# Exhibit D

# Analysis of Himalaya Coin and Himalaya Dollar

April 1, 2024

integra

The opinions expressed in this presentation are based on the analysis described therein, the materials attached as Exhibit A, as well as my training and experience in analysis of cryptocurrencies. I consider myself an expert in cryptocurrencies. My CV, attached, lists all the presentations I have done related to cryptocurrencies as well as all my publications in the last 10 years. I have not previously testified in the capacity as an expert at a trial or in a deposition.

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# Agenda

I. Explaining Blockchain

II. HCN's price, volume, and market cap relative to exchange tokens

III. HCN's price movements relative to the cryptocurrency market

IV. Assessment of centralization of HCN and HDO ownership and transactions

V. Smart contracts for HCN and HDO compared to token contracts

VI. Analysis of Himalaya's claimed reserves

# What is Blockchain?

- Blockchain is a distributed ledger that that allows for secure and transparent recording of transactions across a network of computers.
- It consists of a chain of blocks, where each block contains a set of transactions or other type of data.
- The blocks are cryptographically linked (chained) to the previous block in a way that makes the blockchain almost un-hackable.
- The transparent nature of the blockchain enables one to check asset movement and ownership.

# Blockchain is Decentralized

- Decentralization means that there is no central authority controlling the blockchain network. Instead, it operates on a peer-to-peer basis, with nodes (computers) across the network maintaining copies of the blockchain.

- This decentralized structure ensures that no single entity can dominate or has control over the data or the network, making it resistant to censorship, collusion, and single points of failure.

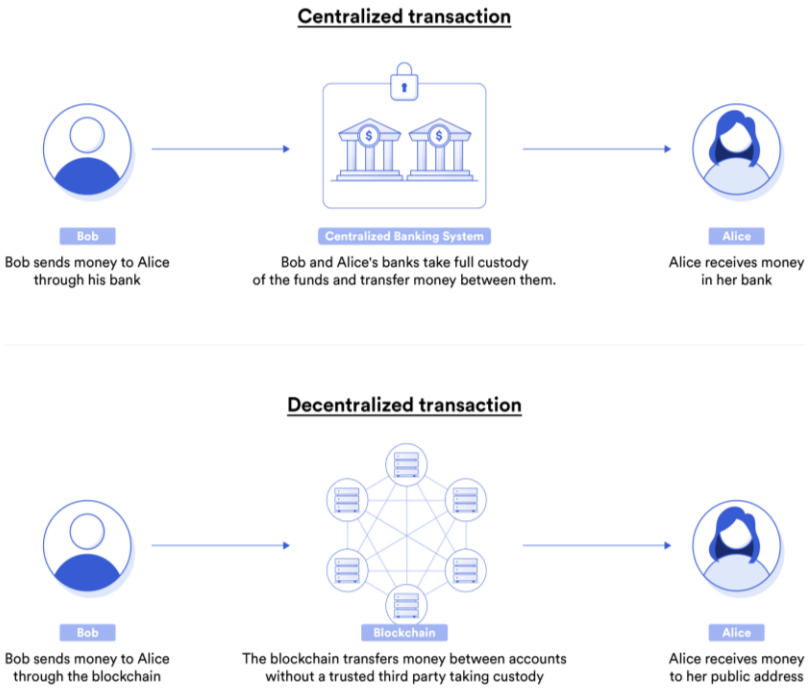


Image Source: Chainlink

# Bitcoin Blockchain - Example Transactions

| | | | | |
|---|---|---|---|---|
| Fee | 0.00000000 BTC<br>(0.000 sat/B - 0.000 sat/WU - 225 bytes) | | | 20.00000000 BTC |
| Hash | 56f8c0db583f21e9c5dee71cd80cc2ba7a1ab00603c775d7718803e4e9... | | | 2012-11-02 02:10 |
| | 14CHgikPnmPnhJfXRXjVgTKiqrqe5i6fH1 | 20.00000000 BTC | 165ioamRu9nARQqRicycKHqakshpdh4UF8 | 20.00000000 BTC |

| | | | | |
|---|---|---|---|---|
| Fee | 0.00000000 BTC<br>(0.000 sat/B - 0.000 sat/WU - 437 bytes) | | | 40.00000000 BTC |
| Hash | b5881c25b92c8af372ea447265851c2600047deedcf35565431e612dda... | | | 2012-11-02 02:10 |
| | 165ioamRu9nARQqRicycKHqakshpdh4UF8 | 20.00000000 BTC | 1CWSm7jaKP25rwiHur66S3MVMbwPx53quY | 37.47000000 BTC |
| | 165ioamRu9nARQqRicycKHqakshpdh4UF8 | 20.00000000 BTC | 165ioamRu9nARQqRicycKHqakshpdh4UF8 | 2.53000000 BTC |

| | | | | |
|---|---|---|---|---|
| Fee | 0.00000000 BTC<br>(0.000 sat/B - 0.000 sat/WU - 405 bytes) | | | 30.00000000 BTC |
| Hash | 308901934ec7d08f8a5ed61ee9ee9077398f2fb3a200157c39e65d88d8... | | | 2012-11-02 02:10 |
| | 165ioamRu9nARQqRicycKHqakshpdh4UF8 | 2.53000000 BTC | 1CWSm7jaKP25rwiHur66S3MVMbwPx53quY | 30.00000000 BTC |
| | 165ioamRu9nARQqRicycKHqakshpdh4UF8 | 27.47000000 BTC | | |

# Smart Contracts

- Smart contracts are self-executing contracts with terms and logic embedded in code that resides on the blockchain.
- Smart contracts are automatically executed, e.g., they release funds or execute actions, when predefined conditions are met.
- These contracts are transparent, tamper-proof, and irreversible once deployed, unless structured in a way to allow upgradeability.
  - These upgradeable contracts are enabled through “proxy contracts.”
  - If a smart contract is not immutable, owners of the proxy contract can leverage upgradeability, potentially enabling them to seize funds or significantly alter contract functionalities.

# Blockchain Immutability

- Immutability ensures that once data is recorded on the blockchain, it cannot be altered or deleted.
- With immutability, the blockchain ledger acts as an unchangeable record of transactions, where each block contains a timestamped list of validated transactions.
- The immutable nature of the blockchain means that there is a high degree of confidence that recorded transactions are authentic and occurred as documented.

# Applications of Blockchain: Bitcoin and Ethereum

- The Bitcoin blockchain was proposed in a whitepaper in 2008 and its network implementation began in 2009.
  - Bitcoin (BTC) is the native cryptocurrency of the Bitcoin blockchain, operating on a decentralized network that enables peer-to-peer transactions without the necessity for intermediaries such as banks.
- Ethereum is a decentralized blockchain that enables smart contracts and decentralized applications (DApps) to be built and operated without downtime, fraud, or interference from a third party.
  - Ether (ETH) is the native cryptocurrency of the Ethereum platform, used to fuel transactions and pay for computational services on the network, including smart contract execution.

# ERC Contracts

- On the Ethereum blockchain, there are a set of standards, with names beginning “ERC” (Ethereum Request for Comment), which indicate that a smart contract has a set of functions or attributes in common with other smart contracts with the same standard.
  - These standards facilitate the creation and deployment of tokens.
  - Tokens with the same ERC standard follow a common set of functions allowing them to easily interact with smart contracts, wallets, and other decentralized applications within the Ethereum ecosystem.
  - Examples: ERC-20, ERC-721, ERC-1404
- ERC-20 tokens are a type of cryptocurrency token standard on the Ethereum blockchain.
- ERC-1404 tokens have all the qualities of an ERC-20 token plus additional functions regarding transfer restrictions (e.g. the ability to check whether a transfer is restricted)

# Stablecoins and Reserves

- Stablecoins are a type of cryptocurrency designed to minimize price volatility by pegging their value to a stable asset, such as fiat currency (USD, EUR, etc.).
- Reserves refer to the assets held by the issuer of a stablecoin to maintain its pegged value.
- Reserves provide backing for the stablecoin's value and serve as a guarantee for holders that they can redeem their stablecoins for the underlying assets.
- If the stablecoins are not adequately backed, they are susceptible to runs, which could cause the value of the stablecoin to drop drastically.
  - An illustrative case of a stablecoin facing issues with backing is TerraUSD (UST). The TerraUSD incident highlights the risks associated with stablecoins lacking sufficient backing, leading to a significant collapse in value.

Source: Griffin, John M., and Amin Shams. "Is Bitcoin really untethered?." *The Journal of Finance* 75.4 (2020): 1913-1964.

# On-Chain vs. Off-Chain Transactions

- Crypto transfers can either occur on-chain or off-chain.
  - On-chain transactions are recorded and verified on the blockchain in a decentralized manner.
    - For transactions on the Ethereum blockchain, there is a public record of the source and destination of the movement of all on-chain funds.
  - Off-chain transactions are not recorded on the blockchain, hence their details are not publicly accessible or verifiable.
    - Off-chain transfers typically take place within the internal ledgers of centralized exchanges and are not publicly visible or verifiable on the blockchain. Such transactions are not decentralized.
    - Off-chain transactions within centralized exchanges resemble internal account adjustments or exchange "credits." Essentially, the exchange updates its internal ledgers to reflect the transfer of cryptocurrency balances between user subaccounts without executing a transaction on the blockchain itself.
- Prominent cryptocurrencies experience a high volume of on-chain transactions.

# Features of Cryptocurrencies

- Cryptocurrencies are digital currencies that utilize cryptography for security and operate on decentralized networks, enabling trustless and transparent transactions.
- Cryptocurrencies typically have significant on-chain activity; on public blockchains such as Ethereum, this means transactions and other activities are recorded and publicly accessible.
- These transactions occur on decentralized networks, eliminating the need for trust in intermediaries as transactions are validated by the network consensus.
- Cryptocurrencies trade in open markets 24/7 and are usually accessible to anyone with internet, providing open and inclusive access to trading.
- Most cryptocurrencies can be traded for various other cryptocurrencies on trading platforms.
- Cryptocurrencies often have unique offerings or value propositions, ranging from serving as a medium of exchange for goods and services to enabling decentralized applications (dApps) and smart contracts on blockchain platforms.
- The smart contracts which enable these features in cryptocurrencies are typically immutable.

# Popular Phrases in the Space

- “To the moon" is a popular phrase in the crypto community used to express optimism about the price of a particular crypto skyrocketing or experiencing significant growth.
- “HODL” is a misspelling of “hold,” and is a term often used to encourage investors to hold onto their crypto despite market fluctuations and volatility.

Source: Ledger

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# Methodology

- In this section the market cap and volume of HCN and various exchange tokens is examined.
  - Hourly price and volume data for HCN was collected from the TradingView chart on the Himalaya Exchange's website.
  - To calculate daily dollar volume for HCN, the hourly volume was multiplied by the closing price for that hour and summed for all hours in each day.
  - The following benchmark exchange tokens are used for comparison:
    - Binance (BNB), Bitget Token (BGB), CRONOS Coin (CRO), FTX Token (FTT), GateToken (GT), Huobi Token (HT), KuCoin (KCS), LEO Token (LEO), LINK (LN), MX Token (MX), OKB (OKB), WOO Network (WOO)
    - These tokens were selected for being the top centralized exchange tokens based on market cap on 3/14/2023, according to CoinMarketCap.
  - The price and volume data for the exchange tokens was obtained from CoinMarketCap.

Source: CoinMarketCap

# HCN Price Over Time


Source: TradingView chart on Himalaya Exchange's website

# Himalaya Exchange Issued 1 Billion HCN

- On 7/16/2021, 1 billion HCN was issued

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 0x6d84cf4b31c... | Exec Transact... | 12839817 | 2021-07-16 19:40:53 | Null: 0x000...000 | → | 0xf7FAaC1d...E554ee338 | 500,000,000 |
| 0xbce410d92a... | Exec Transact... | 12839740 | 2021-07-16 19:22:49 | Null: 0x000...000 | → | 0xf7FAaC1d...E554ee338 | 500,000,000 |

- According to public blockchain data, the total supply of HCN is currently 1 billion
  - The Total Supply recorded on blockchain appears to be 1 billion x $10^{18}$, but this is because the Decimals value of HCN is 18.
  - The Decimals value represents the smallest unit that can be transferred. A Decimals value of 18 means the smallest unit that can be transferred is 1/ $10^{18}$ HCN. Therefore, for 1 billion HCN to be created on blockchain, the smart contract records 1 billion x $10^{18}$ as the Total Supply.

19. decimals

*Returns the number of decimals used to get its user representation. For example, if `decimals` equals `2`, a balance of `505` tokens should be displayed to a user as `5,05` (`505 / 10 ** 2`). Tokens usually opt for a value of 18, imitating the relationship between Ether and Wei. This is the value {ERC20} uses, unless {_setupDecimals} is called. NOTE: This information is only used for _display_ purposes: it in no way affects any of the arithmetic of the contract, including {IERC20-balanceOf} and {IERC20-transfer}.*

18 *uint8*

30. totalSupply

*See {IERC20-totalSupply}.*

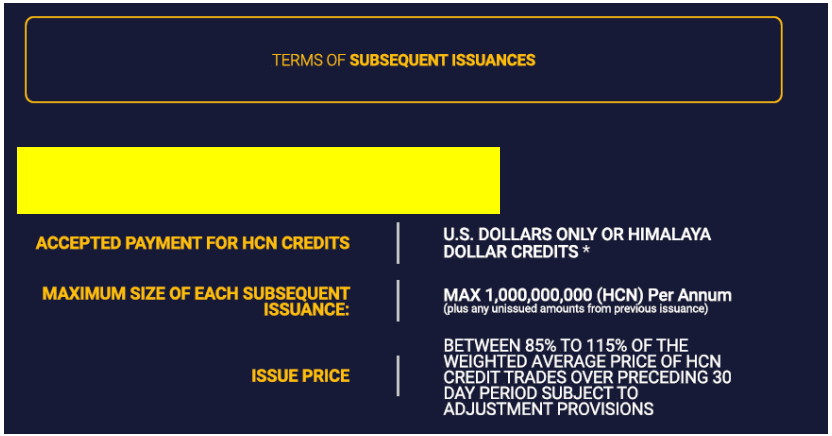
1000000000000000000000000000 *uint256*

Source: Etherscan

# Himalaya Exchange Issued 1 Billion HCN

- According to HCN's whitepaper, HCN had an initial issuance of 1 billion tokens and additional HCN could be issued up to 4 times per 12 months.

| | |
|---|---|
| TOKEN NAME | HIMALAYA COIN |
| TOKEN TICKER | HCN |
| ISSUER JURISDICTION | BRITISH VIRGIN ISLANDS |
| INITIAL ISSUE DATE | 26 APRIL 2021 |
| INITIAL ISSUE PRICE | 0.10 HIMALAYA DOLLAR CREDIT = 0.10 U.S. DOLLARS |
| ACCEPTED PAYMENT | U.S. DOLLARS ONLY OR HIMALAYA DOLLAR CREDITS * |

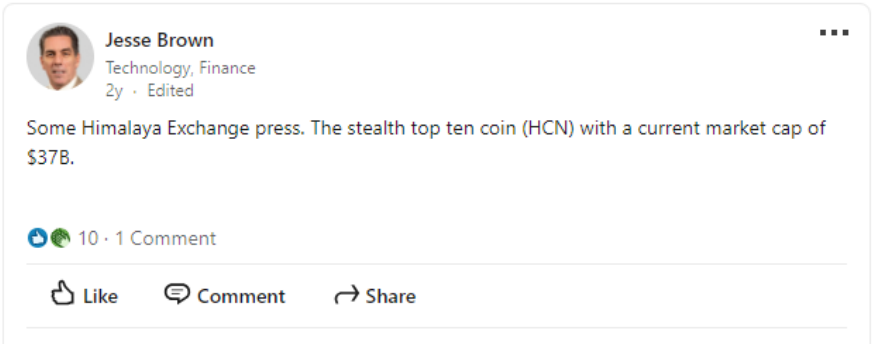


TERMS OF **SUBSEQUENT ISSUANCES**

| | |
|---|---|
| ACCEPTED PAYMENT FOR HCN CREDITS | U.S. DOLLARS ONLY OR HIMALAYA DOLLAR CREDITS * |
| MAXIMUM SIZE OF EACH SUBSEQUENT ISSUANCE: | MAX 1,000,000,000 (HCN) Per Annum (plus any unissued amounts from previous issuance) |
| ISSUE PRICE | BETWEEN 85% TO 115% OF THE WEIGHTED AVERAGE PRICE OF HCN CREDIT TRADES OVER PRECEDING 30 DAY PERIOD SUBJECT TO ADJUSTMENT PROVISIONS |

Source: HCN Whitepaper

# Himalaya Exchange Issued 1 Billion HCN




LinkedIn (2022)

Himalaya Exchange CEO Jesse Brown says one billion of the coins have been issued similar to what CoinMarketCap says Shiba Inu, a dog-themed coin that's recently surged in popularity, is worth.

Bloomberg (November 12, 2021)

- In line with public statements made by the CEO of the Himalaya Exchange, Jesse Brown, and with coverage of the Himalaya Exchange, such as through Bloomberg, one billion HCN was considered to calculate the market cap.

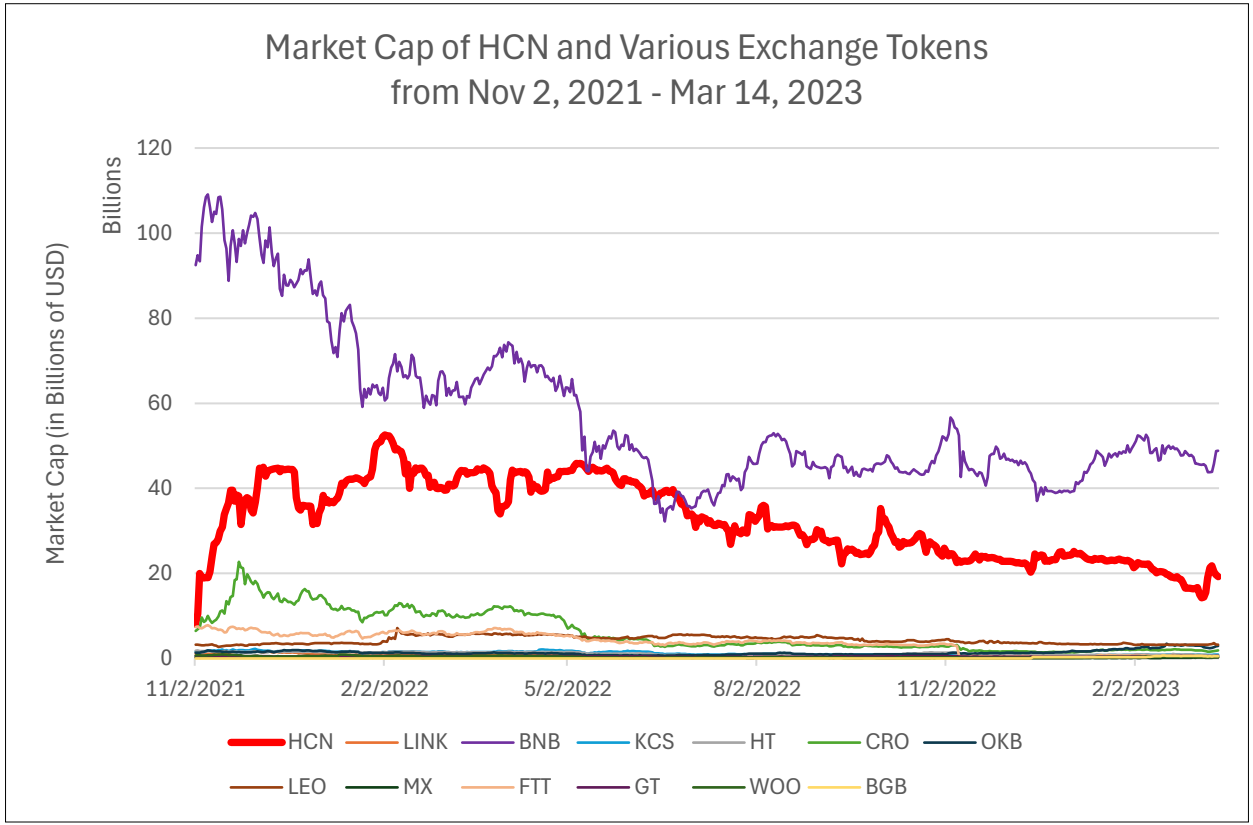
Source: LinkedIn, Bloomberg

# HCN Market Cap Over Time


*Assuming total supply of 1 billion HCN

Source: TradingView chart on Himalaya Exchange's website

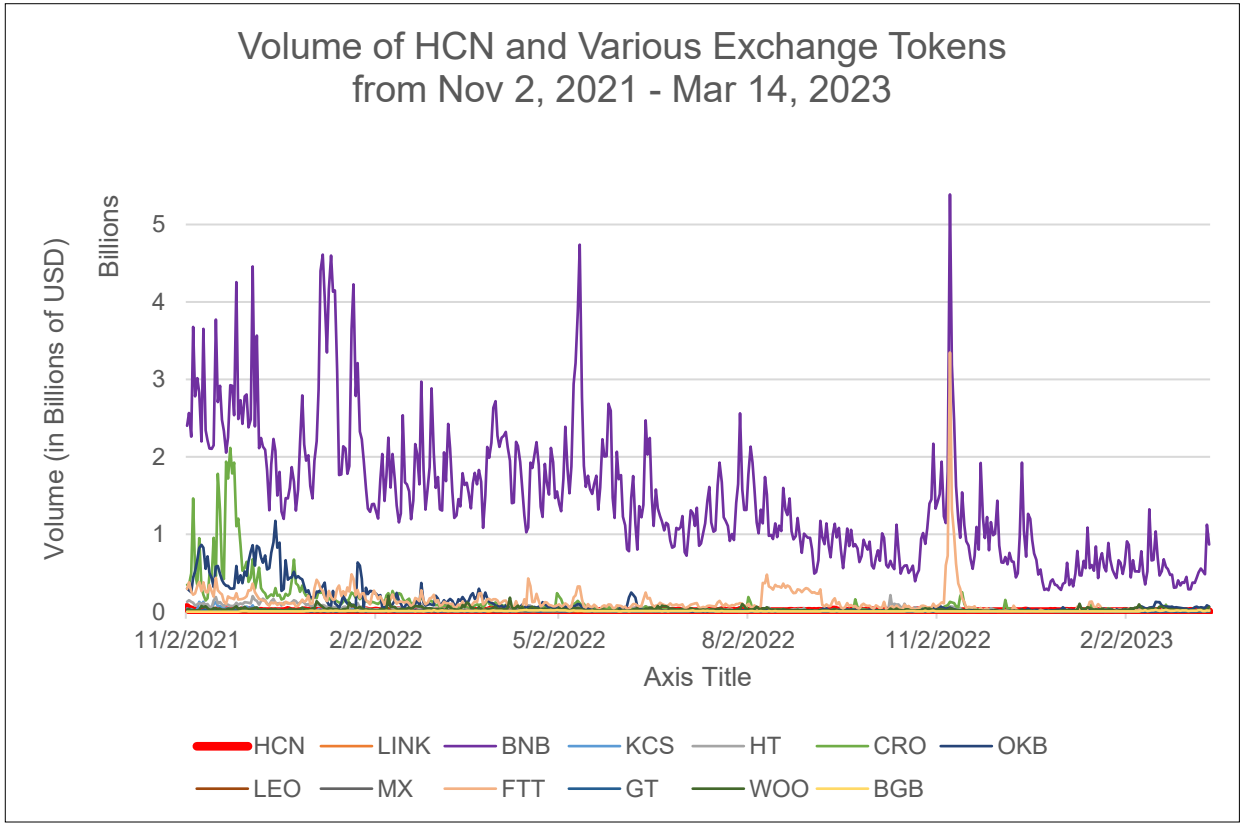
# HCN Market Cap Compared to Exchange Tokens




Source: CoinMarketCap

- HCN's market cap was larger than the market caps of most exchange tokens.
- On average, HCN had the 6th highest market cap of all tokens tracked on CoinMarketCap, and the 2nd highest market cap (after BNB) among these exchange tokens.

# HCN Volume Compared to Exchange Tokens




Source: CoinMarketCap

- HCN's volume was considerably lower than the volume of benchmark exchange tokens.
- Such a high market cap appears uncommon for a cryptocurrency with such relatively low volume.

# HCN Market Cap and Volume Compared to Major Cryptocurrencies

| | Market Capitalization | Daily Trading Volume |
|---|---|---|
| **HCN average from Nov 2, 2021 to March 14, 2023** | **$32 Billion** | **$4.1 Million** |
| BTC average for the same time period | $582 Billion | $29 Billion |
| Ratio of HCN to BTC | 5.49% | 0.01% |
| ETH average for the same time period | $264 Billion | $15 Billion |
| Ratio of HCN to ETH | 12.12% | 0.03% |
| BNB average for the same time period | $58 Billion | $1.2 Billion |
| Ratio of HCN to BNB | 55.17% | 0.34% |
| XRP average for the same time period | $27 Billion | $3 Billion |
| Ratio of HCN to XRP | 118.51% | 0.14% |

Source: CoinMarketCap

# Conclusion

- When comparing HCN with cryptocurrencies' market cap and volume, the ratios of volume are starkly lower than the ratios of market cap.
- HCN has a large market cap that seems unproportional to its trading volume, especially when compared to the volume and market cap of exchange tokens.
- The trading volume of HCN does not appear to align with the size of its market cap.

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# Strong Correlation Between Bitcoin and Other Cryptocurrencies

- Academic literature on cryptocurrencies show that the returns of cryptocurrencies are positively correlated
  - "Not surprisingly, the daily returns are positively correlated across all of the coins, but there is variation across different cryptocurrencies. For example, Bitcoin's correlation with Ethereum, Ripple, and Litecoin are 0.44, 0.20, and 0.45, respectively." (Griffin and Shams (2020))
- Cryptocurrency prices typically moves in the same direction as Bitcoin
  - "In this paper, we provide summary statistics for returns of over 200 cryptocurrencies…A principal risk factor is the return of Bitcoin itself, which is highly correlated with many altcoins. This is demonstrable through examining simple correlations with Bitcoin returns at the daily and monthly frequencies, as well as through a principal component analysis." (Hu, Parlour, and Rajan (2019))

Source: Griffin, John M., and Amin Shams. "Is Bitcoin really untethered?." *The Journal of Finance* 75.4 (2020): 1913-1964.
Hu, Albert S., Christine A. Parlour, and Uday Rajan. "Cryptocurrencies: Stylized facts on a new investible instrument." Financial Management 48.4 (2019): 1049-1068.

# Methodology

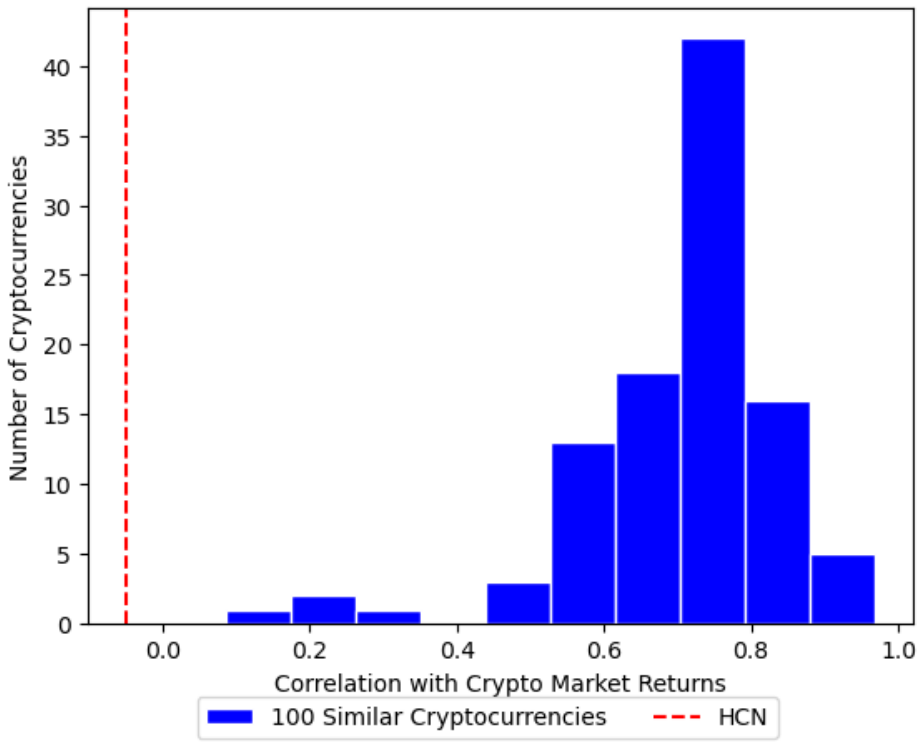
- In this section the correlation coefficient and coefficient of determination (adjusted R2, or $R^2$) between HCN and various market indices are calculated and compared with 100 similarly-sized tokens.
  - The 100 similarly-sized tokens are selected based on having the closest market cap to HCN on November 2, 2021, not being a stablecoin, and having a non-zero market cap at the beginning and end of the sample period (November 2, 2021 – March 14, 2023).
  - The correlation coefficient measures the correlation between two variables. The number varies between -1 and 1, with 1 being a perfectly positive relationship (both variables always move in the same direction) and -1 being a perfectly negative relationship (both variables always move in opposite directions).
  - The coefficient of determination (adjusted R2) measures the extent to which one variable explains the variation in another variable. An R2 of 1 means that one variable perfectly explains the movement of another variable, and an R2 of 0 means that one variable explains none of the movement of another variable.
  - The correlations and adjusted R2 values are calculated based on daily price returns.

Source: Holmes, A., Illowsky, B., & Dean, Susan. (2023). Linear Regression and Correlation. In *Introductory to Business Statistics 2e*. Houston, TX: OpenStax.

# Methodology

- The correlation coefficient and adjusted $R^2$ are examined with regard to three return series: Bitcoin (BTC), Ether (ETH), and the CoinDesk Market Index
  - The CoinDesk Market Index measures the broad performance of the cryptocurrency market
    - It is made up of more than 150 cryptocurrencies, weighted by the market capitalization of each cryptocurrency

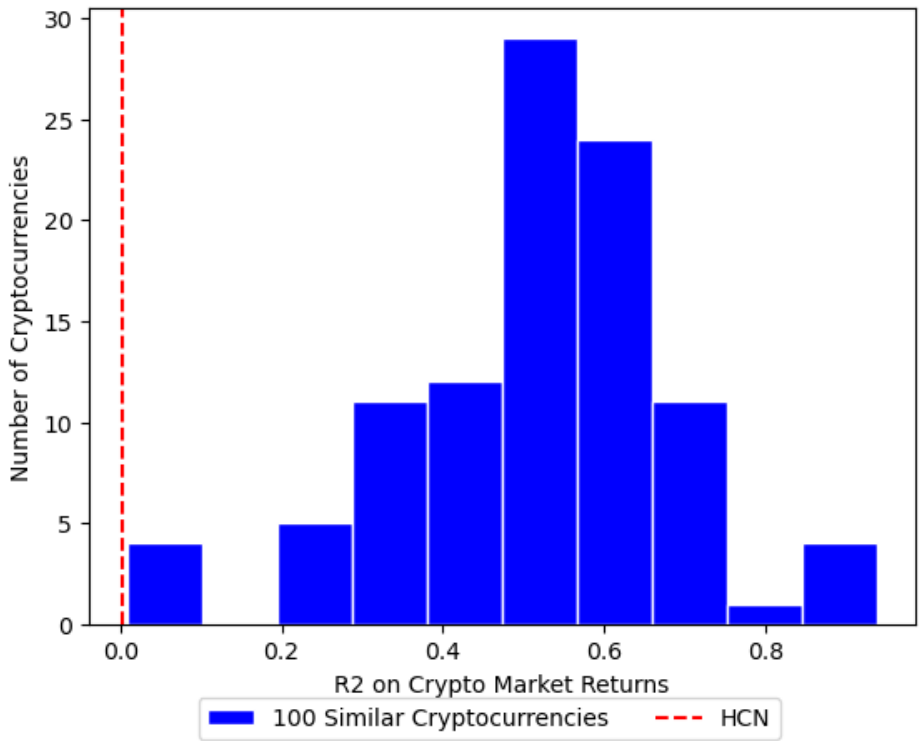
# HCN's Price has Low Correlation with CoinDesk Market Index




- HCN's price exhibits a low and negative correlation with the CoinDesk Market Index, quantified at -0.05.
- The correlation for the 100 similarly-sized tokens is generally positive and often substantial.
- These findings suggest that, in contrast to the general trend of cryptocurrencies moving in tandem with the overall market, HCN's price movements are relatively independent of the broader market trends.

Source: CoinMarketCap, CoinDesk

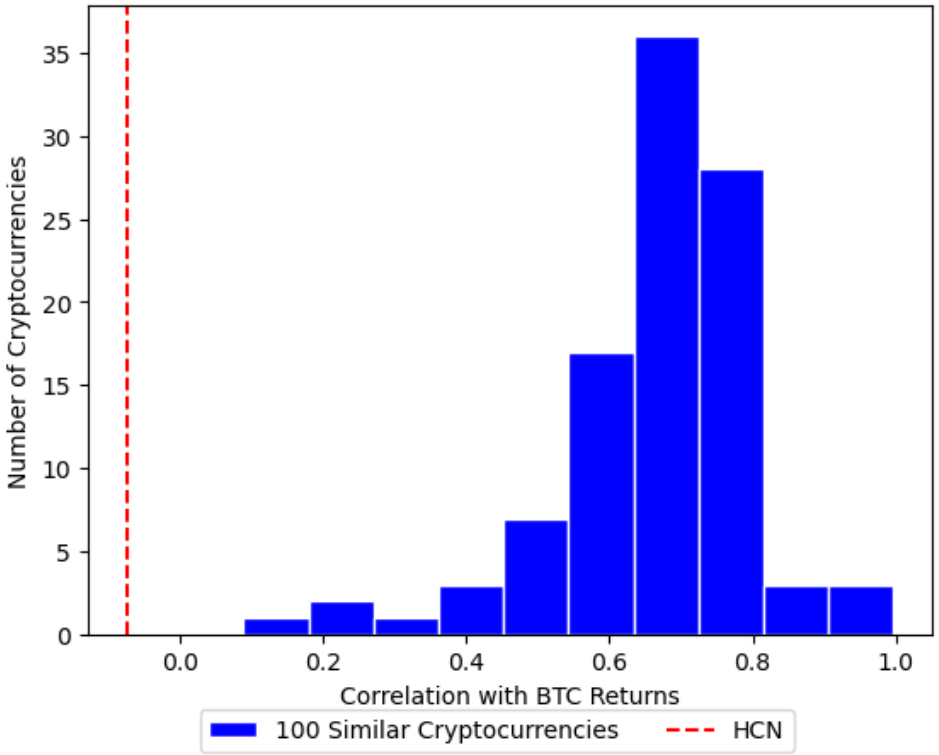
# Low Percent of HCN's Price Explained by CoinDesk Market Index




- HCN's price exhibits a low adjusted R2 with the CoinDesk Market Index, quantified at 0.003.
- The adjusted R2 for the 100 similarly-sized tokens is generally higher and often substantial.
- These findings suggest that, in contrast to the returns of cryptocurrencies being largely explained by aggregate market returns, virtually none of HCN's price movement is explained by crypto market movements.

Source: CoinMarketCap, CoinDesk

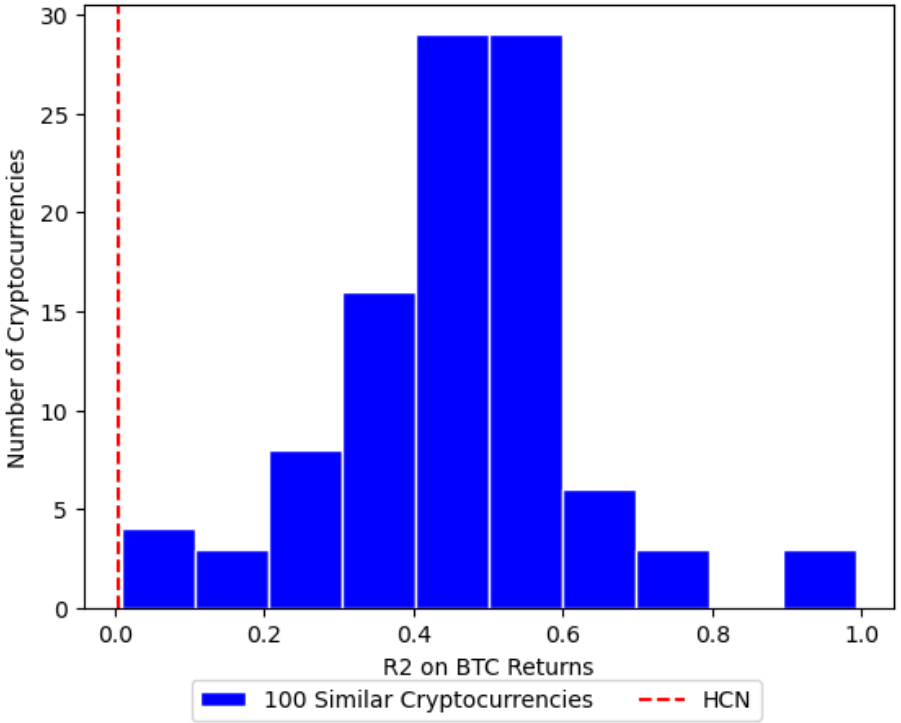
# HCN's price has a Low Correlation with BTC




- HCN's price exhibits a low and negative correlation with BTC, quantified at -0.07.
- The correlation for the 100 similarly-sized tokens is positive and often substantial.
- These findings suggest that, in contrast to the general trend of cryptocurrencies moving in tandem with BTC, HCN's price movements are relatively independent.

Source: CoinMarketCap

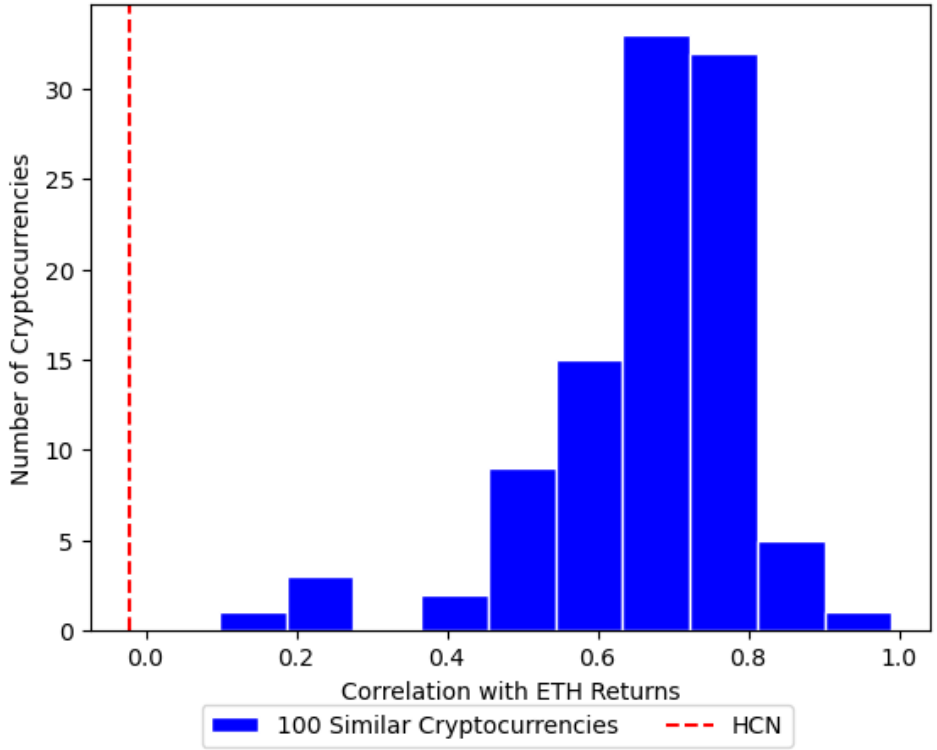
# Low Percent of HCN's Price Explained by BTC's Price




Source: CoinMarketCap

- HCN's price exhibits a low adjusted R2 with BTC, quantified at 0.005.
- The adjusted R2 for the 100 similarly-sized tokens is generally higher and often substantial.
- These findings suggest that, in contrast to the returns of cryptocurrencies being largely explained by BTC returns, virtually none of HCN's price movement is explained by BTC price movements.

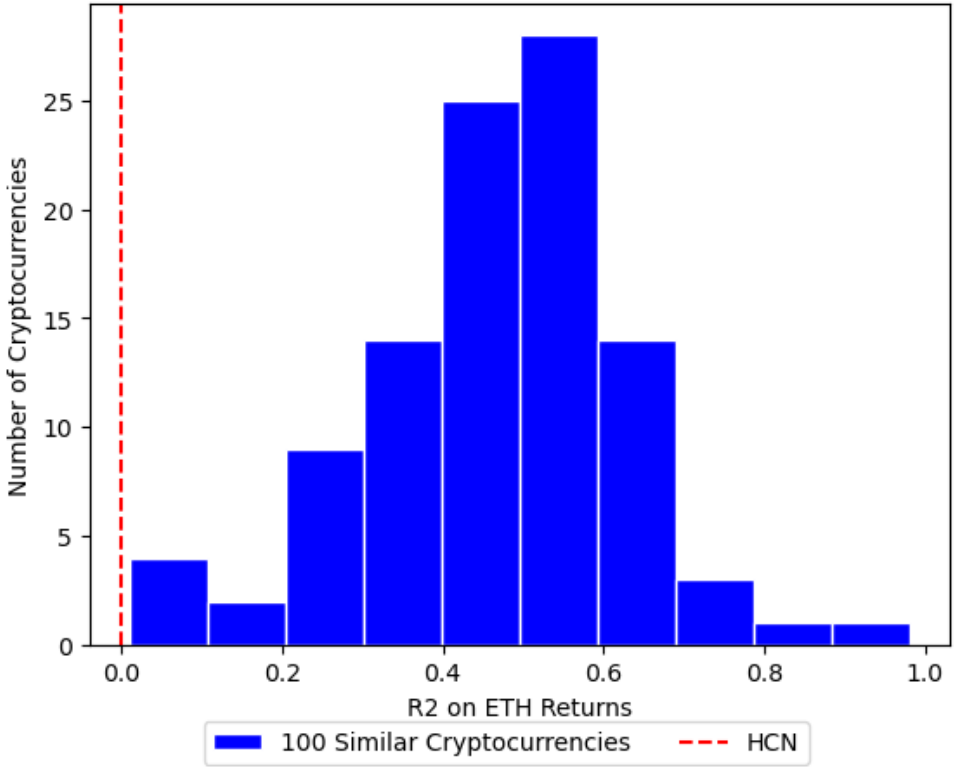
# HCN's Price has a Low correlation with ETH




- HCN's price exhibits a low and negative correlation with ETH, quantified at -0.02.
- The correlation for the 100 similarly-sized tokens is positive and often substantial.
- These findings suggest that, in contrast to the general trend of cryptocurrencies moving in tandem with ETH, HCN's price movements are relatively independent.

Source: CoinMarketCap

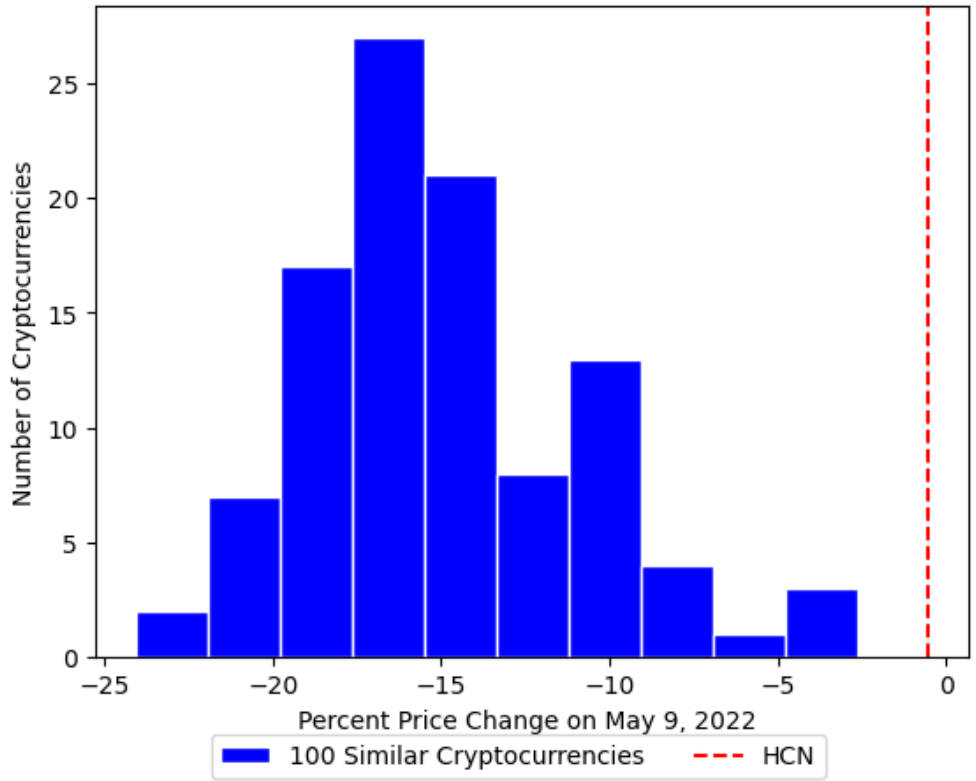
# Low Percent of HCN's Price Explained by ETH's Price




- HCN's price exhibits a low adjusted R2 with ETH, quantified at 0.0005.
- The adjusted R2 for the 100 similarly-sized tokens is generally higher and often substantial.
- These findings suggest that, in contrast to the returns of cryptocurrencies being largely explained by ETH returns, virtually none of HCN's price movement is explained by ETH price movements.

Source: CoinMarketCap

# During the Large Market-Wide Drop in 2022, HCN's Price Barely Changed




- On May 9, 2022, the stablecoin TerraUSD (UST) lost its peg with the U.S. dollar. A widespread decline in cryptocurrency prices happened at this time.
- BTC and ETH prices dropped by 11.0% and 10.8% on a single day on May 9, 2022.
- Among the 100 benchmark tokens, prices declined by 15.2% on average, ranging from 2.6% to 24.1%.
- HCN's price was virtually unchanged, only moving by 0.5%.
- This is further evidence that HCN's price behavior differed from cryptocurrencies and appeared disconnected from market forces and events in the crypto market.

Source: CoinMarketCap, CoinGecko

# Conclusion

- HCN's price movement is largely unrelated to the price movement of the CoinDesk Market Index, BTC, and ETH, as indicated by the low correlation and coefficient of determination (R2) values.
  - This is unusual, given the strong positive relationship found in academic research between cryptocurrencies and Bitcoin / aggregate crypto market.
- This detachment is also highlighted as unusual when comparing the correlation and R2 values between HCN and market indices with those of 100 similarly-sized tokens.
- This suggests that HCN's price was disconnected from the price of cryptocurrencies traded during this time.

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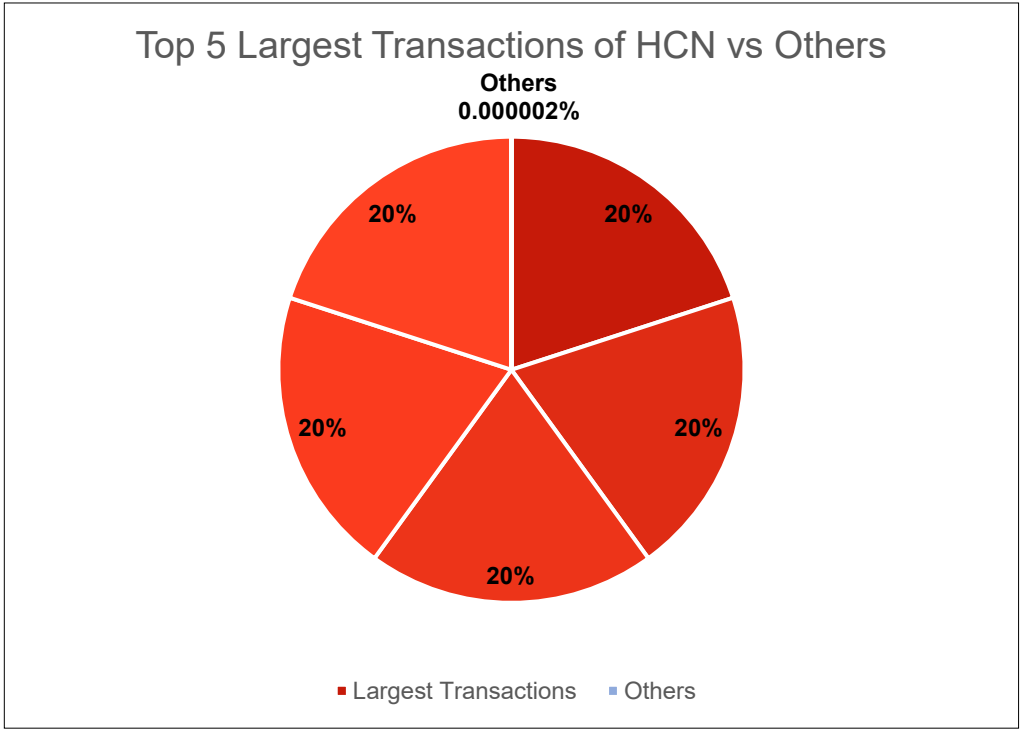
# Methodology

- On-chain activities and decentralization are fundamental characteristics of cryptocurrencies.
- In this section the **on-chain** transactions and concentration of ownership of HCN and HDO are compared with various cryptocurrencies
  - On-chain transaction volume is measured as the number of tokens transferred in a given transaction, for all transactions November 2, 2021 – March 14, 2023
  - Top holders are assessed as of March 14, 2023
  - This data is collected from public blockchain records
  - HCN and HDO are compared with Bitcoin (BTC), Ether (ETH), and other benchmark cryptocurrencies selected because they are tokens associated with cryptocurrency exchanges

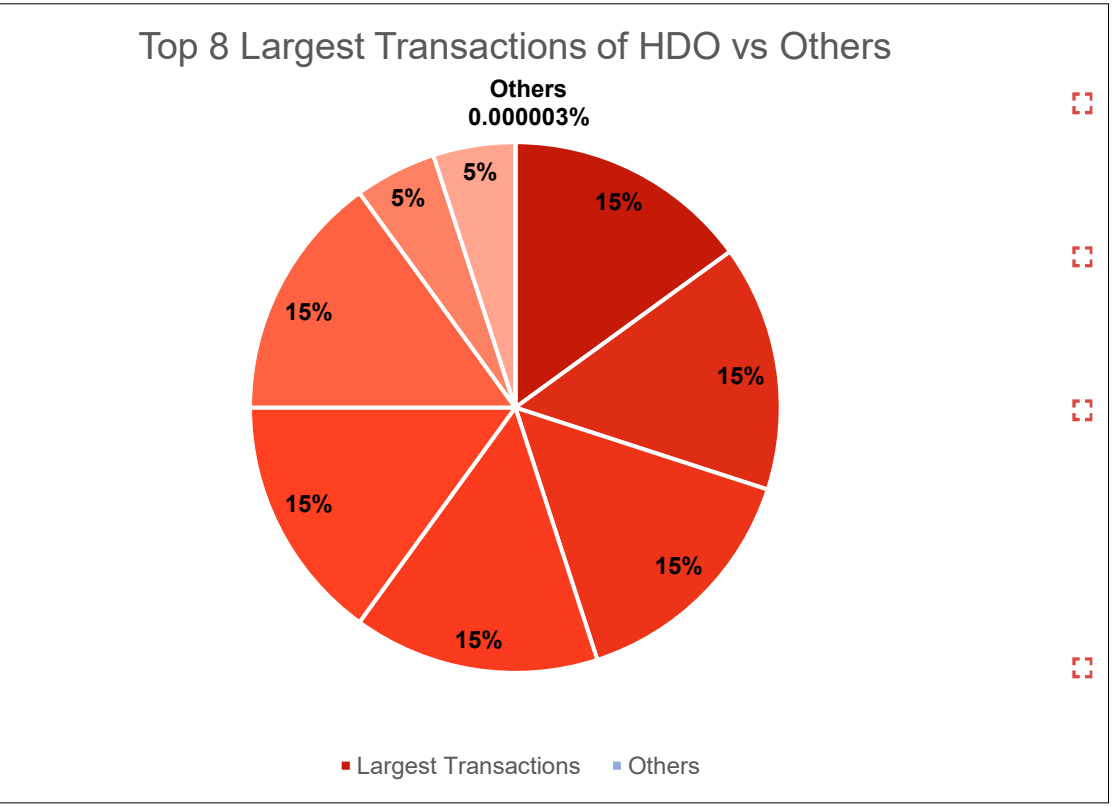
# Largest On-chain HCN Transactions




- On-chain transfer of HCN seems more concentrated than BTC, ETH, and benchmark exchange tokens shown in the next slides.
- Total number of on-chain transactions seem low compared to BTC, ETH, and benchmark exchange tokens shown in the next slides.
- The top 5 transfers of the Himalaya Coin accounted for 99.999998 % of all HCN transferred.
  - All other transfers accounted for only 0.000002% of all HCN transferred
- The Himalaya Coin was transferred 206 times between Nov 2, 2021 and March 14, 2023.

Source: Public blockchain data

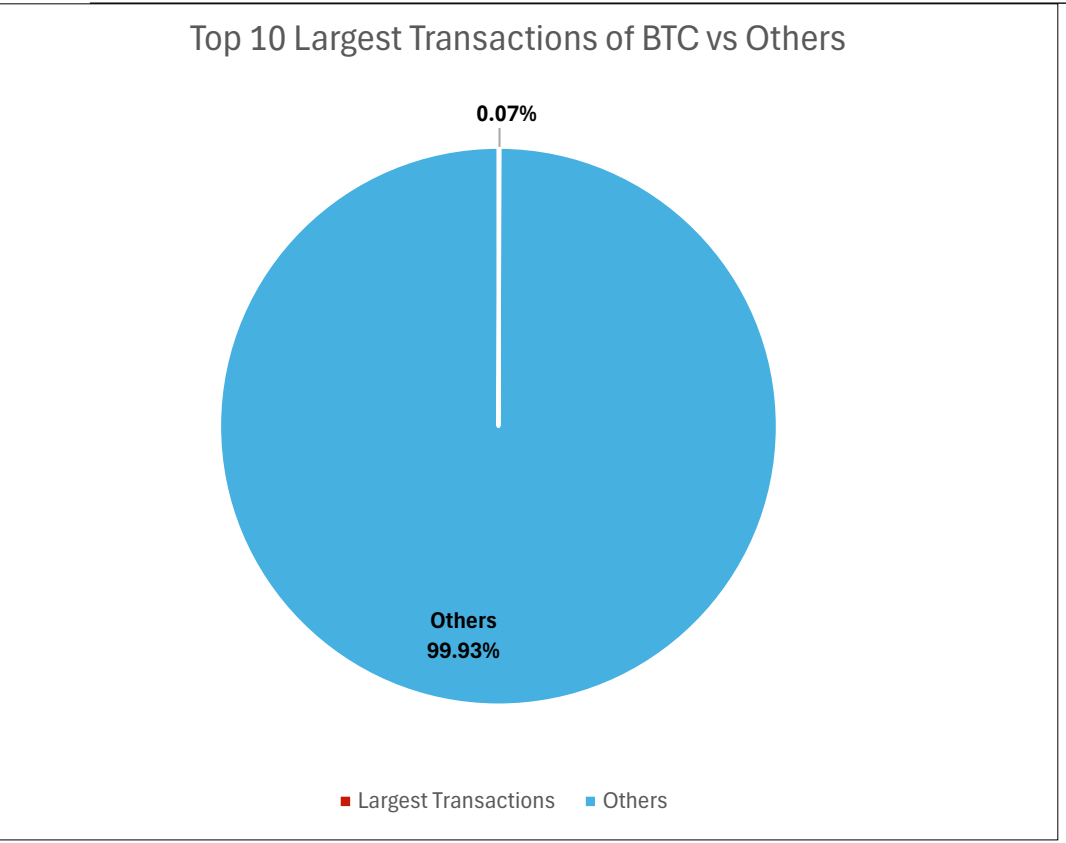
# Largest On-chain HDO Transactions




- On-chain transfer of HDO seems more concentrated than BTC, ETH, and benchmark exchange tokens shown in the next slides.
- Total number of on-chain transactions seem low compared to BTC, ETH, and benchmark exchange tokens shown in the next slides.
- The top 8 transfers of the Himalaya Dollar accounted for 99.999997% of all HDO transferred.
  - All other transfers accounted for only . 0.000003% of all HDO transferred
- The Himalaya Dollar was transferred 251 times between Nov 2, 2021 and March 14, 2023.

Source: Public blockchain data

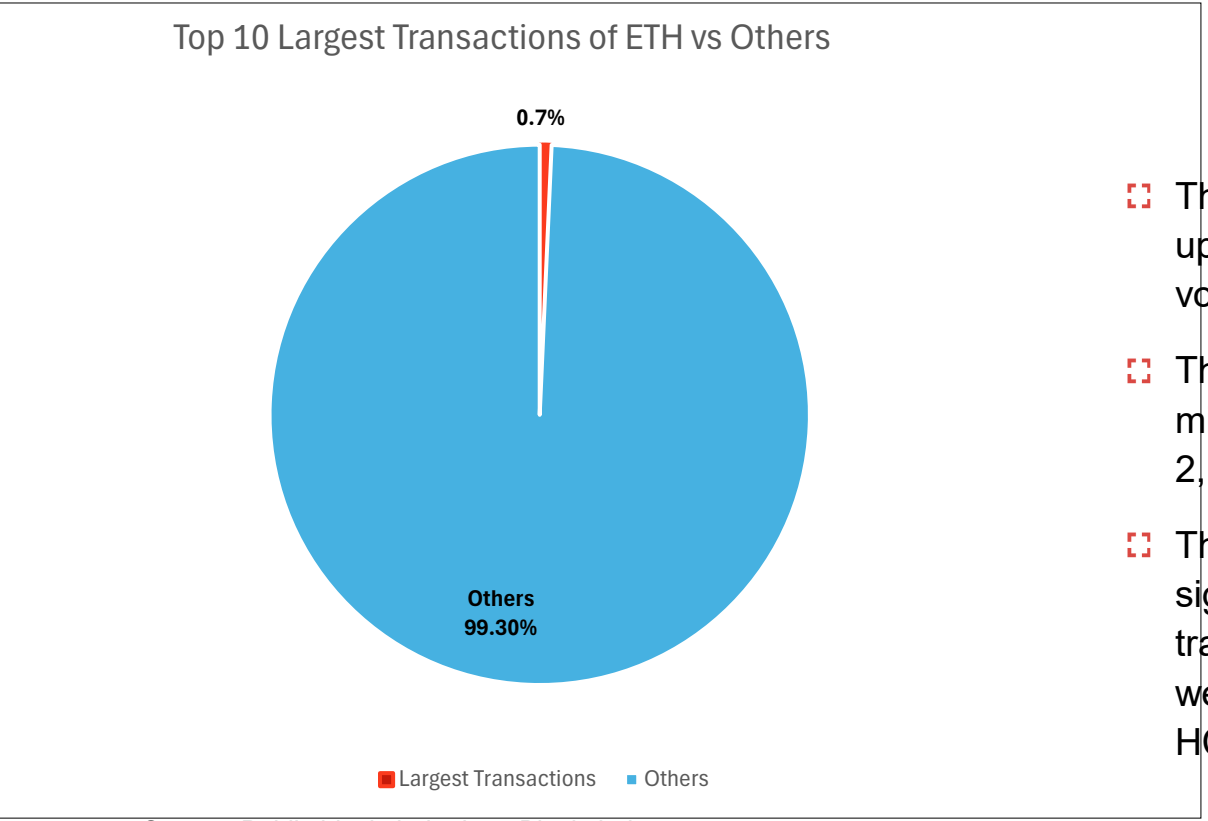
# Largest On-chain BTC Transfers




Source: Public blockchain data, Blockchair

- The 10 largest BTC transactions make up less than 1% of the total transaction volume.
- There were approximately 130 million BTC transactions between Nov 2, 2021 and March 14, 2023.
- This indicates that BTC had a significantly larger number of on-chain transactions, and these transactions were much less concentrated than HCN and HDO transfers.

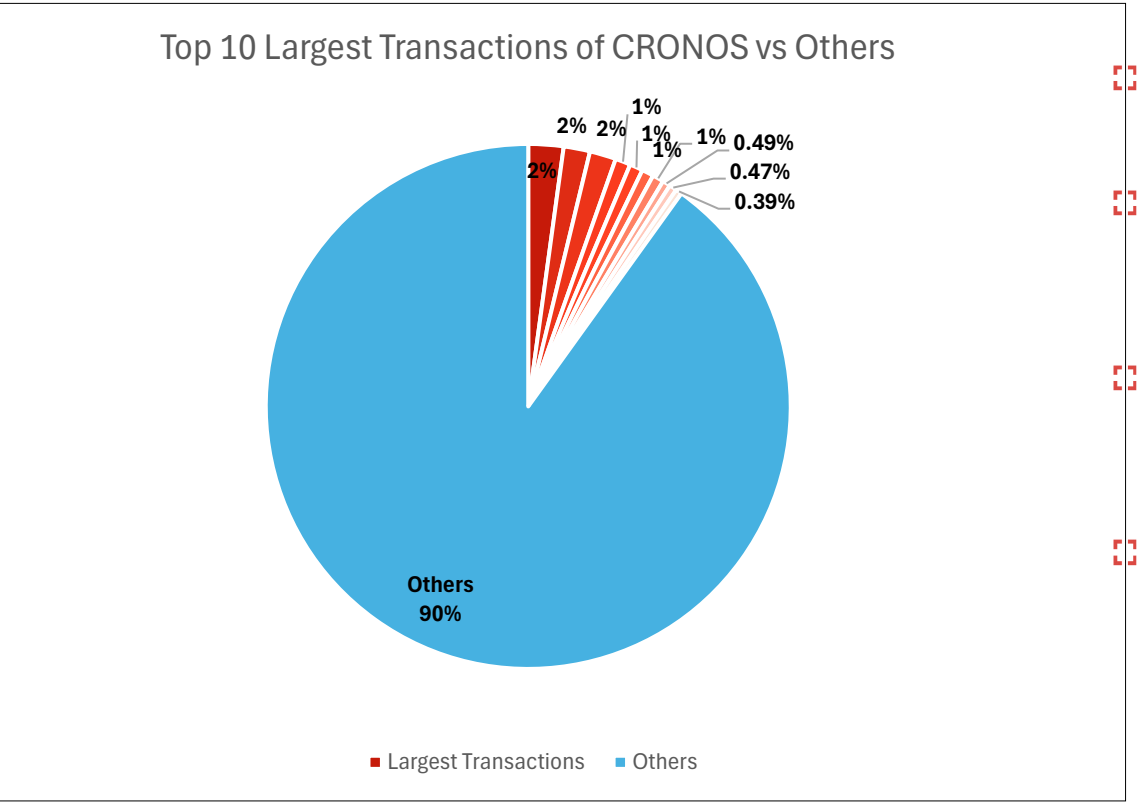
# Largest On-chain ETH Transfers




Source: Public blockchain data, Blockchair

- The 10 largest ETH transactions make up less than 1% of the total transaction volume.
- There have been approximately 559 million ETH transactions between Nov 2, 2021 and March 14, 2023.
- This indicates that ETH had a significantly larger number of on-chain transactions, and these transactions were much less concentrated than HCN and HDO transfers.

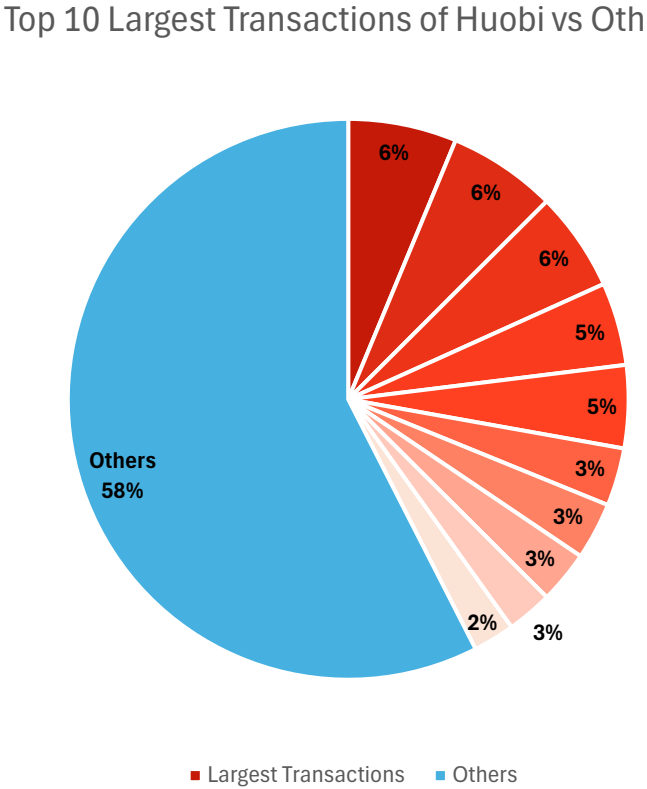
# Largest On-chain CRONOS Coin Transfers




Source: Public Blockchain Data, Etherscan

- The CRONOS Coin is an exchange token for Crypto.com.
- The 10 largest CRONOS Coin transactions make up only 10% of the total Cronos transaction volume.
- CRONOS Coin was transferred approximately 914,000 times between Nov 2, 2021 and March 14, 2023.
- This indicates that CRONOS Coin had a significantly larger number of on-chain transactions, and these transactions were much less concentrated than HCN and HDO transfers.

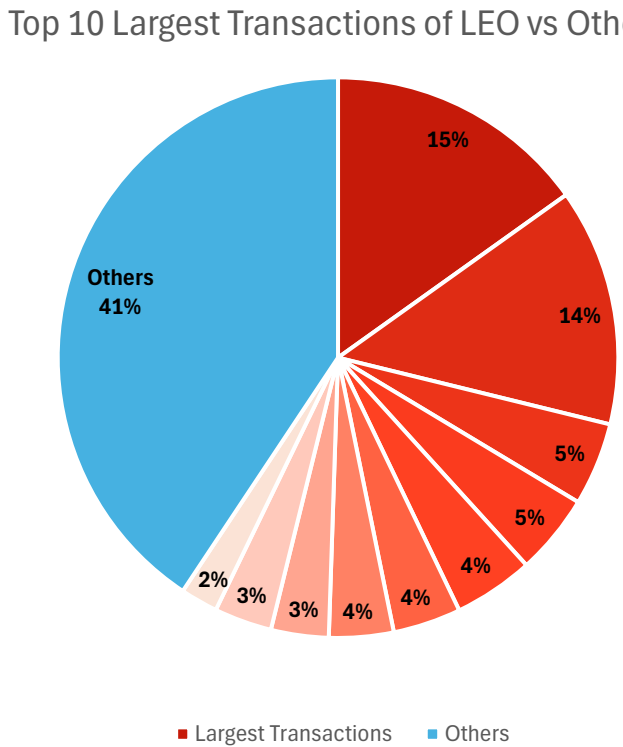
# Largest On-chain Huobi Token Transfers




- The 10 largest Huobi Token transactions make up 42% of the transaction volume.
- Huobi Token was transferred approximately 52,000 times between Nov 2, 2021 and March 14, 2023.
- This indicates that the Huobi Token had a significantly larger number of on-chain transactions, and these transactions were much less concentrated than HCN and HDO transfers.

Source: Public Blockchain Data, Etherscan

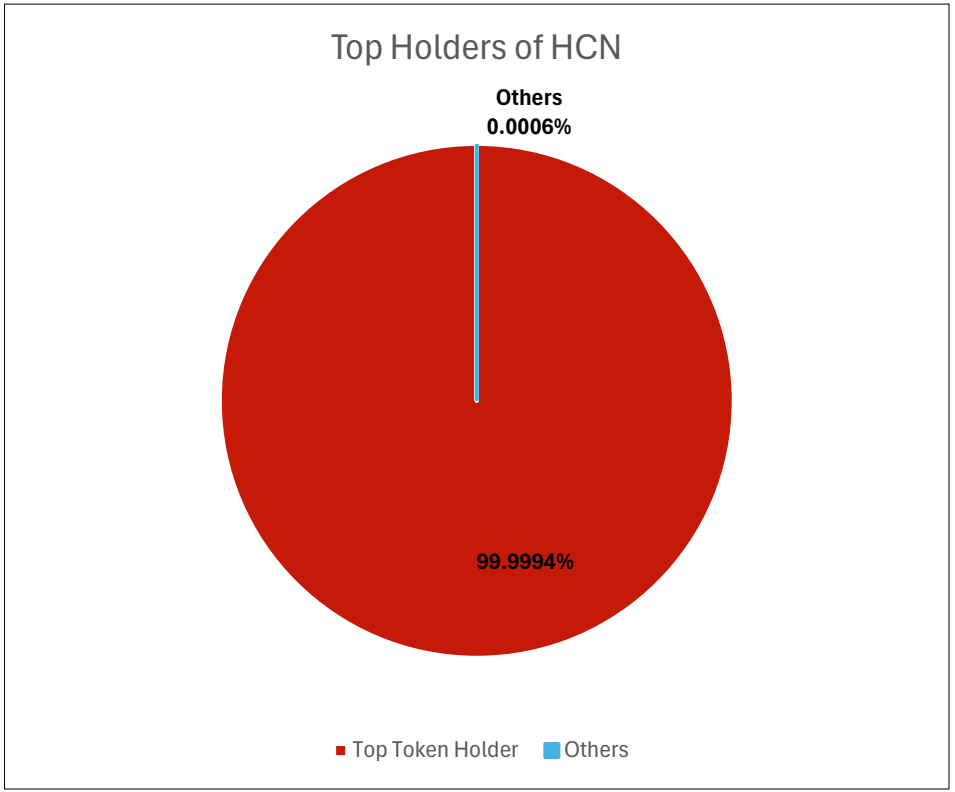
# Largest On-chain LEO Transfers




- The LEO Token is an exchange token for Bitfinex.
- The 10 largest LEO Token transactions make up 59% of transaction volume.
- LEO was transferred approximately 7,000 times between Nov 2, 2021 and March 14, 2023.
- This indicates that LEO had a significantly larger number of on-chain transactions, and these transactions were much less concentrated than HCN and HDO transfers.

Source: Public Blockchain Data, Etherscan

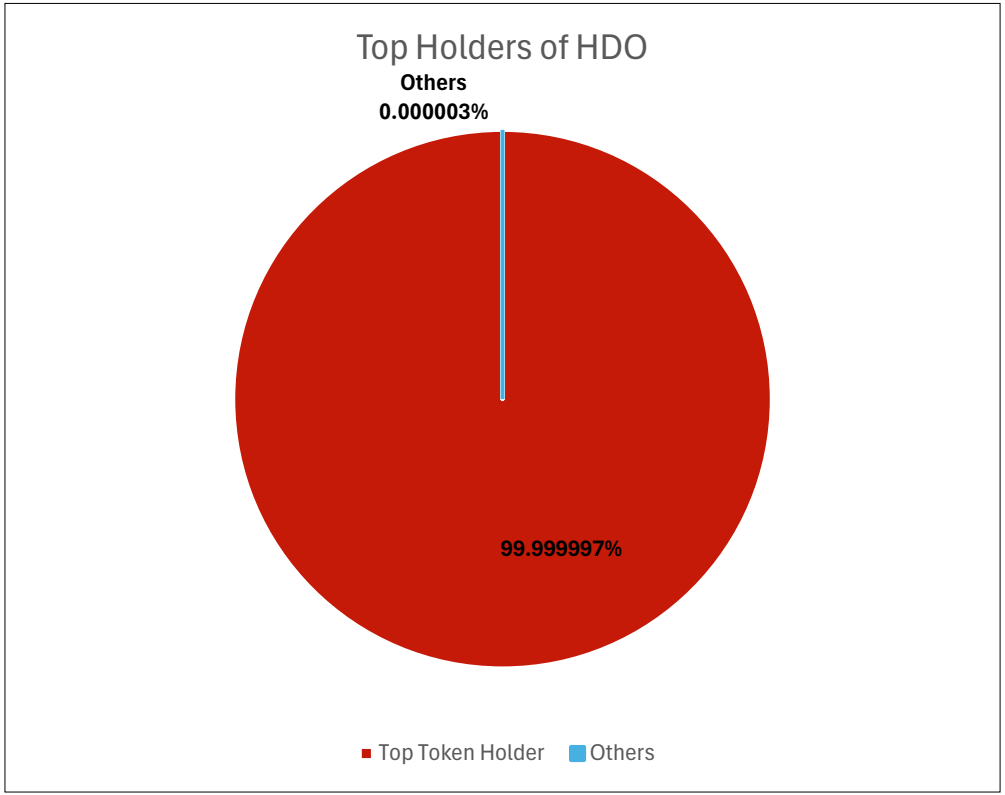
# Largest On-chain HCN Holders




Source: Etherscan

- The top holder of HCN holds 99.9994% of the total supply and there are 12 holders
- This suggests that HCN had a notably smaller number of owners recorded on the blockchain, with on-chain ownership of HCN tokens exhibiting a high level of concentration compared to other benchmarks.

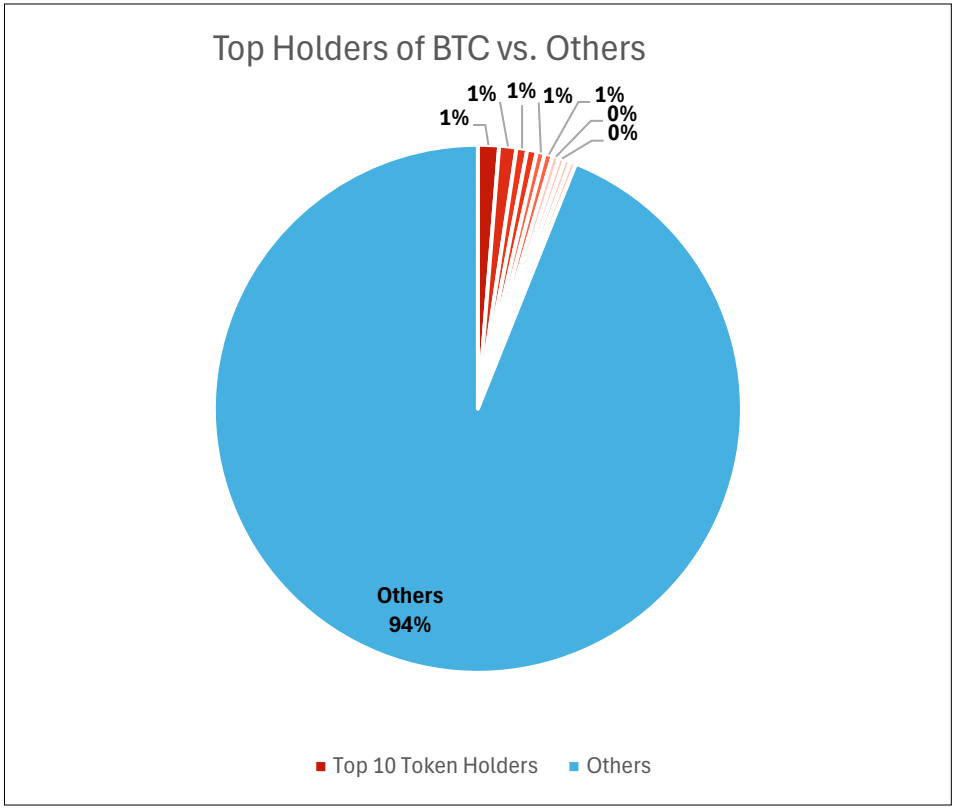
# Largest On-chain HDO Holders




Source: Etherscan

- 99.999997% of the Himalaya Dollar supply is held by 1 address, the token contract. There are 16 total holders of HDO.
- This indicates that HDO had a notably smaller number of owners recorded on the blockchain, with on-chain ownership of HDO tokens exhibiting a high level of concentration compared to other benchmarks.

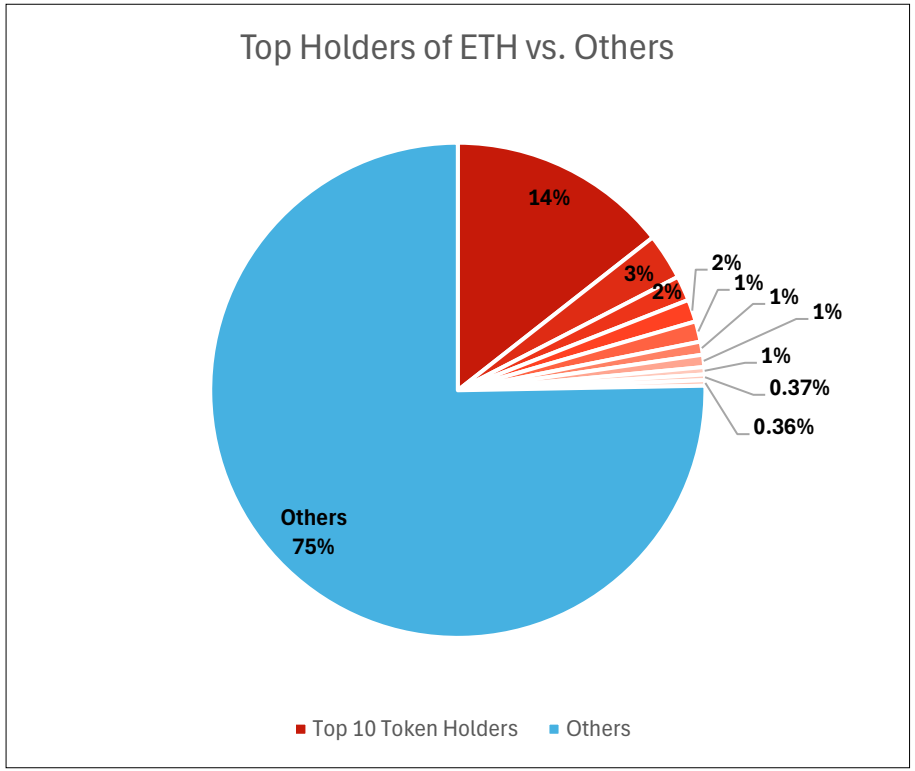
# Largest On-chain BTC Holders




Source: CoinCarp

- ~6% of the BTC supply is held by the top 10 addresses, and ~94% of the supply is held by other addresses
- There were approximately 45 million BTC holders as of March 14, 2023
- This suggests that BTC had a considerably larger number of owners recorded on the blockchain, and the ownership was less concentrated compared to HCN and HDO.

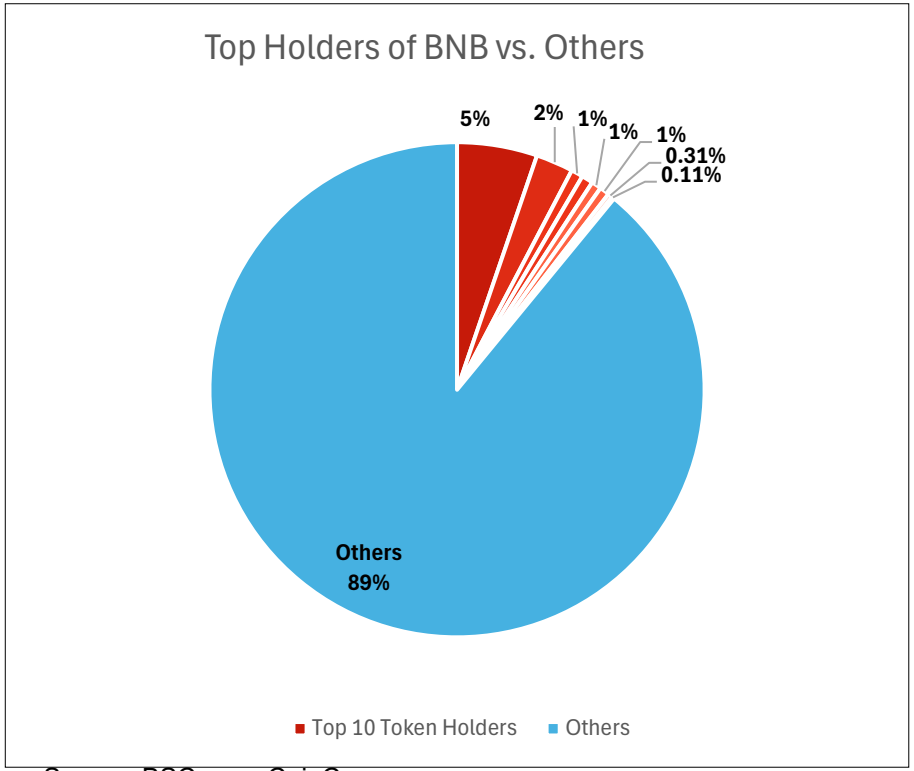
# Largest On-chain ETH Holders




- ~25% of the ETH supply is held by the top 10 addresses, and ~75% of the supply is held by other addresses
  - The top holder of ETH is Beacon Deposit Contract, which is a staking contract. This means the top holder was comprised of many different addresses.
- There were approximately 225 million ETH holders as of March 14, 2023
- This suggests that ETH had a considerably larger number of owners recorded on the blockchain, and the ownership was less concentrated compared to HCN and HDO.

Source: Etherscan, CoinCarp

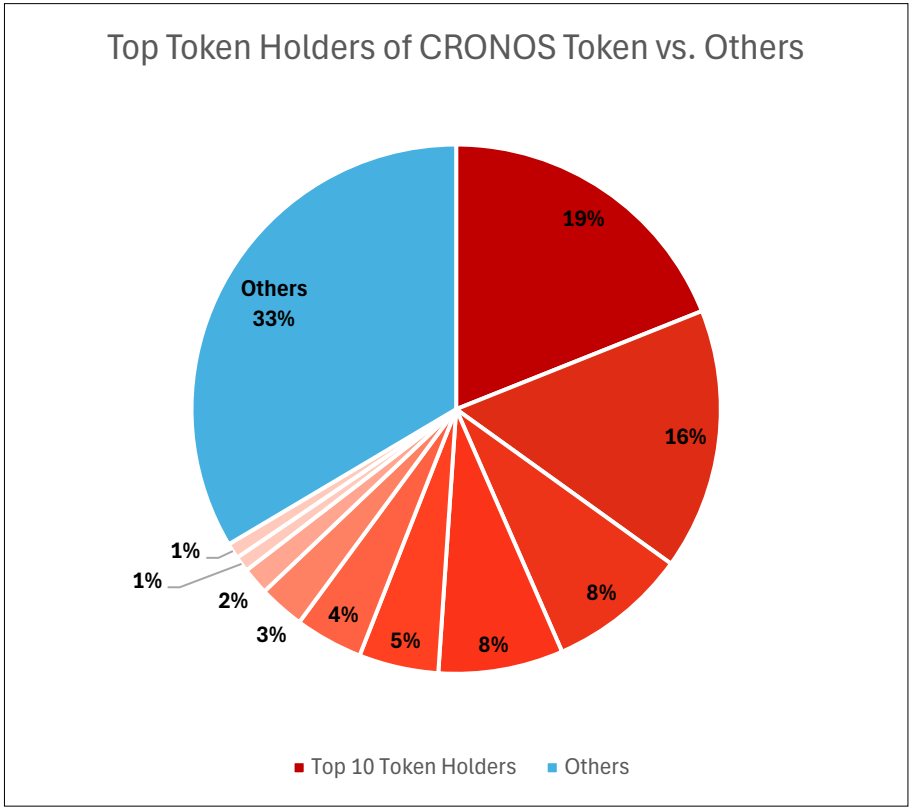
# Largest On-chain BNB Holders




Source: BSCscan, CoinCarp

- ~11% of the BNB circulating supply is held by the top 10 addresses, and ~89% of the supply is held by other addresses
- There are approximately 269 million BNB holders as of March 14, 2023
- This suggests that BNB had a considerably larger number of owners recorded on the blockchain, and the ownership was less concentrated compared to HCN and HDO.

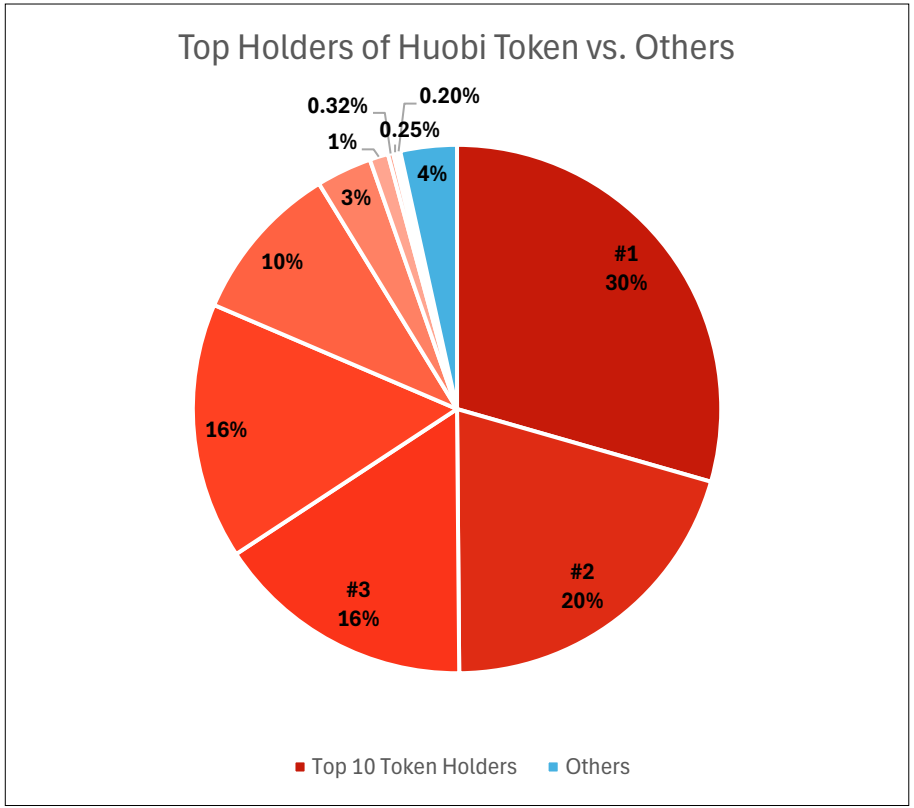
# Largest On-chain CRONOS Coin Holders




Source: Public blockchain data, Etherscan, CoinCarp

- ~67% of the CRONOS Coin supply is held by the top 10 addresses, and ~33% of the supply is held by other addresses
- There are approximately 308,000 holders as of March 14, 2023
- This suggests that CRONOS Coin had a considerably larger number of owners recorded on the blockchain, and the ownership was less concentrated compared to HCN and HDO.

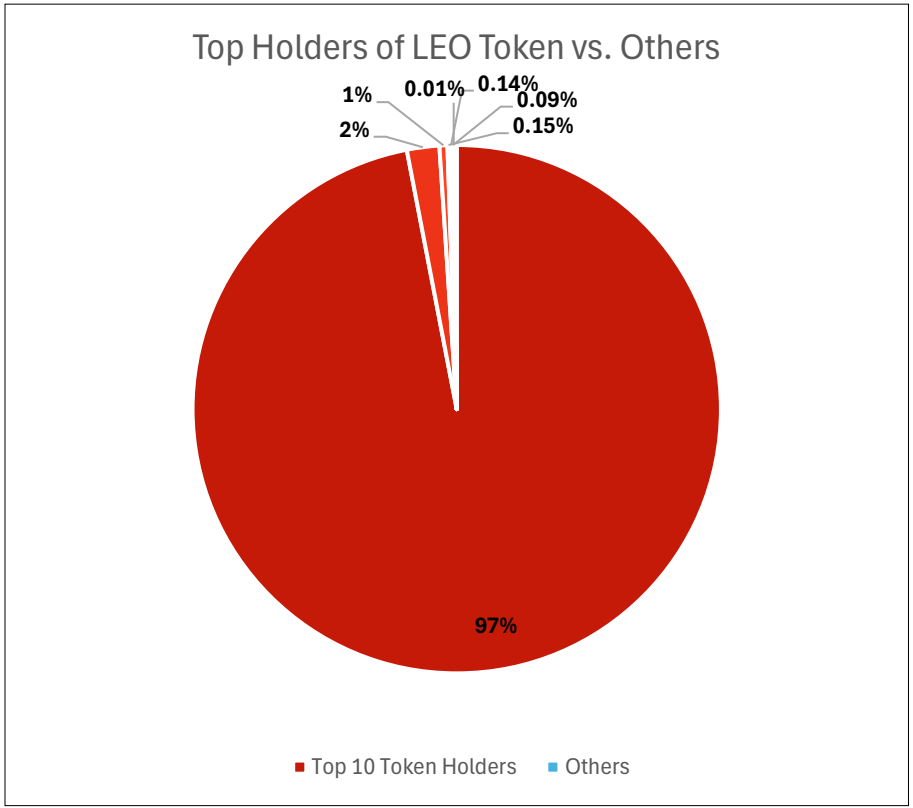
# Largest On-chain Huobi Token Holders




Source: Public blockchain data, Etherscan, CoinCarp

- ~96% of the Huobi Token supply is held by the top 10 addresses, and ~4% of the supply is held by other addresses
- There are approximately 52,000 holders as of March 14, 2023
- The largest Huobi token holder is the Huobi Recovery address
- This suggests that Huobi Token had a considerably larger number of owners recorded on the blockchain, and the ownership was less concentrated compared to HCN and HDO.

# Largest On-chain LEO Holders




Source: Public blockchain data, Etherscan, CoinCarp

- ~99.8% of the LEO Token supply is held by the top 10 addresses, and ~0.2% of the supply is held by other addresses
- There are approximately 2,800 holders as of March 14, 2023
- The largest token holder is the Bitfinex (issuer) Multisig contract.
- This suggests that the LEO Token had a considerably larger number of owners recorded on the blockchain. Even though LEO has a high level of concentration, its ownership is still less concentrated than HCN.

# Summary

| Token | On-chain Transactions (As of 3/14/2023) | On-chain Holders (As of 3/14/2023) |
|---|---|---|
| HCN | 206 | 12 |
| HDO | 251 | 16 |
| BTC | 130 million | 45 million |
| ETH | 559 million | 225 million |
| BNB | 2.4 billion | 269 million |
| CRONOS | 914,000 | 294,000 |
| Huobi | 52,000 | 52,000 |
| LEO | 7,000 | 2,000 |

Source: Etherscan

# Conclusion

- HCN and HDO demonstrate significantly lower on-chain activity, including fewer transactions and a lower number of on-chain holders, compared to BTC, ETH, and exchange tokens.
- HCN and HDO have much more concentrated ownership and transaction activity when compared to BTC, ETH, and exchange tokens
- This suggests that, unlike typical cryptocurrencies, most trading activity and records of ownership of HCN and HDO are not recorded and reflected on a distributed ledger (blockchain), but rather likely on the internal ledger of the exchange.
- This observation is consistent with the custody of HCN and HDO tokens not being materially transferred to other users on a public blockchain. According to public blockchain records, only the Himalaya Exchange appears to hold HCN and HDO.

# Agenda

I. Explaining Blockchain

II. HCN's price, volume, and market cap relative to exchange tokens

III. HCN's price movements relative to the cryptocurrency market

IV. Assessment of centralization of HCN and HDO ownership and transactions

V. Smart contracts for HCN and HDO compared to token contracts

VI. Analysis of Himalaya's claimed reserves

# Methodology

- The features of cryptocurrencies are embedded in the codes written for that cryptocurrency, typically within their smart contracts.
- In this section, the features of HCN and HDO as reflected in their smart contracts are analyzed and compared with features of various cryptocurrencies.
- In particular, the presence of a proxy contract is analyzed to assess immutability.
- The smart contract code is sourced from Etherscan and BscScan.

# Methodology

- HCN's smart contract can be examined on Etherscan. The proxy contract on the token page points to the implementation contract where all the smart contract's functions are coded.
- HCN's implementation contract consists of 14 files, written in the solidity programming language.
- The contract was examined by reading the functions found in the smart contract.

The beginning of HCN's smart contract:

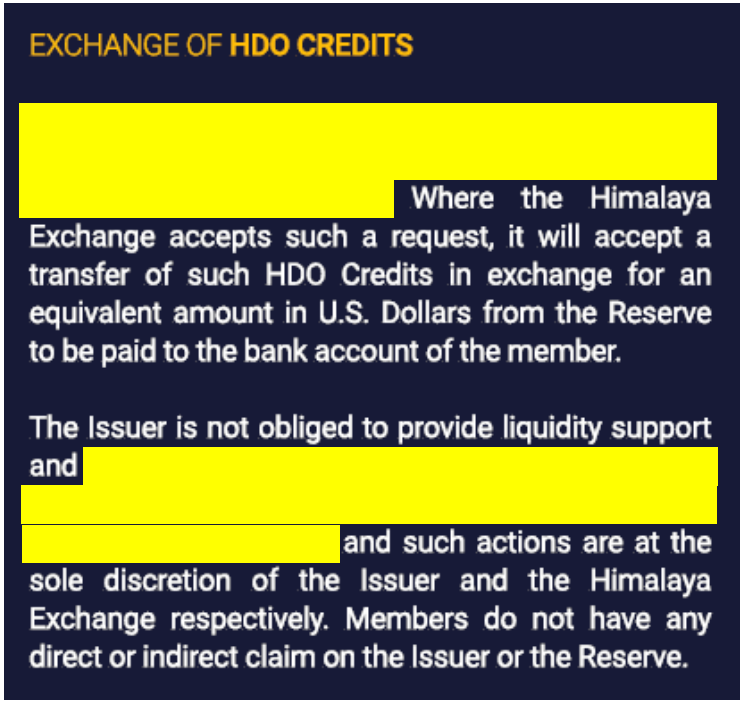
Contract Source Code (Solidity Standard Json-Input format)

File 1 of 14 : HHHmainnet.sol

```
// SPDX-License-Identifier: UNLICENSED
pragma solidity 0.6.12;
pragma experimental ABIEncoderV2;

import "./HHH.sol";

contract HHHmainnet is HHH {
    function initialize(string memory name, string memory symbol, address managementContractAddress, address newMintingAddress) public virtual initializer {
        require(managementContractAddress != address(0), "Management contract address cannot be zero.");
        require(newMintingAddress != address(0), "New minting address cannot be zero.");
        HHH.initialize(name, symbol, managementContractAddress);
        mintingAddress = newMintingAddress;
    }

    address private mintingAddress;

    function changeMintingAddress(address newMintingAddress) external virtual onlyAdmin {
        require(newMintingAddress != address(0), "New minting address cannot be zero.");
        mintingAddress = newMintingAddress;
    }
```

# Features of HCN and HDO

- According to the HDO whitepaper, the Himalaya Exchange has centralized control over the redemption of HDO for U.S. dollars.
- According to the HCN and HDO whitepapers and smart contract code, a Member's address must be whitelisted to freely transfer HCN and HDO.



EXCHANGE OF **HDO CREDITS**

[redacted] Where the Himalaya Exchange accepts such a request, it will accept a transfer of such HDO Credits in exchange for an equivalent amount in U.S. Dollars from the Reserve to be paid to the bank account of the member.

The Issuer is not obliged to provide liquidity support and [redacted] and such actions are at the sole discretion of the Issuer and the Himalaya Exchange respectively. Members do not have any direct or indirect claim on the Issuer or the Reserve.

Source: HDO Whitepaper, 0x40b6457e49071d0b9565934ebd92627ad6cb378f contract code

# Features of HCN and HDO

- The Himalaya Exchange has centralized control over trading of HCN and HDO outside of the exchange.
  - According to the HCN/HDO whitepapers, investors cannot trade HCN/HDO on the Ethereum blockchain for 366 days if transferred out of the exchange, unless the address is whitelisted.
  - According to the HCN/HDO whitepapers, investors may only request to be on the whitelist but are not guaranteed.

on transfers of classes of digital assets to its citizens and residents. To protect against potential liability,

(the "Restricted Period") unless the relevant Ethereum address has been verified and "whitelisted".

Source: HDO Whitepaper, HCN Whitepaper, Etherscan

# Features of HCN and HDO

| Token | Immutable? |
|---|---|
| BNB | Yes |
| LEO Token | Yes |
| Huobi Token | Yes |
| CRONOS Coin | Yes |
| HCN/HDO | No |

- HCN's contract is mutable, meaning someone could change the underlying code.
  - This is unlike typical exchange tokens, which are often immutable.
- The entire supply of HCN is held by a single entity. This creates centralization of the custody.
  - HCN and HDO show signs of much higher concentration, as compared to typical exchange tokens
- All these factors concentrate control and custody with the token issuers, increasing the risk of investors losing control over their assets.

# Examples of Tokens with No Innovative Technology

- Several tokens in the crypto market lack genuine innovation or utility and are often created with the intent of quick profits, typically through deceiving investors.
  - Examples: Squid Game Token and CP3R Token; these tokens gained attention primarily due to marketing hype or unoriginally copying a successful DeFi project.
- These tokens typically have no real-world use case, technological advancements, or sustainable ecosystem, making them susceptible to price manipulation.
- Unlike cryptocurrencies backed by innovative technologies or solving real-world problems, these tokens can be created overnight with little to no effort.

# Qualities of Cryptocurrencies

- Most cryptocurrencies ensure the token contracts are immutable and don't have a single entity controlling the smart contract.
  - This is in contrast to Squid Game Token and HCN/HDO, as they utilize proxy contracts which require investors to place a great deal of trust in the contract owner.
- For typical cryptocurrency projects, the majority of tokens are not held by a single entity.
  - This is in contrast to CP3R Token and HCN/HDO, as they have a single entity holding the majority of the tokens. This reduces on-chain liquidity and creates a centralization of token ownership.

# Features of Squid Game Token and CP3R

| Token | Immutable? | Did a single entity have centralized authority of the smart contract? | Did a single entity control the majority of tokens associated with the smart contract? |
|---|---|---|---|
| Squid Game Token | No* | Yes | Yes |
| CP3R Token | No** | Yes*** | Yes |

- When a contract is mutable, the terms of the contract can change after funds are invested. In the case of Squid Game Token and CP3R, someone maliciously changed the code to allow insiders to withdraw investor funds.
- If a single entity controls most of the tokens, this departs from the decentralized nature of blockchain.

*The Squid Game Token contract contains code for both a BEP-20 and proxy contract. The code which was actually executed was the proxy contract. (BscScan)
** As reported by CoinDesk, “The Compounder team swapped the safe and audited Strategy contracts and replaced them with malicious 'Evil Strategy' contracts that allowed them to steal users funds…They did this through a public, though clearly unmonitored, 24-hour timelock.” (CoinDesk, “$10.8M Stolen, Developers Implicated in Alleged Smart Contract 'Rug Pull’”)
*** The Compounder team had control of the treasury contract and the updating of the strategy pools

# Conclusion

- Typical exchange token smart contracts are immutable, unlike HDO and HCN's smart contracts.
- Features of HCN and HDO include centralized control along with a lack of immutability in the smart contract, characteristics akin to tokens that have led to investor losses.
  - The lack of immutability has allowed founders in the past to change the smart contract in a way where investors cannot access their cryptocurrency and the founders can control the investors' funds
  - One of the features includes a timelock. With a 24-hour timelock, CP3R founders were able to steal investor funds.
    - According to the HCN and HDO whitepapers, HCN and HDO have 366-day timelocks by default.
- When there is a centralized authority over a token's contract, as well as the ability to update contracts, this creates the potential for fraudulent activity where the issuer have the power to change the contract to seize the investors' funds.

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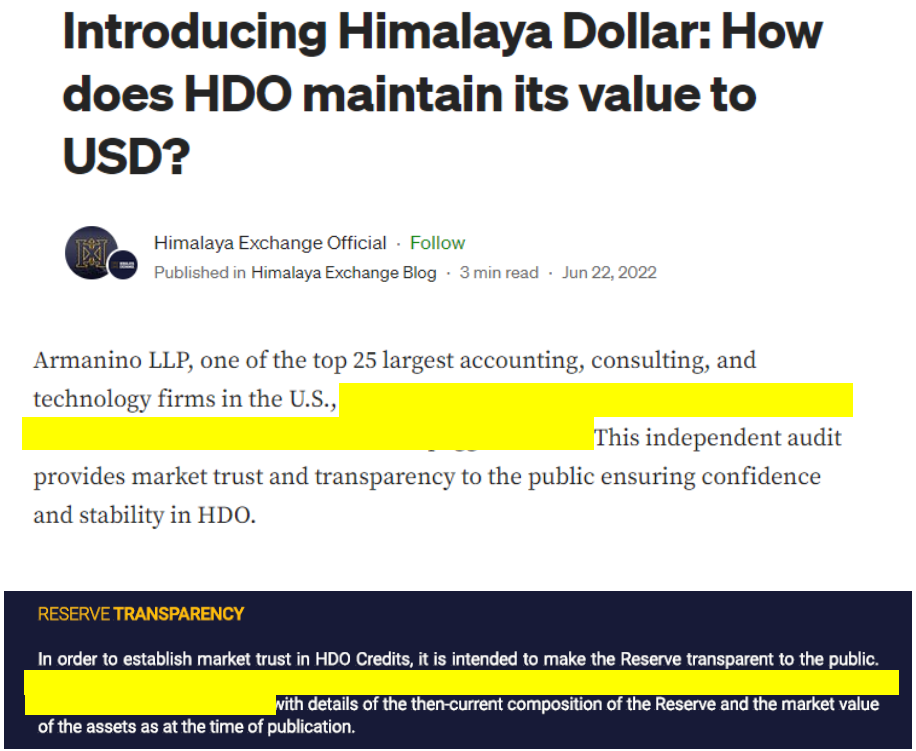
# Importance of Reserves

- Reserves are crucial for a stablecoin because they serve as collateral or backing, ensuring that holders can redeem their stablecoins for the underlying asset at any time which maintains stability.
- Reserves are funds held exclusively for the purpose of supporting the price of a stablecoin, and are separate from customer deposits
  - Tether Limited, which issues a popular dollar-backed stablecoin called USDT, faced legal action from the New York Attorney General for allegedly losing “access to over $850 million dollars of co-mingled client and corporate funds that it handed over, without any written contract or assurance, to a Panamanian entity.” (“Attorney General James Announces Court Order Against “Crypto” Currency Company Under Investigation For Fraud”)
  - The crypto exchange FTX, and its founder Sam Bankman-Fried, were accused of having “commingled FTX customers' funds…to make undisclosed venture investments, lavish real estate purchases, and large political donations.” (“SEC Charges Samuel Bankman-Fried with Defrauding Investors in Crypto Asset Trading Platform FTX”)
    - Bankman-Fried was ultimately sentenced to 25 years in prison (“Samuel Bankman-Fried Sentenced to 25 Years for His Orchestration of Multiple Fraudulent Schemes”)
- Audits are an important tool to ensure transparency of reserves
  - Tether (USDT), a popular dollar-backed stablecoin, faces scrutiny for not producing audits.

# Himalaya Claimed to Maintain Reserves



**Introducing Himalaya Dollar: How does HDO maintain its value to USD?**

Himalaya Exchange Official · Follow
Published in Himalaya Exchange Blog · 3 min read · Jun 22, 2022

Armanino LLP, one of the top 25 largest accounting, consulting, and technology firms in the U.S., This independent audit provides market trust and transparency to the public ensuring confidence and stability in HDO.

RESERVE **TRANSPARENCY**

In order to establish market trust in HDO Credits, it is intended to make the Reserve transparent to the public. with details of the then-current composition of the Reserve and the market value of the assets as at the time of publication.

- According to public statements from the Himalaya Exchange (including their blog and white papers), a reserve was kept to support the value of the Himalaya Dollar
- The HDO whitepaper mentions that audits of the reserve would be conducted annually, and the results made public

Source: Himalaya Exchange Blog, HDO Whitepaper, Forbes

# Himalaya's Reserves do not Match Blockchain Records

- There does not appear to be a publicly available audit result of the HDO reserves
- As of July 31, 2022, Armanino's audit claimed that only 400M HDO was collateralized
  - During this time, 1.5 billion HDO were minted on-chain and transferred to Himalaya Exchange
- In addition, there does not appear to be evidence that HDO or HCN were backed by a reserve held in gold, based on public records

**Himalaya Dollar**
**BANK & FUND HOLDINGS REPORT**
July 31, 2022 at 3:00pm GMT

| | |
|---|---|
| **US Dollars held in Himalaya-owned Bank Account(s)** | **$401,163,865.60** |
| **Total HDO-denominated Liabilities Issued[1]** | **401,047,298.15** |
| - Collateralized HDO Tokens on the Ethereum Blockchain[2] | 0 |
| - Collateralized HDO Credits[3] on Himalaya Ecosystem Platforms[4] | 401,047,298.15 |

Armanino's audit showed $400 million of reserves

| Txn Hash | Method | Block | Date Time (UTC) | From | To | Quantity |
|---|---|---|---|---|---|---|
| 0x4e616f490d7... | Exec Transact... | 13683987 | 2021-11-25 14:23:08 | Null: 0x000...000 | 0xf7FAaC1d...E554ee338 | 500,000,000 |
| 0x76f840d47e3... | Exec Transact... | 13683898 | 2021-11-25 14:03:36 | Null: 0x000...000 | 0xf7FAaC1d...E554ee338 | 500,000,000 |
| 0xfde2f88d78c... | Exec Transact... | 13456193 | 2021-10-20 18:25:24 | Null: 0x000...000 | 0xf7FAaC1d...E554ee338 | 300,000,000 |
| 0xfd3d7366276... | Exec Transact... | 12839484 | 2021-07-16 18:19:21 | Null: 0x000...000 | 0xf7FAaC1d...E554ee338 | 100,000,000 |
| 0xbf08d5fc77f... | Exec Transact... | 12324826 | 2021-04-27 21:15:57 | Null: 0x000...000 | 0xf7FAaC1d...E554ee338 | 100,000,000 |

1.5 billion HDO had been minted by the time of the Armanino audit

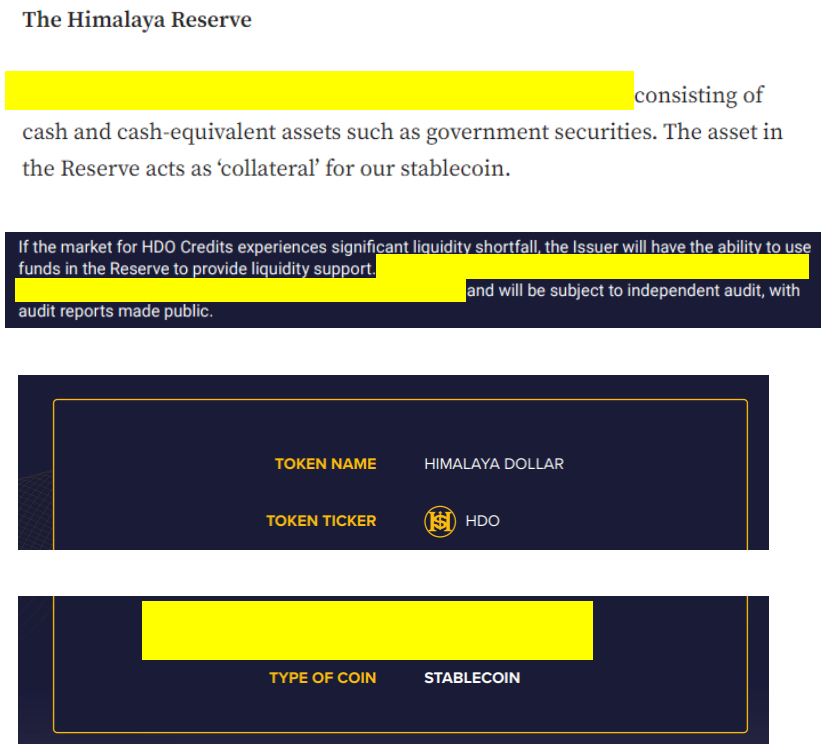
Source: HDO Static Report 2022, Etherscan

# Exchange Deposits vs. Stablecoin Reserve

- The exchange deposits are what the customers deposit to be able to get ‘credits’ to buy and trade cryptocurrencies. This number will vary based on how much customers choose to deposit into the exchange.
- The reserve should be equivalent to number of stablecoins minted.
  - This is in order to maintain the value of the stablecoin.
- Based on Armanino's audit, Himalaya claimed to have $400 million in its bank accounts, but it remains unclear whether those reported funds were used to back HDO or were co-mingled with other customer funds into the exchange.
  - Even if those funds are independent of other customer funds, they only back 27% of the 1.5 billion HDO issued.

Source: HDO Static Report 2022, Etherscan

# Did Himalaya Claim to have 1.5 Billion in Reserves?




Source: Himalaya Exchange Blog ("Introducing Himalaya Dollar: How does HDO maintain its value to USD?"), Himalaya Dollar Whitepaper

- According to the Himalaya Exchange's Blog, the Himalaya Dollar "has the full backing of a reserve."
- The HDO whitepaper indicates that the Reserve will hold a "value at a level equal to the value of all HDO in circulation."
  - According to the HDO whitepaper, the total HDO which could be issued is "unlimited."
  - Blockchain records show that 1.5 billion HDO had been created by November 25, 2021

# Conclusion

- HDO did not seem to carry the $1.5 billion in reserves which would appear to be necessary based on the 1.5 billion HDO created on the Ethereum blockchain

# Summary of Conclusions

- The table below compares the features of typical cryptocurrencies with those of HCN and HDO. These characteristics apply to the typical cryptocurrencies examined here.

| Attribute | HCN/HDO | Typical Cryptocurrencies |
|---|---|---|
| Price moves with BTC, ETH, and aggregate crypto market | No | Yes |
| Traded against multiple different types of crypto | No | Yes |
| Sizable on-chain activity, including transactions and ownership | No | Yes |
| Decentralized ownership | No | Yes, typically |
| Ability to freely move coins on chain | No | Yes |
| Immutable | No | Yes, typically |
| Centralized entity having authority of the underlying codes | Yes | No |
| Medium of exchange for several other assets or services | No | Yes, typically |
| Price data is available from major databases (e.g. CoinMarketCap) | No | Yes |

- HCN and HDO have many features that are not consistent with typical cryptocurrencies.

# Summary of Conclusions

- HCN's price was disconnected from common market indices, indicating that its price movements were unrelated to those of cryptocurrencies traded at the time
  - Taken together with the low on-chain and off-chain trading activity associated with HCN, the price and market cap of HCN do not seem realistic according to market forces.
- HCN and HDO exhibited highly concentrated ownership and low on-chain transaction activity, indicating a significant degree of control and custody over the funds.
- HCN's and HDO's smart contracts allow upgradeability with central authority, a feature that has been manipulated in the past in some projects to allow investor funds to be stolen
- HDO does not appear to have held sufficient reserves relative to the amount of HDO minted on the blockchain.

# END