulation of utility tokens in the U.S. Many in the crypto industry argue these are similar to "memberships" or a "warehouse ticket". Regardless of the debate, many SEC and CFTC enforcement actions center on whether or not the underlying utility token fulfills the requirements of the *Howey* Test.[14]
Asset Management	Crypto asset management companies create a safe and secure way for individuals to invest in crypto. Most companies have a rules-based asset management strategy, offer a diversified and transparent crypto portfolio, and implement very stringent security protocols (cold storage, Multi-Factor Authentication, backup management). Just as investors in traditional assets rely on asset managers to manage and allocate their portfolio, investors can rely on DeFi apps to manage their portfolio of digital assets. These investments can be in individual tokens, baskets of tokens, tokens that track traditional assets, and interest-bearing accounts.	Since crypto asset management companies exist to make it easier for individuals to buy, sell, and store crypto, they generally charge a fee for these services. DeFi asset management protocols combine assets into "pools" or "vaults." They are typically automated protocols that balance these accounts within predetermined ranges with no to minimal fees.	Asset management firms are regulated by the SEC when they manage $110 million or more in client assets, while state securities regulators have jurisdiction over the firms when they manage up to $100 million. Asset management firms with less than $100 million in assets under management (AUM) must register with the state regulator for the state where the firm has its principal place of business.

Oversight and Regulation

Regulations regarding cryptocurrency vary across jurisdictions and are generally not based on the asset itself but rather the types of activities involved. This means a single "coin" can be regulated differently and by different regulators depending on the services being offered.

Sales Regulation: The offer[15] or sale of cryptocurrency is generally only regulated if the offer or sale (i) constitutes the offer or sale of a security under state or Federal law, or (ii) is considered money transmission under state law or conduct otherwise making the person a money services business under Federal law. Derivative contracts that make reference to the price of a crypto asset

14 SEC's Framework for an "Investment Contract" analysis of a Digital Asset: https://www.sec.gov/corpfin/framework-investment-contract-analysis-digital-assets

15 Securities Act of 1933, https://www.govinfo.gov/content/pkg/COMPS-1884/pdf/COMPS-1884.pdf

that constitutes a commodity that is not a security are subject to regulation by the CFTC under the Commodity Exchange Act.[16]

Money Transmission: Under the Bank Secrecy Act, FinCEN regulates money services businesses (MSBs). FinCEN states that the following are considered MSBs: A virtual currency exchange and administrator of a centralized repository of virtual currency who has the authority to both issue and redeem the virtual currency. States define money transmissions as some or all of the following: money transmission, issuing and/or selling payment instruments, issuing and/or selling stored values.[17] In the United States, many state banking agencies regulate the transmission of money throughout the state, requiring Money Transmitter Licenses (MTLs). New York has a specific bitlicense and a trust company charter for those transmitting cryptocurrencies within the state.[18] The combination of FinCEN and state banking commissioners has been the primary regulatory structure under which cryptocurrency companies have existed in the United States.

Tax and Reporting: In 2014, the IRS issued guidance saying that "virtual currencies" will be taxed as "property" and not currency because they do not have legal tender status in the U.S.[19] This means they will be taxed based on their capital gains, or losses. In a follow up to this guidance, the IRS issued a statement in 2018 reminding taxpayers that they must report virtual currency transactions and stated that it has continued concerns with virtual currencies being used to evade taxes. The IRS noted that virtual currency transactions can be difficult to trace and are inherently anonymous, thus leading some taxpayers to use these attributes to hide taxable income.[20] The crypto industry has long advocated for the application of a de minimis exemption, applied to foreign currency transactions, to crypto transactions in order to facilitate its usage in retail payments. These efforts have remained unsuccessful and would require legislative action.

16 Global Legal Insights. "Blockchain & Cryptocurrency Regulation 2021 USA." 2021. https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/usa#chaptercontent1 CFTC deemed Bitcoin and Ether as commodities in 2016 and 2019, respectively.

17 Global Legal Insights. "Blockchain & Cryptocurrency Regulation 2021 USA." 2021. https://www.globallegalinsights.com/practice-areas/blockchain-laws-and-regulations/usa#chaptercontent1

18 NYDFS. Virtual Currency Businesses. https://www.dfs.ny.gov/apps_and_licensing/virtual_currency_businesses

19 Internal Revenue Service. "IRS virtual currency guidance." March 25, 2014. https://www.irs.gov/newsroom/irs-virtual-currency-guidance

20 Internal Revenue Service. "IRS reminds taxpayers to report virtual currency transactions." March 23, 2018. https://www.irs.gov/newsroom/irs-reminds-taxpayers-to-report-virtual-currency-transactions

Regulatory Environment Going Forward

Because of the novel nature and rapid development of crypto, the regulatory framework surrounding the space is constantly evolving. A main focus for regulators has been the desire to promote responsible innovation while protecting against risks. However, the uncertain regulatory treatment of many crypto assets and the novelty of the business models can often create unclear or disparate requirements that may leave significant gaps in regulation and oversight.

Below is an overview of current and expected regulatory proposals that impact crypto markets.

FDIC RFI on Digital Assets. In May 2021, the FDIC issued a Request for Information and Comment on banks' current and potential activities related to digital assets. At the time this report was published, the comment period remains open until July 16, 2021.[21]

OCC Interpretive Letters. At the OCC several interpretive letters were issued pertaining to crypto currency under Acting Comptroller Brian Brooks, who served until January 2021. These interpretive letters provided clarifications on key areas designed to promote the use of crypto assets among OCC-regulated institutions.[22]

- Interpretive Letter 1170 clarified that banks can provide custody services for crypto assets.[23]
- Interpretive Letter 1172 clarified that banks can hold stablecoin reserves.[24]
- Interpretive Letter 1174 clarified that banks can participate in independent node verification networks and use stablecoins for payments activities.[25]
- Interpretive Letter 1176 expanded the eligibility for the OCC National Trust Charter by removing the requirement for trust companies to operate in a fiduciary capacity.[26]

Acting Comptroller Michael Hsu, who has served in this role since May 2021, highlighted that he will re-evaluate the actions surrounding cryptocurrencies from his predecessor(s).

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21 FDIC. "FDIC Issues Request for Information on Digital Assets." May 17, 2021. https://www.federalreserve.gov/newsevents/pressreleases/other20210520b.htm; Federal Reserve. "Federal Reserve Chair Jerome H. Powell outlines the Federal Reserve's response to technological advances driving rapid change in the global payments landscape." May 20, 2021.

22 As of the date of this report, the OCC's Acting Comptroller recently announced his plans to review OCC's decisions on crypto in 2020. https://financialservices.house.gov/uploadedfiles/hhrg-117-ba00-wstate-hsum-20210519.pdf

23 OCC. "Authority of a National Bank to Provide Cryptocurrency Custody Services for Customers." July 2020. https://www.occ.gov/news-issuances/news-releases/2020/nr-occ-2020-98.html

24 OCC. "OCC Chief Counsel's Interpretation on National Bank and Federal Savings Association Authority to Hold Stablecoin Reserves" October 2020. https://occ.gov/topics/charters-and-licensing/interpretations-and-actions/2020/int1172.pdf

25 OCC. "OCC Chief Counsel's Interpretation on National Bank and Federal Savings Association Authority to Use Independent Node Verification Networks and Stablecoins for Payment Activities." January 4, 2021. https://www.occ.gov/news-issuances/news-releases/2021/nr-occ-2021-2a.pdf

26 OCC. "OCC Chief Counsel's Interpretation on National Trust Banks." January 11, 2021. https://occ.gov/topics/charters-and-licensing/interpretations-and-actions/2021/int1176.pdf

Are Cryptos Considered Securities? Discussions around whether specific cryptocurrencies and tokens ought to be considered securities have plagued the crypto industry since its inception. Since each cryptocurrency and token is inherently different and can be used in a variety of ways, each needs to be assessed individually to determine whether or not it is a security. As of June 2021, Bitcoin and Ethereum have been deemed as not securities. However, other cryptocurrencies and tokens have not been afforded the same clarity. Recent examples include the SEC action in December 2020 against Ripple Labs Inc., alleging that more than $1 billion were raised through an unregistered, ongoing digital asset securities offering. The complaint alleges that the defendants failed to register their offers and sales of their XRP token or satisfy any exemption from registration, in violation of the registration provisions of the federal securities laws.[27]

FinCEN proposal on "Requirements for Certain Transactions Involving Convertible Virtual Currency or Digital Assets." The proposal would require crypto service providers to keep records of and report certain crypto transaction information in ways much more complex than what is required for cash transactions.[28] In their responses during the public comment period, crypto companies addressed the burden of these proposed reporting requirements.

The Financial Action Task Force's ("FATF") recently proposed guidelines, *"Draft Updated Guidance for a Risk-Based Approach to Virtual Assets and VASPs."* [29] This proposal would impact the licensing and registration of Virtual Asset Service Providers (VASPs), of which exchanges and hosted-wallet providers are the most prominent group, and update guidance concerning what are considered virtual assets and what are not. Stablecoins are considered virtual assets by FATF Standards, but CBDCs are not. The proposed expanded definition of VASPs and virtual assets conflicts with the current global consensus that only persons with "independent control" over customer funds are treated as regulated money transmitters. The new guidelines would impose requirements for non-custodial persons to register with a local regulator and collect and report on large amounts of information, which has the potential to be burdensome for crypto companies.

Gamification Debate. Given the scrutiny faced by no-fee, online retail brokerages such as Robinhood, it is reasonable to assume crypto exchanges will face similar scrutiny. Gamification of investing, coupled with the unregulated nature of crypto spot markets, make it a likely target. Notably Robinhood and other similar platforms list cryptocurrencies as investments alongside traditional equities.

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27 U.S. Securities and Exchange Commission. "SEC Charges Ripple and Two Executives with Conducting $1.3 Billion Unregistered Securities Offering." December 22, 2020. https://www.sec.gov/news/press-release/2020-338

28 Requirements for Certain Transactions Involving Convertible Virtual Currency or Digital Assets," Financial Crimes Enforcement Network, 85 Fed. Reg. 83,841 (December 23, 2020) https://www.fincen.gov/resources/statutes-regulations/federal-register-notices/requirements-certain-transactions-0

29 Financial Action Task Force. "Draft Updated Guidance for a Risk-Based Approach to Virtual Assets and VASPs." March 2021. http://www.fatf-gafi.org/publications/fatfrecommendations/documents/public-consultation-guidance-vasp.html

DeFi. Financial regulatory agencies are struggling to decide who takes on responsibility for regulating DeFi. SEC Commissioner Hester Peirce proposed a safe harbor for crypto projects in February 2020, and released an updated version of the proposal in April 2021. This proposal will allow start-ups to have a three-year grace period to achieve a level of decentralization sufficient to pass the agency's securities evaluations including the *Howey* Test.[30] To ensure consumer protection during this grace period, the proposal requires semi-annual updates on the development of such projects. After the three-year grace period, projects are required to provide an exit report outlining an analysis by outside counsel or announcing the decision to register under the Securities Exchange Act of 1934.[31] In June 2021, the World Economic Forum published a policymaker toolkit focused on the DeFi space.[32] The report highlights DeFi's distinguishing characteristics and opportunities, while also calling attention to the new and existing risks.

Environmental Concerns. There is increasing concern about the energy use of cryptocurrency networks. Blockchains that utilize proof-of-work consensus mechanisms (such as Bitcoin and Ethereum) have been criticized for their energy intensity, which only grows as the networks and prices of crypto scale. While other consensus mechanisms that use a fraction of the energy exist (proof-of-stake being the best example), proof-of-work currently dominates. This concern coupled with increasing policymaker focus on using financial regulatory regimes to mitigate climate change makes the crypto industry hugely vulnerable to potential policy changes that would aim to address these perceived issues. These could include mandatory taxes, fees, or global accords that would require countries to crack down on service providers or miners.[33]

Bank Engagement with Digital Assets

As the use of crypto currencies expands, banks are looking for opportunities to provide their customers access to these assets through their banking relationship. Customer interest is driving banks' consideration of offering access to crypto products. A survey by institutional crypto trading and custodial firm NYDIG found that 80% of Bitcoin holders would move their Bitcoin to a bank if the bank had secure Bitcoin storage.[34] Further, as discussed below, with the increasing profitability of the crypto industry, banks have found it more lucrative to take crypto companies on as partners and their customers as clients. For their part, crypto companies need banks to provide access to the payments system to onboard and offload fiat deposits.

30 U.S. Securities and Exchange Commission. "Running on Empty: A Proposal to Fill the Gap Between Regulation and Decentralization." February 6, 2020. https://www.sec.gov/news/speech/peirce-remarks-blockress-2020-02-06

31 Hester M. Peirce. U.S. Securities and Exchange Commission. "Token Safe Harbor Proposal 2.0." April 13, 2021. https://www.sec.gov/news/public-statement/peirce-statement-token-safe-harbor-proposal-2.0?utm_medium=email&utm_source=govdelivery

32 World Economic Forum. "Decentralized Finance: (DeFi) Policy-Maker Toolkit." June 8, 2021. https://www.weforum.org/whitepapers/decentralized-finance-defi-policy-maker-toolkit

33 See "mining" in the glossary

34 New York Digital Investment Group LLC. "Survey: Bitcoin and Banking." January 2021. https://nydig.com/wp-content/uploads/2021/01/NYDIG-Survey-BitcoinBanking-Jan2021.pdf

Regulatory Uncertainty

Despite recent attention from banking regulators, there remains significant uncertainty around the expectations for banks when they engage with crypto assets. We expect banking regulators will take a close look at consumer protection and the growing concern relating to the safety of crypto assets. Agencies such as FinCEN have focused their attention on this issue, placing the crypto industry under a microscope. With partnership, comes the inevitable link between crypto and banking, bringing these regulatory doubts to both parties. Additional questions in a fintech partnership could include privacy and security controls, the use of customers' data, scope of appropriate disclosures concerning crypto products and their risks, and the procedures in place to ensure customers are whole should some fraudulent behavior occur.

Possible Crypto Solutions/Partnerships	
Crypto/DLT Activities	**Possible Solution for Banks**
Payments	The blockchain-powered payment networks have the potential to allow for faster and more efficient payments, especially in cross-border transactions.
Lending	Blockchain technology allows for cheaper, more secure, and more efficient lending processes.
Settlements	Distributed ledgers can provide cheaper and faster transactions between financial institutions.
Custody/Wallets	Provides independent/secure storage for users to hold and invest in crypto assets
KYC/AML	Helps banks track the flow of funds and identify the parties involved in digital asset transactions
Digital Identity	Distributed ledgers can provide the necessary record of information needed for authentication and verification purposes.
Reporting	Given the proposed reporting structure for crypto transactions, the distributed ledger transactions can be easily found and reported in an efficient and timely manner.
Banking	Offer business banking services to crypto companies (i.e., corporate accounts, USD/fiat custodial accounts).

Conclusion

Cryptocurrency markets are rapidly evolving, and there is currently a diverse and complex ecosystem of companies offering access to digital asset products. The digital and programmable nature of these products means they can be used to facilitate many kinds of financial activities that increasingly mirror the products and services offered by traditional financial institutions.

This report provides a snapshot of the market and regulatory framework as of July 2021 and will be updated periodically to reflect new developments as they evolve.

Glossary

Term	Definition
Crypto Asset	A crypto asset is generally any digital asset whose provenance is tracked via a blockchain or distributed ledger technology ("DLT") infrastructure, with ownership or control determined by a cryptographic key.
Cryptocurrencies	Cryptocurrencies are a type of crypto asset that are digital representations of value that function within the community (enabled through peer-to-peer networks) of its users as a medium of exchange, unit of account or store of value, without having legal tender status. Their value is driven by market supply/demand.
Decentralized Finance	Decentralized finance ("DeFi") is a concept whereby financial products are available on a public, decentralized blockchain network. This makes them open to anyone to use rather than going through an intermediary such as a bank or brokerage firm. DeFi refers to a system where software written on blockchains makes it possible for buyers and sellers and lenders and borrowers to interact peer to peer or with a strictly software-based intermediary rather than a company or institution facilitating a transaction. Multiple technologies and protocols are used to achieve the goal of decentralization. For example, a decentralized system can consist of a mix of open-source technologies, blockchain, and proprietary software. Smart contracts that automate agreement terms between buyers and sellers or lenders and borrowers make these financial products possible.[35]
Digital Wallets	A piece of software that verifies possession of the keys used to digitally sign cryptocurrency transactions for distributed ledgers.
Distributed Ledger Technology	A network that records ownership through a shared registry.

35 Investopedia. "Decentralized Finance (DeFi) Definition. March 24, 2021. https://www.investopedia.com/decentralized-finance-defi-5113835#:~:text=Updated%20Mar%2024%2C%202021,middleman%20like%20banks%20or%20brokerages.

Term	Definition
Cryptocurrency Mining	The process in which transactions between users are verified and added to the blockchain public ledger. This process is also how new coins are created and added to an existing circulating supply. Miners are essentially a node in the network, collecting transactions and organizing them into a block.
Non-Fungible Tokens (NFTs)	Non-fungible tokens or NFTs are cryptographic assets on blockchain with unique identification codes and metadata that distinguish them from each other. Unlike cryptocurrencies, they cannot be traded or exchanged at equivalency. This differs from fungible tokens like cryptocurrencies, which are identical to each other and, therefore, can be used as a medium for commercial transactions.[36] NFTs are blockchain supported and offer a certificate of authenticity for a digital asset such as artwork, music or a video. Much like a trading card or other collectible, NFTs carry with them a value that is unique to each owner, which has led tech-savvy individuals to pay large sums for these assets. As the momentum for NFTs continues to grow, more and more brands and individuals are creating their own. Examples include: NBA Top Shot, digital collectibles of basketball's greatest moments; Kings of Leon's latest album, which was released in the form of an NFT in March 2021; and digital artist Beeple's collage titled "Everydays: The First 5000 Days," which sold for $69 million, positioning the artist among the top three most valuable artists according to auction house Christie's.
On-Chain Order Book, Off-Chain Order Book[37] and Smart Contract-Managed Reserve	On-chain order books: All offers and trades are conducted fully on blockchain with no external backend service. Off-chain order books: order books are hosted by a centralized entity outside of the distributed ledger. Smart contract-managed reserves: a smart contract is an electronically enforced agreement whose terms are written in code and do not require a third party.

36 Investopedia. "Non-Fungible Token (NFT) Definition." March 8, 2021. https://www.investopedia.com/non-fungible-tokens-nft-5115211

37 An order book is a list of buy and sell orders for a security or other instrument.

Term	Definition
Protocols	The way blockchains work is based on a protocol, which is a foundational layer of code that instructs something on how to function. These protocols provide security and access to a blockchain, and each cryptocurrency has its own protocol. Some common protocols include: Bitcoin, Ethereum, and Ripple.
Security Token	Blockchain-backed token that can be defined as a "security."
Settlement Token	Blockchain-based representation of an underlying traditional security issued on a platform.
Stablecoins	A stablecoin is a cryptocurrency or digital currency that is structured to minimize price volatility, thus enabling it to serve adequately as a non-fluctuating medium of exchange and a store of value. It is typically pegged 1-to-1 to a fiat currency, though exceptions exist.
Staking Rewards	This is the process of helping to participate in the network governance of Proof-of-Stake (PoS) blockchains, by either delegating digital assets to a validator node or by simply holding these digital assets in a compatible wallet. When you help to secure the blockchain by staking assets, you earn rewards that are automatically delivered by the network. Some of the more popular stackable assets include Tezos (XTZ), Tron (TRX), and Cardano (ADA).
Token	Tokens, which can also be referred to as crypto tokens, are units of value that blockchain-based organizations or projects develop on top of existing blockchain networks. Typically, crypto tokens are programmable,[38] permissionless,[39] trustless,[40] and transparent.[41] While crypto tokens, like cryptocurrency, can hold value and be exchanged, they can also be designed to represent physical assets or more traditional digital assets, or a certain utility or service.

38 Programmable Digital Currencies Are Coming - Here's What That Means https://www.nasdaq.com/articles/programmable-digital-currencies-are-coming-heres-what-that-means-2020-08-18

39 A permissionless blockchain allows anyone to participate without prior approval.

40 Blockchain protocols allow transactions with unknown parties (not requiring trust) by providing economic incentives for honest behavior.

41 Many blockchain ledgers are transparent, in that they are open for public scrutiny.

Term	Definition
Utility Token	Crypto tokens that can be used to purchase a good or service on the platform where it was issued.
Value-Stable Crypto-Assets	Examples include: Central Bank Digital Currencies, Tokenized Commercial Bank Money,[42] stablecoins.

42 Representation of customer deposits in a single fiat currency held at a bank or other highly regulated depository financial institution

Specific Cryptocurrencies	
Term	**Definition**
Bitcoin	Bitcoin is a consensus network that enables a new payment system and a completely digital money.
Cardano	Cardano is a public blockchain platform. It is open source and decentralized, with consensus achieved using proof of stake.[43] It can facilitate peer-to-peer transactions with its internal cryptocurrency ADA.
Ethereum	Launched in 2015, Ethereum is an open-source, blockchain-based, decentralized software platform used for its own cryptocurrency, ether. It enables Smart-Contracts and Distributed Applications (dapps) to be built and run without any downtime, fraud, control, or interference from a third party. [44]
Tether	Tether is a blockchain-based cryptocurrency whose crypto coins in circulation are backed by an equivalent amount of traditional fiat currencies, like the dollar, the euro, or the Japanese yen, which are held in a designated bank account.

Service Providers	
Term	**Definition**
BitGo	BitGo provides clients with security, custody, and liquidity solutions.
Circle	Circle is a global internet finance company, built on blockchain technology and powered by crypto assets. They help internet businesses accept payments and send payouts globally in one unified platform.
Coinbase	Coinbase is an online platform that allows merchants, consumers, and traders to transact with digital currency.
Gemini	Gemini is a licensed digital asset exchange and custodian built for both individuals and institutions.
Kraken	Kraken is a cryptocurrency exchange that provides spot and futures trading between Bitcoin, Ethereum and 40+ other digital assets.

43 Proof of Stake (PoS) is a validation model where a miner can validate block transactions according to how many coins they hold. This means that the more coins owned by a miner, the more mining power they have.

44 Investopedia. "What Is Ethereum?" February 18, 2021. https://www.investopedia.com/terms/e/ethereum.asp

Crypto Investors/Funds Examples

Term	Definition
Pantera Capital	Pantera Capital is a venture capital firm focused exclusively on ventures, tokens, and projects related to blockchain technology, digital currency, and cryptocurrency.
Paradigm	Paradigm primarily invests in crypto assets and businesses from the earliest stages of idea formation through to maturity.
Polychain Capital	Polychain invests in protocols and companies in the blockchain space, claiming assistance in advancing the global adoption of cryptocurrencies.