

Global Crypto Industry Overview and Trends

[2021-2022 Annual Report]

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Abstract

The year of 2021 is a breakthrough worth being carved on the milestone of the blockchain industry, for blockchain has entered the mainstream instead of thriving within the confined “geek” environment. Blockchain-related news such as the public offering of Coinbase, the announcement of Bitcoin as national fiat currency of El Salvador, and the prevalence of pet-inspired memes have been more frequently seen and mentioned. The emergence of the new Layer 1 chain has become a key highlight in the market. Against this backdrop, we established a scoring model that addresses the vast attention on Layer 1 chains using some vital parameters, such as the number of daily transactions and total transaction fees, etc., in order to discover the intrinsic value and potential of those Layer 1 chains. Based on the result from the model, Solana scored second to Ethereum; Cardano, Polka dot, Terra are most likely to have a brighter future according to the scores.

In the Crypto financial market, Bitcoin is becoming more recognized by the significant volume being bought by institutional investors comprising public companies in western countries. On one hand, in DeFi, the ecosystem has expanded to other Layer 1 chains that have spawned chains such as Solana. On the other hand, DeFi 2.0 projects, such as OlympusDao and Abracadabra, emerged as a solution in achieving better liquidity and turnover for funds; on-chain financial derivatives, represented by perpetual contract, options, synthesized assets and interest derivatives, have emerged to target the public.

In the Crypto market, NFT enjoys a high level of awareness among the public, and meme coins have drawn immense interest and attention in the market. In addition, various DAO-formed projects, such as ConstitutionDAO and OpenDAO, have attracted enough attention from the mainstream. What's more, the word “metaverse” has been second to none in 2021, to the extent that all big names in technology have developed strategic planning on it. Last but not least, GameFi which is based on the “Play to Earn”, model has exemplified “the Return of the King” for blockchain games.

In terms of Crypto technology, Rollup is becoming commonly recognized as a scaling solution. With the debut of zkEVM, ZK Rollup is expected to dominate the market eventually. Meanwhile, with the emergence of multiple Layer 1 chains with high performance, interactions across chains are in extreme demand. Lastly, at the end of 2021, Web 3.0 was brought under the spotlight. We believe

that the critical characteristics for Web 3.0 are the individual reigning power over the platform or organization, and the ownership of personal data.

From the view of regulations, according to Huobi Research, over 40 sovereign countries and regions have promulgated 151 regulations and guidance towards the Crypto industry in 2021. This number has increased by 75% year-on-year. Specifically, neutral, positive, and negative regulations account for 59%, 23%, and 18% of the new laws, respectively. In addition, stablecoin, NFT, metaverse and DAO have appeared on the list of “special notice” of regulators.

Looking to the future of the Crypto industry, we hereby make 10 major predictions for the upcoming year of 2022: 1) Global liquidity shrinks, Bitcoin will face bear market; 2) DAO will be a major on-chain governance form; 3) Cross-chain will become the infrastructure under the era of multiple chains; 4) DeFi embarks on 2.0 , causing an explosion of on-chain perpetual contract and forward contract; 5) CBDC will land steadily, cross-border payment processing will become the focus of research; 6) Lending market will thrive for institutional participants; 7) Explosive growth in NFT lending and derivatives; 8) New Layer 1 chains will appear, forming a new player structure ; 9) Insurance market for crypto will thrive; 10) Interim mainstream scaling solution will meet the best time for development.

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Chapter1. A Retrospect to Blockchain in 2021

1.1 Summary of Blockchain Industry Development

1.1.1 Booming of Crypto Market

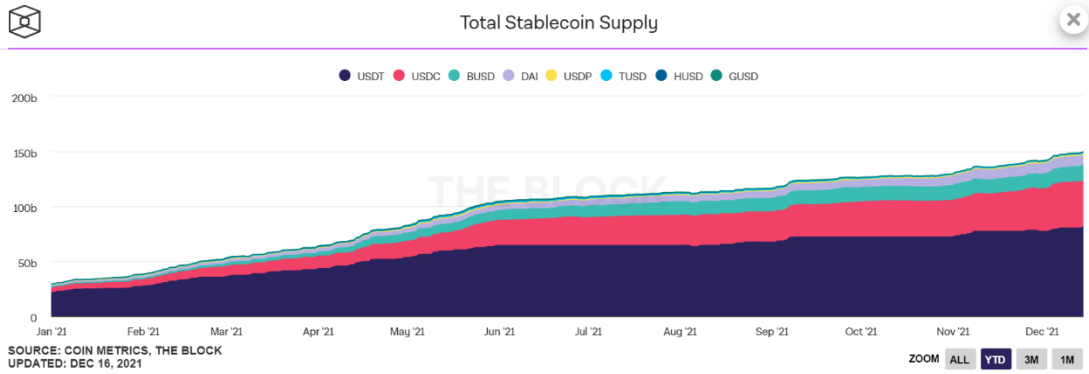
From the beginning of 2021, famous public companies and institutions, such as MicroStrategy, Tesla and Galaxy Digital Holdings, flocked to buy Bitcoins, boosting prices for Bitcoin and other cryptocurrencies. According to TradingView, the global total market capitalization of cryptocurrency reached \$2.26 trillion at the end of the year compared with \$766 billion at the beginning of the year, a 195% yearly growth rate. If Bitcoin were to be treated as a company based on its market capitalization, it could be ranked No. 8, surpassing well-known companies like Nvidia, Berkshire Hathaway, TSMC and Tencent; Ethereum could reach No. 12, leaving JP Morgan Chase, Visa and Samsung far behind.



Graph 1-1: Total Market Cap for Crypto Market 2021

Source: TradingView

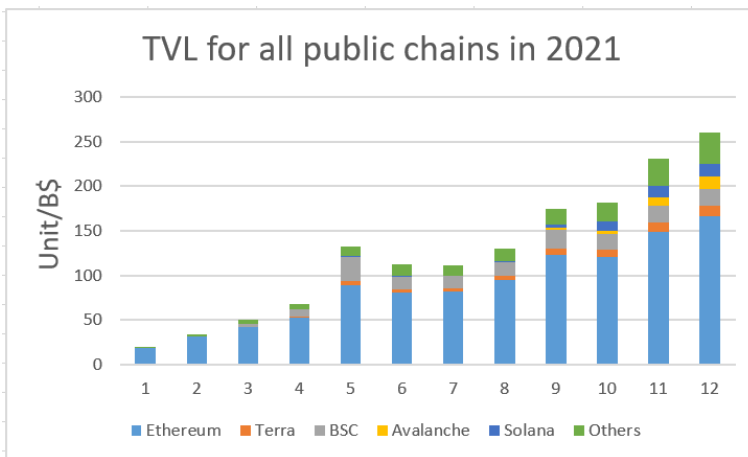
Stablecoin is the bridge that connects the real world to crypto world; an increase in the total supply of stablecoin signals an influx of funds from the real world. According to The Block, the total global supply of stablecoin has grown to \$149.8 billion from the initial \$29.3 billion, a yearly growth rate of 411%.



Graph 1-2: Total Global Supply of Stablecoins in 2021

Source: The Block

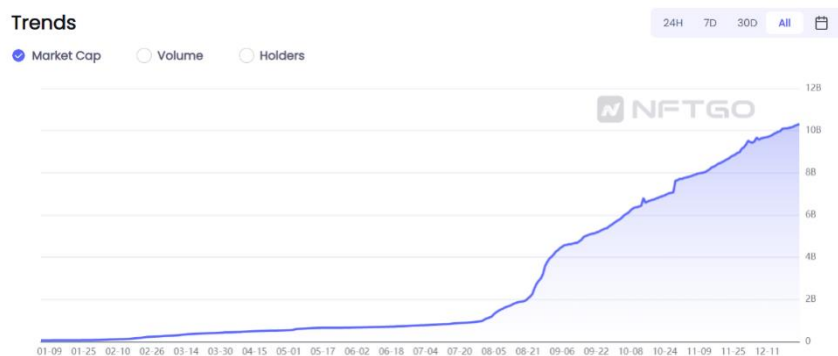
DeFi has been an avant-garde field of blockchain innovations in recent years, with its popularity reflected by a major measurement – TVL. According to DeFi Llama, the sum of TVL from all DeFi projects has increased by 1035% from 21.9 billion. Ethereum remains the major battlefield for DeFi. Taking advantage of the delay of Ethereum 2.0 and the limited diffusion of Layer 2, Layer 1 chains (such as BSC, Solana, Terra and Avalanche) have attracted cross-chain deployments from various projects (including Curve, Aava and Sushiswap). They have cultivated a variety of native projects, utilizing the feature of low transaction fee, fast processing speed and support from eco funds. Aside from Ethereum, TVL from DeFi projects deployed on other chains has grown from \$570 million to \$85.2 billion, a nearly 150-fold increase.



Graph 1-3: Sum of TVL from DeFi Projects on Major Chains

Source: DeFi Llama, Huobi Research

NFT is a standout in the market, with astronomical prices commanded by NFT making the headlines countless times. According to NFTGO, as of December 26, 2021, the total value of NFT in its collection was 168 times higher than that at the beginning of the year – to a value of \$10.3 billion. Daily NFT transaction stood at \$50 million compared with \$500,000 at the beginning of the year, up by some 100 times.

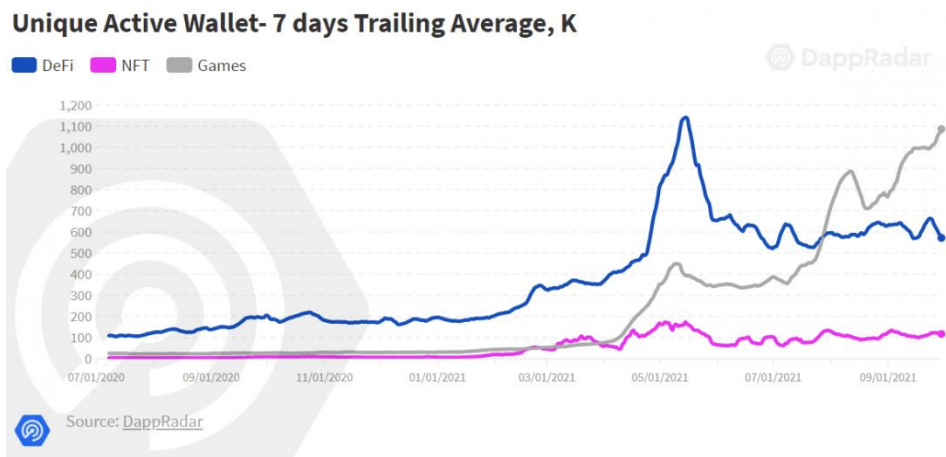


Graph 1-4: Change of NFT Market Cap in 2021

Source: NFTGO

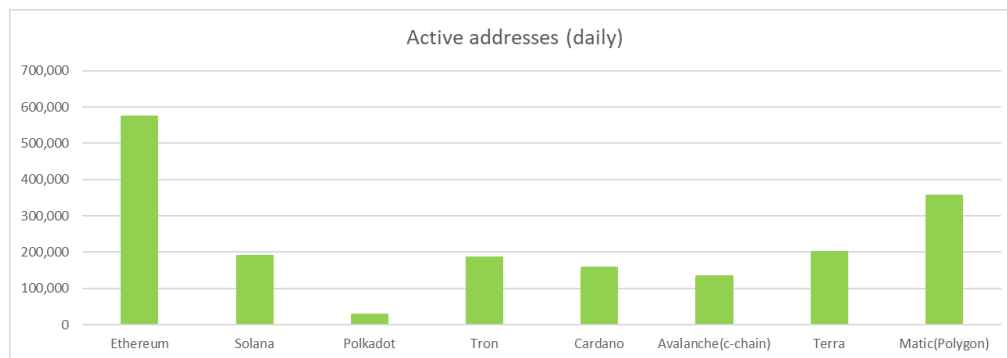
1.1.2 Explosion of Applications in Layer 1 Chain Ecosystem

The richness of the Layer 1 chain ecosystem plays a vital role in its future development. According to Dapp Radar, the number of unique active wallet (UAW) connected to Dapp has increased from less than 400,000 to over 2.7 million, nearly 5 times more in merely 1 year. This is owing to the development of the triads: DeFi, blockchain games and NFT. DeFi remains a superstar and develops continuously. Blockchain game has grown rapidly to having the most users in the whole blockchain industry, whereas NFT is simple to understand and promote as it builds the foundation for blockchain games and the metaverse.



Graph 1-5: Trend of Daily Unique Active Wallets (UAW) Connected to DApps

Source: Dapp Radar



Graph 1-6: Number of Daily Active Addresses for Major Chains (as of December 26, 2021)

Source: Huobi Research

So far, Ethereum is the smart contract platform that features the most applications and funds. According to Glassnode, there were about 200,000 daily active addresses on Ethereum at the beginning of 2020. The number continued to grow until the peak at some 700,000, before falling but staying above 500,000. There were around 350,000 daily calls from smart contracts at the start of 2020. After major development in a half-year period (AKA the Summer of DeFi), the number reached close to 750,000, and remained at this level in 2021. Numbers indicate that various applications are functioning with high frequency of usage; the number of blockchain users has skyrocketed.

ETH contract and address



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glassnode

Graph 1-7: Number of ETH Daily Active Addresses and ETH Daily Contract Calls (30-day Average)

Source: Glassnode

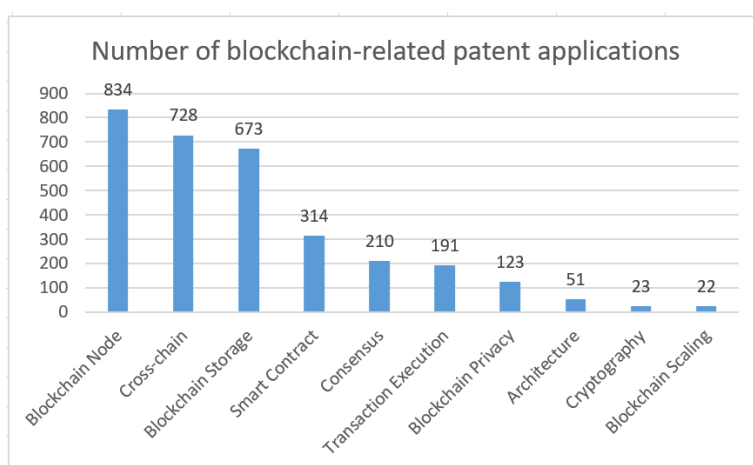
However, Ethereum suffers from under-performance while others could absorb users in various ways that enrich the ecosystem. The Layer 1 chain ecosystem thrives in tandem with the bull market, and has become so successful that vast developments could be spotted everywhere: Side chains (BSC, Polygon, etc.), new Layer 1 chains (Solana, Avalanche, Polkadot, etc.), and earlier Layer 1 chains (Cardano, Terra, etc.). BSC active addresses have exceeded 2 million on a few occasions, with over 150,000 in Solana, Tron, Cardano and Terra. Furthermore, Layer 1 chains are devoted to various specific market segments in order to achieve comparative advantage, even to build a new Layer 1 chain for a specific purpose. For example, the multi-million-dollar NBA Top Shot operates on the NFT-specific chain-Flow, and the prevalence of Axie Infinity will not survive without Ronin, which is specifically designed for games.

Method	Case
Trend	BSC quickly keeps up with the market changes in DeFi and has gained a huge market share. Recently, BSC has increased investment in Gamefi. The games on BSC are easy to play and bring a large number of users and funds in a short time
Channels	In the blockchain industry, DeFi is not the only hot field. GameFi can also attract more users. Other public chains can improve user experience by other methods, such as improving capability.
Incentive	Avalanche's incentive plans in May, August, and November, especially in November, resulted in TVL's countertrend growth in the bear market. In addition, BSC and Solana also have a huge ecological fund.
Capital Flow	Mainstream public chains can interact with other chains by cross-chain technology, Avalanche's official cross-chain bridge has attracted a lot of money.
Breeding	Terra is focused on increasing the application scenario of UST, and its token --- LUNA is rapidly increasing by capturing the value of UST demand, bringing considerable wealth effect.

Graph 1-8: Promotions of Layer 1 Chains

Source: Huobi Research

With the exception of Layer 1 chains, the number of patent applications is another parameter that reflects the maturity of the whole industry. According to PatentCloud, there are a total of 8,367 blockchain-related patent application worldwide. Blockchain node, cross-chain, storage and smart contracts are the top 4 fields of patent, accounting for 834, 728, 673 and 314 applications, respectively. In terms of specific application tracks, data service (177 cases), identity authentication (166 cases), information protection (136 cases), payment processing (85 cases), and path tracing (66 cases) are the major tracks in application.



Graph 1-9: Number of Blockchain Related Patent Application Worldwide

Source: PatenCloud

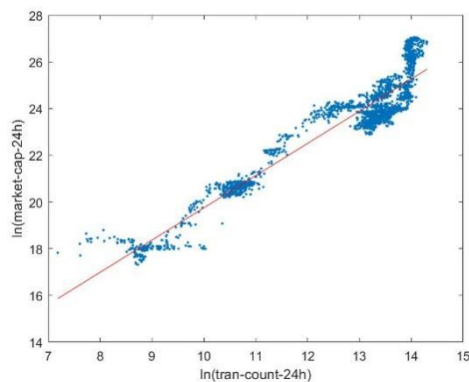
1.1.3 Layer 1 Blockchain Scoring Model

The boom of new Layer 1 chains in 2021 is a reminder that performance, ecosystem as well as transactions cannot be neglected. In response, we established a scoring model to measure the value and potential of Layer 1 chains. The market cap of a Layer 1 chain is nothing more than an exogenous appearance of itself; it would be biased to predict the market cap of a Layer 1 chain given that the former could be affected by factors across multiple dimensions, including the inherent development as well as influence from the macro.

Ethereum is a benchmark for Layer 1 chains, the diversity of data could be utilized to predict the influence on the market cap by each factor. The following factors will be scrutinized: 1) Number of daily transactions; 2) Number of daily active addresses; 3) Total transaction fees; 4) Total Gas consumption; 5) Number of total monthly on-chain active Dapps; 6) Daily on-chain DeFi TVL; 7) Total monthly development activities. These factors will reflect the general development of ecosystem and status of circulation. The methodology of the scoring model is to extract representative factors of Ethereum, and check the degree to which they fit mathematically with the market cap of Ethereum. Therefore there is a need to further quantify and weigh the influence of these factors in order to interpret how much the market cap would be affected in accordance with the change in each factor. An integral score will be generated by inputting the weighted value of these factors. Mathematical fitting will be conducted in the following in order to determine best suitable factors as input.

1. Number of Daily Transactions and Active Addresses

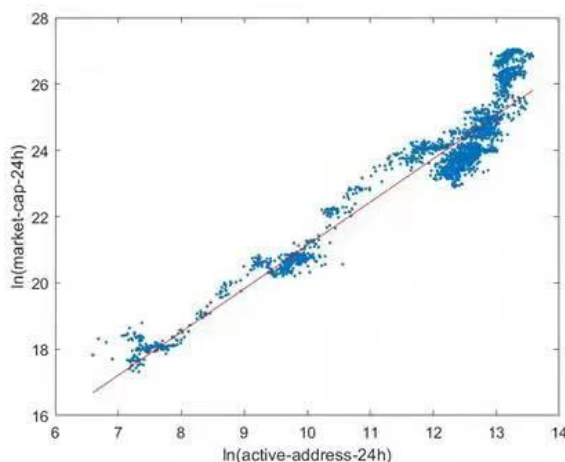
The data range is from August 2015 to December 2021. It is difficult to distinguish the relationship between the number of daily transactions and the market cap directly from the data table; a linear relationship is clearer after we process the data with log. In addition, the data is periodical clustered, which may represent a bull market as transactions are usually concentrated while the market cap is high. After a linear regression, we have a result of correlation coefficient $R^2 = 0.9016$.



Graph 1-10: Panel chart of Log of Daily Transactions Number and Log of Market Cap

Source: Huobi Research

Using the data processing method above, we have the following graph indicating the relationship of daily active addresses number and market cap. By the same method, we have a correlation coefficient $R^2 = 0.9016$.



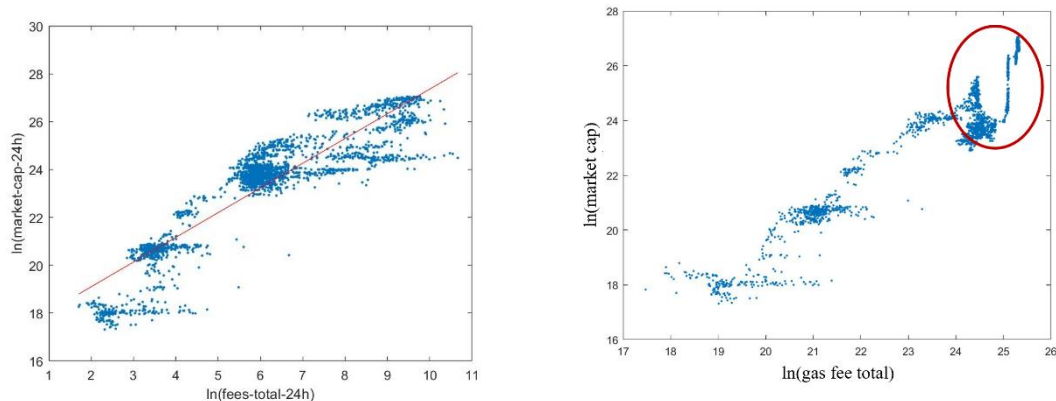
Graph 1-11: Panel chart of Log of daily active addresses and of Log of Market Cap (2015.08-2021.12)

Source: Huobi Research

2. Total Daily Transaction Fees and Total Daily Gas Consumption

With data processed similarly to the method with the number of daily transactions, the result of correlation coefficient $R^2 = 0.8179$ is obtained and illustrated as Graph 1-11. In a mathematical fitting test, data with small correlation may be seen returning a strong correlation after fitting, whereas data with strong correlation could barely be correlated after fitting. In Graph 1-11, the

log of total daily transaction fee and log of market cap are unsuitable for conducting linear regression as the result will be flawed and biased, which eliminates this factor from input selection. Total daily Gas consumption is also eliminated as the data is discrete after EIP-1559.



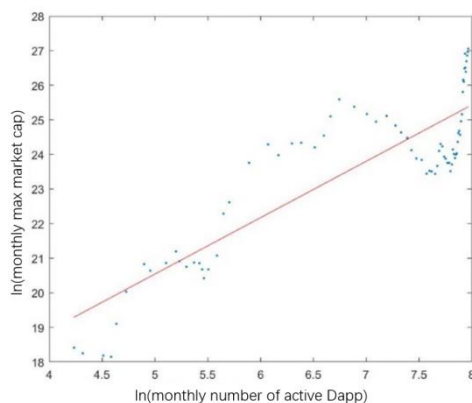
Graph 1-12: Daily transaction fee log - market capitalization log (Left)

Graph 1-13: Total daily gas consumption log - market value log (2015.08-2021.12) (right)

Source: Huobi Research

3. Number of Total Monthly Active On-chain Dapps

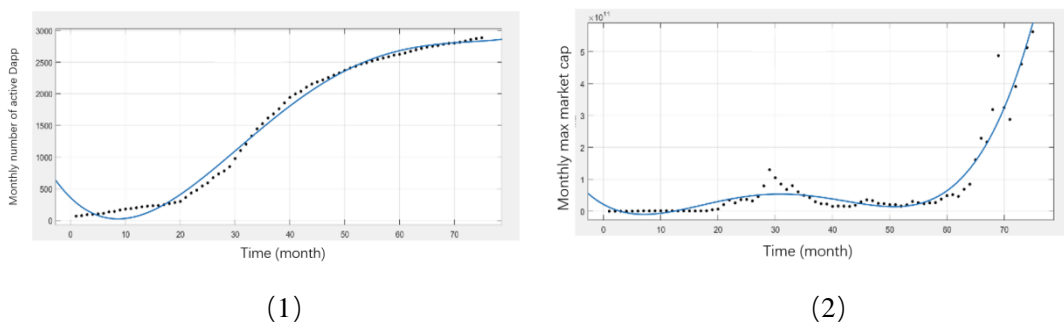
The number of active on-chain Dapps could reflect the completeness of the ecosystem development. Given that Dapp requires time for development, maintenance and launch, daily data is meaningless and so should be replaced with monthly data. Market cap is selected as the largest monthly market cap, as it indicates the influence brought by the number of total active Dapps.



Graph 1-14: Log of Total Monthly Active Dapps Number and Log of Largest Monthly Market Cap

Source: Huobi Research

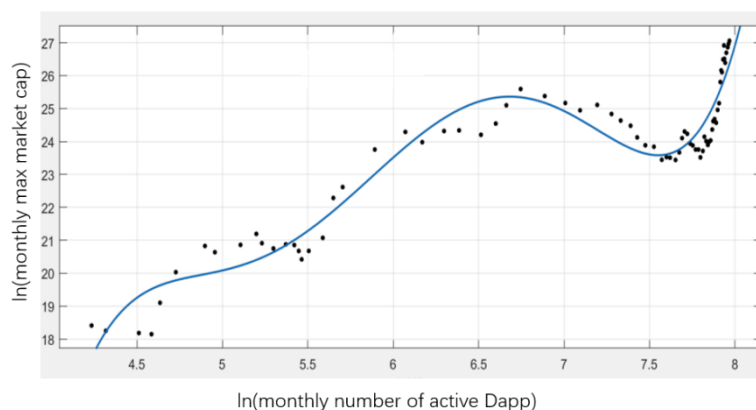
From Graph 1-13, the method of linear regression is unsuitable due to the following probable causes: 1) Too few samples making the result biased; 2) A potential non-linear relationship between the two. From the data, the number of total monthly active Dapps and the largest monthly market cap are polynomially fitted to the fourth power of time. That is to say, the number of total monthly active Dapps and the largest monthly market cap are closely related but not a linear one. After taking a logarithm of each variable and with the variables polynomially fitted, a correlation coefficient of $R^2=0.9314$ is obtained as illustrated in Graph 1-14.



Graph 1-15: (1) Fitting of Total Monthly Active Dapp Number and Time

(2) Fitting of Largest Monthly Market Cap and Time

Source: Huobi Research

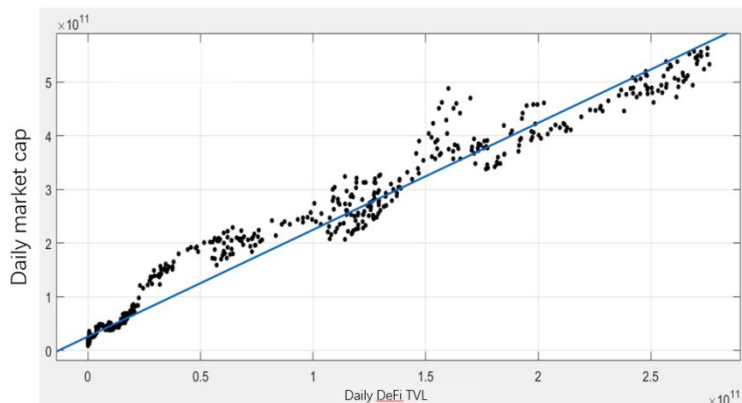


Graph 1-16: Polynomial Fitting of Log Monthly Active Dapp Number and Log Largest Monthly Market Cap

Source: Huobi Research

4. Daily On-chain DeFi TVL

The data of DeFi TVL ranges from November 2018 to December 2021. A linear relationship between TVL and market cap could be obviously spotted without conducting a logarithm. A linear regression returns a correlation coefficient of $R^2=0.9753$, the most strongly related among the factors.

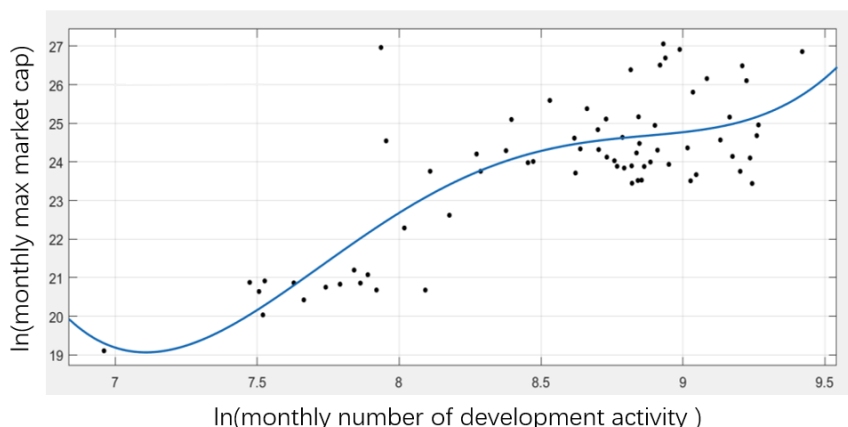


Graph 1-17: Linear Regression of Daily On-chain DeFi TVL and Daily Market Cap

Source: Huobi Research

5. Total Monthly Development Activities

The number of monthly development activities directly mirrors the situation of ecosystem development and Layer 1 chain maintenance. This factor is selected as it is more insightful in interpreting the potential of the Layer 1 chain. A more appropriate correlation coefficient could be obtained by taking the logarithm of each variable and running a polynomial fitting afterwards, which is a correlation coefficient of $R^2=0.6405$.



Graph 1-18: Fitting of Log Number of Monthly Development Activities and Log Largest Monthly Market Cap

Source: Huobi Research

The fittings conducted are to quantify the influence of each factor on the market cap; the weightage of each factor could be allocated according to the degree of influence, thus avoiding biasness by subjective judgement. From the graphs, it is evident that the number of Dapps and DeFi TVL are the most influential on market cap.

Criteria	Description	Correlation coefficient R ²	Weight
Transaction count	Token circulation	0.9016	20.6%
Active addresses	Token circulation+ ecosystem	0.9195	21.0%
Active Dapps	Ecosystem	0.9314	21.3%
Development activities	Ecosystem+performance maintenance	0.6405	14.8%
DeFi TVL	Ecosystem	0.9753	22.3%

Table 1-1: Weightage Allocation of Each Factor

Source: Huobi Research

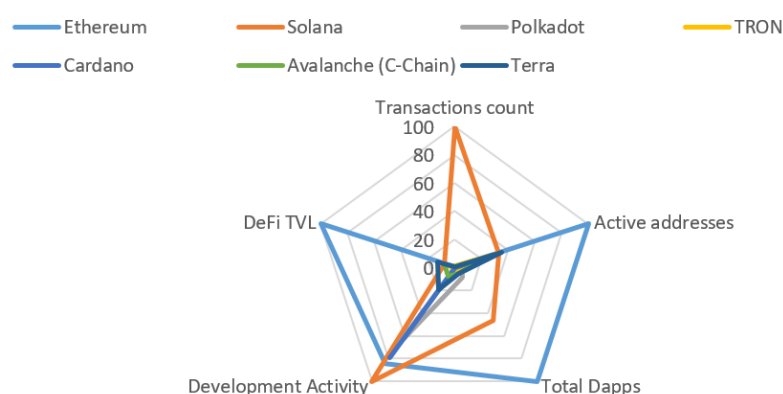
6 Layer 1 chains are selected to compare with Ethereum in order to synthesize an index based on data of each factor extracted from December 22 on Table 1-2 below:

Blockchain	Transactions count (daily)		Active addresses (daily)		Total Dapps (monthly)		Development Activity (daily)		DeFi TVL (daily)	
	Value	Index	Value	Index	Value	Index	Value	Index	Value	Index

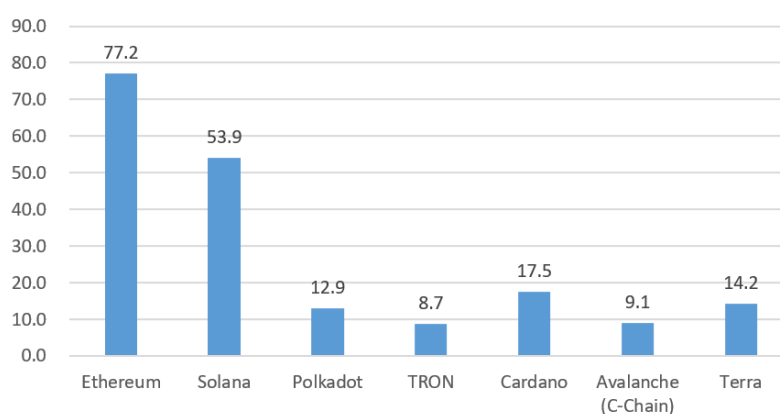
Ethereum	1,201,550	0.5	574,885	100	2894	100	472	84.4	1.55E+11	100
Solana	247,272,942	100	189,917	33.0	1332	46.0	559	100	1.25E+10	8.0
Polkadot	220,411	0.1	28,706	5.00	260	9.0	373	66.7	1,645,926	0.0
TRON	2,730,035	1.1	184,986	32.2	88	3.0	11	2.0	5.35E+9	3.4
Cardano	119,620	0.1	158,440	27.6	0	0	442	79.1	0	0
Avalanche (C-Chain)	959,720	0.4	134,423	23.4	150	5.2	43	7.7	1.27E+10	8.2
Terra	541,129	0.2	200,000	34.8	152	5.3	110	19.7	1.97E+10	12.7
Weighting	20.60%		21.00%		21.30%		14.80%		22.30%	

Table 1-2: 7 Layer 1 Chain Factors on December 22, 2021

Source: Huobi Research



Graph 1-19: Radar Map of Factors from 7 Layer 1 Chains



Graph 1-20: Scores of Layer 1 Chains

Source: Huobi Research

From the result, Ethereum has rather high scores in terms of most factors except for the number of daily transactions. Solana outcompetes Ethereum significantly on the number of daily transactions, exposing the urgency of the Ethereum scaling issue. The number of daily total

active addresses and DeFi TVL indicate that Terra has a large number of user base and a bright future. Cardano scores high on the number of development activities; even though the ecosystem is still somehow less developed, active development activities will eventually lead to success in the long run. In terms of total score, Solana has the second highest score that reflects growth of a thousand times this year. Cardano, Polkadot and Terra will have limitless potential in the future.

1.2 Retrospect of Top 10 Blockchain Events

1.2.1 US BTC ETF Approved, Mainstream Investment Channel Opened

After a long wait, the first US BTC ETF was approved and traded on NYSE starting October 19, 2021. The full name of this ETF is The ProShares Bitcoin Strategy (ticker BITO), with underlying BTC forward contracts traded on CME (Chicago Mercantile Exchange). BITO seeks capital growth via management of the spread of BTC ETF. That is to say, this ETF does invest in BTC directly; it is indeed a forward-based ETF.

Since 2013, nearly 20 institutions have applied to launch Bitcoin commodity ETF, but none have succeeded. First, it is partially attributed to the non-cash commodity characteristic of Bitcoin that no third parties or banks are eligible for custody; another set of regulations and private key management solution are required to be in place. Second, there is no such secondary platform (traditional platforms with full-scale functions like pre-market trade, after-market trade, bulk commodity trade, market maker, liquidation and settlement, etc., such as NYSE, CME, CBOE) that endows the entry and exit of Bitcoin with fair price. A forward ETF could not be approved before a commodity ETF without the bilaterality of the forward that the fund could flow to both directions, generating a balanced status in between. On the contrary, the Bitcoin commodity market does not support shorting activities, which remains a unilateral market.

The launch of BITO is a milestone for Crypto and financial markets because it augurs the formal recognition of Bitcoin as a mature financial asset, or commodity, under the current regulatory system. Meanwhile, it has lifted Bitcoin to a wider horizon to attract massive attention from

mainstream investors.

"The ETF approval is a watershed moment for the industry," said Brock Pierce, Chairman of the Bitcoin Foundation, in a statement to CNN Business. "Today begins an era where retail investors can invest directly into Bitcoin through the ETF, and serves as further validation of Bitcoin and cryptocurrencies across the country and on a global basis."

As of November 22, 2021, there are 14 funds available as options for investors, including Bitcoin ETFs and funds of other cryptocurrencies.

Name	Assets under management
ProShares Bitcoin Strategy ETF	\$1.4 billion
Valkyrie Bitcoin Strategy ETF	\$59.2 million
VanEck Bitcoin Strategy ETF	\$9.6 million

Table 1-3: Volume of Cryptocurrency Funds

Name	Assets under management
Global X Blockchain & Bitcoin Strategy ETF	\$10.6 million
Amplify Transformational Data Sharing ETF	\$1.7 billion
Bitwise 10 Crypto Index Fund	\$1.2 billion
Siren Nasdaq NexGen Economy ETF	\$309.6 million
First Trust Indxx Innovative Transaction & Process ETF	\$142.0 million
Simplify US Equity PLUS GBTC ETF	\$121.7 million
Bitwise Crypto Industry Innovators ETF	\$141.2 million
Global X Blockchain ETF	\$114.4 million
VanEck Digital Transformation ETF	\$75.0 million
Bitcoin Strategy ProFund Investor	\$29.5 million
First Trust SkyBridge Crypto Industry and Digital Economy ETF	\$43.4 million

Source: etfdb.com, Huobi Research

1.2.2 First Cryptocurrency Exchange, Coinbase, Listed on Nasdaq

On April 14, 2021, the largest cryptocurrency exchange in the U.S., Coinbase, listed on Nasdaq (Ticker: COIN) via DPO. It was the first large cryptocurrency exchange listed on a major traditional exchange.

The listing of Coinbase took place via a Direct Public Offering, also known as DPO. Unlike IPO, equities of employees and investors could be converted to stocks directly and traded afterwards instead of raising funds by issuing new stocks to public. After the listing, shares could be purchased directly, and former investors could cash out without the holding time limit as that for IPO. DPO outmaneuvers IPO in the avoidance of the quoting process, large expenditure on issuing, and complicated preparations, and is thus preferred by unicorn companies.

From Coinbase's First Quarter Report in 2021, revenue in first quarter soared to \$1.8 billion, 8 times more than the \$190.6 million recorded in the same quarter in 2020. Net profit was around \$730 million to \$800 million, 25 times more than the \$32 million the previous year. The numbers show how lucrative Coinbase is; raising funds from issuing stocks is not a major pursuit. Aside from incentivizing the team by providing the liquidity of equities via DPO, Coinbase aimed to consolidate its market leadership and further secure its market share by increasing its degree of compliance.

Coinbase is an exemplar in compliance in that it obtained countless licenses from various regulatory parties. According to Brian Armstrong, CEO of Coinbase, the company set about applying for money transfer license in the U.S. starting 2013, obtained its Electronic Money License in Europe, a license to conduct crypto-related activities in New York, BitLicense, as well as registered in FinCEN with a MSB License. It is continuously working on compliance with other regulatory parties. Coinbase is now regulated by SEC and publishes financial reports to public periodically, promoting compliance and driving its brand image to an unprecedented high. As institutions play a more significant role in the Crypto market, a public company with high compliance such as Coinbase has become the best choice for institutional funds.

Trading Volume (B\$)	2020 Q3	2020 Q4	2021 Q1	2021 Q2	2021 Q3
Retail	18	32	120	145	93
Institutional	27	57	215	317	234
Total	45	89	335	462	327
Institutional share	60%	64%	64%	69%	72%

Table 1-4: Recent Transaction Structure of Coinbase

Source: Coinbase Third Quarter Report, Huobi Research

The listing of Coinbase is indeed a milestone for the overall development of cryptocurrency. First, a new channel for mainstream funds to invest in crypto industry has been created; second, Coinbase is an exemplar among all the exchanges in terms of compliance, promoting the overall compliance process for all exchanges. For exchanges which did not issue platform tokens, an extra fund-raising venue could be considered similar to what Coinbase did: DPO. Further, the listing of Coinbase has demonstrated the potential of a new type of asset under compliance, drawing sufficient attention to digital assets as well as researching and deliberating the possibilities and paths of the Crypto industry to advance under proper compliance.

1.2.3 El Salvador Becomes the First Sovereign Nation to Recognize Bitcoin as Fiat Currency

In June 2021, Nayib Armando Bukele Ortez, President of El Salvador, officially announced that Bitcoin would be the fiat currency of El Salvador. The Bitcoin Act was approved by most political groups in the congress with 62 advocate votes and 19 negative votes. The Act took effect in September 2021, making Bitcoin along with the Dollar the national fiat currency of El Salvador – the first time that Bitcoin is used as national fiat currency in a sovereign country.

Located in the north of Central America, El Salvador is weak in business administration and barren in agriculture, as well as lacking in developed financial infrastructure. The economy of El Salvador relies heavily on wire transfers from outside as there are over 2 million Salvadorean immigrants living overseas. They wire money periodically to their families in El Salvador, which adds up to more than \$4 billion per year. According to the President of El Salvador,

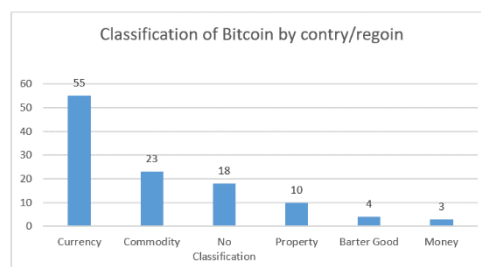
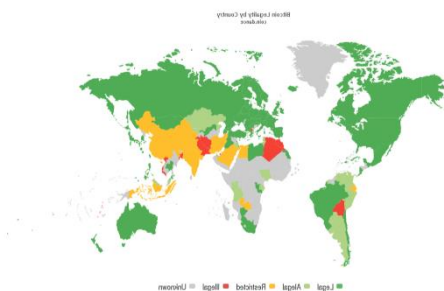
Bitcoin as El Salvador's fiat currency will not only reduce wire transfer cost and time for Salvadorean immigrants, but also attract more foreign investments and raise the actual income of unconventional employment and low-income group. This would promote the comprehensive growth of its domestic financial market and economy by providing secure channels of lending, saving and transferring.

The landing of Bitcoin in El Salvador is not as smooth as expected. Negative voices were heard since July, not to mention the severe protest on the Independence Day of El Salvador with a Bitcoin ATM burnt onsite. Protestors claimed that Bitcoin as fiat currency of El Salvador would harm the Salvadorean economy as well as erode personal asset value, especially in savings and pensions, during Bitcoin's price fluctuations. IMF, Moody's, the Governor of Bank of England and the President of Russia remain wary of El Salvador's actions.

Despite the cynicism, El Salvador has consistently promoted the landing of Bitcoin as fiat currency. Its government raised a trust fund of \$150 million, introduced the official electronic Wallet of Chivo, and gave every citizen who registered \$30 worth of Bitcoin. A national network of 200 Bitcoin ATM was launched and 51 training points established for Bitcoin education, catering to over 7000 Salvadorean entrepreneurs. The government plans to issue a municipal bond of \$1 billion with APR of 6.5% and maturity of 10 years for the construction of the City of Bitcoin, and to supply Bitcoin mining farms with electricity generated from environment-friendly geothermal energy. The government utilized earnings from the trust funds and completed the construction of hospitals and schools. McDonald's, Starbucks, Pizza Hut in El Salvador and other Salvadorean companies began to receive Bitcoin as payment, pointing to the synergy taking place.

What took place in El Salvador has become a role model for countries in Latin America, where several countries have embarked on promoting the legalization of Bitcoin. Investments in cryptocurrencies have increased over 100% between 2020 and 2021 in Latin America.

Currently, Bitcoin has a presence in 131 countries and regions. This includes 102 countries that consider Bitcoin legal, 29 that take a neutral stance, 7 that consider Bitcoin illegal (including Vietnam, Afghanistan, etc.), and another 7 that ban Bitcoin-related transactions (including China, Egypt, etc). So far, 55 countries treat Bitcoin as currency, 23 countries



categorize Bitcoin as a commodity, 10 countries accept Bitcoin for exchange, and 3 countries classify Bitcoin as money.

Graph 1-21: Attitudes of Countries on Bitcoin (Left)

Graph 1-22: Classification of Bitcoin by Country (Right)

Source: coin.dance, Huobi Research

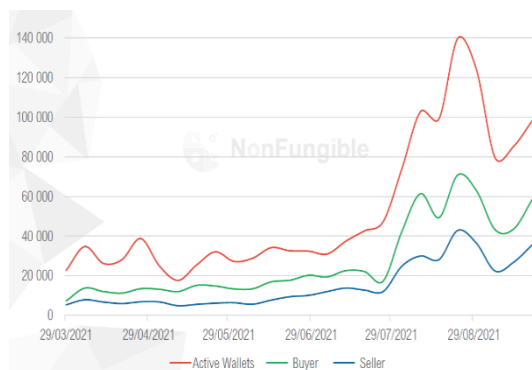
1.2.4 NFT Sold at Record Price on Christie’s, Bringing NFT to the Spotlight of All

NFT became one of the brightest stars in the blockchain industry in 2021. It is commonly used in securing ownership of scarce digital assets, such as game props, digital arts, tickets, etc., because of its uniqueness and resistance to tampering.

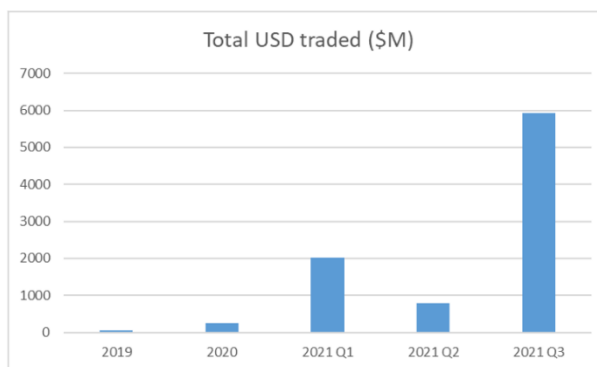
NFT-based art pieces and collections are frequently sold at sky-high premiums, promoting the development of GameFi and Metaverse as an infrastructure on a large scale. In the spring of 2021, NFTs became so prevalent – especially works of artists represented by Beeple, Whisbe and Pak – that Everydays: The First 5000 Days sold for \$69.3 million (including commission) at Christie’s, setting an NFT-based art auction record and marking the third-highest price sold for works by a living artist. A digital NBA players’ collection, NBA Top Shot, sold for over \$700 million with over 10 million transactions. The rising novice, Bored Ape Yacht Club, sold for over \$1.1 billion in merely half a year. In August, the first NFT project Crypto Punks sold CryptoPunk 3100 in an auction for 42000 ETH, equivalent to around \$108.6 million, setting a new record for a single-piece NFT. The total value of NFT on the popular game Axie Infinity reached \$54 million with an exchange volume of \$3.7 billion, driving the adoption of “Play to Earn”.

Prominent brands have launched associated NFT featured products, continually setting new records in auction prices and transaction volume. For instance, players from various industries have flocked onto the NFT stage: luxury brands such as Louis Vuitton, Burberry, Balmain, Gucci, as well as Porsche and Audi in the automobile industry. Even mass consumer brands like Coca Cola and Marvel have started to promote game accessories, virtual appearances, wearable smart equipment, comic books and designs, etc. as associated NFT-based products. Moreover, the co-founder of Twitter listed his first tweet as an NFT for sale, and The Economist auctioned its first DeFi themed cover as an NFT. The actions of celebrities and reputable brands have successfully brought NFT out of the box into the full view of the public.

The year 2021 was boom time for NFT. According to nonfungible.com, there were as many as 140,000 daily active addresses interacting with NFT smart contracts on Ethereum. Transaction volume was close to some \$6 billion in Q3, with cumulative volume for the first 3 quarters at nearly \$8.7 billion – 34 times than the previous year. Even though a high growth rate often comes with unstable and unrealistic expectations – sometimes disappointment – NFT has undoubtedly entered a new era and will score big in the near future.



Graph 1-23: Number of wallet addresses interacting with NFT smart contracts on Ethereum (Left)



Graph 1-24: NFT transaction volume on Ethereum (Right)

Source: nonfungible.com, Huobi Research

1.2.5 Elon Musk Highly Recommended DOGE Publicly, Pushing Meme Coin to Battlefront

A special type of coin in the crypto market has attracted mass attention: the Meme Coin. Meme Coins are cryptocurrencies derived from popular jokes, buzzwords, images or events on the internet or social media.

DOGE is the earliest and most popular Meme Coin. In 2013, two Adobe software engineers, Jackson Palmer and Billy Markus, created DOGE based on Bitcoin’s codes as a spoof of Bitcoin. They may be as shocked as most people that their little joke has become a multi-billion-dollar existence, and ranked fourth in market value among all cryptocurrencies.

The price of DOGE cannot skyrocket without Tesla’s CEO Elon Musk. The latter is a loyal fan of DOGE who has made multiple tweets advocating DOGE since 2019, and once changed his Twitter bio to “Former CEO of Dogecoin”. His tweets have attracted mass attention that grew followers on Dogecoin’s Twitter to 2.63 million, exceeding that of Ethereum. Moreover, Dogecoin was the fourth most-searched term on Google Trends’ “Top Search of 2021-Top News”. Mass attention has fueled the price rise of Dogecoin, which has shot up over 156 times.



Graph 1-25: Tweets of Elon Musk

Source: Twitter @elonmusk

Another Meme Coin worthy of some attention is Shiba Inu (SHIB). Shiba Inu issued tokens back in 2020. During the rise of Meme Coins in 2021, 2 tweets with vague implications from Elon Musk caused the number of SHIB followers to explode: “I’m looking for a Shiba pup!”

and “I’m getting a Shiba Inu”. Since then, people have started to view this “Shiba Inu” as a symbol of decentralization and 0 token allocated to the team. The price of SHIB shot up an eye-popping 430,000 times over the previous year.

Following the meteoric success of DOGE and SHIB, dogs and other animals became symbols of Meme Coins to the extent that all kinds of cryptocurrencies with animal appearances began flooding the market: Shiba Inu, Akita, Samoyed, Siberian Husky, pig, ant, fox, etc.

On May 13, Vitalik converted Meme Coins received as gift from the Meme project team to ETH, and donated the partial proceeds to various charities. Meanwhile, as the downward trend in prices continues to distress the market, prices of Meme Coin have moved in tandem, signalling the end of the crypto version of “Zootopia”.

1.2.6 Hearing on Digital Assets Summoned in the U.S. Congress

On December 8, 2021, a hearing was held in the U.S. Congress on digital assets: Digital Assets and the Future of Finance: Understanding the Challenges and Benefits of Financial Innovation in the United States. Members of the committee sought to further understand the crypto industry via the hearing, and participated in a discussion on the regulatory rules. Six executives from exchanges Coinbase and FTX, Stablecoin issuers Circle and Paxos, crypto mining firm Bitfury, and Stellar Development Foundation attended the hearing. They emphasized the capabilities of crypto products in financial innovation, and expressed their opinions on current regulations. Throughout the hearing, congressmen and leading executives from the crypto industry had a deep and cordial discussion on cryptocurrency regulations, which was lauded by the General Counsel of Compound as “the most positive, constructive, and bipartisan public event on crypto I’ve seen in Congress.”

The range of issues discussed in the hearing was broad, with the following core opinions highlighted:

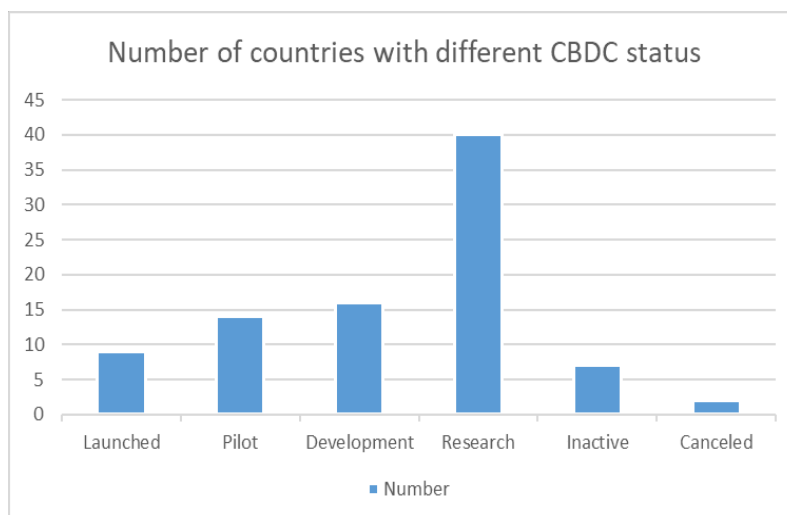
- Stablecoin and crypto exchange are the core objects of regulation.

- There is no integral regulation scheme nationwide, regulations on a single unit at the national level is expected.
- The advantages of cryptocurrency are reflected in the low threshold, low transaction fees and fast speed, which could provide services to more people compared with traditional financial institutions. Therefore just following current regulations would not be optimal.
- Crypto could enhance the competitiveness of the US in technology and further reinforce the status of the Dollar as the dominant global foreign exchange reserve.
- The core value of crypto is to achieve decentralization; it does not exert the power of control over users. Any companies moving in the opposite direction will become obsolete and forgotten.

1.2.7 Multiple Central Banks Boosted the Development of CBDC, China Promotes E-CNY on Full Scale

Many international organizations and central banks remain positive towards CBDC and continuously promote its development.

In June 2021, the G7 bloc expressed a common interest of CBDC on communique of G7 Foreign and Development Minister's Meeting. They stated that close attention was paid on opportunities and challenges brought by CBDC on the currency system and financial stability, and promised to cooperate closely on a larger scale regarding the possible influences on public policies within the proper functional range of treasury and central banks. In August, BIS, IMF and World Bank appealed to the central banks of all countries to collaborate in terms of promoting the development of CBDC. BIS said it would reinforce the development of CBDC with full-scale power to build a modern financial world where a currency system is not a monopoly in the hands of a "tech giant".



Graph 1-26: Number of Countries with Different CBDC Status

Source: atlanticcouncil.org, Huobi Research

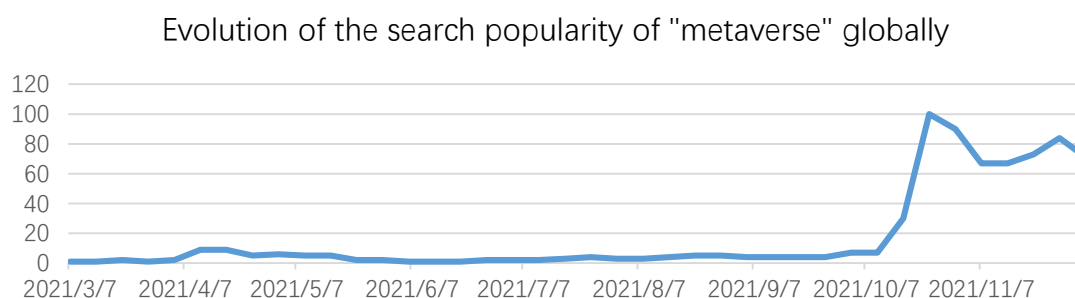
During its exploration of CBDC, China has been in a leading position among major economic entities. According to the latest November announcement of Gang Yi, President of China Central Bank, the E-CNY is in the middle of a stable trial, which has been accelerated in the second half of the year. The number of trial scenarios increased from 1.32 million at the end of June to 3.5 million. The total number of accounts opened exceeded 123 million with total transactions of around 56 billion CNY. Yi announced the next moves to complete the design and usage of E-CNY, in response to the problems encountered in the trial scenarios. First, an E-CNY specific management scheme would be established to integrate the overall management philosophy of cash and bank accounts. Second, key functions, including enhancing account settlements, protecting privacy, anti-counterfeit, etc., would be under further development. Third, the interaction between E-CNY and current electronic payment processing tools would be facilitated to achieve unity of security and convenience. Last, the ecosystem of E-CNY will expand by intensive development to increase its inclusiveness and availability.

1.2.8 Metaverse Prevails, Social Media Giant Facebook Renamed to Meta

The year 2021 has been called the first year of the Metaverse Era: the concept of metaverse

spread virally via the internet, triggered by the IPO of Roblox. In fact, the concept was invented way earlier in 1992 when science fiction novelist Neal Stephenson published the novel Snow Crash, portraying a parallel world named “Metaverse”. Everyone in the real world was described as having a presence in the parallel world, which could be considered as the native definition of the metaverse.

Many large corporations have embraced the metaverse, with an increasing number of metaverse copyrights registered under those big names, attesting to their keen interest in participating in the metaverse. The competition behind the scene is in fact intense. Starting from the first half of the year, tech giants, including Facebook and Microsoft, piled into the metaverse competition. On October 29, 2021, Facebook announced the renaming of the firm to “Meta” in a surprise move, putting the concept of metaverse in the public spotlight. According to Google Trends, the number of searches for the word “metaverse” surged in October and remained high, with the top 5 search locations being Mainland China, Singapore, Turkey, Myanmar and Hong Kong. In China, the top search location, registrations of trademarks and patents have formed a long waiting list. As of December 11, 2021, according to Qichacha, a credible search engine for company registration related information, the number of metaverse-related trademarks and patents has surpassed 15000. The metaverse has never been closer to being explored and embraced by such a large number of industries.



Graph 1-27: Global Search Heat of Metaverse

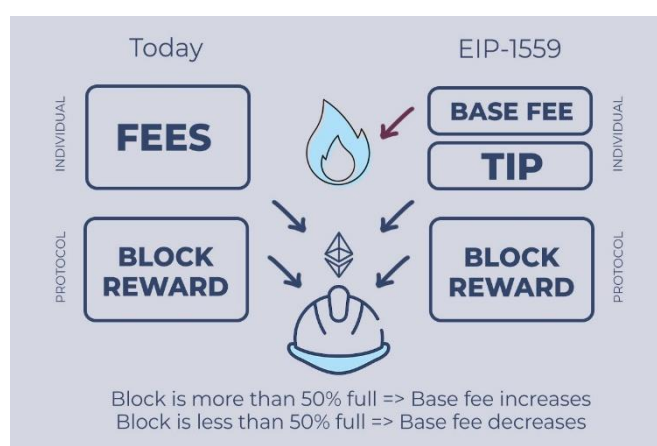
Source: Google Trends, Huobi Research

1.2.9 EIP-1559 Launched, Debuting the “Burn and Destroy” Era of Ethereum

On August 5, 2021, Ethereum underwent a formal technical upgrade, namely “London Hard Fork”. In this upgrade, the proposal of EIP-1559 drew significant attention from the industry.

There are two main opinions on EIP-1559: one is the reform of the gas auction scheme, the other is the implementation of a block easing scheme. Any operations on Ethereum are subject to a gas fee. Previously, the capacity of each block was fixed. Gas was sold by free offerings from users in an auction, with the highest bid winning and the gas sold fully due to the farmer in charge of packing the transaction.

EIP-1559 doubled the gas capacity of each block, while the gas fee will be automatically adjusted in this case for a target occupation rate of 50%. The expansion of space could reduce congestion arising from a large number of transactions. At the same time, the gas fee comprises a “base fee” and “tip”. The “base fee” is calculated automatically by the occupation rate of block space, increasing when the occupation rate exceeds 50% and vice versa. The same pricing criteria apply to all as mandated. “Tip” is used to incentivize mining farmers to pack the transaction in a new block, with the pricing determined by the user. What’s worth noting is that the “base fee” is burnt instead of being paid to mining farms.



Graph 1-28: Change in Gas Structure Before and After EIP-1559

Source: thecoin.news, Huobi Research

Before the “London Hard Fork”, earlier speculation in the community suggested the gas fee would be sharply reduced, leading to a commensurate drop in revenue for mining farmers and causing ETH to face deflation. With the smooth implementation of EIP-1559, such speculation turned out to be rumors.

EIP-1559 aims to improve the information asymmetry in auctions to increase the efficiency of gas auctions, thus reducing transaction costs. According to Glassnode, after EIP-1559 went into effect, transaction cost did not decrease by a large margin when converted to ETH. Even though the “base fee” does not go to mining farmers anymore, their revenue fell slightly in ETH. However, taking the appreciation of ETH into consideration, transaction fees and the revenue of mining farmers increased in dollar value.



Graph 1-29: Transaction Fee and Revenue of Mining Farmers after EIP-1559 (Unit in USD)

Source: Glassnode

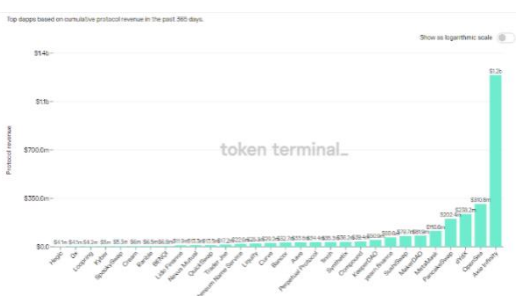
The primary goal of the elimination of “base fee” in EIP-1559 is to prevent the intentional hike of “base fee” by mining farmers, and solve the issue of “vague economy”, reinforcing the role of ETH in Ethereum rather than causing deflation. According to ultrasound.money, as of December 12, 2021, EIP-1559 had destroyed over 1.17 million ETH, which comprised 68% of issuance number in the period. It slowed the yearly inflation rate from 4.4% down to 1.3%, but did not result in deflation.

1.2.10 Revenue of Blockchain Game, Axie Infinity, Exceeded Honor of Kings, Entering Global Top 3

The two types of creatures most popular in blockchain are dogs and monsters, the latter being able to fight, breed, and earn money for players in Axie Infinity.

Axie Infinity must be the blockchain game of the year in the blockchain game market this year. Players could fight, breed and conduct other operations by directing Axie, the monster character in the game. The game is user-friendly to all with a rather pleasing style of imagery. What’s more, it introduced the avant-garde “play to earn” model. This is a complete economic system: Purchasing an Axie to enter the game, earning profit from playing, upgrading Axie with game tokens, selling game tokens or Axie for profit. Meanwhile, a sidechain of Ronin was brought out to reduce transaction fees, thus refining the general gaming experience of players.

Graph 1-30: Revenue of Dapp in the Past Year Graph 1-31: Growth Trend of Game Players



Source: oklinktokenterminal

Source: DappRadar

The prevalence of Axie Infinity energized the whole blockchain gaming industry. Based on the blockchain gaming report by BGA in October 2021, an average of over 2 million unique active wallets (UAW) were connected to Dapps every single day in October. The number of game-related UAW accounted for 55% of all types of Dapp. Gaming has therefore received tremendous attention from capital firms. As of November 2021, blockchain gaming raised over \$3.7 billion from investment funds.

Chapter2. Finance

2.1 Bitcoin Assets officially Entered the Mainstream

Since its birth in 2009, Bitcoin has attracted the world's attention, and the accompanying controversy has continued. After nearly 12 years of development, the price and market value of Bitcoin have been rising all the way, but it still hasn't gotten rid of the labels of "niche" and "geek". Whether in domestic applications or in the field of cross-border payments, most central banks regard encrypted digital currencies such as Bitcoin as a niche [referring to niche, specialized products] or trivial products.

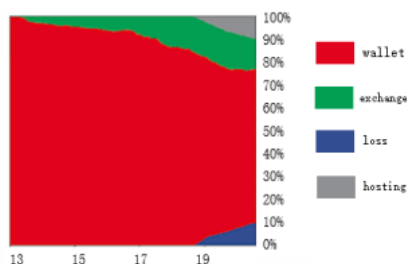
However, from 2021, this view started to change as listed companies in Europe and the United States and other countries started to buy Bitcoin in large quantities. Many large listed companies, including Tesla, the world's largest asset management company BlackRock, and US mobile payment giant Square, have invested huge sums of money to buy Bitcoin.

Behind the phenomenon was, as the founder of Bridgewater, Ray Dalio said: "Bitcoin is becoming a digital asset that can replace gold."

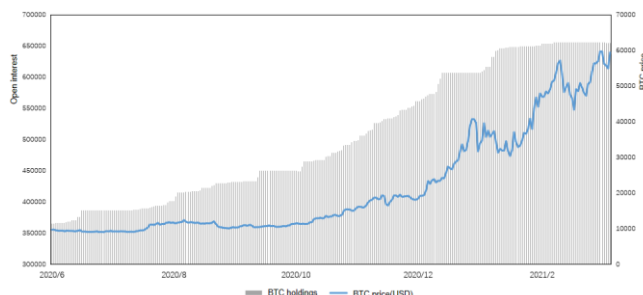
In this bull market in Bitcoin, the funds of institutional investors began to flow into the Bitcoin market, generating a huge amount of market transactions which caused the Bitcoin price to soar. Through the Grayscale Trust Fund, we can observe the signal of the large-scale entry of institutional investors: 80% of GBTC funds came from institutional investors, and since the second half of last year, GBTC's holdings have begun to grow rapidly, which means that a large number of institutional money started pouring into the Bitcoin space.

Behind the recognition of Bitcoin by a growing number of institutional investors is the product of Bitcoin's unique attributes and profound changes in the global macroeconomic situation.

First of all, Bitcoin is regarded by more and more people as "digital gold" based on its characteristics similar to gold, such as scarcity (total amount of BTC is fixed), easy division, easy portability, and global circulation.



Graph 2-1: Bitcoin spot distribution



Graph 2-2: Grayscale Trust Fund Bitcoin holdings

Soucre: Huobi Research

Second is the profound change in the global macroeconomic environment, which is the root cause of the structural shift in Bitcoin. Under the impact of the coronavirus pandemic in 2020, global financial markets collapsed, and even safe haven assets such as gold and 10-year U.S. bonds plummeted.

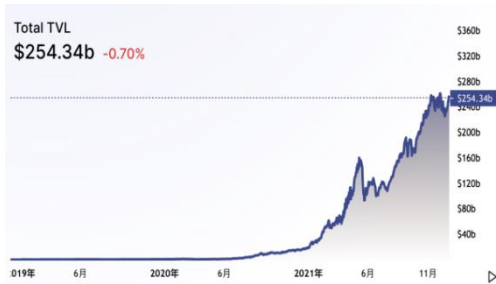
In response to the economic recession brought about by the pandemic, countries have generally adopted extremely loose monetary policies, pushing up the market's inflation expectations. To avoid losing the principal sum in their investments, investors who used to hoard cash naturally turned towards gold and gold substitutes – including Bitcoin, which has become an asset used by the market to hedge against high inflation. As the CEO of MicroStrategy said: “The future average annual inflation rate will reach 20%, greatly reducing purchasing power, and holding bitcoin is less risky than holding cash. At present, bitcoin is the only asset that gives us positive returns.”

2.2 The Evolution of DeFi

Starting with the DeFi summer in 2020, within just a year the DeFi TVL has rapidly increased to \$254.3 billion, and the total number of Ethereum addresses has also rapidly increased to more than 4 million.

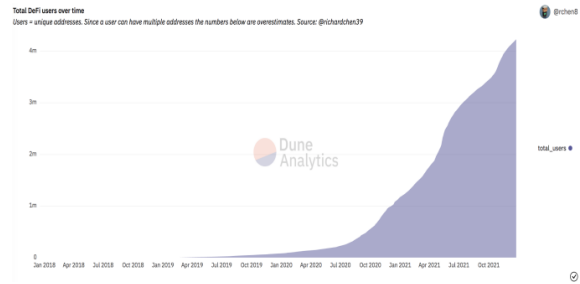
Since the beginning of this year, with the outbreak of DeFi, as well as the congestion and high gas of Ethereum, the DeFi ecosystem has begun to spill over to other blockchains. From HECO

and BSC in February and March, Polygon in May and June, Avalanche and Solana in September and October, to the recent Terra, the DeFi ecosystems of various blockchains have been making their presence felt one after another. Ethereum’s TVL rate decreased from 95% at the beginning of the year to the current 63%. The DeFi protocols are growing rapidly in terms of scale, number of users, types, and ecological diversity.



Graph 2-3: DeFi TVL

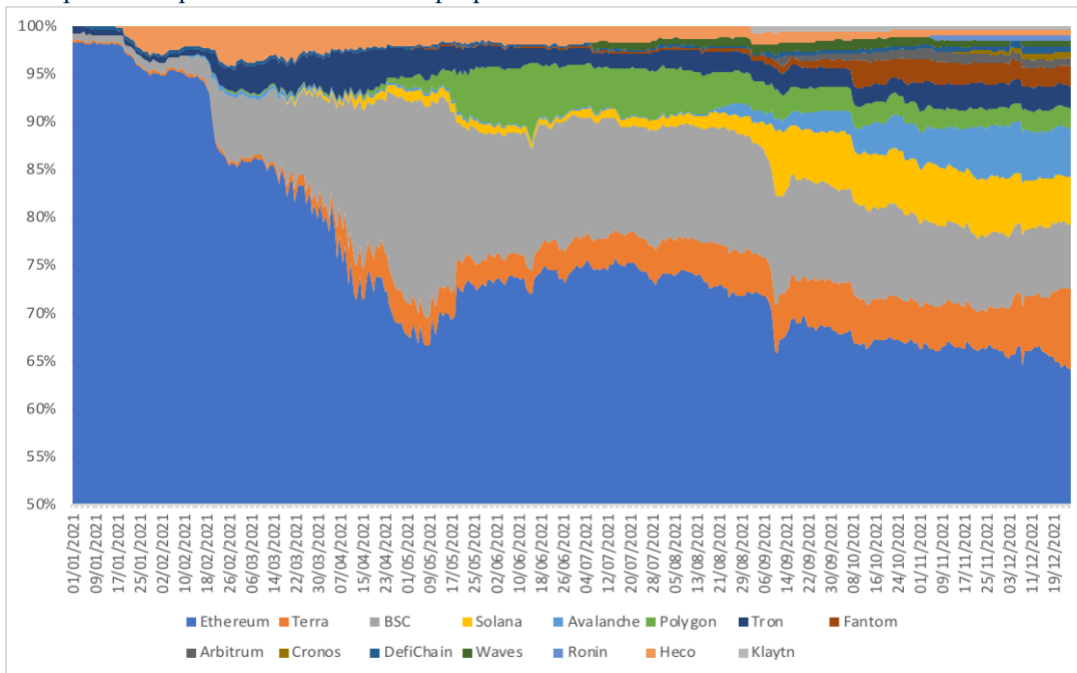
Source: DeFi llama



Graph 2-4: DeFi users

Source: dune analytics

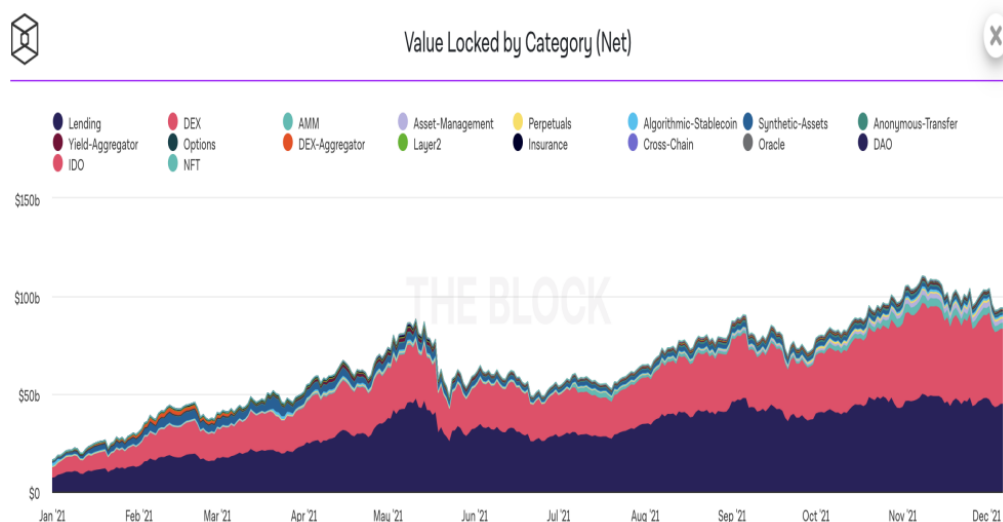
Graph 2-5: Top 15 blockchains TVL proportion



Source: huobi research, DeFi llama

2.2.1 Market Situation

Since 2021, the TVL of each track of DeFi has been increasing, and the largest proportion is still the dex and lending protocols. These two categories account for about 87% of the total TVL.



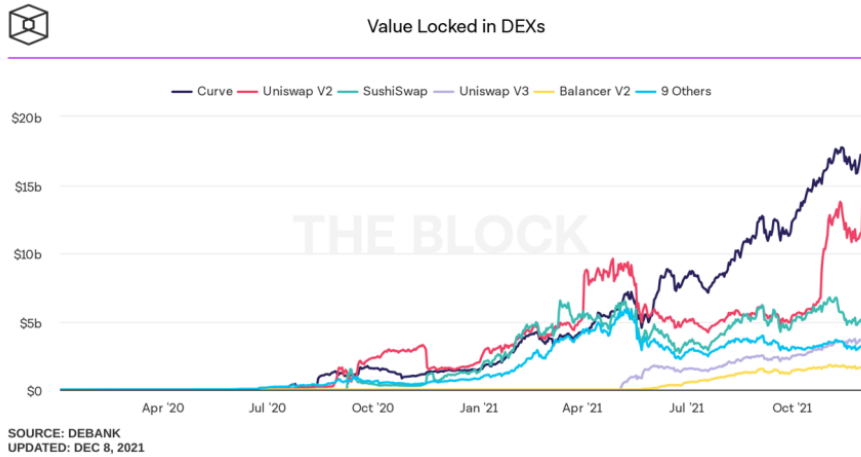
Graph 2-6: Value Locked by Category

Source: the block

2.2.1.1 DEX

Curve, Uniswap, and Sushiswap, which have the highest TVL among dexs on Ethereum, account for 94% of the total TVL, and the head effect is obvious. In the past year, the optimization of Dex has mainly focused on how to reduce slippage, reduce IL, improve capital efficiency of LP, and build order book dexs on Layer 2 or new blockchains.

Among the main dex protocols, the biggest update is v3 released by Uniswap. The v3 update mainly focused on capital efficiency, which also matches the theme of DeFi 2.0 in the fourth quarter of this year.

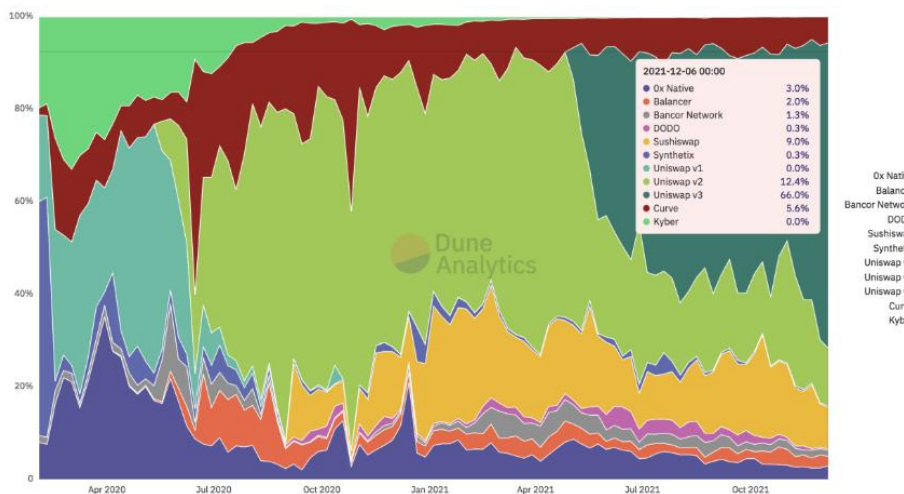


Graph 2-7: dex TVL

Source: The block

● **Uniswap v3**

On May 5, 2021, Uniswap V3 was officially launched. On the day of launch, the transaction volume increased sharply. The v3 transaction volume accounted for 10% of the total transaction volume of v3 and v2. Afterwards, it began to grow steadily, with a growing percentage in volume. As of December 6, Uniswap V3's transaction volume accounted for 66% of the main Ethereum dexs, an amazing growth rate.



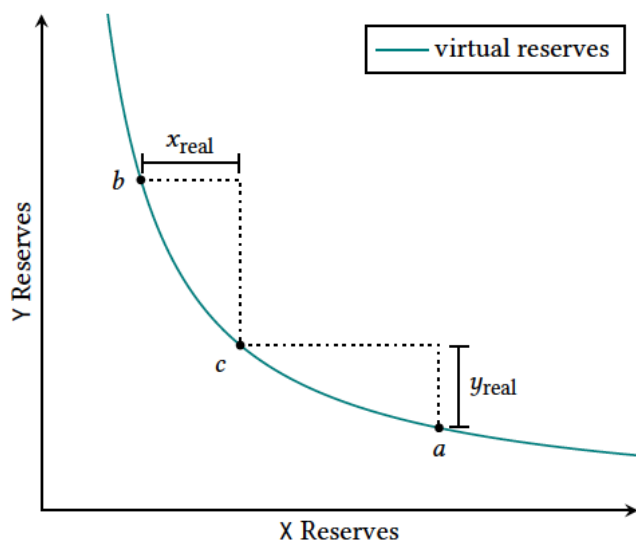
Graph 2-8: DEXs Proportion

Source: Dune Analytics

The core concept of Uniswap V3 is to propose Concentrated Liquidity: Provide liquidity within a specified price range.

In the previous version, the liquidity was uniformly distributed along $x*y=k$. This design can provide liquidity at any position within $(0, \infty)$, but it also means that many assets in the liquidity pool may never be used.

Uniswap V3 allows LPs to select a smaller price range to provide liquidity and concentrate capital in the more active trading range to improve the efficiency of capital.



Graph 2-9: Virtual Liquidity of Uniswap v3

Source: uniswap v3 whitepaper

In addition, another major change of Uni V3 is the introduction of a more flexible transaction fee pool. In Uniswap V1 and V2, each trading pair corresponds to a unique liquidity pool, and a unified fee of 0.3% is charged. Although this fee has been valid for most transactions in the past, it is too high for some trading pairs such as stablecoin pools, and too low for some pools such as tokens with high volatility or sparse trading volumes.

Uniswap V3 introduces multiple liquidity pools for each trading pair, corresponding to different handling fees. For the same trading pair, three different commissions are allowed to create a pool: 0.05%, 0.30%, and 1%. In November 2021, another 0.01% fee option was added.

As can be seen from the figure below, for the two stablecoin trading pairs, the largest trading volume is the lowest rate pool of 0.01%; when trading pair involves a high-volatility coin, the largest trading volume is 0.05 % or 0.3% fee rate pool. When there are particularly highly volatile high-risk altcoins in the trading pair, LP needs to obtain higher handling fees to compensate the possible IL, and it needs to trade in the pool with the highest rate of 1%.

#	Pool	TVL	Volume 24H	Volume 7D ↓
1	USDC/ETH 0.05%	\$244.18m	\$1.26b	\$8.45b
2	ETH/USDT 0.05%	\$59.00m	\$337.08m	\$2.16b
3	DAI/ETH 0.05%	\$45.30m	\$314.16m	\$1.65b
4	USDC/ETH 0.3%	\$433.44m	\$281.01m	\$1.53b
5	ETH/USDT 0.3%	\$195.38m	\$146.62m	\$915.98m
6	USDC/USDT 0.01%	\$181.37m	\$108.49m	\$849.17m
7	DAI/ETH 0.3%	\$126.26m	\$139.91m	\$814.09m
8	FEI/USDC 0.05%	\$35.45m	\$119.38m	\$655.77m
9	DAI/USDC 0.01%	\$62.58m	\$80.47m	\$483.46m
10	WBTC/ETH 0.05%	\$71.52m	\$46.09m	\$356.75m

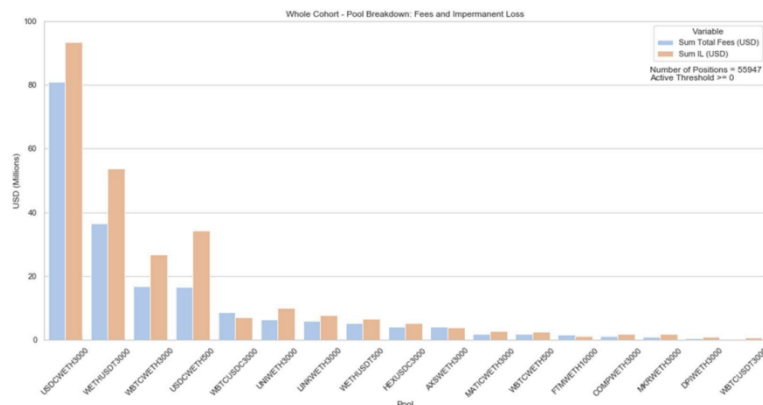
Graph 2-10: Top 10 Trading Volume Pools in Uniswap V3

Source: uniswap

One of the highlights of Uniswap V3 is that concentrated liquidity improves capital efficiency. However, concentrated liquidity only changes the structure of the internal liquidity supply of the pool, and does not change the total liquidity supply and demand of the pool. The total capital efficiency of the pool remains unchanged.

This also creates unseen liquidity competition. More professional LPs can set a more precise liquidity range to obtain more transaction fees; while the capital efficiency of ordinary LPs is lower than that of V2, due to the setting of the liquidity range at an unreasonable level.

According to a report released by Topaz Blue and Bancor Protocol on November 17, 49.5% of liquidity providers on Uniswap v3 had generated negative returns due to impermanent losses.

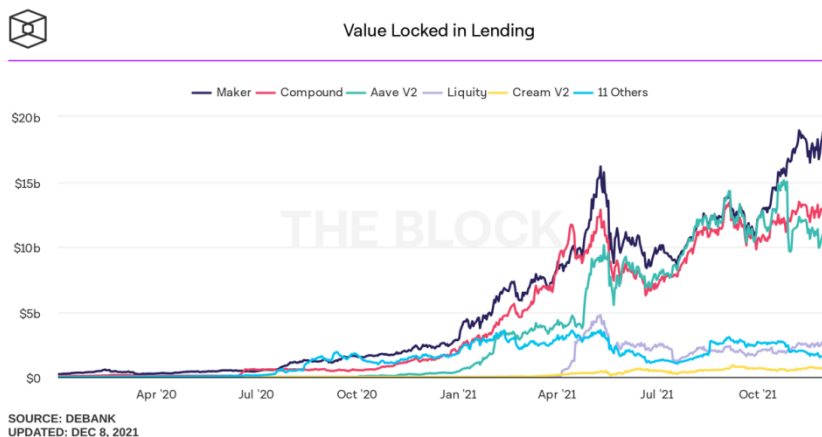


Graph 2-11: Fees and IL of Uniswap V3

Source: Topaz Blue、Bancor

2.2.1.2 Lending

Maker, Compound, and Aave, the three biggest lending protocols on Ethereum, account for more than 88% of TVL lending. In the past year, the optimization of the lending protocols has mainly focused on the introduction of cross-chain functions, risk isolation between different asset pools, and higher LTV. The biggest update of mainstream lending protocols is Aave v3.



Graph 2-12: Value Locked in Lending

Source: the block

- Aave V3

On November 5, 2021, Aave released the V3. There are three main improvements in the V3:

First is portal, which allows assets to cross chains within the protocol. Portal burns a Token on the original chain and mints them on the target chain by bridging through Connex, Hop protocol, Anyswap, xPollinate and other solutions. This makes it easier for users to realize asset cross-chain.



Graph 2-13: Aave V3 Portal

Source: Aave

The screenshot shows the Aave V3 eMode interface. It features a grid of asset selection cards, each displaying the asset name, Collateral Factor (CF), and Liquidation Penalty (LP). Below the grid, there are sections for 'Stablecoin eMode', 'ETH eMode', and 'BTC eMode', each with their respective CF and LP values. A legend at the bottom defines 'Normal Mode', 'eMode', 'CF = Collateral Factor', and 'LP = Liquidation Penalty'.

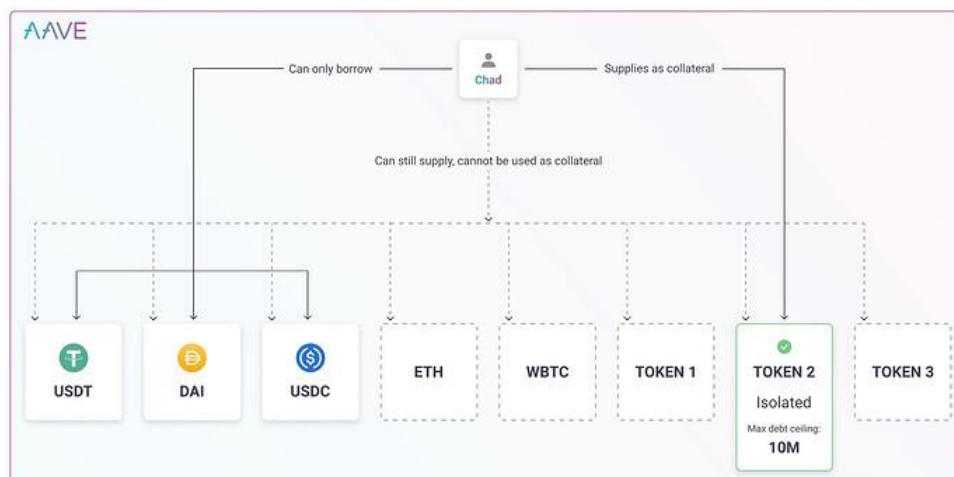
Asset	CF	LP
USDT	0%	0%
DAI	75%	5%
USDC	80%	5%
ETH	82%	5%
stETH	70%	10%
aETH	70%	10%
WBTC	60%	10%
renBTC	50%	10%
Stablecoin eMode	98%	1%
ETH eMode	95%	1%
BTC eMode	95%	1%

Graph 2-14: Aave V3 eMode

Source: Aave

The second is the eMode, which greatly improves capital efficiency. V3 will classify assets so that users who temporarily need other tokens of the same type (such as mortgaging USDT to borrow DAI, mortgaging ETH to borrow stETH) can use a larger LTV.

The third is asset risk isolation. When the community submits a governance proposal to create a new asset market on V3, they can choose to list the assets as "isolated collateral", so that users of these "isolated" assets can only borrow Aave Governance's licensed stablecoins, and designated debts upper limit is set for borrowing to achieve effective isolation of borrowing risks. This enables some high-risk long-tail lending in the future. Previously, Rari capital had also made more attempts in long-tail lending.



Graph 2-15: Aave V3 eMode

Source: Aave

In general, Aave v3 does not have a high level of innovation, but the cross-chain function of portal is worthy of some attention. Taking the Dai bridge of Maker into account, when protocols with strong liquidity start to introduce the cross-chain function, will it pose a threat to the existing cross-chain applications in future? Moreover, Curve, which is already under multi-chain deployment, has high stable currency liquidity; it is also a quality candidate for cross-chain bridge.

2.2.2 DeFi2.0

After Compound put forth the "borrowing is mining" maxim, it defined the DeFi summer, making liquidity mining the most commonly used mechanism of the DeFi protocol. However, liquidity mining is a double-edged sword with its downside.

Recently, several protocols have implemented new improvements on this basis, advancing the concept of DeFi 2.0. Compared with DeFi 1.0, DeFi 2.0's main improvement is around liquidity and capital efficiency:

A. Better liquidity solutions

Although the liquidity mining started by DeFi1.0 was unprecedented and solved the early

liquidity problems, liquidity providers are ruthlessly mining and selling machines without any loyalty. Once the income drops, liquidity will immediately dry up. Moreover, the high liquidity subsidy caused inflation of the mined coins, which led to price stagnancy in the later period.

DeFi 2.0 proposed two innovative liquidity solutions, POL and Laas, to make up for the shortcomings of DeFi 1.0's liquidity solutions:

- Protocol-owned-liquidity (POL)

The POL (protocol-owned-liquidity) enables protocols to have its own permanent liquidity at a lower cost and lock this part of the liquidity permanently. This model addresses the disadvantages of the liquidity mining model that relies on high subsidies to maintain liquidity, which is insufficient for a long time.

The first to propose this concept is the bonding mechanism in OlympusDao. Users can use OHM/DAI, OHM/ETH, OHM/LUSD and other LP tokens in exchange for OHM at a certain discount price. There is no redemption mechanism for bonds, which transfers these LPs' liquidity to the protocol and locks it up permanently. Judging from the results of the OHM operation, more than 95% of the liquidity of the OHM pools on Sushi and Uni is owned by the protocol.

Olympus Pro also provides a platform for bond sales, selling liquidity lock-in solutions to other projects. This enables other protocols to similarly sell bonds on this platform to obtain POL.

Bonds	Payout Asset	ROI	TBV	
BANK-ETH SLP Get LP	\$27.65 \$164.15 Market	493.60%	\$495,017	Sold out
INV-DOLA SLP Get LP	\$847.41 \$879.75 Market	3.81%	\$435,000	Bond
ALCX-ETH SLP Get LP	\$436.94 \$451.97 Market	3.43%	\$3,910,170	Bond
XRUNE-ETH SLP Get LP	\$0.4075 \$0.4170 Market	2.31%	\$181,463	Bond
PENDLE-ETH SLP Get LP	\$0.7077 \$0.7203 Market	1.77%	\$1,453,412	Bond

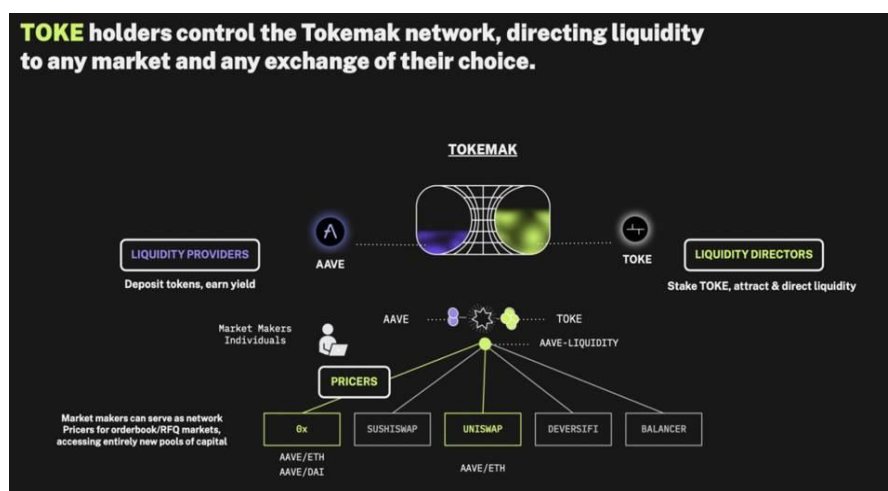
Graph 2-16: Olympus Pro Bond Sales

Source: Olympus Pro

- Liquidity-as-a-service (Lass)

The Liquidity-as-a-service (Laas) mode refers to the provision of services that increase liquidity for other protocols. This mode can help some start-ups provide liquidity. Start-ups often need to spend a lot of resources and energy to solve the challenge of low liquidity, and the resultant cost is very high regardless of whether it is the introduction of a centralized market maker or through yield farming. Laas has solved this problem.

The representative of this mode is Tokemak, a liquidity guidance protocol. Tokemak introduces the role of LD (liquidity director) , allowing LDs to stake TOKE tokens to control the liquidity of assets LPs deposited. Projects can stake TOKE tokens to obtain continuous liquidity at a relatively low cost.



Graph 2-17: Tokemak Mechanism

Source: Tokemak

B. Higher capital efficiency

Unlock liquidity of interest-bearing assets

In DeFi 1.0, users who hold interest-bearing assets such as xSUSHI, veCRV, yvVault, etc., can only receive dividends or voting governance rights of the corresponding lock-up protocols. However, because it does not support market circulation or transactions, many of the user's interest-bearing assets can only be stored in the wallet and cannot be used efficiently. By releasing the liquidity of these idle assets, DeFi 2.0 enables higher capital utilization.

The most representative protocol is Abracadabra, where users can deposit interest-earning assets such as yvUSDT and xSUSHI, and then use the interest-earning assets as collateral to mint the stablecoin MIM (Magic Internet Money). MIM, like USDT, DAI, USDC and other stablecoins, allows circulation and trading in the market. After getting MIM, users can start mining in mim-2crv of Curve, or change into USDT, deposit in YFI, get yvUSDT and then borrow MIM from Abracadabra for a revolving loan. This way, the originally idle interest-earning assets are utilized, thereby increasing the utilization rate of capital assets.

Collateral	LTV	Initial Max	Interest
yvWETH	75%	300M	1.5%
yvUSDC	90%	300M	0.8%
yvYFI	75%	80M	1.5%
yvUSDT	90%	300M	0.8%
xSUSHI	75%	80M	1.5%

Graph 2-18: Abracadabra LTV

Source: Abracadabra

The above table shows Abracadabra’s LTV (loan-to-value). Take USDC as an example, with an LTV of 90%. When this revolving loan mode is in effect, if 100 USDC is stored in YFI, the yvUSDC obtained works out to $100 * 90\% = 90\text{MIM}$ in Abracadabra. When the MIM is changed to USDC and then pledged in YFI, the yvUSDC obtained can be loaned to $90 * 90\% = 81\text{MIM}$, which can continue to be revolved. If the leverage is full, the summation formula of the geometric sequence shows that a total of $90 / (1 - 90\%) = 900\text{MIM}$ can be borrowed, that is to say, the amount of capital can be enlarged by 9 times, all between stable currencies. In theory, there is no liquidation risk for borrowing.

C. Future cash flow advanced

DeFi 2.0 also improves capital efficiency by using future mining revenues and forwarding future cash flows.

The most representative example is Alchemix's "self-repaying loan", which allows users to deposit DAI in Alchemix and mint 50% of the deposited alUSD. The deposited Dai will be deployed to the Yearn Finance v2Dai vault to earn income, and used to repay the alUSD debt.

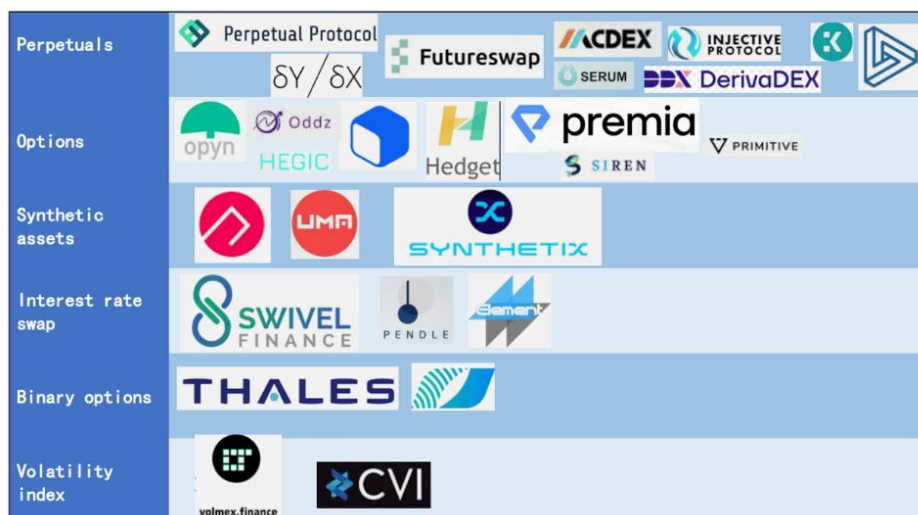
With sufficient time, the loan will automatically be paid off. There is no liquidation risk, and the loan setting is very flexible. There is no shortest lock-up time or expiry date, while the debt can be repaid at any time to exit the position. Through this mode of forward cash flow in the future, users are allowed to use future interest income in advance, which improves the efficiency of capital turnover.

In general, DeFi 2.0 has made some small improvements and micro innovations to the original DeFi protocol mainly in terms of liquidity and capital efficiency. In addition, the role of the community has become more significant under DeFi 2.0, and communities have become more tight knit.

2.3 The Emergence of On-chain Derivatives

On-chain derivatives can be divided into six categories: perpetual contracts, options, synthetic assets, interest rate derivatives, binary options and volatility indices. Among them, perpetual contracts are the most mature and accepted.

On-chain derivatives have five major advantages: there is no centralized exchange operator, thus the cost is lower in the long run; no permission is required for access; user-owned funds, no counterparty risk; no license for trading varieties; no withdrawal restrictions or transaction size restrictions. However, due to the small trading volume of some derivatives on-chain currently, there are problems such as poor trading experience, insufficient liquidity, and parties' liability is not clear when issues are encountered.



Graph: 2-19: Derivatives Overview

Source: Huobi Research

2.3.1 Perpetual Contracts:

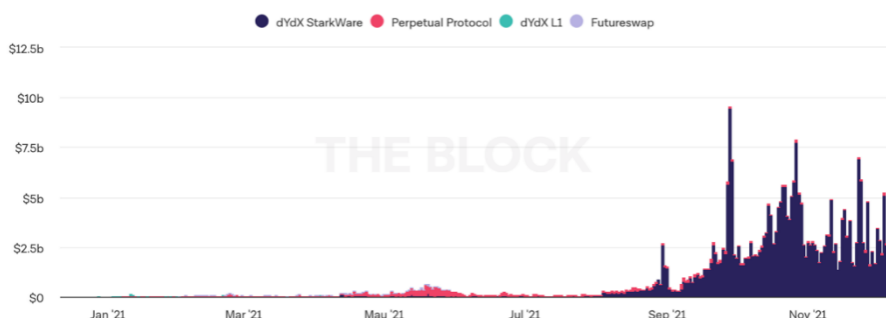
First proposed by BitMEX in 2016, perpetual contracts have the characteristics of zero rollover requirement and the concentration of liquidity. Representative products include dydx, Perpetual Protocol, Futureswap, etc.

The working principle of the stabilization mechanism can be summarized as follows. Long positions in perpetual contracts need to pay short positions' Funding Fees daily. The calculation formula of the fund cost is (mark price-Index price): mark price is the transaction price of the contract; index price is the actual price of the underlying asset. If the contract price is much higher than the price of the underlying asset, the long position will pay high Funding Fees, pushing them to sell the contract, thereby pulling down the contract price, and making the contract price consistent with the spot index price.

Project: dYdX

dYdX is the first decentralized derivatives exchange that launched products using an order book model. The bottom layer is built on the second layer of Ethereum network Starkware, and its operating model is closer to that of a centralized exchange than other DEXs. At present, due to the promotion of transaction mining and domestic supervision at the end of September, a large

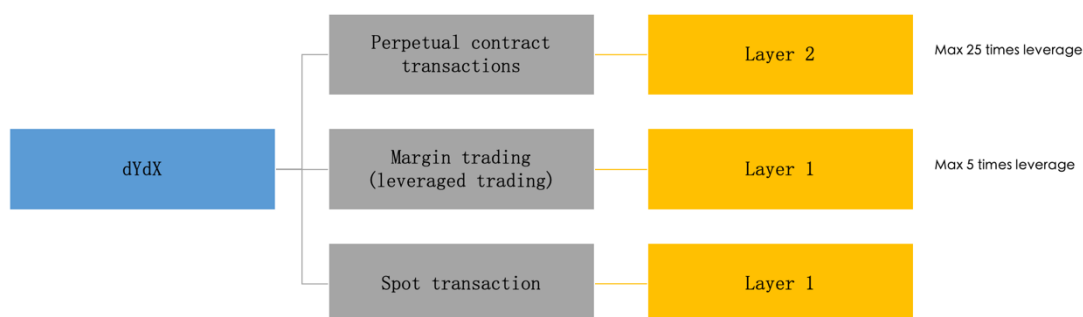
number of users have poured into the derivatives DEX, and the end of epoch1 has caused a surge in transaction volume, pushing dYdX to first place in the ranking of derivatives DEXs.



Graph 2-20: Perpetuals trading volume

Source: The Block

dYdX includes perpetual contract trading, margin trading and spot trading. The core matching link in the transaction business is completed off-chain, after which Stark Contract will package the data on the chain. In essence, this link is not fundamentally different from CEX. Special market participants Maker and Taker participate in the transaction. This is also the key reason why dYdX's trade experience is on par with that offered by a CEX.



Graph 2-21: dYdX Product Line

Source: The Block

2.3.2 Options:

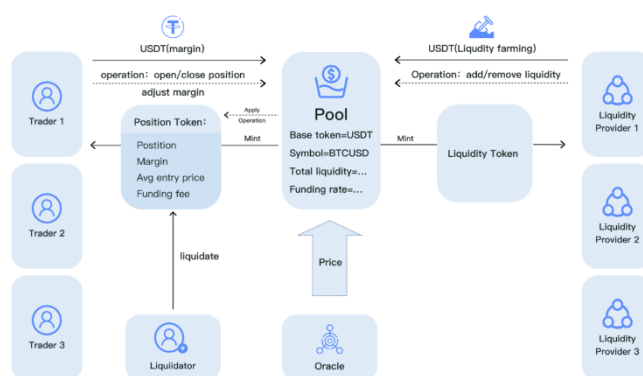
Oryn is a representative options project that occupies most of the trading volume share of on-chain options. The integration protocol, Ribbon Finance built by Oryn, has promoted an increase in option trading volume. Ribbon Finance packages options into a yield product, which

addresses two challenges faced by options in DeFi, namely, centralized liquidity and catering to retail investors. The Perpetual Vault template provided by Oryn allows anyone to create the options they need.

Perpetual Options:

Perpetual options were proposed by FTX founder Sam Bankman-Fried and researcher Dave White of crypto agency Paradigm in May 2021. The basic principle is similar to that of a perpetual contract. The only difference is that the Funding Fee is calculated by (mark price-payoff), which is the difference between the contract transaction price and the option return. For example, when the spot price of ETH is \$2900 (Index price), the strike price of the option is \$3000 (strike price); when the transaction price of the option is \$150 (mark price), the return of the option is \$100 (payoff). According to the above formula, the capital cost is $\$150 - \$100 = \$50/\text{day}$.

Deri Protocol is the first agreement to implement perpetual option products. Using a mechanism similar to Uniswap, a pool of derivatives is deemed as the counterparty of the trader. The liquidity pool serves as a liquidity medium, allowing traders and LPs to conduct basic token transactions. Position tokens and liquidity tokens represent the trader's positions and LP's liquid stocks, respectively. Since the agreement went live in September, the total transaction volume in the following three months has reached \$13 billion.



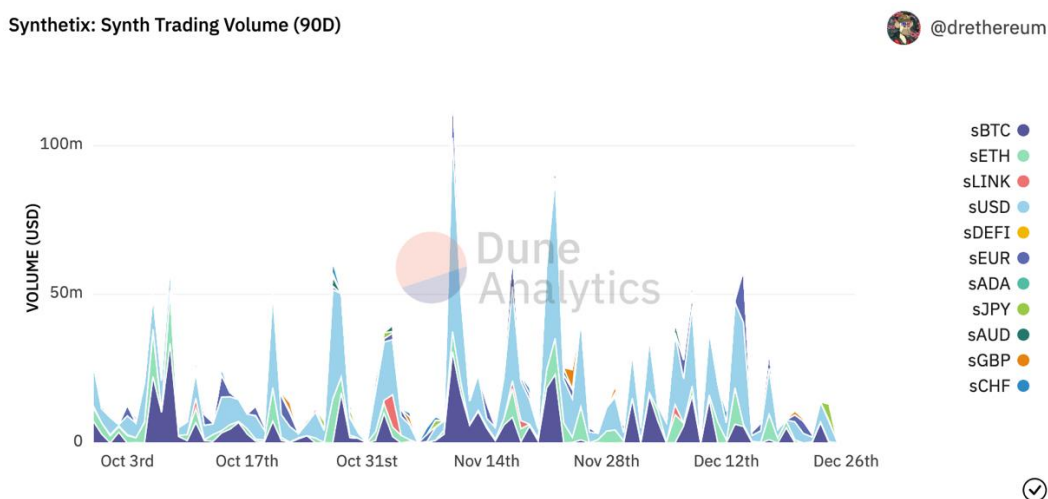
Graph 2-22: Deri Protocol Operating Mechanism

Source: Deri protocol whitepaper

2.3.3 Synthetic Assets:

Synthetic assets are encrypted assets that are tokenized by a combination of one or more assets/derivatives. In the early stages of DeFi, synthetic assets were represented by stablecoin DAI and cross-chain asset WBTC. Since then, synthetic assets based on stocks, currencies, precious metals and valuable data have become more prevalent. The idea is to provide investors with exposure to multiple asset classes, without the requirement to hold the underlying assets or trust the custodian.

In the field of derivatives, synthetic assets are another subdivision after perpetual contracts and options. According to data from DeFillama, the total TVL of the representative projects Synthetix, UMA and Mirror amount to \$2.64 billion. The average daily trading volume of synthetic assets on Synthetix is usually less than \$50 million; sBTC and sETH are the most widely used assets. The total market value of mAssets in Mirror has reached 300 million UST, with an average daily transaction number of more than 30,000, of which mDOT is the most popular asset. UMA has deployed synthetic assets with 72 projects, and decided to launch synthetic assets through token voting. There are 17,000 UMA holding addresses with a circulating market value of \$680 million.



Graph 2-23: Synthetix trading volume

Source: Dune Analytics

2.3.4 Interest Rate Swap:

Interest rate derivatives refer to derivatives based on interest rates, which are usually used as hedging tools to protect investors from changes in market interest rates. In the traditional financial market, due to the high volatility of lending interest rates and the low level of risk aversion among most investors, the market of interest rate derivatives has become the largest. In DeFi, however, the income mechanisms of the loan agreement and the income aggregator are almost all floating, which is unfriendly as a hedging tool and accounts for the relatively small market share of interest rate derivatives. With the emergence of more fixed interest rate agreements, the future of the interest rate derivatives market looks brighter.

2.4 Crypto Compliance Business Continues to Rise

Starting 2020, global institutions have continued to pour into the crypto market, bringing unprecedented prosperity to the market and delivering virtual asset investments to the mainstream. At time of writing, the total market cap of the crypto market has exceeded \$2.22 trillion, with an increase of over 300% in the last year.

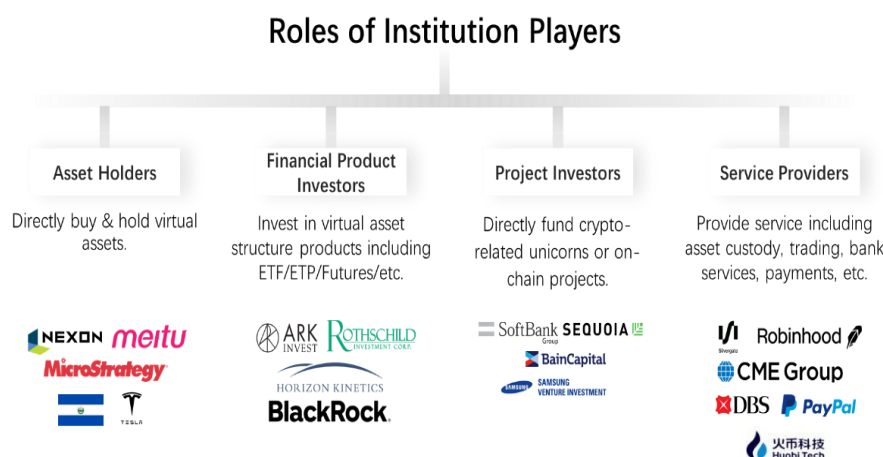


Graph 2-24: Market Cap of Cryptocurrencies

Source: tradingview

Institutions participating in the crypto market span the gamut, from crypto asset investors to crypto service providers. The number of institutions investing directly or indirectly in the crypto asset market is growing. According to Coinbase’s (NASDAQ: COIN) Q2 2021 report, its

institutional user transaction volume reached \$317 billion, accounting for 68.6% of its total transaction volume. Crypto asset management giant Grayscale’s AUM in Q3 2021 reached \$38.7 billion, with institutional users accounting for about 90%. With the influx of more users, especially institutional clients, compliance has become more vital.



Graph 2-25: Roles of Institutional Players

Source: Huobi Research

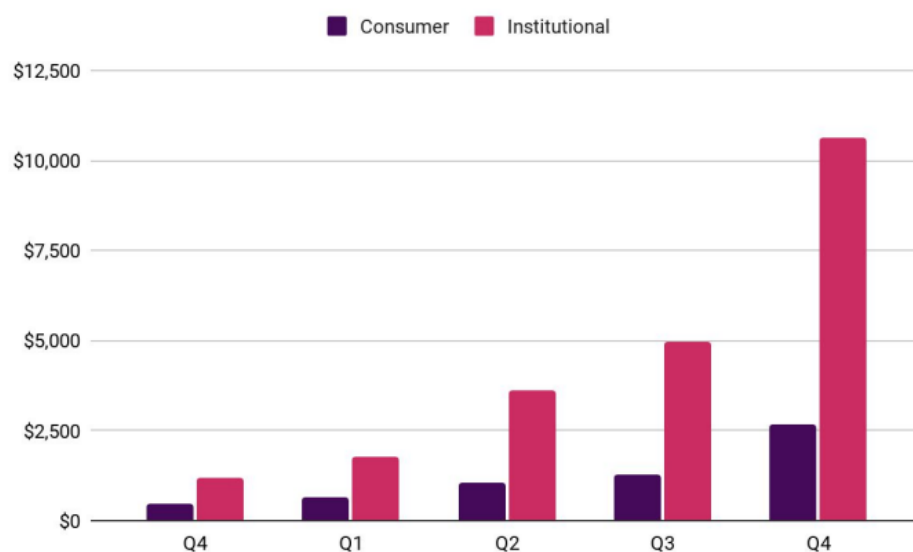
Due to its stable regulations and the influence of traditional financial institutions entering the market as investors or service providers, the U.S. has more diversified products and services, and has formed supporting services for prime brokers such as asset management, lending, and OTC. All these services have experienced rapid growth that led to the emergence of industry leaders.

This year, Huobi Tech has also made great progress in its compliance business, with its blockchain revenue increasing by more than 5 times year-on-year. Huobi Asset Management has obtained the approval of the Hong Kong Securities Regulatory Commission to manage a 100% virtual asset portfolio and launched five fund products. Huobi Trust has also registered as a Hong Kong trust company and launched its virtual assets custody services. As of the end of September in 2021, its assets under custody exceeded US\$2 billion. Huobi Lending, a subsidiary of Huobi Brokerage, has also begun to provide over-the-counter lending services to institutional clients.

2.4.1 Lending

• User profiles and demands

The main users of CeFi lending include individuals (small bulk), high-net-worth customers, miners, and professional institutions including funds, market makers, etc. From the perspective of capital scale, institutions, high-net-worth customers, and miner groups are the main group.



Graph 2-26: 2019Q4-2020Q4 Active Debt

Source: CredMark 2020 year end report

According to the CredMark report, the CeFi lending market¹ had an active loan balance of \$13.3 billion as at end 2020, of which retail loans grew by nearly 450% year-on-year, and institutional loans grew by more than 800% year-on-year – significantly higher than the retail-end growth. The proportion of institution loan balance during the year rose from about 70% to 80%.

The aforementioned types of customers have different appeals for lending, and the platform generally develops customized products and provides additional services for its main target customers (especially non-retail customers). The lenders' demands are basically the same: they

¹ 《TheCryptoCreditReport Q4-2020》: Private Lending, the statistical source is basically CeFi lending, so it is classified as CeFi lending in this article

generally hope to receive interest income while holding the token; the borrowers' motives for borrowing differ greatly on the basis of their propensity to hold assets.

	Mortgage loan (borrowing)	Leveraged trading (borrowing)
Individuals	Short-term demand for other currencies, such as participating in liquidity mining, obtaining IDO qualifications, etc.	Transactional requirements, similar to contracts and ETP
High-net-worth customers	Fiat liquidity; demand for other currencies, etc.	Transactional requirements
Miners	Fiat liquidity; hedging, etc.	Hedging
Fund/market makers	Balance positions among currencies, etc.	Balance positions among currencies; hedging, etc.

Table 2-1: Demands of Borrowers

Source: Huobi Research

CeFi mortgage loans rely on its more "customized" services to meet the specific needs of different user groups, thereby generating loyalty. Among them, credit enhancement, risk sharing, fiat liquidity, privacy, etc. are currently difficult to provide under DeFi lending products.

Compared with mortgage loans, leveraged lending in CeFi can provide higher capital leverage. Customer demand is mainly based on transactional needs, similar to contracts and ETP, where institutions and experienced traders account for a larger share. At the same time, because leveraged lending can provide a higher utilization rate of capital, miners and market makers will also use it for hedging.

- Compliance

From the perspective of compliance, the current regulatory framework for CeFi lending is still unclear. Each region is basically classified under the traditional financial lending licenses which are mainly for services related to fiat. Regulation of crypto asset lending is absent due to the lack of regulation on crypto assets themselves.

	MTL	MSB	U.S. states	HK	overseas
	borrowing				
Genesis	/	BitLicense	/	/	PSA 豁免
BlockFi	20	2	14	/	/
Nexo	5	1	14	CR	Canada MSB; Australia ASIC; AUSTRAC registration
OSL	/	/	/	NO.1 /NO.7	PSA exemption
Matrix	/	/	/	TCSP	PSA application
Copper	/	1	/	/	British CiSP member

Table 2-2: Licenses of Some CeFi Lending Companies

Source: Huobi Research

Based on the licenses of several mainstream CeFi lending platforms, it is seen that American companies such as BlockFi and Nexo have obtained lender licenses in different states, but industry leader Genesis has not disclosed if it has a lending license. Combined with the current lack of consistency in crypto supervision across regulatory departments in United States, it remains unclear if a lending license is necessary.

On the whole, the crypto lending business has a well-defined financial model and target market. Companies with user flows, brand reputation, and licenses can launch products quickly. But it also means a commoditized market which will lead to intense competition. In addition, industry regulation remains in its infancy which translates to more uncertainty in compliance.

2.4.2 Custody

- **User profiles and demands**

In crypto assets custody, the risk of hacker attacks resides in online custody, while the risk of hard disk loss is present in offline custody. For institutional investors, it is therefore more risky

to carry out the function of custody on their own; professional custody services are required to ensure asset safety while facilitating management and transactions. The US Securities and Exchange Commission also stipulates that institutional investors holding client assets of more than \$150,000 must deposit their assets with a "qualified custodian." This has given rise to a high demand for custodial services.

The users of custodial services are mainly cryptocurrency exchanges, OTC counters, market makers, funds, lending companies, payment processing companies and other institutions.

The providers of custodial services are mainly hardware wallet service providers, exchanges, and traditional financial institutions, such as trust service providers and banks. Services include asset custody, asset reporting, investment supervision, financial reporting, and record keeping, etc.

● **Compliance**

Custody is a relatively basic service. There are some differences between the various compliance agencies in terms of technical security and whether the assets are insured, but the overall difference is minor.

The main competitive point of differentiation between various institutions lies in ancillary services linked to the custody basis, such as support for transactions, asset management, and DeFi support.

Company	Customer	License	Technology	Financial Security
Genesis	Institutions	Bitlicense	Cold storage and MPC hybrid technologies	Not mentioned
Gemini	Institutions + Individuals	Trust license of NYDFS	1, Completely offline cold storage. 2, Multi-signature technology, role-based governance protocol, multi-layer biometric access control, physical security	Regularly accept audits and comply with the capital reserve requirements and compliance standards of

				traditional financial institutions.
BitGo	Institutions	Trust license of banking department in South Dakota	Multi-signature, multi-user policy control, key management, advanced security configuration	Regularly accept the audit of the management agency, Comply with compliance standards in terms of capitalization, anti-money laundering procedures, confidentiality, auditing, reporting, and storage.
Coinbase	Institutions	New York State Chartered Trust, BitLicense	1, Completely offline cold storage. 2, Security settings: M of N signature consensus, address whitelist, duress protocol settings	Regularly accept external financial audits

Table 2-3: custodial companies

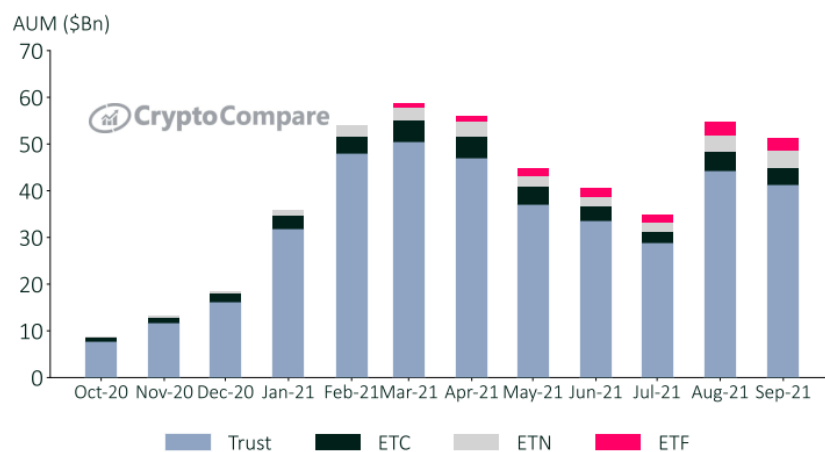
Source: Huobi Research

2.4.3 Asset Management

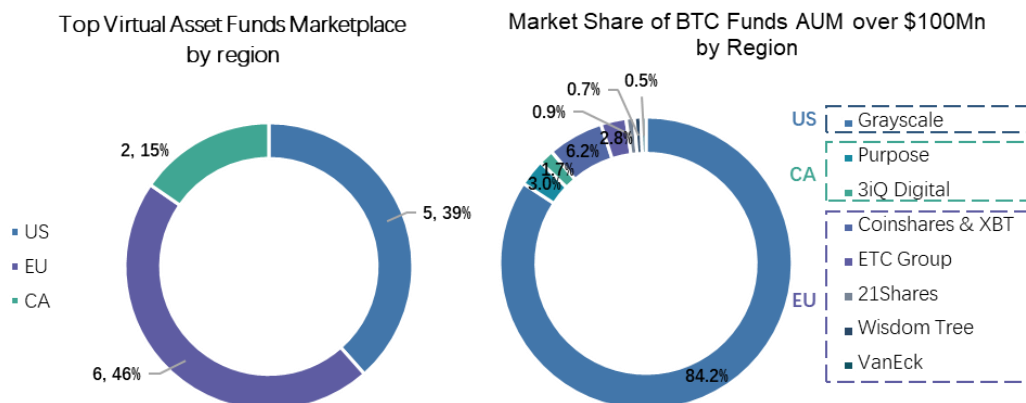
The overall market for asset management remains small, but the growth rate is quite high and products of different forms are emerging one after another. As of Q3 21, the market grew by nearly 600% to \$51.4 billion in the past year, and trust products have long accounted for more than 80% of the market. The continued market dominance of trust products stems from the taxation and audit benefits for institutions that have held virtual assets with a financial product exposure, and the lack of storage problems and custody costs for institutions that do not hold assets.

In terms of geographic distribution, the current asset management products worth over \$100 million are mainly located in the US, Europe and Canada, with more private equity products in the US. For BTC products exceeding \$100 million, the US, Canada, and Europe account for 84.2%, 6.8%, and 4.7% of assets under management respectively. Grayscale has a monopoly in the US market.

Graph 2-27: Total Cryptocurrency Market Asset Management (\$Bn)



Source: Cryptocompare



Graph 2-28: Geographical distribution of products

Source: Huobi Research

The needs of institutions continue to drive innovation in the traditional financial and crypto industries. Examples include the game publisher's securitization token EXO, which was recently approved by BaFin in Germany, and the carbon neutral tokens (CNTs) launched by Cyberdyne Tech Exchange (CTX) in Singapore, etc. The crypto world also supports physical asset mortgages for on-chain stablecoin lending Project Centrifudge, NAOS, etc.

On the whole, the rapid development of the virtual asset industry in the US, Canada, Europe and other regions is mainly due to the rapid progress of local compliance and the large number of upstream and downstream service providers in the industry. This has ensured that customers have complete and stable supporting services throughout the product life cycle, and the overall compliance risk is small. However, the Asian market has a large user base, and the overall supporting services are not complete. In addition to transactions, small market size also means a lot of room for development.

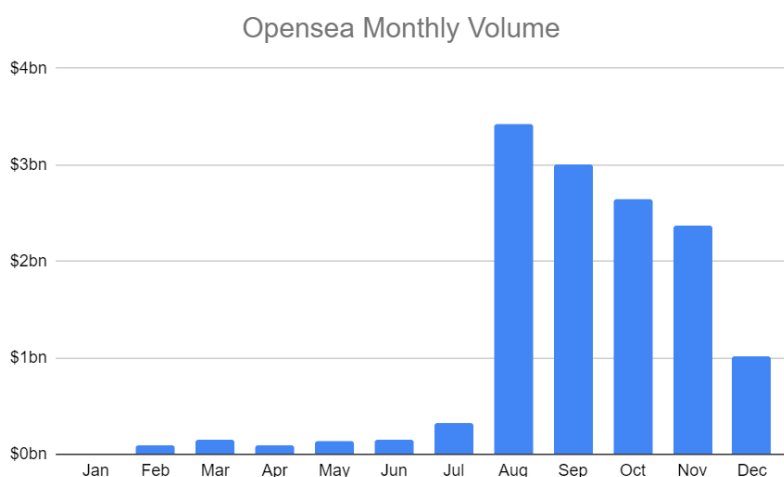
Chapter 3. Emerging Sectors

3.1 The New Primitive of Mainstream Culture: NFTs

3.1.1 The Status of the NFT Market

Non-fungible Token, or NFTs, are on-chain tokens that are immutable and irreplaceable. The uniqueness and immutability of NFTs place them in the ownership definition of scarce digital assets.

2021 is the year that NFTs became mainstream. August and September witnessed 10 times growth in NFT trading volume and monthly active users on major NFT trading platform Opensea.



Graph 3-1: Opensea Monthly Trading Volume

Source: Dune Analytics, Huobi Research

NFTs currently fall into three categories: art, picture for profile (PFP) and game props. Examples of art NFTs include Beeple's various paintings and the Artblocks collection. Art NFTs are created through an AI algorithm that forms patterns with simple content; the final work is often abstract, and purchased through auction at a high price by modern art collectors. An example of PFP NFTs is the Bored Ape Yacht Club collection. They usually consist of a set of fixed sizes, each with randomly generated rare attributes, and minted in a blind box style

(fixed price, but the traits are unknown before minting). PFP collections can create decent returns for lucky blind box winners; therefore they tend to have a strong community and can quickly become popular among crypto natives. The PFP market is the most hyped one. The most representative game prop NFT is Axies from Axie Infinity. Players can send their Axies to acquire tokens in a PvP battle, or use them to breed new Axies. As game props can produce revenue for players in games, they are comparatively more demanded and liquid.



Graph 3-2: Popular NFTs

Source: Opensea, Huobi Research

Other market hotspots include the bottom-up style composable NFTs of loot and rarity, as well as land NFTs from metaverse projects Decentraland and Sandbox.

3.1.2 Why are NFTs Going Mainstream?

We believe that four reasons led to the 2021 NFT hype:

1. NFTs satisfies all requirements of property rights: they are exact (the owner and the content can be universally verified), specific (NFTs are unique), can be transferred and operated upon (NFTs are programmable). Such property rights are the necessary building block of an efficient market.
2. Through NFTs, IPs can for the first time accrue value in the digital space. NFTs are so far the crypto primitive that are most compatible with the non-crypto world. The proofs are non-crypto native IPs, like Coca Cola issuing their NFT vendor machines, and NBA star Stephen Curry's expensive purchases.



Stephen Curry ✓
 @StephenCurry30
 Believer. Husband 2 @
 brother Warriors from



Graph 3-3: NFTs in the Non-crypto World

Source: Opensea, Huobi Research

3. NFTs are social functions. The big names of crypto are usually the buyers of expensive NFTs, like the \$70 Million purchase of Beeple’s work by the Indian founder Metakovan from the NFT fund Metapurse. The theory of Maslow’s hierarchy of needs divided human pursuits into 5 categories, and when a lower need has been met, the next need on the hierarchy becomes the focus of attention. Indeed the lower needs are being met for the big names of crypto, but not the higher needs of esteem and self-actualization. Therefore, as NFTs went mainstream, big crypto players spent heavily to fulfill these two needs.

4. Because of the points above, NFTs are ideal speculation targets. Crazy returns of top NFT projects were created by speculative capital, and retail buyers flocked into the market, scaling the participant size. Many NFTs also saw decent returns due to their blind box sale mode.

3.1.3 NFTs’ Problems and Potential Solutions

Since October, there has been a decline in the NFT market. Although the volume is still higher than in previous years, many NFTs are seeing volatile floor prices.



Graph 3-4: Floor Price of Bored Ape Yacht Club

Source: Opensea, Huobi Research

We think that the high volatility of NFT market is due to three problems:

1. Weak price discovery. As top NFT projects have low supply and high prices, they are very illiquid and tend to have volatile prices. There are NFT fractionalization solutions such as Fractional and Unicly, which lock NFTs into smart contracts and mint tokens respectively; nevertheless, those tokens may face the risk of being designated securities. Apart from fractionalization, there are also solutions that price through loans (P2P loans from Pawn.fi), and through derivatives (floor price perpetuals from Paradigm, which tracks floor prices of certain NFT collections, and NFT holders can purchase perpetuals to hedge against volatile floor prices without selling their NFTs),
2. NFT infrastructure is weak and needs to be improved. Most NFTs are on the expensive layer 1 of Ethereum. The development of alt-L1s and L2s will vastly reduce the costs of NFT adoption.
3. NFTs lack practical value. Apart from game equipment, most NFTs are backed by market hype and are very illiquid in a bear market. We recognize that NFTs are a primitive of applications: creator economy, games and metaverse as open, permissionless, interoperable content platforms will bring various fundamentals for NFTs, and NFTs will in return incentivize content creation, which is crucial for these scenarios.

3.2 The Booming of Meme Culture

Meme tokens were a hot topic in the cryptocurrency market this year. It created the biggest annual increase of the year (SHIB, 540,000x), sparked a buzz among a group of entrepreneurs, investors and cryptocurrency practitioners, attracted a large number of newcomers to the market, and appeared frequently in media reports both inside and outside cryptocurrency circles. The Meme culture behind this trend has played a crucial role, and below we explore the reasons.

3.2.1 The Meaning of Meme Culture

The meme is a basic unit of culture that is transmitted through imitation and can be understood

as the symbols or genes of culture. It was introduced in 1976 by British evolutionary biologist Richard Dawkins in his book, *The Selfish Gene*, and refers to "that which is analogous to the role played by genes in the evolution of organisms in the transmission of such things as language, ideas, beliefs, ways of behaving, etc."

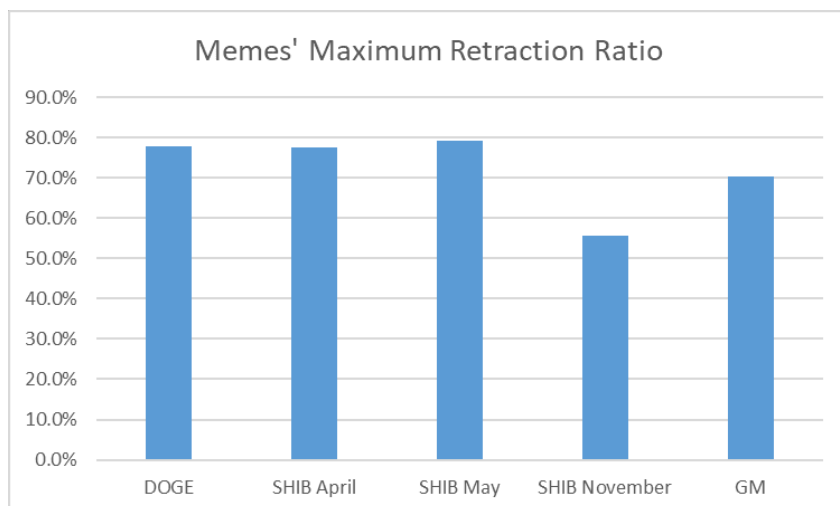
3.2.2 Features of Meme Tokens

Meme tokens have the following five characteristics.

Their issue size is very large and their unit price is very low. Meme coins with issue volumes of hundreds of billions or trillions are commonplace; for example, DOGE and SHIB both have issued volumes of 100 billion coins, and DOGE issues an additional five billion coins every year. Their unit price is often very low, usually containing a long string of zeros after a decimal point; for example, you can buy 30,000 SHIBs for \$1.

The token distribution scheme emphasizes fairness. The community is entitled to a high share, and conversely, investors and project teams have very low percentage of shares or none at all. A more extreme example is SHIB, which sent half of its tokens to Vitalik and paired the other half with ETH to provide liquidity on Uniswap; there are many projects following this distribution scheme.

DOGE and SHIB rely on traffic from Elon Musk, a super celebrity; both projects have more than two million Twitter followers. Other meme projects with high market capitalizations attract user attention through community promotions. When meme coins started to perform well, advertising slogans like "miss DOGE, don't miss XXX" could be seen everywhere. The allure of wealth creation and the strong publicity attracted many novice investors to enter the space; they knew little about Vitalik, who later sold off the meme coins.



Graph 3-5: Annual Maximum Retracement Ratio of Popular Meme Coins

Source: CoinMarketCap, compiled by Huobi Research

The price fluctuation is very large. Due to the high percentage of new retail users in the meme coin community, many people are investing with a gambling mentality, and the coin price can be heavily influenced by group sentiment. A single tweet can push up the price of the coin tremendously. Dogecoin's price plummeted 30% in response to a single tweet of Musk saying it was a scam. Most meme coins, however, tend to disappear completely after a single plunge.

Impracticality. Many meme tokens are born without specific goals or feasible development plans. A social hotspot or a buzzword can be enough to spawn a meme coin. Many projects are completely nonsense in terms of operating mechanisms and business models, and they oftentimes collapse before even generating an actual product.

3.2.3 Reasons Behind the Formation of the Meme Fad

The first reason is that memes are easy to accept. The funny logo of DOGE's Shiba Inu, which was created as a joke, established an "industry standard" for future generations of meme coins. Most meme coins do not market visionary plans about the future of money, financial innovation, or the transformation of the Internet. They are a symbol + a coin, very simple, and generally enjoyable. Memes are easy to understand, making it easy to gain public acceptance and spread

by word of mouth.

Second, meme coins appeal to people who want to get rich overnight. When meme coins go up a lot, especially when someone shows off that he has made gains of hundreds or thousands of times in a short period of time, onlookers will inevitably have FOMO (Fear of Missing Out). Because of the low price of Meme coins, you can buy a lot of coins for a small amount of money, which gives newer investors a sense of satisfaction and creates the illusion that losses are minimized. People want to get rich quickly, and this is the reason why many businesses can exist. In the cryptocurrency market in 2021, the illusion of suddenly becoming super rich lives in the form of meme coins.

Third, meme coins represent the rise of a counter-elite culture, or grassroots culture.

Whether it be governments or corporations, the world has always been perceived as controlled by the elite, with everyday citizens playing a trivial role. It is commonly seen that regardless of what the field is, there will always be a small group of people that end up shaping history.

Blockchain was born with the idea of decentralization, but is it a world that truly represents the commoners? Of course not, the world of blockchain is also built by the elite. Satoshi Nakamoto is a crypto geek, and all the people in Bitcoin's email group are cryptography experts; Vitalik grew up programming, and his dad is a computer scientist. In addition to such prominent figures, the elite are taking an increasingly important role in the development of the blockchain industry. From 2020 onwards, a large number of traditional financial institutions started to invest in Bitcoin, which became a bargaining chip for Wall Street and the giant whales. Whether in terms of operational mechanisms or economic models, projects on Ethereum are also becoming more and more complex, and Ethereum itself has become an arena for technologists.

So what if history can be made by the power of everyday citizens alone? In the stock market, there is the saga of retail investors, organized by WSB, beating Wall Street, and in the cryptocurrency market, the same thing can happen.

If everyday citizens are united, A buys \$20, B buys \$50, no one sells, together they could take a token's price to the moon. This idea, which sounds a bit impractical, actually happened in real life.

Musk did play a role in the surge of meme tokens, but he is not a great entrepreneur in the crypto world, he is just a normal person with a lot of influence. Led by him, the collective sentiment found an outlet, hence this mass movement was born.

Ordinary people don't desire much, they just want to express themselves, and meme coins fulfill this desire.

3.2.4 Inspiration of Meme Coins

First of all, whether it be high profile or low profile, work must be done.

Most meme coins tend to have trouble escaping such a cyclical law.

- High-profile publicity + community following + FOMO = fast rally.
- All talk and no action + attention shifting + profit taking + fear selling = a flop.

In contrast, DOGE and SHIB have jumped out of the above two formulas to achieve sustainable growth. According to CoinMarketCap, the sum of their market caps accounts for 97% of the total sum of all meme tokens, and their total trading volumes accounts for 92%. It's not easy for these two dogs to survive, especially DOGE, which experienced two rounds of bulls and bears since its birth at the end of 2013, during which countless tokens went to zero; yet it has been resilient. They have no other secrets except practical work.

The only scenarios in which DOGE is used are payments and rewards, but they do a lot of good for society with such basic functions. The DOGE community has raised DOGE funding to donate to Jamaican sled teams, charities that provide service dogs for children with special needs, the Arbor Day Foundation, and organizations that remove ocean trash. And, of course, donations are used to build more dog kennels. The application scenario for payments continues to expand, including payment platforms such as Coinbase Commerce and Binance Pay and a large number of merchants such as AMC Cinemas in the U.S., travel platform GetYourGuide, and Burger King in Brazil supporting DOGE payments.

Shiba Inu launched the decentralized exchange ShibaSwap in July 2021, ranking in the top 30 of all DEXes in terms of trading volume. It also released Shiba-themed NFTs and supports the

NFT art incubator. In addition, the development of the Shibarium blockchain and Shiboshi game is in progress.

They strengthen the formula of the meme coins with real actions.

- Continuously active community + real applications = survival.
- Overall market rise + renewed attention = revival.

Secondly, we should pay attention to community building and the value of everyday users.

We have seen the power of the many in the trend of meme coins, and in the movement of Constitution DAO, where the power of the people has been put to the extreme. Blockchain, as a cutting-edge technology, inevitably must move from a niche audience to a general one. In this process, the faster one's opinion is understood by general public, the faster the one moves in the market.

Satoshi Nakamoto once said: "If you don't believe me, or don't understand, I don't have time to convince you, sorry." This quote was true in the early days of blockchain development, but is perhaps a bit outdated today. There is more room for exploration in many aspects, such as making more benefits available to everyday users in token distribution and governance, and gaining more understanding through PR campaigns targeting the public. Embrace the power of people, and that power will reciprocate beyond imagination.

3.3 Debut of DAO

When we feel that the hot concepts of 2021 have all been fired up, ConstitutionDAO has brought us a surprise. The kickstart of 2022 is undoubtedly Web3. We have always been familiar with DAO, but in 2021, it seems that it is difficult to identify its traces amongst the background of DeFi, NFT, GameFi, and Metaverse. The story cannot be heard until the others are silent.

3.3.1 The Development

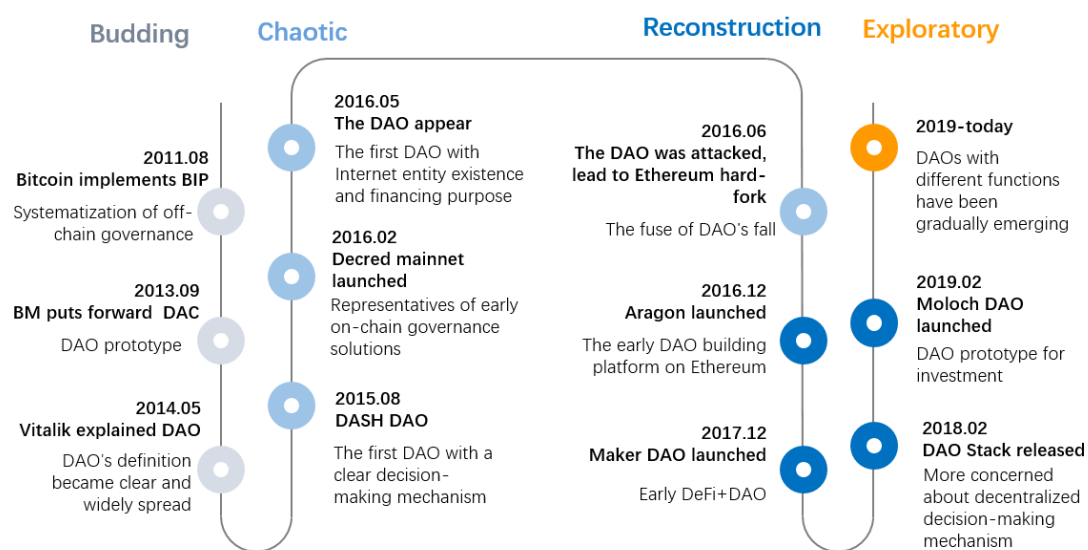
Regarding the DeFinition of DAO, Vitalik Buterin made a good description in 2014. DAO is "an entity that lives on the internet and exists autonomously, but also heavily relies on hiring

individuals to perform certain tasks that the automated process itself cannot do." From a time dimension, the evolution of DAO can be roughly divided into four periods.

- The budding period between 2011-2014: concept formation.
- The chaotic period between 2015 and 2016: DashDAO appeared until The DAO fell.
- Reconstruction period between 2017 and 2019: Aragon, Maker DAO, and Moloch DAO governance frameworks emerged one after another.
- The exploratory period from the second half of 2019 to the present: DAOs of various scenarios and multiple applications appeared.

In 2016, The DAO raised more than 12M ETH in just over a month. It showed that people were enthusiastic about exploring this new organization. But it also exposed two serious problems: (1) The deep integration with smart contracts amplifies technical risks; (2) The United States Securities and Exchange Commission (SEC) convicted The DAO in 2017 for illegally selling securities, which means that such organizations face big compliance risks. These two problems also appeared in 2021.

In November 2021, Mochi group purchased a large number of Convex governance tokens with USDM stablecoins of its own protocol, and controlled the Mochi's yield rate in the Curve pool. This caused Curve to lose \$30M. Also in November, SEC filed a lawsuit against CryptoFed DAO located in Ohio, requesting it to stop the securities registrations of "\$Ducat" and "\$Locke".

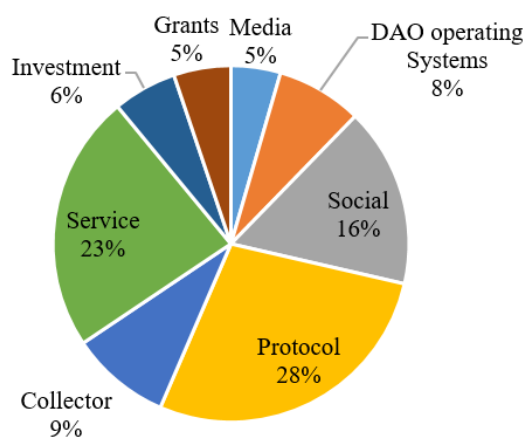


Graph 3-6: The history of DAO

Source: Huobi Research

3.3.2 Status Quo of DAO

In 2021, DAO entered the current exploration period - exploring the utility and boundaries of DAO for different purposes, application scenarios, and ecosystem. Classified by application scenarios, DAO includes investment, protocol, social, etc. The largest proportion is the protocol DAO, including MakerDAO, Compound, Uniswap, AaveDAO, etc. They are mainly for token holders to participate in governance services, covering parameter adjustments, contract upgrades, decision-making and so on.



Graph 3-7: Proportion of Different Types of DAOs, Totaled 154 DAOs

Source: COIN 98 ANALYTICS, Huobi Research

From the perspective of asset scale, DAO's overall AUM grew rapidly from about \$4 billion at the beginning of 2021 to over \$15 billion now. Except for Uniswap, BitDAO, which was established by Bybit, caught our eyes in 2021. This is the reason why the total asset value of DAO rose sharply in June. From the perspective of governance activity, especially in December ConstitutionDAO's exit in November, governance activities reached a record high. So far, the largest number of proposals were made by BerezkaLexDAO, Dxdao and Decentraland. And Sushi, Badger, and Balancer own the largest number of DAO members.

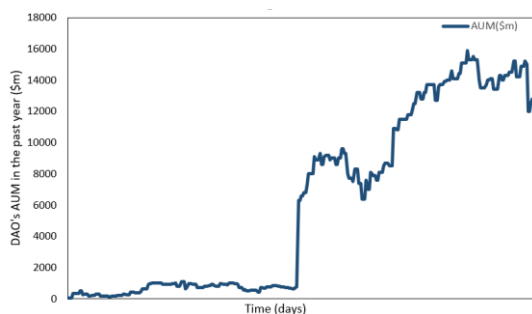


Fig. 3-8: DAO's AUM in the Past Year

Source: deepDAO, Huobi Research

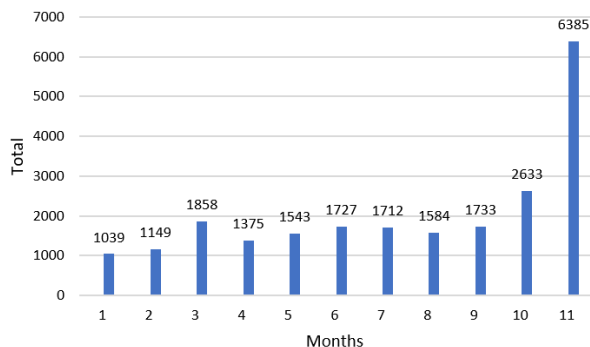


Fig. 3-9: Statistics of DAO's Governance Activities in 2021

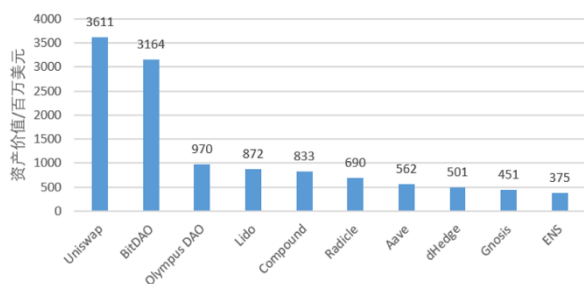


Fig. 3-10: Top ten DAO by Asset Size

Source: deepDAO, Huobi Research

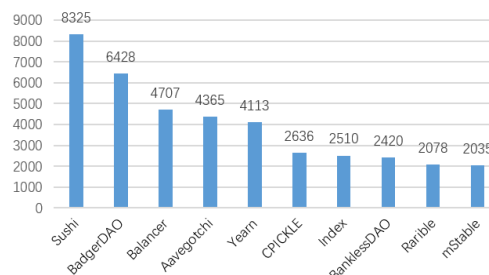


Fig. 3-11: DAO Voter Ranking

In infrastructure construction, a batch of governance, management, and platform tools have been developed to serve DAOs. We make a simple classification here. This infrastructure will play an important role in Web3.

- Governance tools: governance framework tools and voting systems.
- Social management: provide a platform for suggestions or discussions, and set chat thresholds.
- Asset management: provide organizational asset management tools, including some multi-signature schemes.
- Minting platform: mainly to provide digital identity NFT to DAO members.
- Community value management: evaluate the activity of members and assess their value,

and distribute rewards.

- Creation platform: seldom at present, mostly text output.

DAO infrastructure classification	Representative Projects
Governance tools	Gnosis, Aragon, WithTally, Snapshot, Boardroom, Sybill
Social management	Discourse, CollabLand
Asset management	Coordinape, Parcel, Gnosis Safe
Minting platform	POAP, MinGate
Community value management	SourceCred, RabbitHole
Creation platform	Mirror

Table 3-1: DAO Infrastructure Classification and its Representative Projects

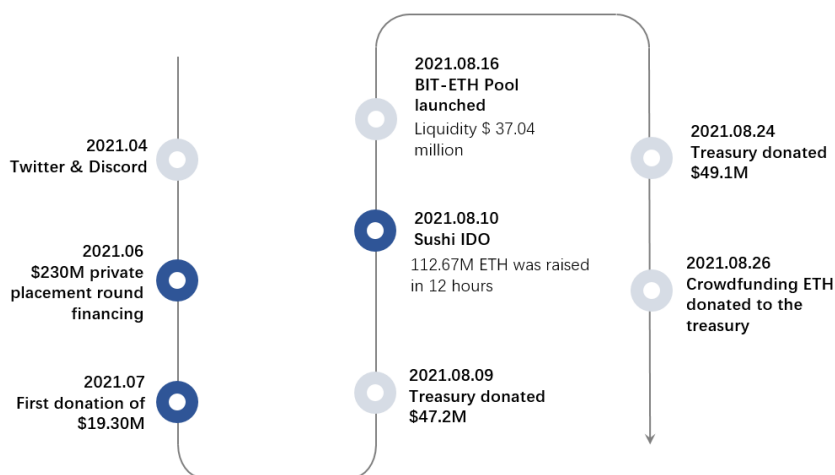
Source: Huobi Research

3.3.3 Representative DAOs

In 2021, BitDAO and ConstitutionDAO have provided us with different ideas on governance frameworks and the possibility of DAO influence.

1.BitDAO

BitDAO is a funding platform organized by Bybit. It began public fundraising in May. The goal is to promote the growth of DeFi in R&D, capital, and liquidity. BitDAO employs Snapshot and multi-signature verification schemes to manage the fund library. But Bybit is always the largest holder of the governance token \$BIT, accounting for 60%. Since the launch of the BitDAO program, the positive effects on Bybit can be clearly seen: (1) The method of using DAO has been widely promoted, and huge amounts of funds have been raised in a short amount of time; (2) The application for tokens could be quite wide, such as the token swap with FTX in October. BitDAO is a new direction, which may drive external communities and partners to jointly build a centralized exchange.

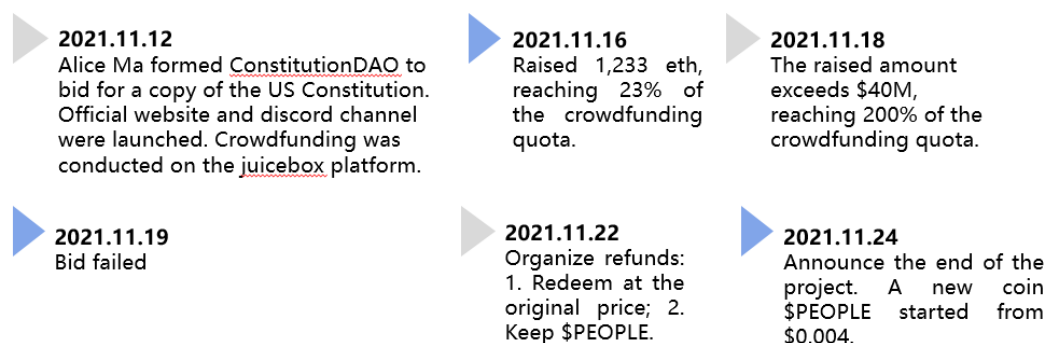


Graph 3-12: Timeline of BitDAO

Source: Huobi Research

2. Constitution DAO

The appearance of ConstitutionDAO ignited a heated discussion on Web3. Such a spontaneously established DAO completed the foundation, fundraising, decision implementation, voting, and token issuance in just one week. DAO infrastructure can currently fully support the self-organization and self-operation of a DAO. And the influence of this non-crypto world also opened up more imagination for DAO. ConstitutionDAO also created a new meme coin: \$PEOPLE.



Graph 3-13: Timeline of ConstitutionDAO

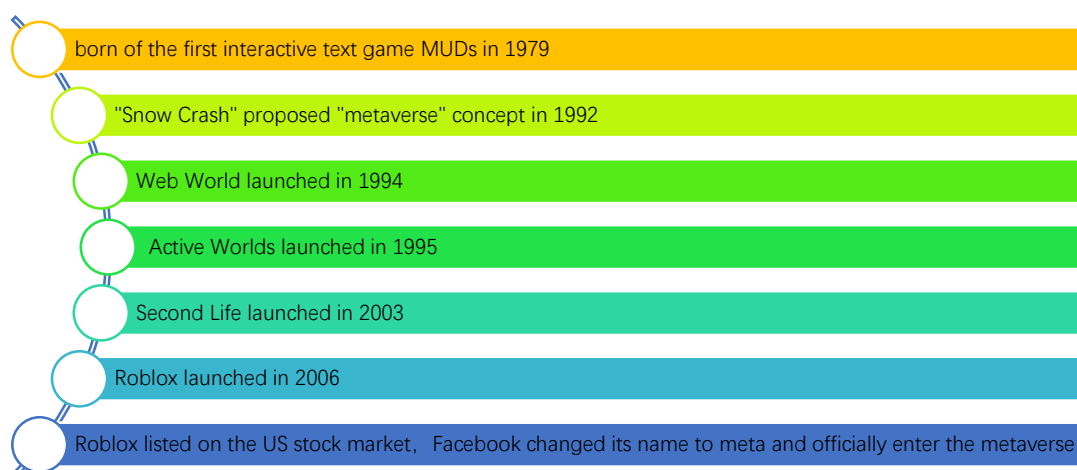
Source: Huobi Research

Looking into the future, we believe that DAO will see more diverse scenarios, clearer identities, and higher participation in the short term. In the long run, if DAO can continue to break the circle, attract external talents to join, and optimize various problems, it may become a part of the real economy and create its own subeconomy under Web3. We look forward to DAO bringing more possibilities in 2022.

3.4 Metaverse

3.4.1 The Development of the Metaverse

In 1992, "SnowCrash" first described a virtual world parallel to the real world. Humans could enter it through VR devices and live together with virtual people. This parallel world was named the Metaverse. In fact, the concept of the metaverse began to take shape as early as the late 1970s. In 1979, the world's first open world game MUDs was born, which opened the social prelude to real-time multiplayer contact. In 1994, Web World came out, opening the UGC era for games. In 1995, the first metaverse project based on "Snow Crash", Active Worlds, was officially launched. It provided users with content creation tools to transform the virtual environment, allowing users to log in, name themselves, explore 3D virtual worlds created by others, and create their own worlds. In the 21st century, the first phenomenon-level virtual game "Second Life" came out in 2003, in which players could realize social networking, shopping, business, etc. When it was most popular, the BBC and other media used to broadcast news on it. Sweden itself even built its own embassy in it. In 2006, the multiplayer online creation sandbox game platform Roblox came out, and in 2017, the sandbox game Fortnite was officially launched. As we enter the third decade of the 21st century, 2021 is widely regarded by the industry as the first year of the Metaverse, because not only did we see the listing of the first stock of the Metaverse, but we also saw Facebook announce its name change to Meta , making great strides in construction of a Metaverse ecosystem.



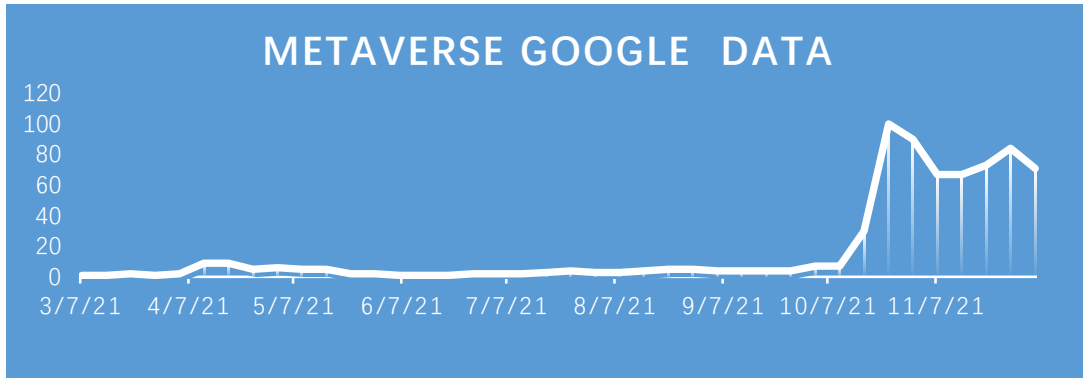
Graph 3-14: Metaverse development timeline

Source: Huobi Research

3.4.2 Metaverse’s Development Status

With the successive deployment of global technology giants, the attention paid to the "Metaverse" continues to increase. The process of increasing global attention on the concept of the "metaverse" is basically the same. In September 2021, ByteDance acquired Pico, a VR hardware manufacturer, and the Chinese market's attention on the Metaverse increased significantly; at the end of October, technology giants such as Facebook and Microsoft, have made high-profile moves in response to the Metaverse, and Facebook even changed its name to Meta. The concept of "Metaverse" has officially been brought out of the box, and attention on a global scale has reached a new peak. From a national point of view, South Korea is highly enthusiastic about searching for opportunities in the metaverse. Seoul released a metaverse plan, which is led by the government, and followed by China, Singapore, New Zealand, and the United States.

With the technology giant Meta entering the Metaverse ,according to Google search data, the concept quickly broke the circle and attracted global attention, and the Google search volumes for the Metaverse rose rapidly.



Graph 3-15: Metaverse Global Search Volume

Source: Google, Huobi Research

According to Jon Radoff's division of the Metaverse industry chain, it's divided into the following: experience layer, discovery layer, creator economy layer, spatial computing layer, decentralization layer, human-computer interaction layer and infrastructure layer, for a total of 7 layers. According to this division, the current participation in the ecosystem construction of the Metaverse includes three main players: traditional technology giants, software and hardware infrastructure providers, and decentralized encryption communities based on blockchain technology. Among them, traditional technology giants enter the metaverse ecosystem by preempting the experience layer and discovery layer through their large traffic; while software and hardware infrastructure service providers such as VR equipment manufacturers, 3D technology providers, etc.; the encrypted community mainly uses the decentralized infrastructure platform to provide the creator economic layer, which is the key to the construction of the Metaverse, and the decentralized layer to enter the Metaverse ecosystem.



Graph 3-16: Major players in the Metaverse

Source: Jon Radoff, Huobi Research

3.4.3 Metaverse Mode

On October 28, 2021, the well-known social company Facebook officially announced that it would transform into a future-oriented metaverse social company, Meta, which immediately attracted global public attention. At the same time, the head of A16Z, a well-known crypto investment company, expressed in an interview when discussing the construction of the Metaverse community by Meta, that the future of the Metaverse established by centralized companies will eventually end in failure. Regardless of whether this statement is objective or not, there is no doubt that a company-led centralized metaverse model and a decentralized metaverse model supported by blockchain technology may coexist, or be integrated as a whole, for a long time to promote the development of the Metaverse.

Since the construction of the current Metaverse ecosystem is still in early stages, the competition is inclined to seize the Metaverse traffic entrance, no matter if it is a centralized Metaverse or a decentralized Metaverse. There are both commonalities and differences between the two modes. In general, the development of the two should be established on the base of seeking common interests. Attacking each other can bring nothing but harm to the overall development of the Metaverse. Companies and communities that devote themselves to building a full-scale Metaverse should jointly promote the overall development of the Metaverse, so that the vision and lifestyle it proposes can become a consensus of society as a whole. Nevertheless, a preliminary analysis will be made with a description of the possible differences the two may have while portraying potential cooperation points between the two models in the future.

- The degree of centralization of construction entities

The biggest difference between the two Metaverse construction models is the degree of project concentration. The Metaverse model with the company as the main body of construction will adopt a top-down construction model, which is characterized by the fact that the construction of the Metaverse ecosystem will often be affected. It has a complete plan; while the Metaverse model with decentralized organization as the main body of construction will more likely adopt a flat Metaverse construction model, which is characterized by community collaboration and the lack of organized planning on the Metaverse ecosystem construction., but the construction

is more in line with the preferences of participating users.

- Attribution of data ownership

Just as the Internet giants control user data, the centralized Metaverse will still give them a large amount of data from participating users, thus giving them a comprehensive grasp of user behavior in their ecosystems; meanwhile, a decentralized Metaverse uses a decentralized data storage model, so participants have a high degree of personal data sovereignty, thus ensuring the privacy of users' personal data to a certain extent.

- Efficiency and user experience

The differences between efficiency and user experience mentioned here is not absolute, but compared to the metaverse applications built by decentralized communities, centralized applications will be able to improve product user experience at a faster application iteration speed to a certain extent. The main reason is that the centralized metaverse often does not require require changes to go through the collective decision-making process of the community, and because it has more user usage data, it can make corresponding decisions faster.

- Security

Compared with the open-source decentralized metaverse, the enterprise-led metaverse has set more levels of management permissions and higher-level applications to enter the audit mechanism in application security management, thereby improving its applications to a certain extent.; the open source mechanism of the decentralized metaverse not only encourages the creation of more applications, but also provides a window for potential phishing applications, so it has a certain degree of insecurity.

Despite the original differences determined by the organizational structure in the two metaverse models, the common goal pursued by the two is to use such a model of the metaverse to create a future-oriented business model and social network, thus promoting the metaverse. Common promotional points of the two reside in the necessary steps to boost the development of metaverse: infrastructure, business model, and increase of awareness. In the early stage of the current metaverse ecosystem development, cooperation will bring more benefits than the losses

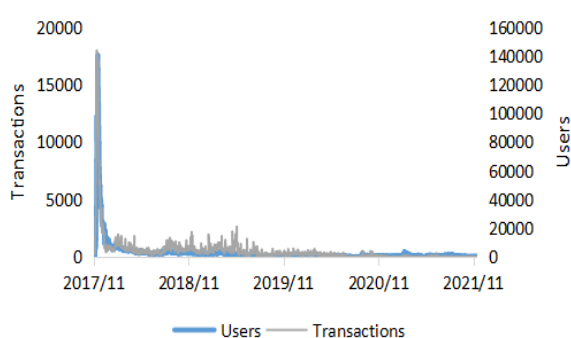
incurred from fighting each other. Therefore, cooperation will be the wiseman's choice and represent a broader view.

3.5 The Rise of Blockchain Games

3.5.1 Blockchain Games Are Back

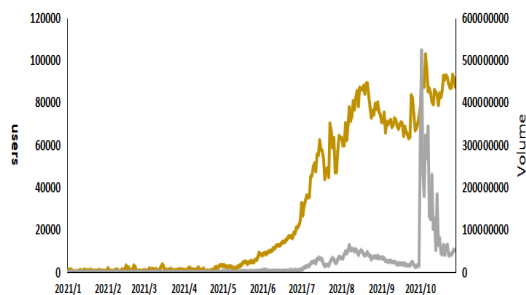
At the end of 2017, the game called CryptoKitties (encrypted cat) based on the development of Ethereum smart contracts became popular all over the world; afterwards, blockchain games of strategy, PRG, and simulation management have also been launched one after another, bringing "blockchain game fever". However, the early blockchain games generally had the problems of single form, poor entertainment and experience. When the novelty of the game to the public declined and the popularity weakened, blockchain game fever gradually cooled down.

Just when people thought blockchain gaming was past tense, since June this year, a number of games featuring NFT, DeFi and other blockchain elements have rapidly risen in the market with their special mechanism design, under the slogan "Play to Earn". The representative of these is Axie Infinity, which has become a hot topic in the market recently. Specifically, Axie Infinity is a small pet game that relies on inside operations such as breeding, battle and land trading to realize the game experience of earning while playing. It attracts game unions and players whose purpose is to make money. However, this kind of seemingly ordinary small game once exceeded the famous mobile game "Arena Of Valor" with a single day income of 9.72 million U.S. dollars. The game assets AXS and SLP also have seen users and transactions rising in the past three months, increasing by more than three times in two months.



Graph 3-17: Operation Data of Axie Infinity

Source: Dappradar, Huobi Research



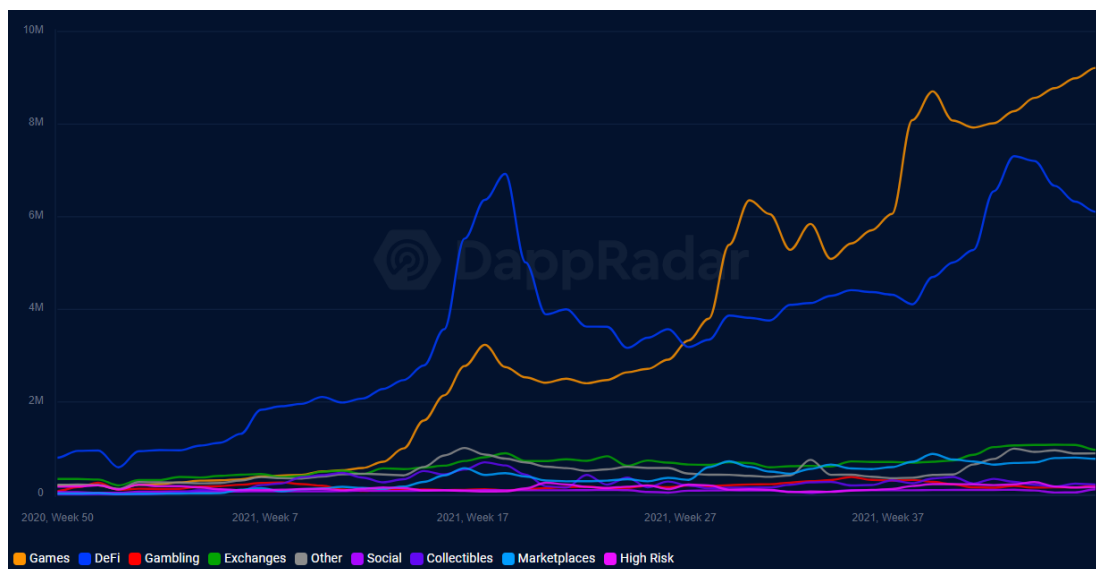
Graph 3-18: AXS Market Data

Source: Feixiaohao, Huobi Research

This new type of blockchain game, also known as GameFi, is the gamification of creation economy and commerce. From the data on the chain, GameFi has risen rapidly since the summer of this year. In the DApp rankings, 5 out of the top 9 are GameFi applications; from the perspective of the number of active independent wallet addresses (independent users) on the chain, since this summer, the number of independent users of GameFi has surpassed DeFi and become the main source of users on Dapps, and it is still growing. As of early December, GameFi's weekly active users have reached 9.21 million, a record high.

Rank	Project	Category	TVL	Users	Volume
1	PancakeSwap	Exchange	\$2.57 B	5.09 M	\$ 172.69 B
2	Alien Worlds	GanmeFi	\$12.43 M	1.55 M	\$ 24 M
3	Axie Infinity	GanmeFi	\$4.4 B	852.85 K	\$1.79 B
4	Splinterlands	GanmeFi	\$267.76 K	672.12 K	\$ 444.63 K
5	Uniswap	Exchange	\$10.56 B	467.35 K	\$ 18.91 B

Table3-2: Dapp Leaderboard (2021.12)



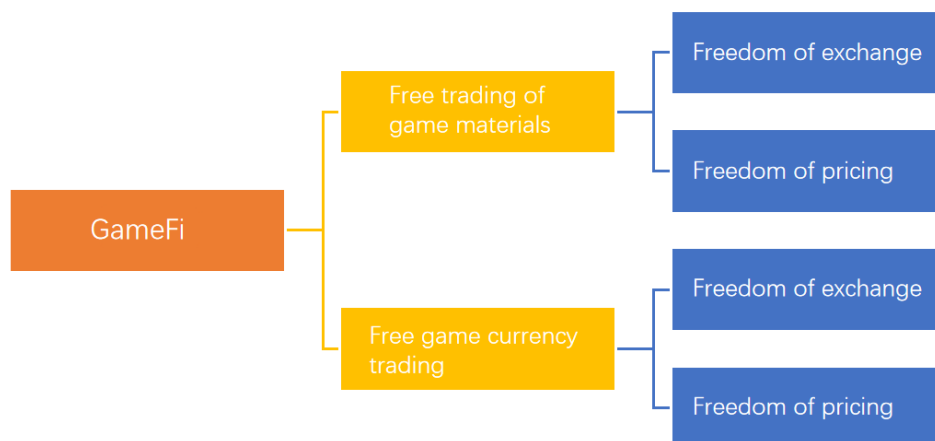
Graph 3-19: Changes in the number of active independent wallet addresses in Dapp

Source: DappRadar, Huobi Research

3.5.2 The Reason for the Rise of GameFi

Many people attribute GameFi's success to its "Play To Earn" model, where players earn money by playing games. However, in the traditional game industry, "Play To Earn" has long been a tradition - from fighting monsters in World of Warcraft to get equipment, to playing games in League of Legends to get skin fragments or blue essence, all of which are true of the current model. So what's the real reason for GameFi's success?

The current mainstream interpretation of GameFi in the market can be summarized as an equation: GameFi = Game + Finance + NFT. This summary points out the key to GameFi's success: GameFi, with its special DeFi mechanism, greatly reduces transaction fees and improves user gaming experience, mainly reflected in the following two points:



Graph 3-20: The Path to Lower GameFi Transaction Fees

来源: Huobi Research

The first is the free transaction of game materials, which is not only reflected in the freedom of exchange of objects to be bought and sold, but also in the freedom of transaction prices. Different from traditional game regulations that only allow official transactions and official unified pricing, GameFi further reduces transaction costs and improves user experience by giving more freedom to transactions.

The second is the free trading and pricing of game currency. In traditional games, revenue is realized through game currency---equipment items---cash (official transaction/underground black market), and the transaction cost is relatively high. The free trading and pricing of GameFi game currency greatly reduces transaction costs.

Therefore, the popularity of GameFi is not because of "Play To Earn", especially at a time when the gold-making activities of traditional games have already formed an industry chain. On a deeper level, it is because GameFi can significantly reduce the transaction costs of "gold-making activities", and users can quickly obtain great benefits at a very low cost, which is more attractive than other games.

Finally, the success of GameFi is inseparable from the protection of property rights.

It is generally believed that resources are private property only if the following three conditions are met:

- 1) The right to use: Only the owner has the right to decide how to use its resources, and has the right to refuse the use of others;
- 2) The right to profit: The right to use assets to earn private income
- 3) The right to transfer: The right to transfer or sell resources to anyone

The above three constitute the three elements of private property rights, and none of them are dispensable. For most traditional games, the right to profit and the right to transfer cannot be guaranteed. On GameFi, the owner of private property rights can choose to sell or not sell the right to a certain resource, which expands the range of choices, and also stimulates market competition, thereby saving transaction fees.

So why haven't traditional game manufacturers established such private property rights system arrangements before? The reason is that changing the original economic system also incurs transaction costs. Before that, the cost of establishing this property rights system for game developers was too high, and the benefits brought by it were far less than its cost. At this time, the reform of the property rights system was not necessary; however, with the rise of blockchain technology, NFT with the promotion and application of technology, GameFi can establish a complete private property rights system on the public chain at a very low cost. This is an advantage that traditional game developers do not have, and it is also the real value of the application of related Layer 1 chains in the game field.

Chapter 4. Technology

4.1 Rollups are Ascending - Where will Ethereum Go from Here?

Since it was founded by Vitalik Buterin, Ethereum has lost its some of its sheen. As the price of Ethereum rises, the gas fee required to use the Ethereum network has been increasing, sometimes exceeding 80% of the total transaction fee.

For this reason, Layer-2 technology, often referred to as an “off chain solution” (transactions performed outside of the blockchain aimed at reducing costs) came into being

Among the many Layer-2 solutions, “Rollup” appears the most promising. Rollup packages a large amount of transaction data, originally distributed in blocks, into a set of transactions (conceptually similar to a "compressed cookie") which is then placed on the Ethereum mainnet. Rollups come in two distinct flavors. The first would be Interactive Rollup. wArbitrum, Boba Network and Optimism are some outstanding projects in this category: the number of projects in the ecosystem and TVL skyrocketed this year, and the TVL of these three projects occupied almost 60% of the entire Layer-2 market. Non-interactive Rollup, also known as ZK (Zero-Knowledge) Rollup, is the second form of Rollup; exemplary projects in this category are dYdX, Loopring and zkSync. These have a comparatively smaller market share.

Graph 4-1: Rankings of Layer-2 Projects in TVL (Amount Locked)

No.	Name	TVL	Breakdown	7d Change	Market share	Purpose	Technology
1.	Arbitrum	\$2.65B		-5.94%	40.04%	Universal	Optimistic Rollup
2.	Boba Network ^{OP}	\$1.31B		-8.77%	19.81%	Universal	Optimistic Rollup
3.	dYdX	\$896M		-6.70%	13.54%	Exchange	ZK Rollup
4.	Loopring	\$642M		-14.59%	9.71%	Payments, Exchange	ZK Rollup
5.	Optimism ^{OP}	\$466M		-4.13%	7.05%	Universal	Optimistic Rollup
6.	ZKSwap V2	\$202M		-13.36%	3.06%	Payments, Exchange	ZK Rollup
7.	ImmutableX	\$188M		-28.50%	2.84%	NFT, Exchange	Validium
8.	DeversiFi	\$103M		+22.40%	1.56%	Exchange	Validium
9.	Metis Andromeda ^{OP}	\$60.42M		+46.06%	0.91%	Universal	Optimistic Rollup
10.	zkSync	\$54.89M		+27.36%	0.83%	Payments	ZK Rollup

Source: L2Beats

From a technical point of view, Optimistic Rollup is simple and easy to implement, but also has its own insurmountable shortcomings. Due to the use of "fraud proofs" (as the name suggests), the time to withdraw funds usually takes approximately one week. Compared with "Fraud Proofs", ZK Rollup is more technically challenging because it requires the second-tier operator to provide a "Validity Proof". This means the second-tier operator directly proves that the state transition it submits is valid. As the submission is verified, users have peace of mind and there is no holding period for fund withdrawals. However, ZK Rollup has its drawbacks in – it has a higher technical difficulty coefficient and is more challenging to implement. The current ZK Rollup solutions for the public can only package simple transfer transactions, and are unable to execute smart contracts. In other words, ZK Rollup currently does not support zkEVM (a virtual

machine that allows smart contracts while being compatible with zero-knowledge proof computation)).

	ZK Rollup				
	ZKSync	Loopring	Aztec	ZKSwap	Hermez
withdrawal time	5hours	2 hours	4 hours	20-40 minutes	20 minutes
	Optimistic Rollup		Validium	Arbitrum	
	Optimism	Fuel	StarkEx	OffChainLabs	
withdrawal time	7 days	7-14 days	10 minutes	7-14 days	

Table 4-1: Withdrawal time of Layer-2 projects

Source: Huobi Research

However, ZK Rollup solutions with zkEVM are on the horizon. In the future, according to different implementation schemes, there will be two zkEVM technical tracks with different focuses. Here, we shall label them "EVM-friendly technical track" and "Zero-Knowledge Proofs friendly technical track". The "EVM-friendly technical track" puts EVM compatibility with the Solidity instruction set and supports native EVM opcodes (Ethereum Virtual Machine Opcodes). On top of this, it needs to be friendly to Zero-Knowledge Proofs. The "Zero-Knowledge Proofs friendly technical track" puts the friendliness of Zero-Knowledge Proofs at the forefront. It will put aside the original EVM opcodes and directly design a set of instructions that is more friendly to Zero-Knowledge Proofs, then seek to adapt to the original EVM.

Technical track	EVM-friendly technical track	Zero-Knowledge Proofs friendly technical track
Advantage	better compatibility and safety	better flexibility

Shortcoming	Part of Opcodes are difficult to generate ZKP, and the workload is large	Additional adaptation is required, which may cause security risks
Projects	Hermez; Applied ZKP; Arbitrum; Optimism; Boba Network; the Ethereum Foundation zkEVM	zkSync; dYdX; Loopring

Table 4-2: Advantages, shortcoming and outstanding projects of the zkEVM technology tracks

Source: Huobi Research

All in the arrival of zkEVM will is expected to deem the ZK Rollup solution more well-rounded and enable the ZK Rollup solution to occupy more market share in Layer-2. The most likely mature ZK Rollup solution with zkEVM should be zkSync2.0, the second "Zero-Knowledge Proofs friendly technology track" referred to above. At present, its testnet has been launched on Uniswap, and its team Matter Labs has also completed the financing led by a16z.

Since sharding is a complex process in ETH2.0, the development of ETH2.0 may be protracted. In the short term, the Rollup solution will be the main Layer-2 technology in Ethereum, endowing Ethereum users with a better experience, while holding its own against new public chains that have emerged to challenge Ethereum.

In the long run, the potential Rollup technology remains. According to Vitalik, Rollups are, for the short and medium, and possibly the long term, the only trustless scaling solution for Ethereum. There might even be a place for Rollups in future new public chains. With the shift toward ETH 2.0, Ethereum will likely regain its lustre. New public chains are also expected to enjoy less congestion, especially if Rollup technology gets applied to new public chains.

4.2 The Emergence of Cross-chain Bridges

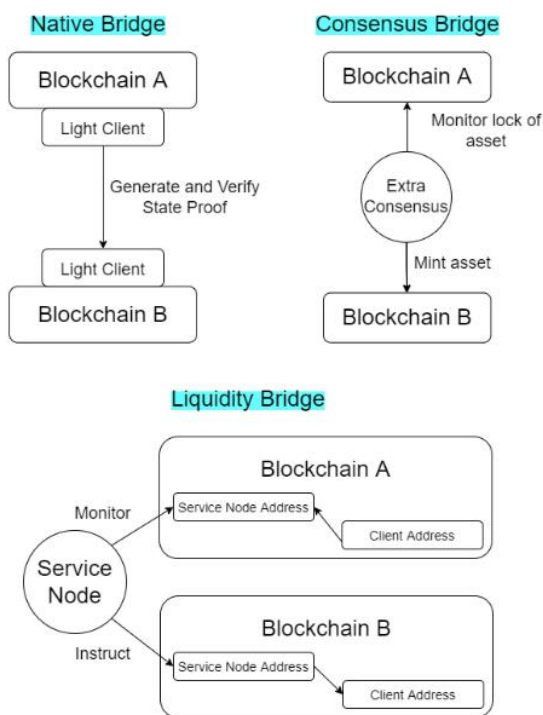
The rapid rise in TVL of layer 2 networks and alt-L1s brings strong demand for interoperation, and cross-chain bridges str becoming a necessary pillar of the on-chain ecosystem.

There are two forms of cross-chain token transfer: asset lock and mint and asset exchange. Asset

lock and mint refers to process where a user deposits his tokens into a contract on the sender-chain, after which a certain confirmation mechanism will verify this transaction and then instruct the contract on the destination-chain to mint corresponding tokens to be sent to the user.

The lock and mint bridges have two confirmation mechanisms: native and consensus. Native bridges are light clients deployed on the destination chain, which track and verify the states of the source chain and confirm the deposit of the token, corresponding tokens are then minted accordingly; consensus bridges refers to an external set of validators reach a consensus on the deposit of token on the source chain, and mint on the destination chain accordingly. As native bridges deploy the more complicated light clients, they are network-specific, such as NEAR's RainbowBridge to Ethereum; light clients consume a great amount of gas as they generate and verify state proofs, bringing higher cost for cross-chain token transfer; but they are safer as no external consensus is involved. Consensus bridges, on the other hand, can be deployed to various chains, and are faster and cheaper as an external consensus is dealing the requests. However, they are also less secure for the same reasons have been historically been compromised multiple times.

The exchange bridges are also known as liquidity bridges. They utilize atomic swap to guarantee safety of funds. However, as various forms of liquidity is required on both source and destination chains, they are less deployable than consensus bridges, and require incentives for liquidity providers. The speed and cost of liquidity bridges is similar to that of consensus bridges.



Graph 4-2: Mechanisms of various cross-chain bridges

Source: Huobi Research

	Market Cap	TVL	# of chains supported	implementation	Service type	characteristics
WBTC	No token	\$14269M	2	Consensus bridge	One-way	Only supports BTC
Ren Protocol	\$760M	\$970M	7	Consensus bridge	One-way	Supports BTC, ZEC
Anyswap	\$167M	\$4620M	23	Consensus bridge	Multi-chain	Supports most chains and tokens
Synapse Protocol	\$394M	\$623M	7	Consensus bridge	Multi-chain	Supports Boba Network and Harmony
Wormhole	No token	\$619M	5	Native + Consensus bridge	Multi-chain	Supports Solana and Terra
Chainswap	\$2M	Unknown	23	Consensus bridge	Multi-chain	Deployed on Anyswap
cBridge	\$610M	\$21M	9	Liquidity bridge	Multi-chain	Developing general interoperability protocol
Hop Protocol	No token	\$104M	5	Liquidity bridge	Layer 2	Supports most layer 2 networks
Connex	No token	\$10M	8	Liquidity bridge	Layer 2 + Multi-chain	Developing general interoperability protocol

Graph 4-3: Major Cross-chain Bridges

Source: Huobi Research

Key points concerning major cross-chain bridges:

Anyswap dominates the TVL charts and number of supported chains: it supports EVM chains as they are technically compatible with one another and contracts can be quickly deployed. A The tokens flowing between these EVM chains are mostly ETH and USDC.

There are three niche markets: BTC bridges, Layer 2 bridges (such as hop, which supports all major Layer 2 networks) and non-EVM bridges (such as wormhole of Solana)

We have three predications regarding the future of cross-chain bridges”

1. **Improvement in cost and capital efficiency”** The present consensus bridges use AMM to facilitate the exchange of their medium tokens and target tokens, and incentives are paid to liquidity providers. Liquidity bridges also incentivize liquidity providers. We recognize that major DEXs like Sushiswap and Curve may take advantage of their ample liquidity on various chains. and have the ability to facilitate cross-chain transfers at lower prices.

2. **Further decentralization of cross-chain mechanisms:** The consensus bridges have historically been proven to be less safe. Decentralizing the external network and having more validators participate in the consensus is the next important step for these bridges.

3. **General interoperability protocol:** The holy grail for bridges would be a general interoperability protocol that allows cross-chain contract calls apart from token transfers. Native solutions such as Cosmos and Polkadot, as well as cross-chain communication protocol LayerZero, are currently available to solve the problem of divided blockchain ecosystems.

4.3 Blockchain Attack and Security Defense

2021 was a harvest year for the blockchain industry and also marked an important turning point for blockchain security. According to public statistics, the total economic loss for the blockchain industry as a result of hacking stood at about \$7.2 billion in 2021, an increase of 98% over 2020. The number of security incidents was 188, the highest in history. The main types of

security incidents include exchanges, public chains, digital wallets, and public chain ecology. Among them, exchanges and ETH ecosystem were the main targets of hackers, with losses from these two categories accounting for about 56% of total losses as a result of security breaches.

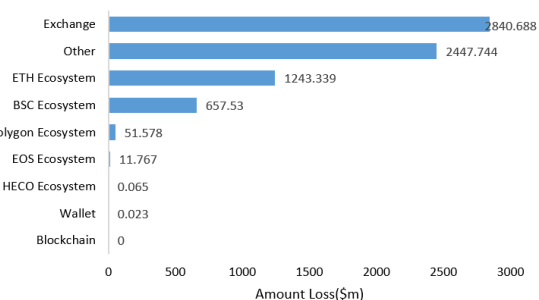
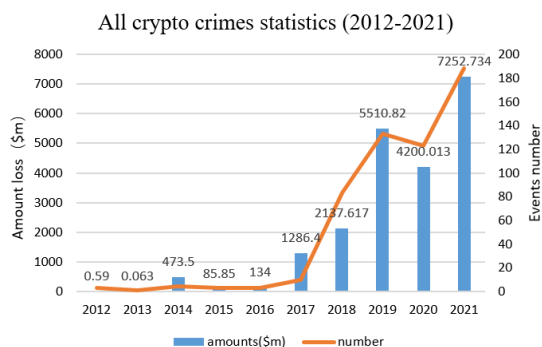


Fig. 4-3: Statistics on the Number of Blockchain Security Incidents and Loss Amounts from 2012 to 2021.

Fig. 4-4: Statistics of the Loss Amount According to Different Attack Targets

Source: SlowMist Hacked, Huobi Research

The open nature of DeFi has also led to unprecedented security risks. The total loss caused by DeFi bugs and fraud in 2021 was approximately \$2.2 billion, an increase of 46.7% from the \$1.5 billion in 2020. The most noteworthy vulnerability attacks include Poly Network’s loss of \$610 million, PAID Network’s \$180 million loss, Cream Finance’s \$130 million loss, and Badger DAO's front-end hacking loss of approximately \$196 million. Nevertheless, such breaches have barely compromised the integrity of the blockchain industry. The total value of the entire DeFi alone has reached \$258 billion. There are three main types of DeFi security incidents, one is fraud, the other is smart contract bugs, and the third is the use of lightning loans to manipulate the price of tokens.

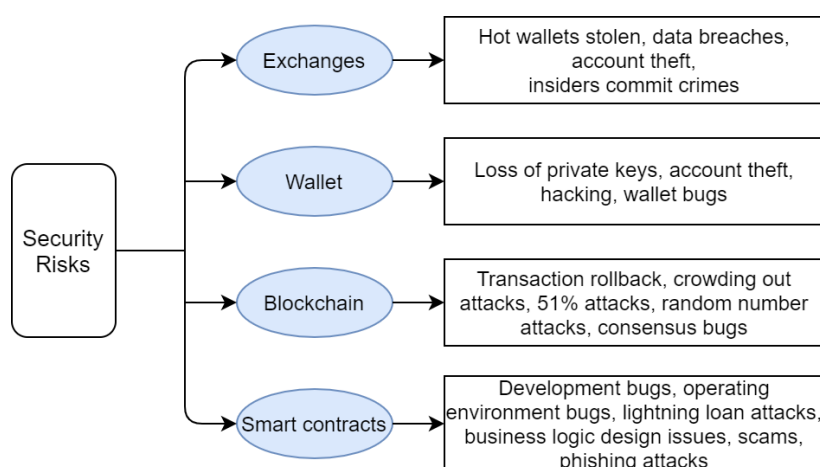
Apart from attacks on DeFi, the following noteworthy security incident occurred in 2021:

- In June, the founders of cryptocurrency investment platform Africrypt vanished, alongside 69,000 bitcoins.
- In August, Japanese crypto exchange Liquid was attacked. The hacker hacked Liquid’s hot wallet and stole approximately \$97 million worth of cryptoassets
- In addition to hacker attacks, fraud schemes also made headlines. One of the largest crypto

scams, Bitconnect, an open source cryptocurrency that was purportedly connected with a high-yield investment program, was accused of financial fraud by the SEC in September. It had illegally raised more than \$2 billion in 2017.

4.3.1 Risk Category

According to security trends over the past ten years, the above-mentioned different attack targets face the following security risks:



Graph 4-5: Different Types of Attacks Against the Targets
Source: Huobi Research

Exchanges and smart contracts were the two segments that suffered the largest losses due to hacking incidents over the past two years. We recommend comprehensive emergency recovery plans for safety and risk control be established for exchanges. For smart contracts, audits must be conducted and insurance products should be available for purchase pre-launch. Post-launch, activities on-chain should be tracked, with priority placed on tracking abnormalities at the front-end. Users and investors should not covet high profits in lieu of security..

4.3.2 The Initial Formation of Security Industry

Blockchain security solutions and technologies are constantly updated, resulting in multiple services such as security audits, consulting, emergency response, etc. Many up-and-coming

firms , such as SlowMist and Quantstamp, have engaged in the security of smart contracts. The scale of these companies has grown significantly in the past two years.

2021 was landmark year for crypto security investment. Venture capital investments in this industry exceeded \$1.4 billion, a significant jump from less than \$100 million in 2020. Some remarkable investments that occurred include the \$380 million Series C financing completed by secure hardware wallet Ledger in June, while Certik completed \$140 million in financing. Also, Fireblocks completed \$310 million in Series D financing and \$400 million in Series E financing. Although Fireblocks is a digital asset platform, its solution helps solve various business issues surrounding digital assets from security to compliance.

Audit companies cannot guarantee that the contract is free of bugs, with one such example being the Monox Finance attack. From a development perspective, there will be a greater demand for customized insurance products aimed at alleviating the security woes of investors. The business of insurance will likely exceed that of existing contract audits.

A blockchain security industry has already emerged, with the current industry summarized as follows::

Type	Services	Customers	Company
Blockchain security	Smart contract audit; bugs audit and handling	exchanges, blockchain, developers	Certik, Slowmist, PeckShield, Consensus Dilligence
Solution provider	Provide encryption, signature and identity verification services; network security solutions	blockchain, wallet	Thales, HB Security, Stark Ware
Security Development Module	Secure smart contract development tool	developers	Forta Protocol
Security Monitor	Market and risk monitoring and warning	Investors	Solidus Lab, Fire Blocks, Elliptic
Insurance	Smart contract insurance	Contract users, developers	Yearn. Finance, InsurAce

Table 4-4: The Overall Situation of Blockchain Security Industry

Source: Huobi Research

The myth of gaining wealth in the blockchain industry has attracted the masses.. However,

wealth and risk coexist. Industry practitioners need to provide a safer environment investment environment in order to attract investors with lower risk appetites while convincing regulators of the industry's legitimacy..

4.4 Bitcoin's Upgrade Path

After Bitcoin's third halving, the entire crypto market prospered for a whole year as expected. In 2021, apart from the price of Bitcoin, two other points worth paying attention to are:

4.4.1 Lightning Network

Lightning Network was developed as a Layer 2 solution for Bitcoin over the course of 6 years. Its purpose is to speed up Bitcoin transaction processing time, increase scalability, and reduce transaction costs.

Lightning Network's footprint gained prominence in 2021. According to Glassnode, Lightning Network's capacity has increased exponentially. The capacity currently exceeds 3,100 BTC, an increase of 190% from the beginning of 2021. The number of active nodes increased 120% to 18,343. Meanwhile the number of active channels was 79,150, an increase of 110%. In accordance with the capacity changes, Lightning Network is undergoing two important phases.

Phase 1: June 2018 to May 2019 was the trial period after Lightning Network launched on the mainnet. Large nodes made the most contributions - more than 50% of Bitcoin's capacity.

Phase 2: From January 2021 to the present, developers have been working hard to improve the performance of Lightning Network after its widespread adoption. Due to the Bitcoin halving bull market and the open attitude of El Salvador and other countries, the capacity and wallet payment volume of Lightning Network increased substantially after September 2021. Lightning Network has seen substantial traction with its integration into the Paxful exchange, AOther examples include Twitter allowing the use of Strike wallet, backed by the lightning network, for tips and Chivo Wallet launching in El Salvador.

Bitcoin: Lightning Network Capacity



Bitcoin: Lightning Network Number of Channels



Lighting Network Capacity (1) Light Network Number of Channels
 Graph 4-6: Bitcoin Lighting Network Capacity & Number of Channels (2018.01-2021.12)
 Source: glassnode, Huobi Research

Bitcoin: Lightning Network Number of Nodes

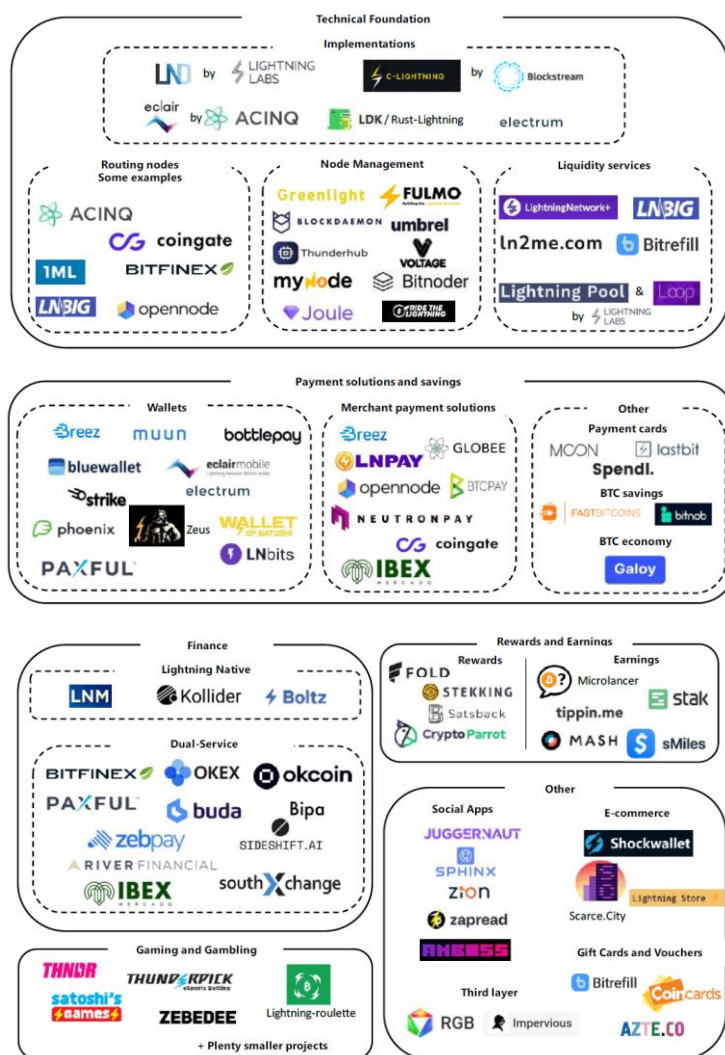


Graph 4-7: Bitcoin Lighting Network Number of Nodes (2018.01-2021.12)
 Source: glassnode, Huobi Research

In addition to the performance improvement, Lightning Network has gained traction in other aspects. Its use is no longer limited to payments for online services, but also other aspects of daily life. According to Arcane Research report, the number of Lightning Network users increased by 11,164% to 9.7 million in September, with its use for personal transfers, including merchant payments and gift cards, increasing by 122%. Many financial products are also being built on Lightning Network, such as the derivatives trading market LN Markets and

Kollider.

Although Lightning Network is still weak security and versatility-wise, its future looks promising with the legalization of Bitcoin in El Salvador and its acceptance by Twitter as a tipping platform. Recently, Synonym, founded by Tether, expressed hopes to expand the adoption of Bitcoin through Lightning Network. Should the future see more countries legalizing the use of Bitcoin, Lightning Network may feature prominently in the micro payments space for consumer goods and services.

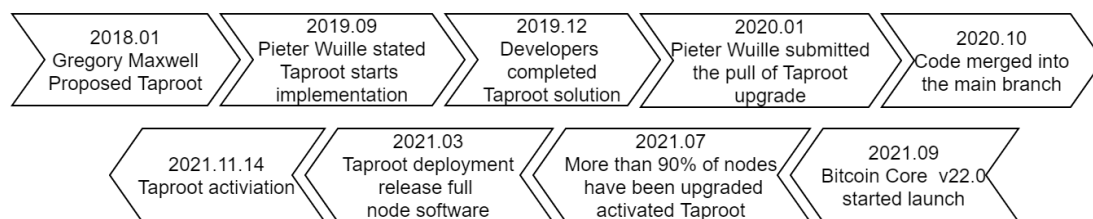


Graph 4-8: Lightning Network’s Ecosystem in 2021.

Source: Arcane Research Report

4.4.2 Bitcoin’s Taproot Upgrade

On November 14, 2021, Bitcoin ushered in the Taproot soft fork upgrade, a long process that began with Gregory Maxwell’s proposal in 2018. . This upgrade was considered "an important technology for Bitcoin in the next stage." Bitcoin was initially created for the purposes of storage and transfer, with little considering for its use in smart contracts., and the Taproot upgrade aims to address this shortcoming.



Graph 4-9: Timeline of Taproot upgrade.

Source: Huobi Research

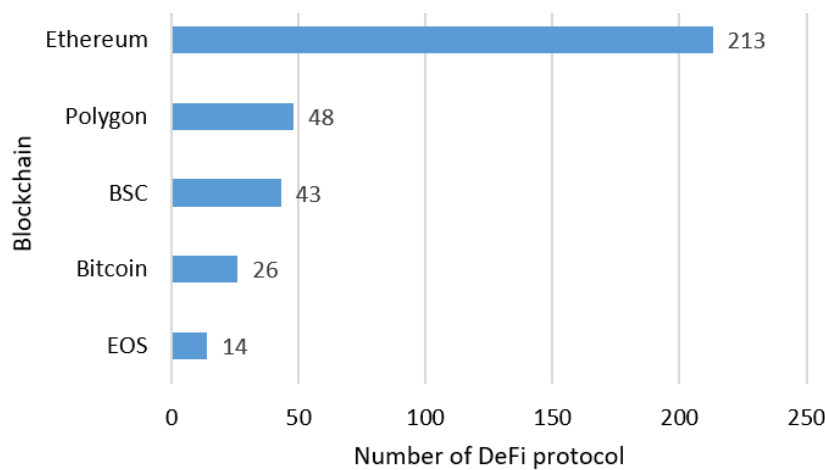
Taproot contains 3 BIPs:

- Schnorr signature (BIP340) provides a more private, safer, and easier verifiable cryptographic signature. Schnorr replaced the original ECDSA signature, with a "key aggregation" function and decreasing block size.
- Taproot (BIP341) proposes Pay-to-Taproot (P2TR) and realizes Merklized Abstract Syntax Tree (MAST). MAST only needs to submit transaction execution conditions to the blockchain, so that transactions generated by Schnorr signatures could be the same as single signatures. Taproot changes the data structure of the block and strengthens anonymity, privacy and scalability.
- Tapscript (BIP342) updates the script for the above two BIPs, and also makes future Bitcoin opcode updates easier to implement. The implementation of three BIPs can enhance the privacy and security of Bitcoin transactions, optimize block capacity, and reduce transaction costs. Taproot has not been widely applied since activation. Currently, the block still contains both Schnorr signature and ECDSA signature. It may take several months to complete the upgrade

until all nodes are upgraded. Third-party applications such as wallets need time to complete the transformation test.

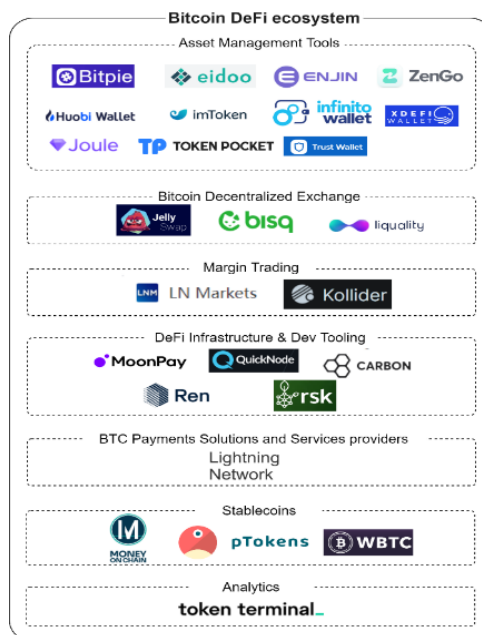
Bitcoin upgrades are cautious affairs. Becoming the second Ethereum is not Bitcoin’s goal.. And Bitcoin may not be able to achieve the same smart contract functions as Ethereum. However, Taproot upgrade shows that Bitcoin deserves attention. . Bitcoin brings more possibilities other than a store of value and payment currency to the table:

- 1) Schnorr signatures enable Bitcoin's side chain network to create a multi-signature library at low cost, giving the side chain more space for development.
- 2) Multi-signature also reduces the cost of DeFi protocol deployment in Bitcoin. More DeFi products may appear in the future. Even the possibility of other smart contracts has become a hot topic. There are currently 25 DeFi protocols on Bitcoin, which is far from the Ethereum DeFi.
- 3) After the privacy are enhanced, Lightning Network with Taproot-compatibility will be more widely used.



Graph 4-10: Comparison of the Number of DeFi Protocols in Each Blockchain.

Source: DeFiprime.com, Huobi research



Graph 4-11: DeFi Ecosystem of Bitcoin.

Source: Huobi research

4.5 Exploring Web3

Web3 is the next chapter of Internet. Web1 started from 1990, where developers built static content such as blogs upon open source protocols like Linux and Netscape. Web2 started from 2005, and the core business models is that emerged were platforms such as Facebook, Amazon, who aggregate producers and consumers of content and goods, and then through their control of the platform, used algorithms to distribute ads.

Both producers and consumers of Web2 platforms have long been critical of the Web2 business model. They claim that Web2 platforms have high take rates (Apple for example, charges 30% on all App Store purchases), violate user privacy (Facebook), and abuse algorithms to perform price discrimination. As a result, content ownership boundaries are somewhat blurred with platforms accused of unfair data extraction and analysis alongside customer exploitation for self-gain.

4.5.1 Define Web3

The aforementioned problems lead to the rise of Web3. We think the most important aspect of Web3 is the ability for users to govern platforms or organizations they participate in, with users owning their digital assets:

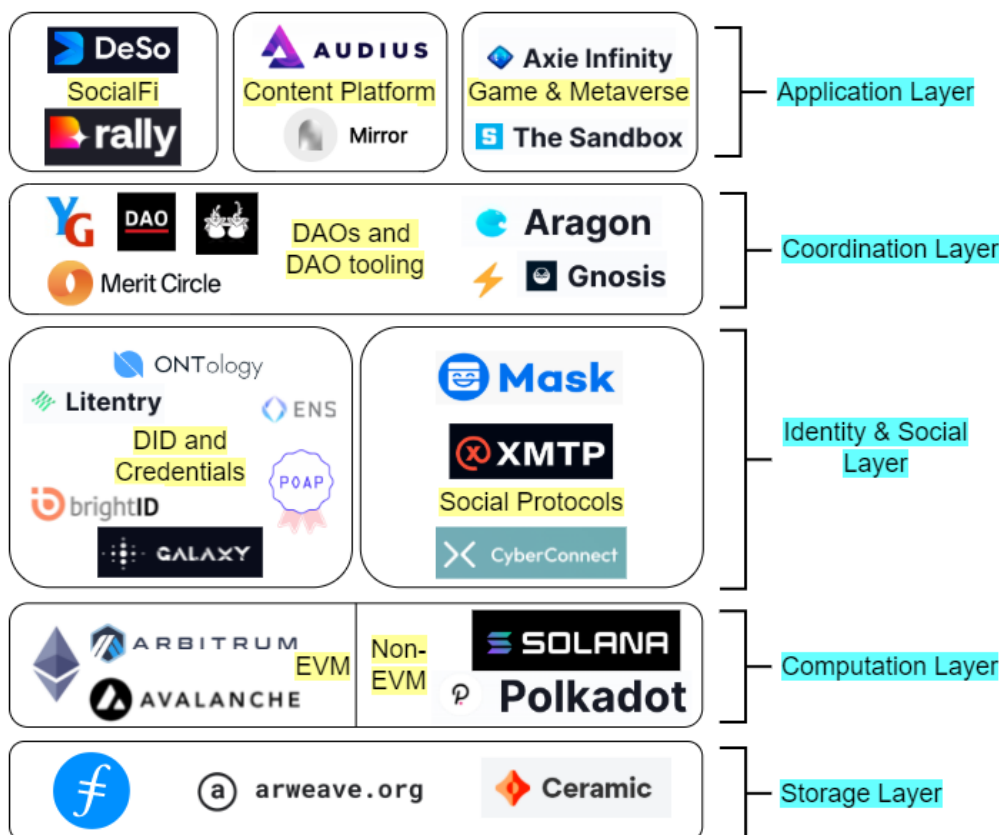
- Web3 refers to an economy of a community that controls and governs a platform based on blockchain. In specific, community members are able to govern the community and the platform.
- The purpose of Web3 economies is to realize ownership of digital assets, identity and privacy of community members, and upon on that distribute value in a fairer manner.

	Web 1.0	Web 2.0	Web 3.0
Interaction	Read	Read&Write	Read&Write&Own
Form	Static content	Interactive content	Virtual economy
Organization	Company	Platform	Community
Infrastructure	PC	Cloud service	Blockchain
Ownership	Centralized	Centralized	Decentralized

Graph 4-5: From Web1 to Web3

Source: Huobi Research

4.5.2 The Status And Future of Web3



Graph 4-12: Web3 Ecosystem

Source: Huobi Research

We divide the Web3 ecosystem into storage, computation, identity and social, coordination and application layer. Also, application layer has three subcategories: SocialFi, content platform, game and metaverse.

- Storage layer refers to decentralizing data storage to realize digital asset ownership. Players in this field include Filecoin and Arweave, and niche market solutions such as Ceramic Network (specializes in storing states of contracts).
- Computation layer refers to decentralized computation. The mainstream solution is EVM: Ethereum, Layer 2s and high performance alt-L1s such as BSC and Avalanche. Also, there are

competitive non-EVM solutions such as Solana and Polkadot (with WASM).

- Identity and social refers to decentralized solutions of identity, social graph and communication protocols to realize ownership identity and social relations. Specific players include the decentralized name service ENS, DID solution Ontology, BrightID that verifies human from bots, POAP, Cyberconnect that creates decentralized social graph, and XMTP that intends to provide communication tools between addresses.
- Coordination layer refers to decentralized community solution for the control of platform by community. DAOs are the new primitive here, and there are also DAO tooling aspects such as voting protocol snapshot, Aragon, that provides DAO as a service.
- Content platforms such as Audius provides a Web3 scenario that allows producers and consumers to govern the value distribution and reward producers directly. SocialFi is another interesting scenario where the ownership of identity aggregates verifiable information across platforms, allows for more efficient social matching and financialization. Gaming is also an important aspect: Web3 games have more a more robust economy and more vibrant user generated content, in addition to interoperability.

Chapter 5. International Policy

In 2021, the rapid development of the crypto market has prompted global regulatory authorities to gradually deepen their knowledge and understanding of this emerging field. The two biggest industry-related hot events this year emerged out of China and El Salvador, where seemingly opposite scenarios occurred. In order to maintain market stability, the Chinese government adopted a series of policy measures to completely ban crypto industry-related activities since May 2021. Consequently, a negative impact on the crypto market was immediately felt. At the same time, the government of El Salvador became the first independent sovereign country in the world to use Bitcoin as a fiat currency, which has attracted attention worldwide. For the crypto industry, 2021 was a critical watershed.

This chapter analyzes the development status and trends of global encryption policies based on

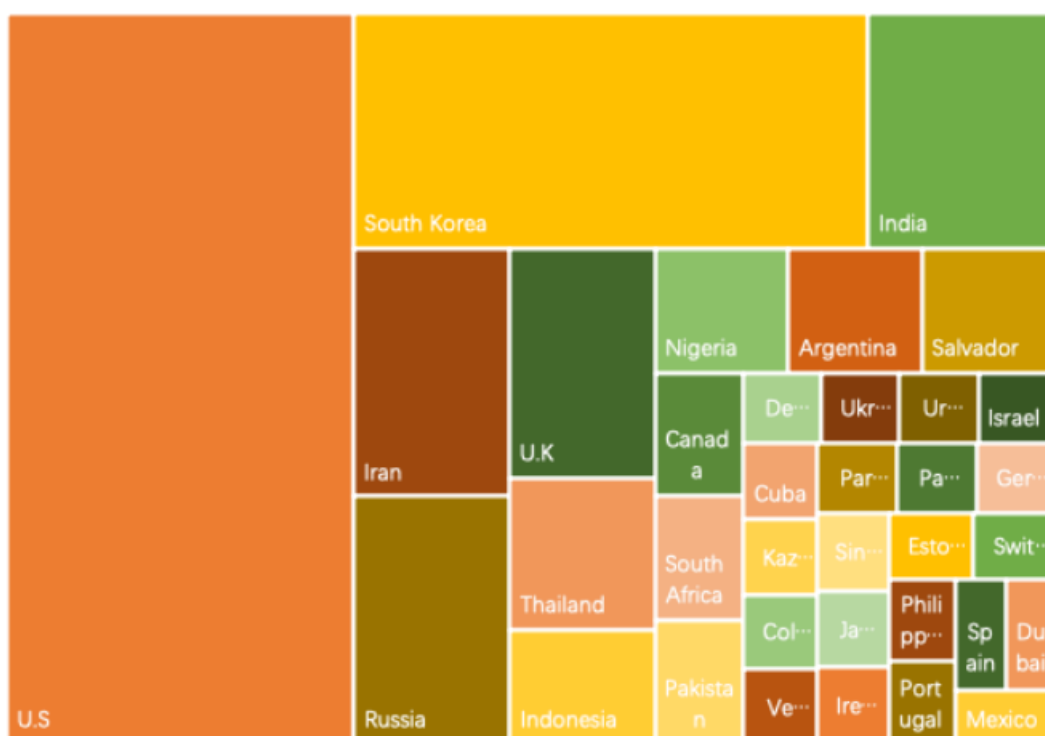
the summary statistics of global encryption policies from January to November 2021. Considering that China's policies on crypto industry are by all accounts set in stone and unlikely to change significantly in the short term, the policy analysis involved in this chapter centers around countries and regions outside of China.

5.1 General Situation of Global Encryption Policy

According to Huobi Research's statistics on crypto policies around the world in 2021, more than 40 sovereign countries and regions have issued a total of 151 regulatory measures and guidance for the crypto industry, an increase of about 75% year-on-year.

From a regional perspective, the regulatory measures adopted by the United States, South Korea and India are more concentrated and intensive. Among them, there are a total of 45 federal and state policies in the United States, followed by South Korea with a total of 24 regulations, and India with 8 related regulatory guidelines. There leaves no doubt that the intensity of policies has a certain degree of correlation with the level of development of the country or region's crypto industry. As the world's largest economy, the development of the crypto industry in the United States has attracted the attention of the global market. With the continuous enrichment of the crypto industry, the areas covered by US policy are also expanding. For example, since the beginning of this year, the US policy has covered many new fields such as DAO, DeFi, stable currency, etc. At the same time, the US has passed the issuance of Bitcoin futures ETF for the first time, which has further stimulated the development enthusiasm of the global encryption industry.

2021 Global Encryption Policy Statistics (excluding China)



Graph 5-1: Global Crypto Policy Heatmap

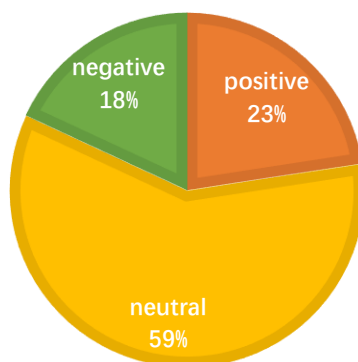
Source: Huobi Research

In order to further analyze the policy orientation of global regulatory authorities for the formulation of crypto industry policies, we divide them into positive policies, neutral policies, and negative policies according to policy types. Positive policies refer to policies that have a positive role in promoting the crypto industry, e.g. El Salvador's listing Bitcoin as a legal currency. Neutral policies refer to policies that routinely govern the crypto industry without positive or negative effects, such as the New York Police Department's release of a standard tool for analyzing cryptocurrency transactions; while negative policies refer to a prohibitive policy or related administrative penalties, such as the British FCA's ban on the sale of cryptocurrency derivatives to retail investors.

Based on the definitions above it can be said that the majority of global encryption industry policies in 2021, were neutral policies, accounting for 59% of the total, followed by positive policies accounting for 23%, and negative policies accounting for 18%. This data shows that in 2021, more than 40 countries or regions in the world, except China, have adopted a neutral-to-positive regulatory orientation towards the crypto industry, which indicates that countries are

keen to adopt crypto into their economies, but prefer to do so in a cautious manner with regulatory guidance.

2021 GLOBAL CRYPTO POLICY CATEGORIZED BY NATURE



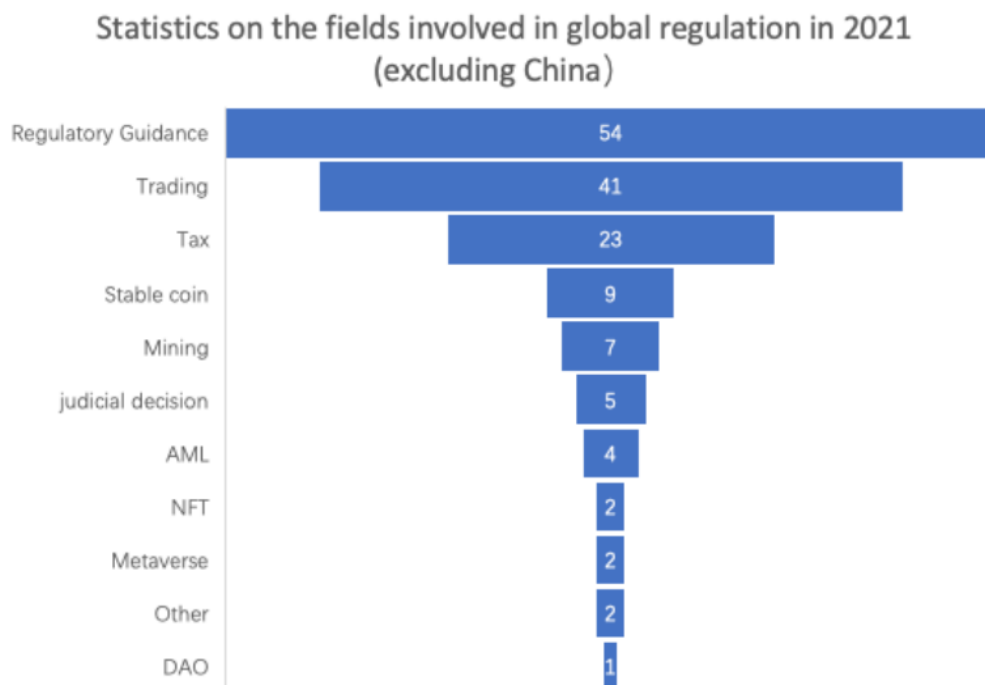
Graph 5-2: Pie Chart of the Nature of Global Encryption Policy

Source: Huobi Research

We further divided the encryption fields involved in the policy into categories such as regulatory guidance, trading, taxation, stablecoins, mining, and other 11 directions. Among their policy guidance, crypto transactions and crypto taxation were the top three, garnering the highest levels of concern – these included 54 crypto policy guidelines, 41 policies regarding crypto transactions, and 23 crypto taxation items, totaling 118 items and accounting for nearly 80% of the statistics. This shows most countries or regions in the world are actively looking to formulate a regulatory framework for crypto with a focus of issuing regulatory guidance for crypto currency trading and its related businesses. At the same time, with the continuous growth of the crypto market, regulators in various countries have also begun to pay attention to the potential tax problems in this field, as the mining mechanism used in the encryption industry consumes a lot of resources and has become a global discussion point around carbon reduction and environmental protection. It would be seen as a practical significance to levy taxes on the negative social externalities the mining process generates, and many countries have begun to focus on this area for policy formulation.

In addition to the top three policy-intensive areas, a new feature of regulatory policy in 2021 is regulatory refinement. From the statistical data, stablecoins, NFTs, Metaverse, and DAO have

also caught policy makers’ attention. In the field of encryption, this shows that policy makers have gained a better understanding of the industrial structure of the encryption industry, and policy formulation has become more targeted.



Graph 5-3: Areas Covered by Global Encryption Policy

Source: Huobi Research

5.2 New Features of Global Regulation

In the process of sorting out global policies, we found that global regulation in 2021 showed some new features. First, the trend of joint regulation began to rise. Secondly, it impacted the current international competition pattern to a certain extent. Finally, attitudes of different countries towards crypto regulation have been varied.

- Feature 1: Joint supervision gains strength

Joint regulation includes two dimensions, one is the trend of cross-departmental joint regulation within sovereign countries, and the other is the emergence of international cross-border joint regulation. Due to the global open source nature and wide business scope of the crypto industry, the divisional management model used by traditional regulatory authorities has been challenged.

The specific manifestations are that the unclear business boundaries have led to the inability to identify the main entity of industry supervision, and the increased difficulty of implementing anti-money laundering laws caused by cross-border transactions, etc., posed higher challenges to the supervision of this sector by sovereign countries. At present, with the increasing awareness of the crypto industry from all walks of life, regulators have also put forward new regulatory ideas. For example, the Federal Reserve, the Federal Deposit Insurance Corporation and the Office of the Comptroller of the Currency will jointly set up a "cross-departmental sprint" for cryptocurrency regulation in the future. The International Monetary Fund calls on countries to jointly implement global standards for the regulation of the crypto industry, while the European Union and the financial regulators in the United States are also in discussion regarding stablecoins and digital asset cooperation. It is expected that this trend will be further prolonged in the future, so as to adapt to the new model of 7*24, global business formats in the crypto industry

- **Feature 2: Changing the international competition pattern**

Due to the different attributes, definitions and views of crypto assets, countries have shown different regulatory attitudes towards this emerging industry. However, as the scale of the crypto industry continues to expand, the resulting wealth from cryptocurrency trading remains prominent, and its application value has gradually attracted attention. As a result, policy changes around the encryption industry have become the focus of international attention. El Salvador, which had previously attracted scant international attention, has become a hot topic in international discussions because of its recognition of the legal currency status of Bitcoin, and heightened international awareness of the country. At the same time, crypto assets have also become a new player in international competition. The Russian foreign minister has said that the use of "digital assets" and other currencies to replace the US dollar in the country's international settlement business would not be ruled out. The appearance of emerging crypto assets could lead to further changes in the international sphere.

- **Feature 3: Various degrees of repetition in supervision**

As the blockchain industry develops, countries' perceptions of this emerging industry will

waver. So far, India has had the highest number of changes. Various regulators in the country hold different opinions on the crypto industry - the Indian Central Bank claims crypto related activities breach the law, while the Supreme Court of India advocates the legalizing of crypto., South Korea and the United States have also experienced a certain degree of policy repetition. For example, South Korea announced in October that it would begin to tax crypto assets in the first quarter of 2022, but this has since been delayed till 2023. Many countries that actively engage in regulatory activities continue to waver in their perceptions toward how the crypto industry should develop and be regulated.

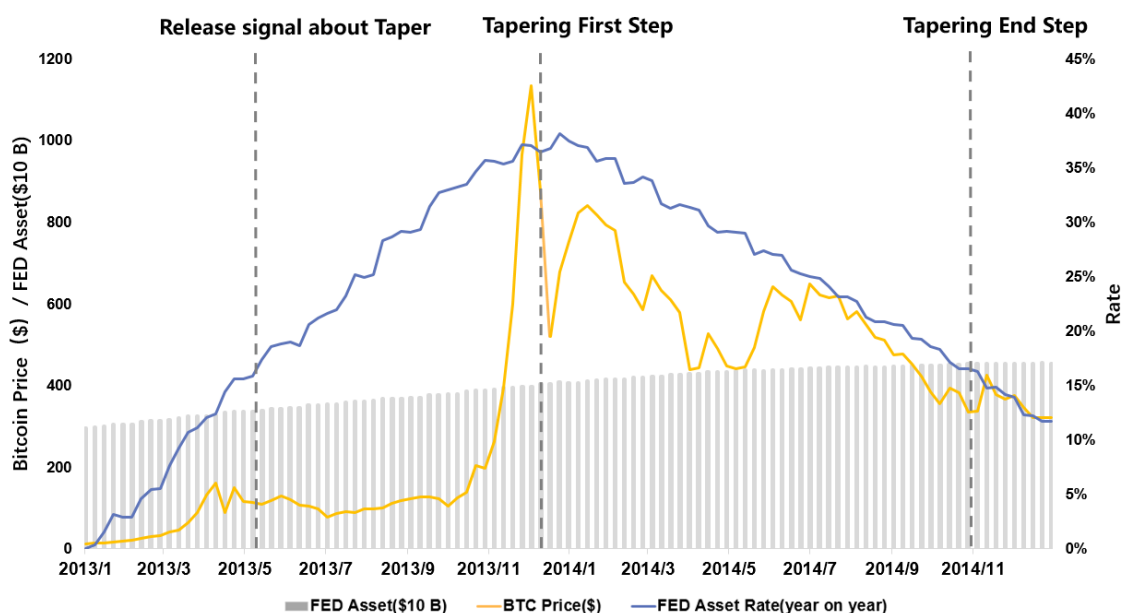
It can be surmised that the entire industry has been receiving attention from regulatory authorities and societies as it continues to develop, and this in turn will spur development of regulatory frameworks

Chapter6. Future Forward View in 2022

6.1 Global Liquidity Shrinks, Bitcoin Will Face Bear Market

In November 2021, the Federal Reserve announced a \$15 billion reduction in monthly bond purchases in an attempt to pull back on the help it has been providing for markets and the economy. This process, known as tapering, signifies a diminishing return on dollar liquidity. Although it does not inherently change the direction of liquidity, it is likely to alter the direction of fund flow or the degree of mismatch in assets. Highly risky assets like Bitcoin, are theoretically more sensitive to the change in dollar liquidity.

From last round of Taper, Federal Reserve announced Taper in December, which collides the acme of Bitcoin’s bull market in 2013, which switched to bear market for a long time afterwards.



Graph 6-1: Bitcoin Price Trend during Last Taper

Source: Wind, Huobi Research

From another point of view, normally by standard operations of Federal Reserve, a raise in the interest rate will follow the end of Taper. A raise in interest rate is commensurate to a cut down in liquidity, which would distress the price of all kinds of risky assets, including Bitcoin. So far, many senior management members of the Federal Reserve have implied that Taper might land sooner than expected. An acceleration of Taper will theoretically ease QE policies,. As a result, under the influence of market expectation, various types of highly risky assets, including Bitcoin, will be incapable of appreciating; the possibility of Bitcoin depreciation cannot be eliminated.

6.2 DAO Will Be a Major On-chain Governance Form

DAO is short for decentralized autonomous organization. It is a form of organization with no central leadership that integrates benefits from all members in order to complete organizational management and decision-making. Since the second half of 2021, DAO started fund-raising

to purchase the copy of the original US Constitution and the concept of DAO has since taken its roots in society.

Rank	PROTOCOL	AUM	TOKEN PRICE
1	Gnosis	3.42B	\$445.63
2	Uniswap	3.26B	\$18.50
3	Ethereum Name Service	3.07B	\$42.80
4	Aave	1.54B	\$294.93
5	Gitcoin	803.53M	\$14.46
6	Dydx	699.25M	\$9.43
7	Compound	662.23M	\$222.84
8	Lido DAO	649.54M	\$2.66
9	Radicle	570.83M	\$11.28
10	Synthetix	275.63M	\$6.19

Table 6-1: Top 10 DAOs by AUM

Source: Broadroom

DAO has been a rather mature form of organization with considerably sized of assets. According to DeepDAO, there are over 188 DAOs managing assets over 11.5 billion dollars; a rapid growth in Assets Under Management (AUM) AUM was observed - from 4 billion dollars to the current 17 billion dollars. However, DAO is flawed due to the absence of efficient integration scheme and complete infrastructure., In the future, there will be demand for the management of DAOs and funds they oversee. Specifically, the management of DAO funds could connect with various DeFi applications, facilitating a venue for treasury management.

6.3 Cross-chain Will Become the Infrastructure Under the Era of Multiple Chains

The Layer 1 chain landscape was filled of players in 2021. Most quality projects werelaunched on multiple Layer 1 chains. As there was enormous demand for a cross-chain bridge, star projects were born with multi-million dollars' worth of coins locked, such as Anyswap and Synapse Protocol.Accompanied by the vast development of heavy-duty Layer 1 chain and Layer 2 network, fast and secured cross-chain bridge has emerged as a significant infrastructure.

Project	TVL (\$M)	Supported chains number	Service type	Service features
WBTC	14269	2	Single-way cross chain	Support BTC cross chain
Ren Protocol	970	7	Single-way cross chain	Support BTC, ZEC and other cross chains
Anyswap	4620	23	Cross-chain between multiple chains	Supports the most public chains and the most complete currencies
Synapse Protocol	623	7	Cross-chain between multiple chains	Support Boba Network and Harmony
Wormhole	619	5	Cross-chain between multiple chains	Support rust public chain: Solana and Terra
Chainswap	unknown	23	Cross-chain between multiple chains	Deploy on Anyswap
cBridge	21	9	Cross-chain between multiple chains	A general inter-chain interoperability protocol supporting smart contract invocation is being developed
Hop Protocol	104	5	Layer2 cross-chain	Support the largest number of Layer2
Connex	10	8	Layer2 cross-chain & Cross-chain between multiple chains	A general inter-chain interoperability protocol supporting smart contract invocation is being developed

Graph 6-2: Top-tiered Cross-chain Projects

Source: Huobi Research

However, a cross-chain with basic functions will no longer suffice in future; core demand exists in the pursuit of profit via cross-chain for arbitraging and enhancing capital efficiency. Hence, cross-chain projects will likely see potential in more specialized fields surrounding integration for cross-chain transactions and profit.

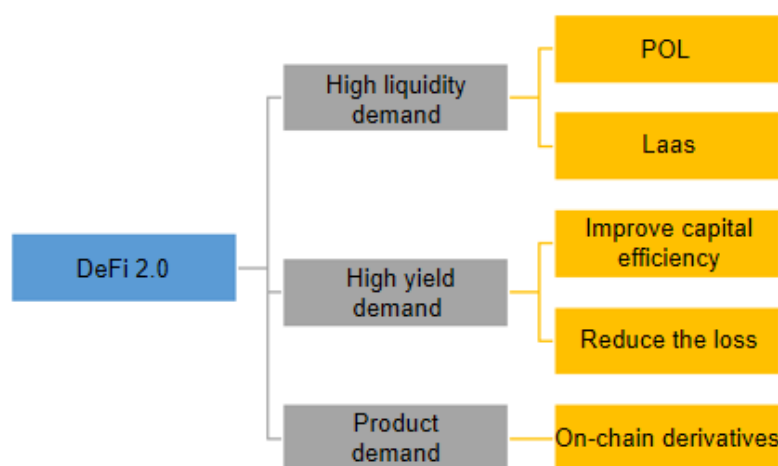
Constrained by the performance of Layer 1 chain, future projects will not stop at Dapp but pursue a higher goal to develop their own Layer 1 chain. Therefore, cross-chain protocols could have a growth period for some time, and projects on these protocols could be worth investing in.

6.4 DeFi Embarks to 2.0 , Causing an Explosion of On-chain Perpetual Contract and Forward Contract

In the past year, DeFi has seen rapid growth, with TVL that reached 246.7 billion dollars, DeFi projects have been most sought after by AMM, lenders and integrators. However, DeFi 1.0 is inefficient in capital turnover, liquidity and consumption, which limits growth potential. DeFi 2.0, however, warrants further analysis.

From future perspective, DeFi cannot succeed without the following need satisfied:

- **Better liquidity:** It requires DeFi have the capability to solve liquidity issues without relying on “liquidity mining”, which is commonly seen as POL (Protocol Owned Liquidity) and Laas (Liquidity-as-a-service)
- **Higher profitability:** Two solutions are most commonly employed to increase user profitability: One is to accelerate the capital turnover, and the other is to minimize consumption (typically seen as free loss of AMM)
- **More products:** There are very few derivatives in DeFi, yet there is strong demand on derivative types of products, such as fixed income, perpetual contract, forward contract and CDS. On-chain derivatives could emerge in DeFi 2.0.



Graph 6-3: Development Path of DeFi 2.0

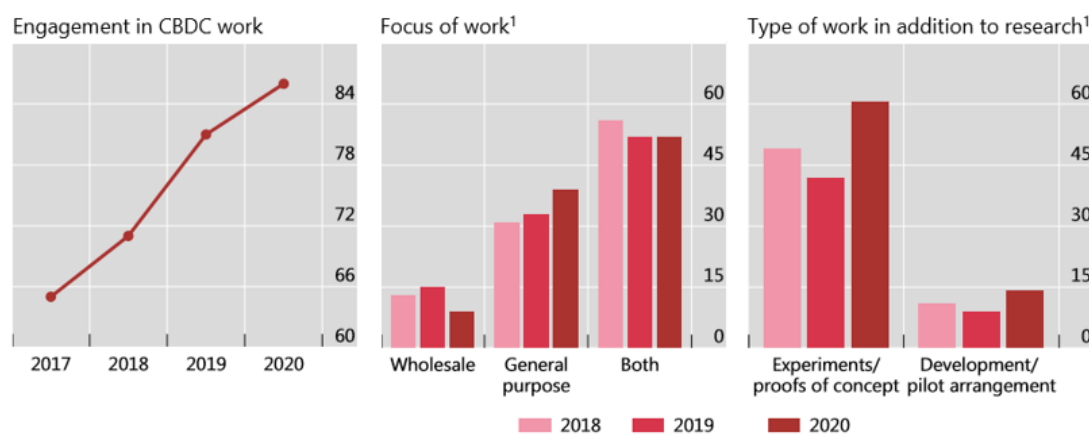
Source: Huobi Research

DeFi 2.0 projects, represented by OlympusDAO and Alchemix, have progressed for the first time. However, in a market that is gradually turning bearish, survival becomes top priority for DeFi projects. DeFi 2.0 projects will be more adaptive to market changes due to advantages in the form of liquidity, profitability and potential of innovation. More DeFi 2.0 projects will likely appear.

6.5 CBDC Will Land Steadily, Focus Place on Cross-border Payment Processing

According to the research conducted by BIS on over 60 central banks, almost 86% of central banks are engaged in the development of Central Bank Digital Currency (CBDC) in the past 4 years. CBDC can be classified into two types, retail and wholesale. The former is aimed at general public, whereas the latter is focused on institutional transactions between a central bank and financial institutions. Research indicates that retail type CBDC is most sought after by central banks. Most central banks either lay eyes on both types of CBDC, or focus on the retail type.

Graph 6-4: Research of BIS on Various Central Banks Towards CBDC



¹ Share of respondents conducting work on CBDC.

Source: BIS, Huobi Research

Most countries have acknowledged the significance of CBDC, yet remain skeptical towards its issuance. Research shows that CBDC development projects are mostly still at the concept verification stage; very few have stepped into the development phase. China is set to officially

announce the country’s CBDC,, dubbed E-CNY, after the 2022 Winter Olympics in Beijing 2022. 2022 will likely mark CBDC’s inauguration.

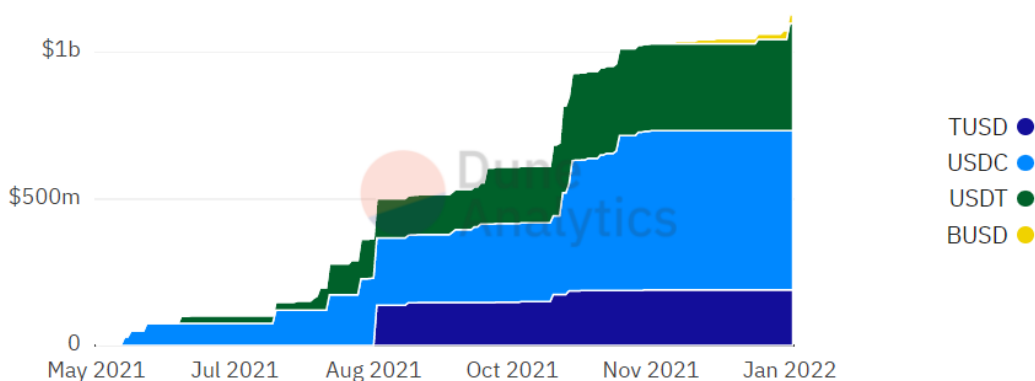
It is worth noting that CBDC’s potential as a cross-border payment processing method has attracted mass attention from various countries due to its potential could alleviate the conflict and risk when making cross-border transactions . On September 2, 2021, BIS announced a test scenarios for the use of CBDC in processing cross-border payments in conjunction with the central banks of Australia, Malaysia, Singapore and South Africa. As more mature forms of CBDC emerge this sort of cross-border transactions o this nature will could likely treplace the current SWIFT system and take its place as the core settlement system.

6.6 Lending Market Will Thrive for Institutional Participants

The current crypto lending market is mainly a mortgage market; credit lending in the crypto market is less developed largely due to the anonymity of users, which could result in high default risk. Nevertheless, institutional users flocked into the crypto market in 2021, laying the foundations for institutional credit lending.

Decentralized credit lending projects, such as TrueFi and GoldFinance, have launched in the DeFi market. TrueFi has released a total number of 1 billion dollars in credit in merely 1 year without any default activities, indicating huge potential for credit lending in the crypto market. As the number of institutions in the market increases, the credit lending market on an institutional level will likely burgeon in the coming years.

Cumulative loan originations (\$) TrueFi lending metrics



Graph 6-5: TrueFi Loan Originations

Source: Dune Analytics, Huobi Research

6.7 Wild Growth in NFT Lending and Derivatives

NFT has seen an exponential growth in the past year as a rather new form of investment s. The market cap of NFT s reached \$8.7 billion = and the industry is gaining recognition.

Historically, theNFT market will trend toward lending and derivatives. However, NFT is unique - it is challenging to ascribe a value to NFT goods and alsolacks market liquidity. NFT lending cannot be realistic until thepricing problem can be solved; NFT oracles, which aim to provide verifiable information on NFTs that could lead to more established pricing mechanisms, could be the answer. NFT oracles and other NFT pricing solutions will likely feature prominently in the NFT market going forward.

Two development paths will likely emerge NFT lending and derivatives by different types of mortgages:

First, lending and derivative business on NFT It has the advantage of high efficiency in the use of capital as it underlies the price of NFT to conduct lending and derivative trade, yet with low liquidity.

Second, lending and derivative trade based on the floor price of NFT. It has low capital usage efficiency as the floor price is lower than the price of NFT, but with high liquidity. Specifically, floor price of similar NFTs within the same series could form the basis for a constantoffering price and provide sufficient liquidity. It could easily be the marking price for related derivatives, securing the safety of NFT derivative transactions.

6.8 New Layer 1 Chains Will Appear, Forming New Players Structure

Total Value Locked All Chains

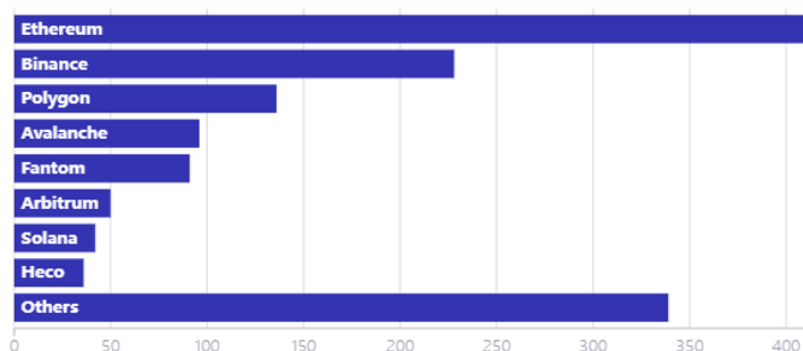
Chain	TVL	Protocols	1d Change	7d Change	30d Change	7d Protocols Growth	30d Protocols Growth
Ethereum	163,946,561,442.26	322	-5.67%	-5.19%	-9.4%	0	33
Binance	18,660,041,983.72	200	-3.30%	-6.81%	-15%	3	47
Terra	12,930,525,288.91	10	-8.12%	0.03%	20%	0	0
Avalanche	12,584,406,358.88	86	-5.78%	-8.31%	22%	10	25
Solana	11,474,113,437.62	38	-8.43%	-19.45%	-19%	0	7
Tron	7,218,544,197.94	5	-3.10%	-4.87%	-28%	0	-1
Fantom	6,765,304,053.09	83	-2.43%	-9.69%	-17%	3	15
Polygon	4,934,139,522.48	122	-5.83%	-1.00%	-2.7%	2	15
Arbitrum	2,198,877,698.63	44	-5.63%	-0.73%	-27%	3	6

Table 6-2: Newly Emerged Layer 1 Chains

Source: footprint analytics

Solana, Avalanche and Fantom were sharp performers in the second half of the year. According to DeFiLlama, as of December 11, the cumulative TVL of each Layer 1 chain surpassed \$246.8 billion: \$163 billion in Ethereum, \$16.08 billion s in BSC, \$12.86 billion in Terra, \$11.28 billion in Solana, \$11.25 billion in Avalanche, \$4.82 billion in Polygon and \$4.56 billion in Fantom.

Number of Protocols by Chain



Graph 6-6: Number of Protocols by Chain

Source: footprint analytics

As use of the Ethereum network is costly, the value of Ethereum spilled to other Layer 1 chains. As new Layer 1 chains, such as Solana and Avalanche, continuously provide incentives to accelerate the development of ecosystem, Layer 1 chains have entered an unprecedented era of development.

6.9 Insurance Market for Crypto Will Thrive

The lasting prosperity of DeFi, coupled with the steady growth of Layer 1 chain ecosystem, has driven demand for security of crypto asset.. Currently, the security issues of smart contracts are addressed via the auditing of the smart contract by third party; and this has brought companies with expertise in blockchain security, such as SlowMist and Quantstamp, to prominence.

At present, there are many insurance startup projects in the DeFi field, and the locked value of some projects has exceeded \$100 million. However, according to Bitcoinist, only 2% of DeFi value is currently insured, so the insurance market has further potential for growth in the future.

Rank	Name	Deploy the public chain	TVL (M\$)
1	Armor	Ethereum	620.76
2	Nexus Mutual	Ethereum	578.7
3	Unslashed	Ethereum	91.3
4	InsurAce	Ethereum、BSC、Polygon	38.5
5	Sherlock	Ethereum	30.6
6	Guard	BSC、Polygon	20.4
7	Bridge Mutual	Ethereum	14.3
8	Itrust Finance	Ethereum	9.5
9	Bumper Finance	Ethereum	8.6
10	Tidal Finance	Polygon	7.1

Table 6-3: Top 10 Bestsellers of Insurance in DeFi

Source: DeFi Llama

Smart contract auditing firms have benefitted from the DeFi boom since 2020. Preliminary auditing cannot guarantee the perfection of smart contract, nor is it liable for the consequences if the smart contract is flawed and losses ensue. From a development perspective, there would be larger demand for the coverage provided by customized insurance plan. Therefore, the market for smart contract insurance will be much larger than that of current auditing firms.

6.10 Interim Mainstream Scaling Solution Will Meet Best Time for Development

Since the emergence of Ethereum, the weak transaction processing capability has resulted in frequent jams on the network. Furthermore, the rise in gas fees has severely limited the development of the Ethereum ecosystem. Ethereum's ability to scale remains a matter of concern. Layer 2 solutions in previous years, such as state channel, Plasma, etc., are incapable of satisfying the requirements of DeFi, further adding to the case for sharding. As the solution to status quo is urgent, Rollup has become the best solution available for scaling of Ethereum in the short run, growing to be the transition to Ethereum 2.0.

Overall, zk-rollup outcompetes others in Rollup with its low cost, fast speed and high security. Rollup has seen a rather quick development since various Rollup mainnets went live. As of the end of December, TVL reached 5.5 billion dollars, which Arbitrum itself occupies most of the market share of 2.4 billion dollars.

No.	Name	TVL	Market share	Technology
1	Arbitrum	\$2.43B	44.06%	Optimistic Rollup
2	dYdX	\$975M	17.68%	ZK Rollup
3	Loopring	\$546M	9.90%	ZK Rollup
4	Boba Network	\$508M	9.22%	Optimistic Rollup
5	Optimism	\$437M	7.93%	Optimistic Rollup

Table 6-4: Top 5 Rollup

Source: L2BETA

However, current zk-Rollup is aimed at particular applications and not compatible with universal applications. A universal zkEVM is necessary for faster diffusion of zk-Rollup. As more table-searching configurations and customized tools are made available, alongside the improved efficiency of the recursive proof process, zkEVM has seen a fast development track. ZkEVM will have a major breakthrough in 2022, and zk-Rollup will be the most accepted solution for Ethereum scaling.

About Huobi Research

Huobi Research established in April 2016, and has been committed to comprehensively expanding research and exploration in various fields of blockchain since March 2018. The research aims to accelerate the research and development of block chain technology, promote the application of blockchain industry, and promote the ecological optimization of blockchain industry. Its research contents include the industry trend, technology path, application innovation, and mode exploration in the blockchain field. Based on the principle of public welfare, rigorous and innovative, Huobi research will carry out extensive and in-depth cooperation with the government, enterprises, universities and other institutions in various forms to build a research platform covering the complete industry chain of blockchain, and provide blockchain technology for the blockchain industry, and provide a solid theoretical basis and trend judgment for professionals in blockchain industry, and promote the healthy and sustainable development of the entire blockchain industry.

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