Blockchain Technology and Its Impact on the Global Economy

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Part VII: Stablecoin

Stablecoins

- What is a stablecoin?

A stablecoin is a digital currency that is pegged to a “stable” reserve. Stablecoins are designed to reduce volatility relative to unpegged cryptocurrencies like Bitcoin.

- Different types of stablecoins:

➢ Fiat-backed stablecoins

Fiat-backed stablecoins are pegged to traditional fiat currencies, like USD or EUR.

Stablecoins

- ➢Crypto-backed stablecoins

Crypto-backed stablecoins are pegged to another cryptocurrency, like ETH. This kind of stablecoins usually over-collateralize their reserves as a measure against price swings of the pegged cryptocurrency.

- ➢Algorithm-backed stablecoins

This kind of stablecoins do not involve the use of any reserve assets. Instead, the on-chain algorithms and smart contracts manage the tokens' supply like a central bank. (e.g. TerraUSD)

Stablecoins

Important stablecoins: Tether (USDT), USD Coin (USDC), Binance USD (BUSD) and DAI

# ▲	Name	Price	1h %	24h %	7d %	Market Cap	Volume(24h)	Circulating Supply	Last 7 Days
3	Tether USDT	$1.00	▼0.00%	▲0.00%	▼0.00%	$67,546,908,359	$59,472,020,793 59,470,960,500 USDT	67,545,704,103 USDT	
4	USD Coin USDC	$0.9999	▼0.01%	▼0.01%	▼0.01%	$51,736,196,194	$6,505,295,747 6,504,852,942 USDC	51,732,674,594 USDC	
6	Binance USD BUSD	$1.00	▼0.02%	▼0.02%	▼0.03%	$19,724,811,024	$9,491,714,820 9,491,062,215 BUSD	19,723,454,840 BUSD	
13	Dai DAI	$0.9996	▼0.02%	▼0.02%	▼0.06%	$6,844,592,602	$575,549,199 575,701,619 DAI	6,846,405,223 DAI	

Source: CoinMarketCap

Tether (USDT)

- Tether was co-founded by Brock Pierce, Reeve Collins and Craig Sellars in July 2014 and was originally named as “Realcoin”. Later in November, this project is renamed to “Tether”.

- First token was issued on October 6th 2014, on the Bitcoin blockchain.

- Nowadays, Tether tokens are issued on Bitcoin, Ethereum, EOS, Tron, Algorand, Solana, Bitcoin Cash (SLP) and OMG network blockchains.

Tether (USDT)

Step 1: deposits fiat currency into Tether’s bank account.

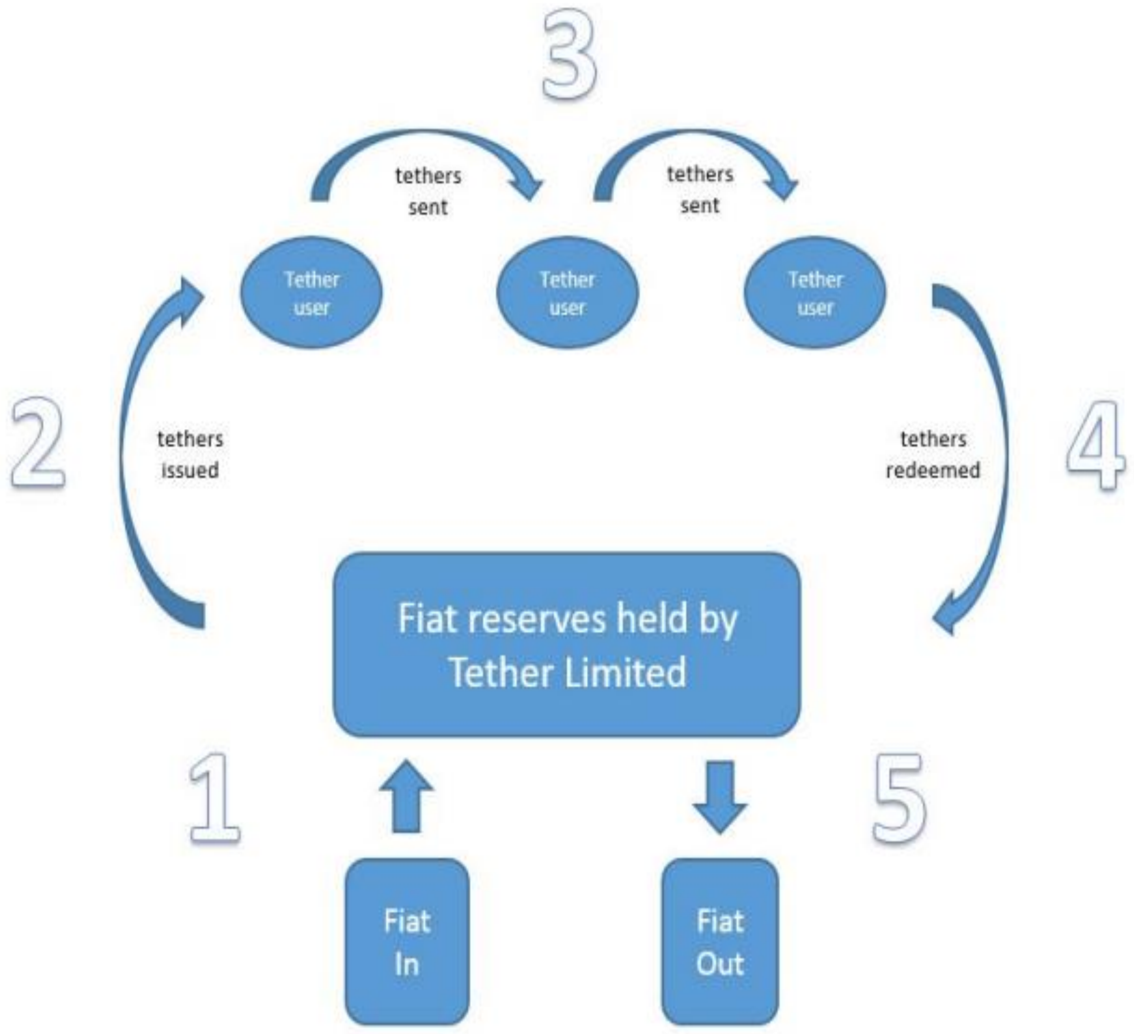
Step 2: Tether generates new tethers and credits the user’s tether account.

Step 3: users can transfer, exchange or store tethers via different platforms.

Step 4: users can deposit tethers with Tether for redemption into fiat currency.

Step 5: Tether destroys the tethers and sends fiat currency to the user’s bank account.

Source: Tether Whitepaper



USD Coin (USDC)

- USDC was founded by a peer-to-peer payment company, Circle and the cryptocurrency exchange Coinbase in September 2018.

- USDC claims that the USDC reserve is held entirely in cash and US T-bills with maturities of 3 months or less.

- Nowadays, USDC tokens are issued on Ethereum, Tron, Algorand, Solana, Stellar, Hedera, Avalanche, Flow and Polygon blockchains.

- USDC reserves are regularly attested by Grant Thornton, LLP and the monthly attestations can be found on the Centre Consortium's website.

Binance USD (BUSD)

- BUSD is launched by the FinTech company Paxos and the largest crypto exchange Binance.

- BUSD is an ERC-20 token issued on Ethereum. There are also BEP-20 and BEP-2 Binance-Peg tokens available on BNB Chain and Binance.com.

- Nomic Labs has audited BUSD smart contract, and US auditor Withum attests to BUSD reserve account balance.

Source: Stablecoins And BUSD

DAI

- Dai is a decentralized, unbiased, collateral-backed cryptocurrency soft-pegged to the US Dollar.

- Dai is maintained and regulated by MakerDAO, whose owners may vote on changes to certain parameters in its smart contracts in order to ensure the stability of Dai.

- Users who deposit Ether (or other cryptocurrencies accepted as collateral) are able to borrow against the value of their deposits and receive newly generated Dai.

- Dai runs on Ethereum network.

Libra (Diem)

- Diem (formerly known as Libra) was a permissioned blockchain-based stablecoin payment system proposed by Meta (formerly known as Facebook).

- The plan for the Libra token was to be backed by financial assets such as a basket of currencies, and US Treasury securities in an attempt to avoid volatility.

- On Feb 1st 2022, Diem is sold to Bank Silvergate.

- FT-Facebook Libra: the inside story of how the company's cryptocurrency dream died

Applications of stablecoins

- Stablecoins facilitate a large and growing volume of digital asset trading by allowing market participants to quickly convert volatile digital assets into a digital asset with more perceived stability.

- Stablecoins provides a digital asset with more perceived stability to transfer across platforms without the use of national currencies and reducing the need for traditional financial institutions.

- Stablecoins serves as a source of collateral against which market participants can borrow to fund additional activity, sometimes using extremely high leverage.

- Stablecoins can be used to earn yield by transferring stablecoins into digital asset trading platforms in exchange for interest or returns. (Ponzi scheme?)

Benefits of stablecoins

- Lower-cost, safe, real-time, and more competitive payments compared to what consumers and businesses experience today

- Facilitate crypto-transactions

Stablecoin typically facilitate the transfer of coins between or among users of the stablecoin by having issuers and other participants record the transfer either “on the books” of the wallet providers or on the distributed ledger.

- Avoid potential loses in crypto trading

The prices of traditional cryptos are voletial.

- CBDC projects

Drawbacks of stablecoins

- Certain public blockchains may require great computational resources to achieve consensus.
- Permissioned blockchains may offer less transparency and security.
- Some stablecoins allow users to directly hold and spend the stablecoins without relying on a third-party custodian. However, some stablecoins are only accessible through certain wallets, which means a limited group of participants are responsible for transferring assets on behalf of account holders.

Risks imposed by stablecoins

- Presents risks related to market integrity and investor protection

Market manipulation, insider trading, and front running, as well as a lack of trading or price transparency

- Poses illicit finance concerns and risks to financial integrity

Know Your Customer (KYC), Anti-Money Laundering (AML), Countering the Financing of Terrorism (CFT)

- Stablecoin runs risk

If stablecoin issuers do not honor a request to redeem a stablecoin, or if users lose confidence in a stablecoin issuer's ability to honor such a request, runs on this stablecoin may happen and may result in harm to broader financial system.

Source: PWG_Report on Stablecoins

Risks imposed by stablecoins

- Stablecoin Runs Risk

Confidence in a stablecoin may be undermined by factors includes:

- ➢Use of reserve assets that could fall in price or become illiquid
- ➢A failure to appropriately safeguard reserve assets
- ➢A lack of clarity regarding the redemption rights of stablecoin holders
- ➢Operational risks related to cybersecurity and the collecting, storing, and safeguarding of data.

Failure of a stablecoin to perform according to expectations would ahrm users of that stablecoin and could pose systemic risk.

Source: PWG_Report on Stablecoins

Risks imposed by stablecoins

- Payment System Risks

Unlike traditional payment systems where risk is managed centrally by the payment system operator, some stablecoin feature decentralized decision-making and complex operations where no single organization is responsible or accountable for system failures.

(1) Operational Risk

Novel operational risks related to the validation and confirmation of stablecoin transactions and the management and integrity of the distributed ledger.

Source: PWG_Report on Stablecoins

Risks imposed by stablecoins

- Payment System Risks

(2) Settlement Risk

Permissionless blockchain + consensus-based settlement mechanism => uncertainty of longer settlement periods + no single party accountable for ensuring legal settlement finality

Bitcoin Block #759,105 mined on 2022-10-18 01:21:04

Bitcoin Block #759,106 mined on 2022-10-18 02:40:06

(3) Liquidity Risk

Misalignment of the settlement timing and processes between stablecoin and other systems may cause temporary shortage in the quantity of stablecoin available to make payments.

Source: [PWG_Report on Stablecoins]

Risks imposed by stablecoins

- Risk of Scale: the potential for an individual stablecoin to scale rapidly raises few policy concerns.

(1) The failure or distress of this stablecoin could affect financial stability and the real economy.

(2) The combination of this stablecoin issuer and a commercial firm could lead to an excessive concentration of economic power.

(3) A stablecoin that becomes widely adopted as a mean of payment could impose anti-competitive effects.

(4) If insured depository institutions lose retail deposits to stablecoins, and the reserve assets that back stablecoins do not support credit creation, the aggregate growth of stablecoins could increase borrowing costs and impair credit availability in the real economy.

Source: PWG_Report on Stablecoins

Policy Suggestions

- Stablecoin Runs Risk

Require stablecoin issuers to become insured depository institutions.

- Payment System Risk

Require custodial wallet providers to be subject to appropriate oversight.

- Concentration of Economic Power

Require stablecoin issuers to comply with activities restrictions that limit affiliation with commercial entities.

Source: [PWG_Report on Stablecoins]

Part VIII: Central Bank Digital Currency (CBDC)

Central Bank Digital Currency (CBDC)

DFC [CBDC] is a form of currency that is issued by central bank…contains the same intrinsic value as physical fiat currency. By its nature, DFC [CBDC] is still central bank's liability against the public with its value supported by sovereign credit. (Yao, 2018)

Kumhof and Noone (2018) define a CBDC as electronic central bank money that:

(1) Can be accessed more broadly than reserves

(2) Has much greater functionality for retail transactions than cash

(3) Has a separate operational structure compared with other form of central bank money, allowing it to potentially serve a different core purpose.

CBDC’s advantage over private digital currencies

Yao (2018) argues there are two advantages:

- CBDC has anchor of value that enables it to perform functions of money effectively.

Unit of account, medium of exchange, store of value

- CBDC can play a part in credit creation and has real economic impact.

Facts tend to suggest that credit creation is critical to modern economy, in particular, actions such like liquidity assistance during financial crisis contribute greatly to preventing risk contagion and promoting ecnomic recovery.

Account VS. Token Based CBDC

CBDC = digital currency + digital payment system

An account-based system requires verifying the identity of the payer.

An token-based system requires verifying the validity of the object used to pay.

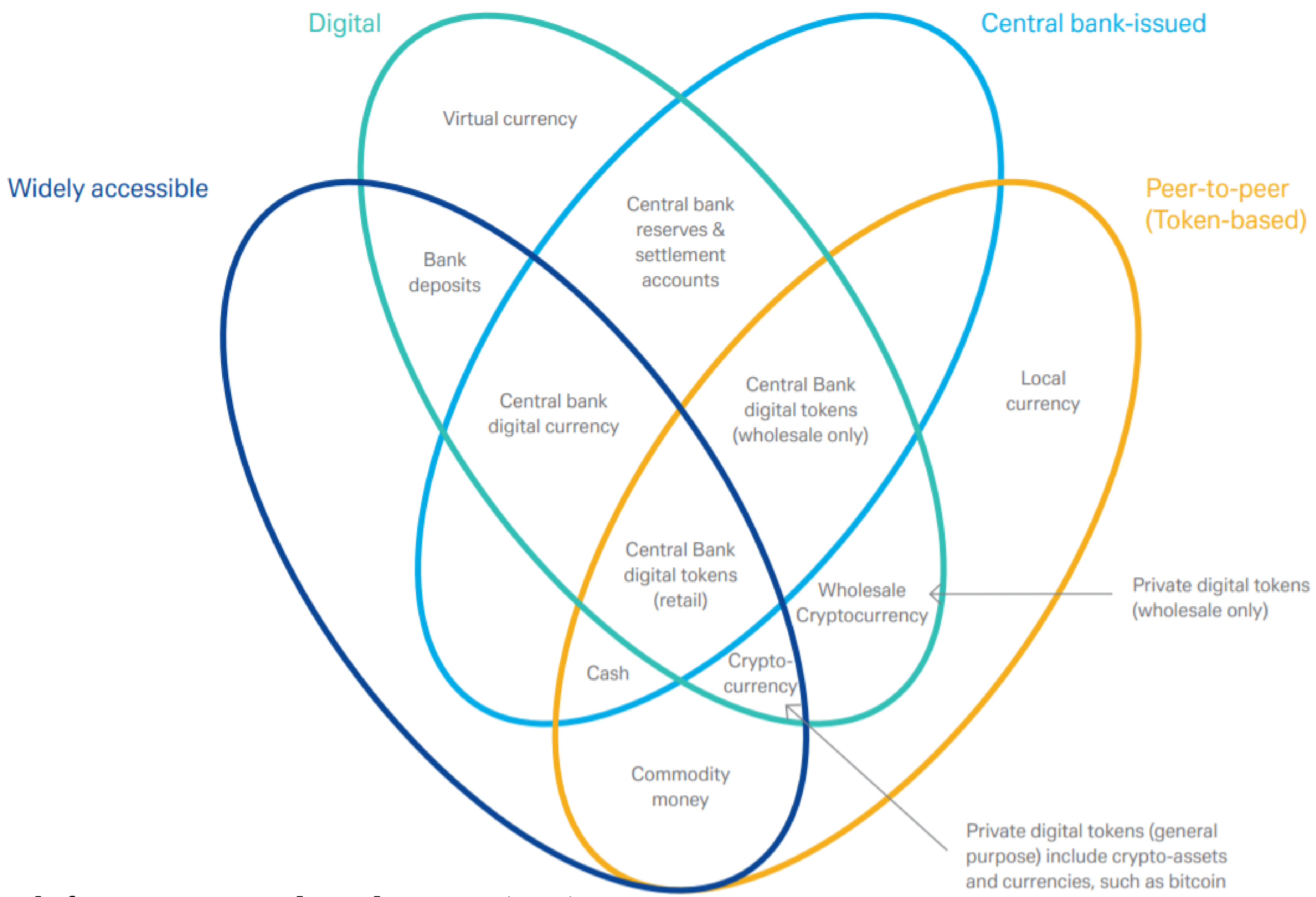
Token-based CBDC can be traded offline while account-based CBDC transactions cannot be executed without the system remotely validating the identity of the account holder and the balance on the account. (Terracciano and Somoza, 2020)

Wholesale vs Retail CBDC

- A wholesale CBDC is only available to banks and is similar to the existing digital central bank reserves.

- A retail CBDC grants end-users access to digital central bank money and can be used as an additional means of payment besides cash and commercial bank money.

Money Flower



Source: Bank for International Settlements (BIS)

Motivation and benefits of issuing CBDC

- Motivations:

Support unconventional monetary policy (Bordo and Levin, 2017)

Financial stability and inclusion (Engert and Fung, 2017; Ozili, 2021a)

Counterreaction to private cryptocurrencies (Ozili, 2021b)

- Benefits:

Enhance monetary policy, reduce the cost of producing and managing cash.

CBDC and financial inclusion

Ozili (2021a) argues that CBDC promotes financial inclusion by digitizing the value chains in the economy, improving access to digital financial services, enlarging the digital economy, enhancing the efficiency of digital payments and reducing transaction cost.

Foster et al. (2021) argue that CBDC improve financial inclusion in the excluded populations by giving people access to CBDC so that the poorest can avoid the high costs charged by banks and other financial service providers.

CBDC and financial inclusion

A survey conducted by Barontini and Holden (2019) shows that one of the reasons why central banks are issuing a CBDC is to broaden financial inclusion goals.

They argue that even though many central banks are not yet convinced that the benefits of a CBDC will outweigh the costs, emerging countries appear to be interested in the financial inclusion benefits of a retail CBDC than developed countries.

CBDC and macroeconomic and financial stability

Yao (2018) argues that the development of CBDC in China could make money become a more stable value, and could offere effective tools for macroeconomic control (with a sophisticated AI model).

However, Kim and Kwon (2019) show that the introduction of deposits in CBDC account will decrease the supply of private credit by commercial banks, which many have a negative effect for financial stability by increasing the likelihood of bank runs.

Ferrari et al. (2020) shows that a CBDC can amplify global spillovers of shocks under open-economy settings.

CBDC challenges: security risk and privacy concerns

Rennie and Steele (2021) argue that central banks have a number of priorities which could eventually undermine privacy such as preventing the criminal abuse of the financial system, geopolitical concerns and private sector innovation.

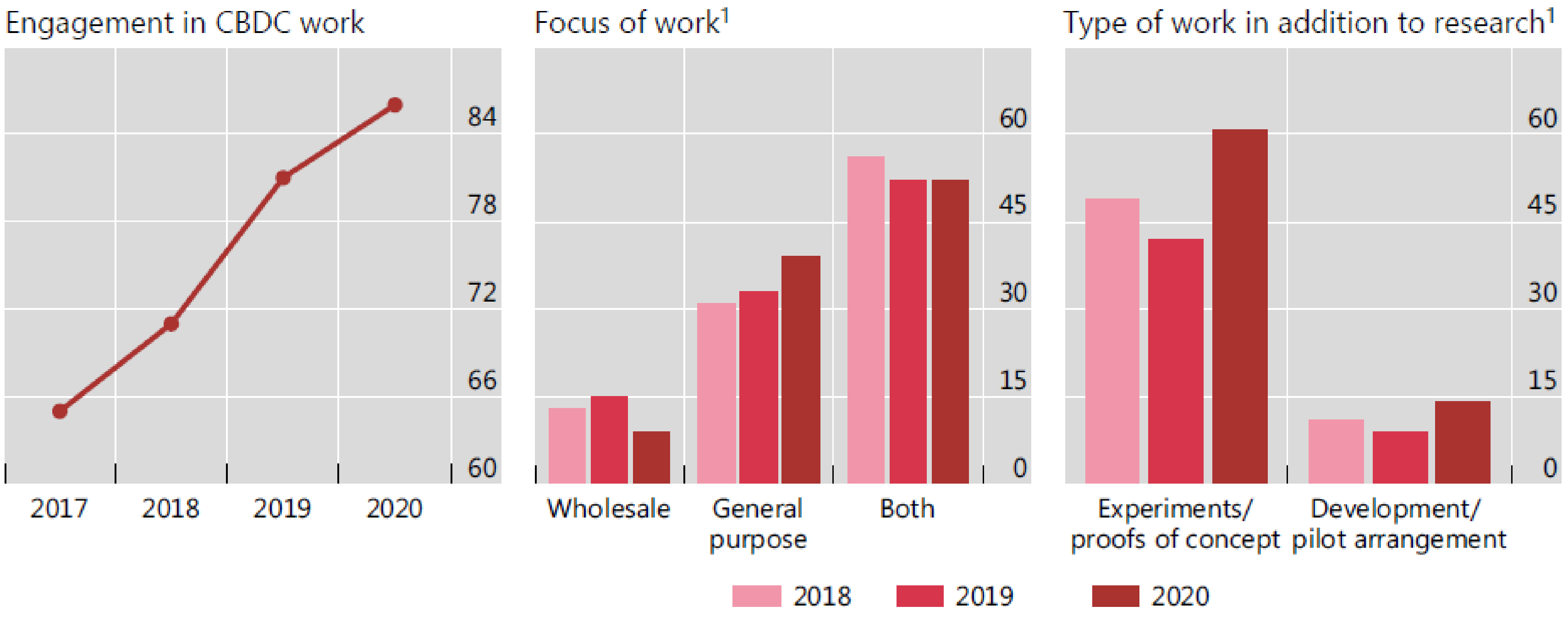
Grothoff and Moser (2021) shows that a CBDC can attain the transction privacy property of cash only when the CBDC is deployed in a token-based system.

Central Bank Engagement

Bank for International Settlements (BIS) conducted a survey on 65 central banks in 2020. (21 advanced economies, 44 developing economies)

Central banks' work on CBDC advances further

Share of respondents Graph 2



[1] Share of respondents conducting work on CBDC.

Source: BIS central bank survey on CBDCs.

Central Bank Engagement

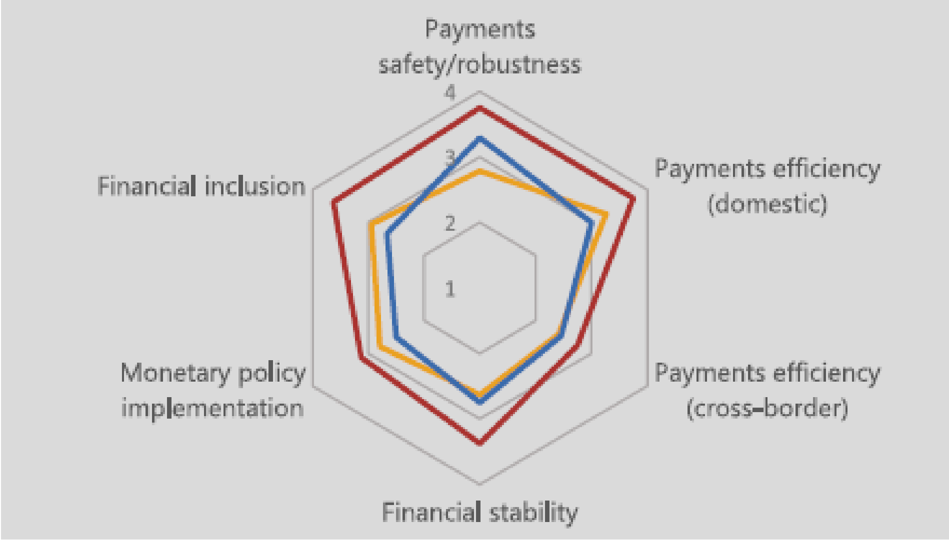
Main motivations of CBDC work by stage

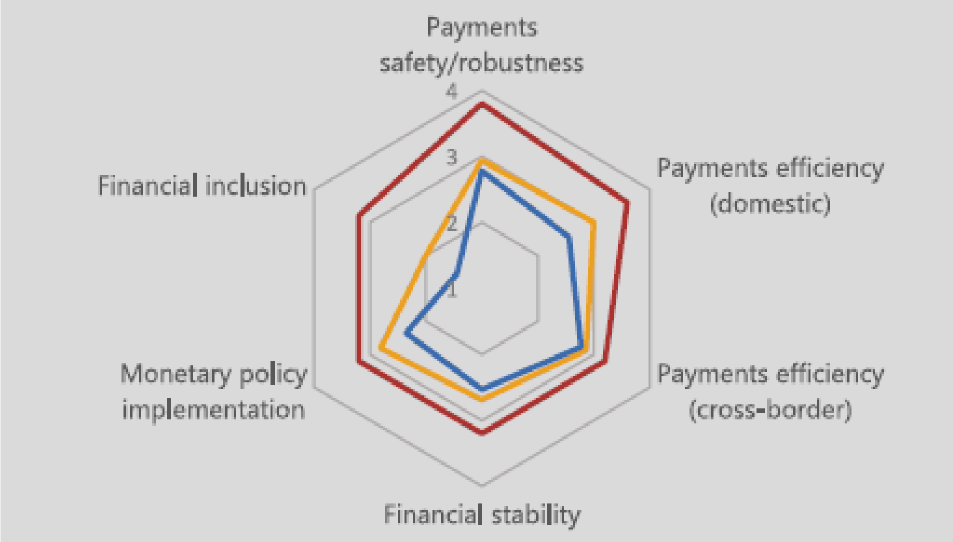
Average importance

Graph 5

Retail CBDC

Wholesale CBDC





Research only — Research + Proof-of-concept — Research + Proof-of-concept + Pilot

(1) = “Not so important”; (2) = “Somewhat important”; (3) = “Important”; (4) = “Very important”.

Source: BIS central bank survey on CBDCs.

Part IX: Regulations Need? FTX Scandal…

FTX Scandal

- FTX is the biggest scandal in the crypto community.
- On 2022-11-02, CoinDesk published an article pointing out that Alameda's balance sheet is full of FTT, the token issued by FTX.

casts CoinDesk

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4%	Binance Coin	$289.94 -1.97%	XRP	$0.38629734 -1.13%	Binance USD	$1.00 -0.04%	Dogecoin	$0.10247801 -1.93%	Cardano	$0.32010000 -1.06%

Business

Divisions in Sam Bankman-Fried's Crypto Empire Blur on His Trading Titan Alameda's Balance Sheet

Alameda had $14.6 billion of assets as of June 30, according to a private document CoinDesk reviewed. Much of it is the FTT token issued by FTX, another Bankman-Fried company.

By Ian Allison Nov 2, 2022 at 10:44 p.m. Updated Nov 10, 2022 at 2:36 a.m.

FTX Scandal

- FTX, FTT, Alameda Research

FTX is one of the biggest crypto exchanges and Alameda Research is a trading firm, both giants in their respective industries. And both of them are controlled by Sam Bankman-Fried (SBF).

- Take a close look at Alameda Research balance sheet:

➢ Total assets: **$14.6 billion**. This is comprised of $5.8 billion FTT token, $1.2 billion Solana token (SOL), $3.37 billion in unidentified "crypto held," $2 billion in "investments in equity securities." According to Dirty Bubble Media, Alameda only had **$134 million** in cash on hand in June 2022.

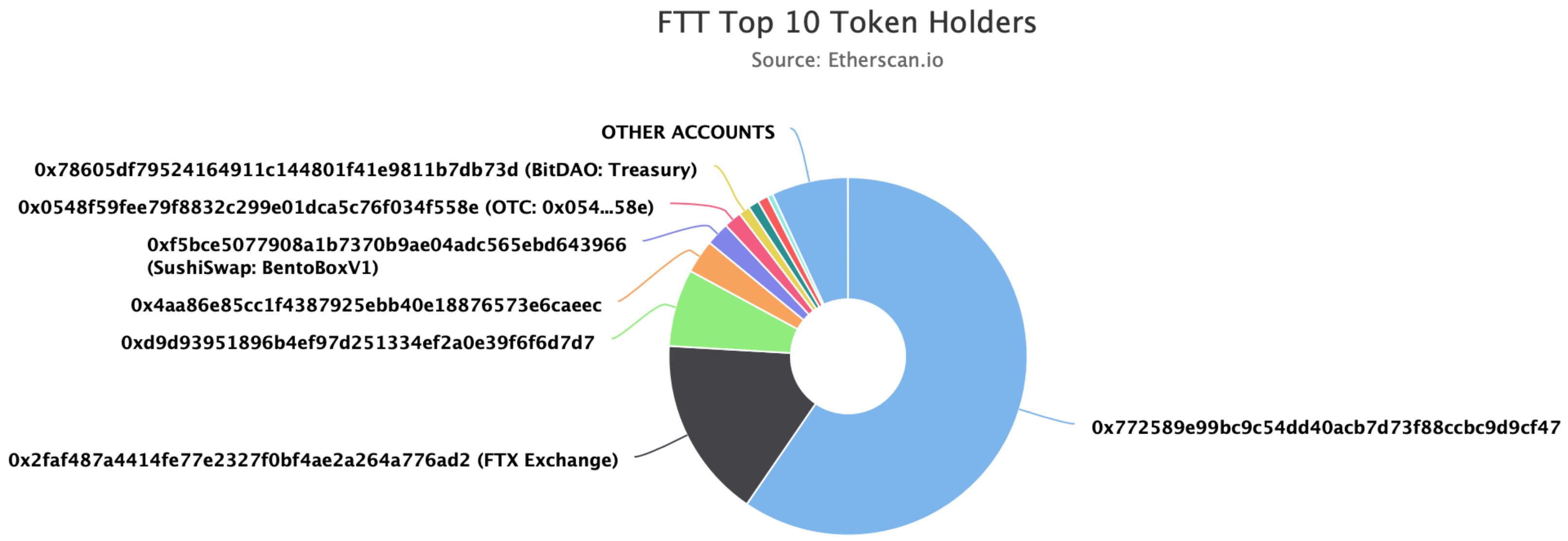
➢ Total liabilities: **$8 billion**, of which $7.4 billion is "loans," with another $292 million worth of FTT token owed. The remainder is unidentified.

FTX Scandal

- According to CoinDesk’s report, Alameda owned \$5.8 billion FTT tokens in June of 2022. According to market aggregator CoinGecko, this is equivalent to **180%** of the total circulating supply of the tokens.
- A scan of the blockchain confirms that FTT ownership is highly concentrated, with 93% of the total tokens held by only 10 addresses:

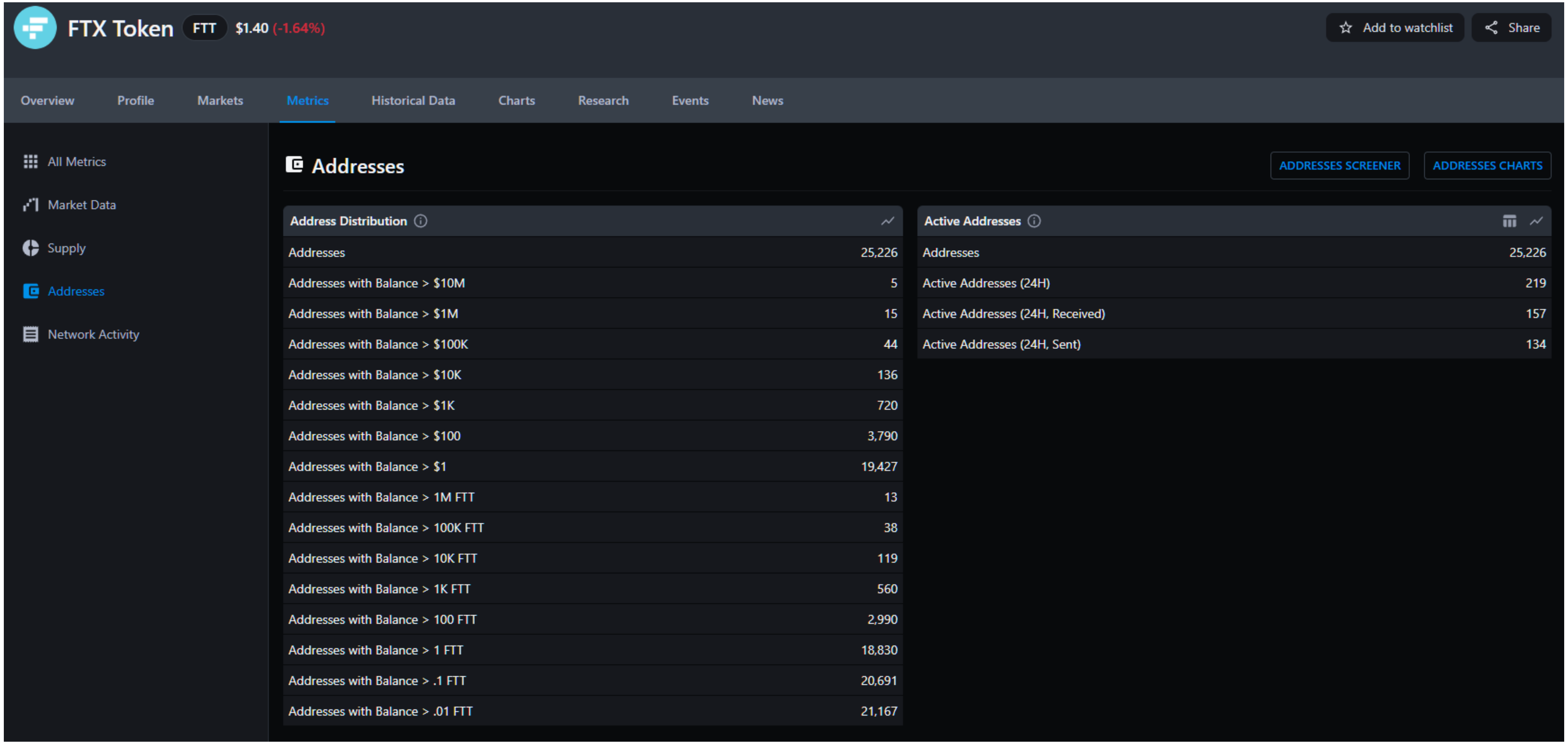
The top 10 holders collectively own 93.08% (306,135,969.36 Tokens) of FTT

Token Total Supply: 328,895,112.30 Token | Total Token Holders: 21,187



FTX Scandal

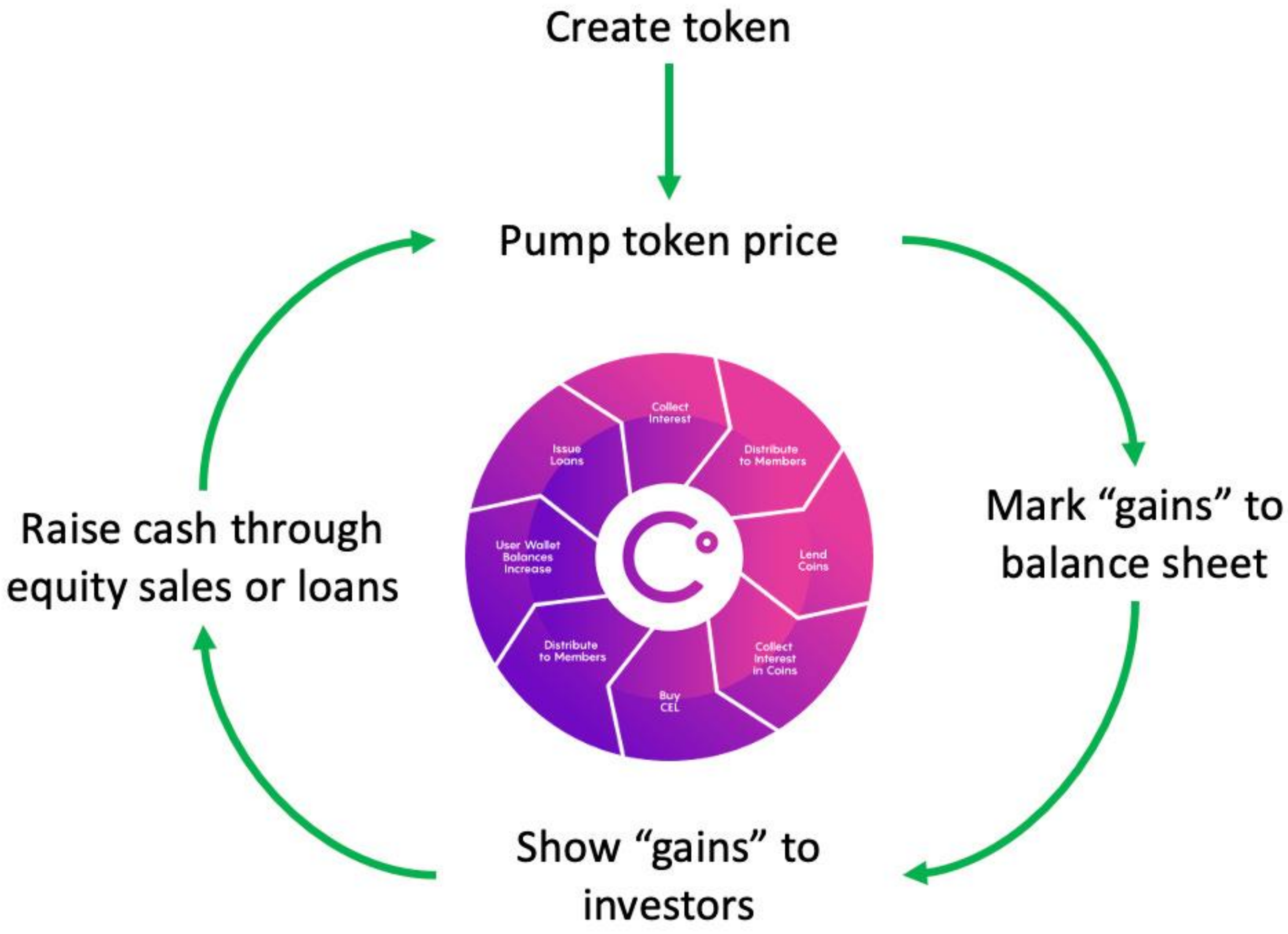
Even more concerning, the blockchain analytics firm Messari shows that there are only **180-200 addresses** actively transacting in FTT tokens.



Address Distribution	
Addresses	25,226
Addresses with Balance > $10M	5
Addresses with Balance > $1M	15
Addresses with Balance > $100K	44
Addresses with Balance > $10K	136
Addresses with Balance > $1K	720
Addresses with Balance > $100	3,790
Addresses with Balance > $1	19,427
Addresses with Balance > 1M FTT	13
Addresses with Balance > 100K FTT	38
Addresses with Balance > 10K FTT	119
Addresses with Balance > 1K FTT	560
Addresses with Balance > 100 FTT	2,990
Addresses with Balance > 1 FTT	18,830
Addresses with Balance > .1 FTT	20,691
Addresses with Balance > .01 FTT	21,167

Active Addresses	
Addresses	25,226
Active Addresses (24H)	219
Active Addresses (24H, Received)	157
Active Addresses (24H, Sent)	134

FTX Scam



Source: Dirty Bubble Media - Is Alameda Research Insolvent?

FTX Scandal

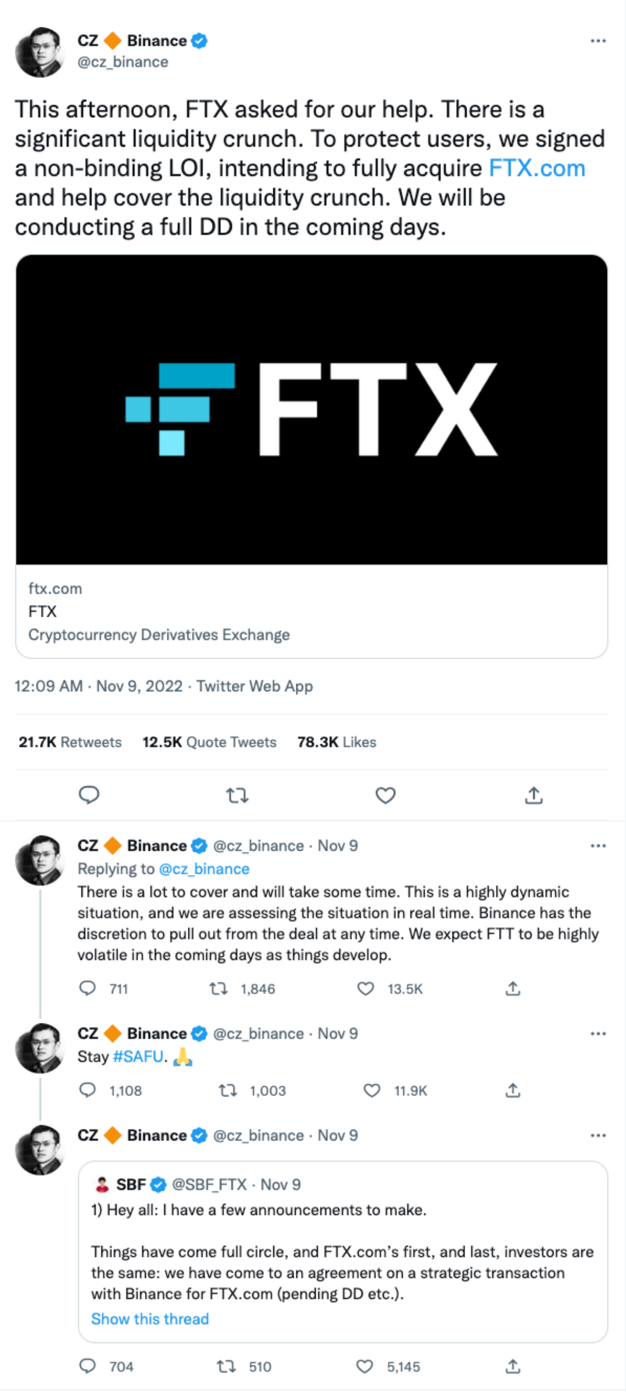
- On 2022-11-05, Binance, the biggest crypto exchange in the world, begins to liquidate its all FTTs.

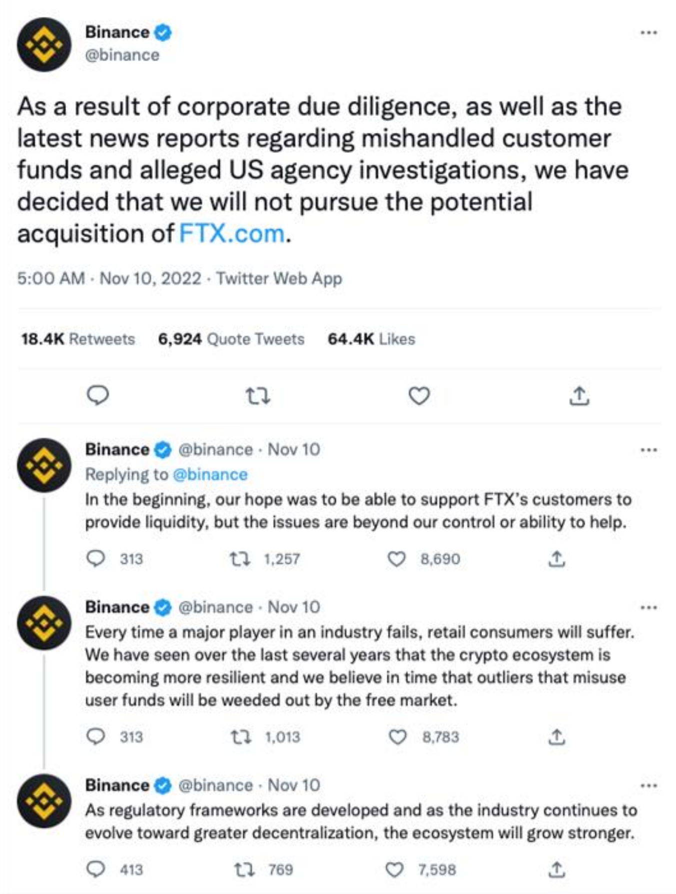
- On 2022-11-07, a bank run on FTT begins.

FTX Scandal

- On 2022-11-08, Binance announced that its was considering to fully acquire FTX.com.

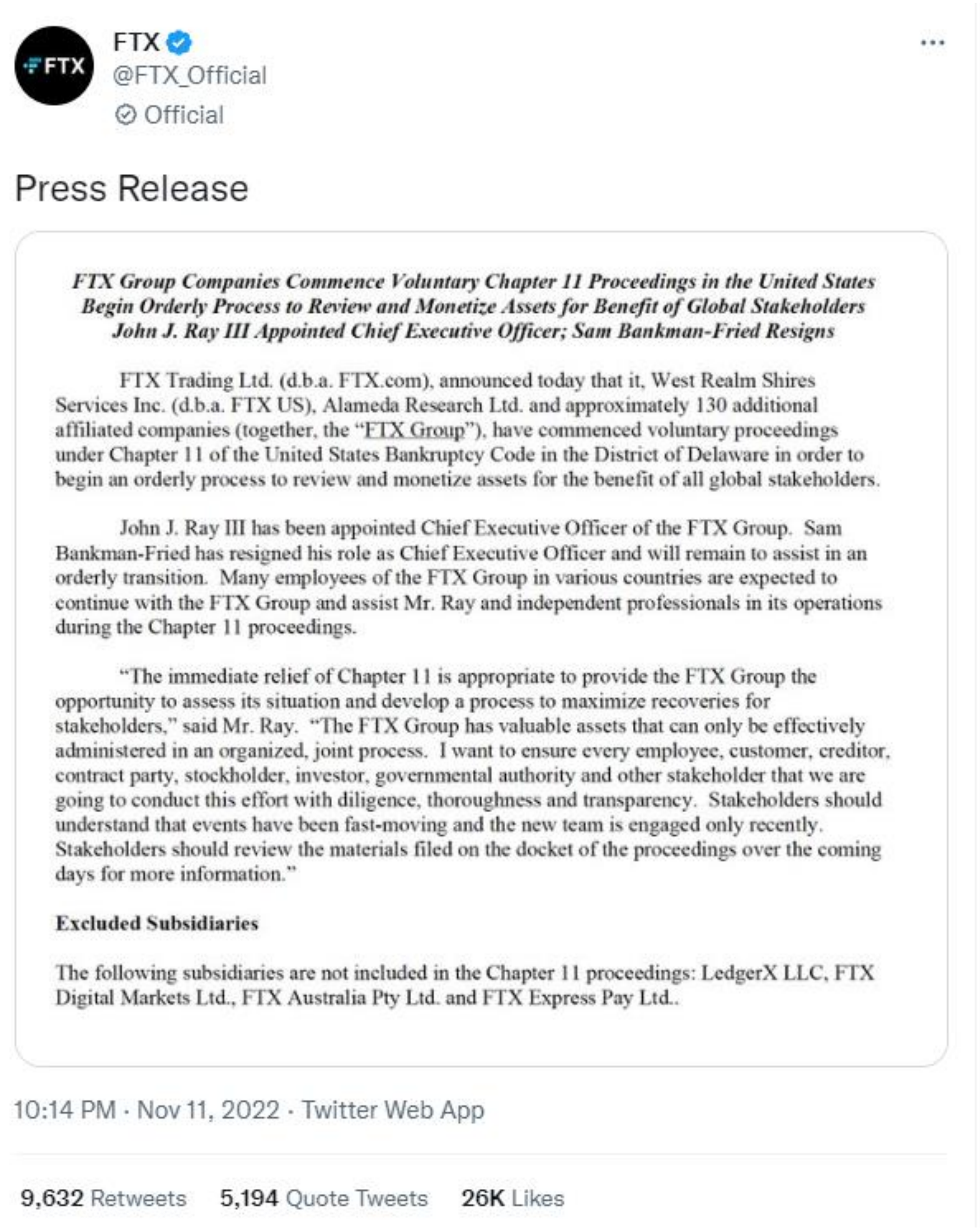
- But it backed out of this deal on 2022-11-10 as a result of corporate due diligence.





FTX Scandal

- On 2022-11-11, FTX filed for bankruptcy.



FTX
@FTX_Official
Official

Press Release

FTX Group Companies Commence Voluntary Chapter 11 Proceedings in the United States Begin Orderly Process to Review and Monetize Assets for Benefit of Global Stakeholders John J. Ray III Appointed Chief Executive Officer; Sam Bankman-Fried Resigns

FTX Trading Ltd. (d.b.a. FTX.com), announced today that it, West Realm Shires Services Inc. (d.b.a. FTX US), Alameda Research Ltd. and approximately 130 additional affiliated companies (together, the "FTX Group"), have commenced voluntary proceedings under Chapter 11 of the United States Bankruptcy Code in the District of Delaware in order to begin an orderly process to review and monetize assets for the benefit of all global stakeholders.

John J. Ray III has been appointed Chief Executive Officer of the FTX Group. Sam Bankman-Fried has resigned his role as Chief Executive Officer and will remain to assist in an orderly transition. Many employees of the FTX Group in various countries are expected to continue with the FTX Group and assist Mr. Ray and independent professionals in its operations during the Chapter 11 proceedings.

"The immediate relief of Chapter 11 is appropriate to provide the FTX Group the opportunity to assess its situation and develop a process to maximize recoveries for stakeholders," said Mr. Ray. "The FTX Group has valuable assets that can only be effectively administered in an organized, joint process. I want to ensure every employee, customer, creditor, contract party, stockholder, investor, governmental authority and other stakeholder that we are going to conduct this effort with diligence, thoroughness and transparency. Stakeholders should understand that events have been fast-moving and the new team is engaged only recently. Stakeholders should review the materials filed on the docket of the proceedings over the coming days for more information."

Excluded Subsidiaries

The following subsidiaries are not included in the Chapter 11 proceedings: LedgerX LLC, FTX Digital Markets Ltd., FTX Australia Pty Ltd. and FTX Express Pay Ltd..

10:14 PM · Nov 11, 2022 · Twitter Web App

9,632 Retweets 5,194 Quote Tweets 26K Likes

FTX Scandal

- On 2022-11-12, FTX claimed that it was hacked, and $895M drained from customer wallets.

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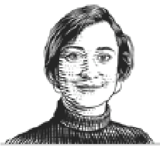
FTX possibly hacked, $895m drained from customer wallets



Jessica Sier
Journalist

Nov 12, 2022 – 6.02pm

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Troubled crypto exchange FTX appears to have been hacked, with $US600 million ($895 million) drained from a series of FTX-linked wallets following a week when founder Sam Bankman-Fried filed for bankruptcy and resigned as chief executive officer.

Users have been instructed not to install any new upgrades and to delete all FTX apps, according to a statement on the company's official Telegram channel.

"FTX has been hacked. FTX apps are malware. Delete them. Chat is open. Don't go on FTX site as it might download Trojans," reads a post by an account administrator in the FTX Support Telegram chat.

FTX Scandal

- The contagion effect

The contagion effect caused by the FTX Scandal cannot be overlooked. More than a dozen crypto companies have taken to social media to confirm whether they have exposure to FTX since the exchange's liquidity crunch came to light.

- Do we need more regulations?

Yes.

- Is crypto dead?

…

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