

2Q19

CRYPTO RETROSPECTIVE

CIRCLE RESEARCH

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Highs, lows & must knows

2019 crypto trends

Bitcoin

This quarter, bitcoin outperformed relative to the first quarter across many key metrics (price, daily transaction count and value, daily active addresses, hashrate, etc.). New proposals aimed at enhancing privacy (Taproot and Schnorr) and reducing transaction bandwidth required by bitcoin nodes were introduced as well, highlighting that the community is keen to address challenges and implement innovation that makes the network stronger. Additionally, common topics of discussion in the crypto community regarding bitcoin centered around the upcoming halving in 2020 (and the impact of prior halvings on the Bitcoin network and its performance), the implications of declining block rewards on the network's security, and the implications of reorganizations in response to exchange hacks, among other topics.

Ethereum

Similar to bitcoin, Ethereum outperformed across many key metrics, (such as daily transaction count and value, total daily gas usage, average transaction size, etc.) quarter over quarter (but inter-quarter performance was more mixed than for bitcoin). A key announcement from the Ethereum community this quarter was the continued development and release of Ethereum 2.0 Phase 0 testnet (or Ethereum's proof-of-stake beacon chain) by Prysmatic Labs. Other topics of discussion this quarter included the return and rise of decentralized autonomous organizations, leveraging zero-knowledge proof technology, and upcoming competition from newer smart contract platforms.

Defi/open finance

The open finance ecosystem continues to display explosive growth across metrics used to track progress as well as the speed with which new projects are launching in this burgeoning ecosystem. Notable call outs include rising interest in decentralized lending platforms, a month over month rise in volumes on decentralized exchanges and the proliferation of projects using base open finance protocols (Maker's DAI, OX, Compound Finance, etc.) as composable building blocks.

Highs, lows & must knows

2019 crypto trends

Institutionalization

“Institutionalization” has been a recurring theme for at least a couple of years. While involvement depends on the definition of “institution”, we believe we’re starting to see evidence of greater involvement from institutions and investors that were already in the space as well as new, incumbent institutions gearing up to enter the space. We highlight the maturation of institutional infrastructure, such as regulated exchanges, custody providers, and investment vehicles and products, paving the way for incumbents enter. Notable signs of involvement include highs in inflows into Grayscale products and the institutional makeup of inflows into these products and all time highs in CME bitcoin futures daily volume and open interest. Additionally, multiple providers seeking approvals from regulators such as the CFTC have been able to secure the licenses needed to roll out key derivatives products.

Stablecoins

Libra was the major announcement in the stablecoin arena this quarter. The response was mixed with many in the community highlighting that Libra could be the gateway drug for Facebook’s 2B+ users into real crypto assets like Bitcoin and Ethereum, while others were not convinced of Facebook and Libra’s claims that users’ financial data will be kept separate from their social data. In terms of existing stablecoins, the magnitude of the rise in USDC’s market cap was the greatest, followed by USDT, which saw its dominance rise despite hurdles in 2Q19.

Token offerings

Initial exchange offerings continued to dominate the conversation around token offerings this quarter, especially driven by Bitfinex \$1 billion token sale for its LEO exchange token. While these assets continued to get attention from investors and the media, the returns for tokens that conducted IEOs as well as the exchange tokens often needed to participate in these sales were not as significant as in the first quarter this year. The security token industry is still in an embryonic phase, with very few offerings taking place in 2Q19.

Highs, lows & must knows

Crypto funding

Funding in 2Q19 was headlined by Bitfinex's \$1 billion IEO for its LEO exchange token, which was more than all other tokens sales--ICOs, STOs and IEOs--combined. The past few months also introduced two new, innovative funding models: initial futures offerings (IFOs) and the auction style offering used by Algorand. Funding for continued open source ecosystem development has seen increased attention. Proposals for sustainable funding models include formalized funding methods (Hard Core Fund for Bitcoin), DAOs (MolochDAO) and, most recently, a dev tax on block subsidies (EIP 2025). Regarding VC funding, we noticed three categories that stood out--wallets/payments, exchange, and security/privacy/identity.

Crypto market performance

Bitcoin's strong price rally over the last quarter (up 165% q/q) is an indication Bitcoin has entered into a new cycle. Many have pointed to growing geopolitical tensions and financial uncertainty as potential reasons why investors have turned to uncorrelated, sovereign, safe-haven assets like Bitcoin. The increased focus on bitcoin has not yet shifted to include less established crypto assets, as bitcoin's price has outperformed all crypto indices (Bitwise Large, Mid and Small) and Bitcoin market cap dominance has continued its upward trend, reaching a two-year high of 67% on June 16.

Crypto network activity

The hashrate devoted to Bitcoin (up 32% q/q) hit a new all time high in 2Q19, topping the previous high set in August 2018. Ethereum's total hashrate reversed its downward trend seen in 1Q19 (likely driven by the block reward reduction with the Constantinople upgrade) and is up 19% q/q. Lightning Network (LN) metrics have tapered relative to 1Q measurements, marked by decreases in bitcoin capacity (down 11% q/q) and unique channels (down 12% q/q). However, there continues to be a proliferation in the development of LN infrastructure and apps.

The total number of dApps increased again quarter over quarter, but dApp deployment on the top smart contract platforms is trending down significantly. The average number of dApps deployed on Ethereum and EOS in 2Q19 was 43 (down 29% q/q) and 16 (down 58% q/q) respectively.

2019 crypto trend update

Six Key Themes

BITCOIN

ETHEREUM

DEFI/OPEN FINANCE

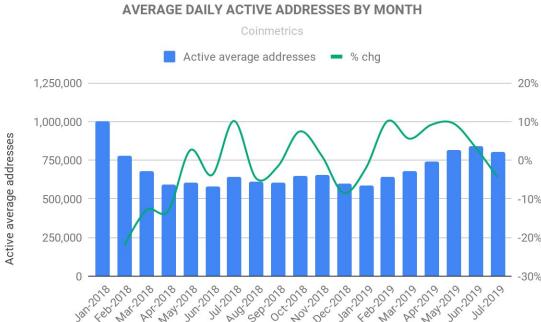
INSTITUTIONALIZATION

STABLECOINS

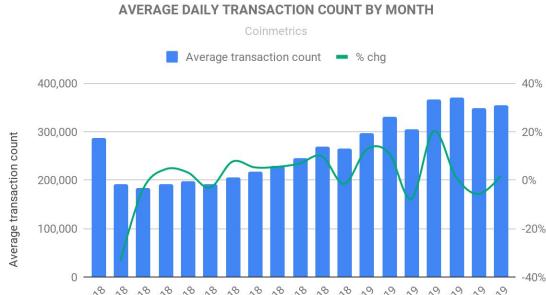
TOKEN OFFERINGS
(STO, ICO, IEO, IFO)

BTC

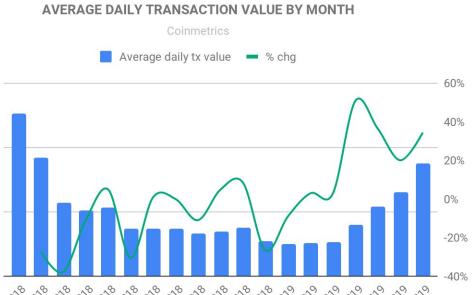
Growth in Bitcoin network activity



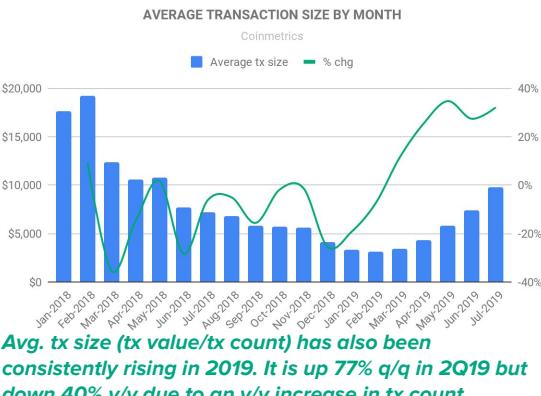
Avg. daily active addresses increased for 5 consecutive months from Jan to Jun 2019. Daily active addresses are up 26% in 2Q19 q/q and 35% y/y.



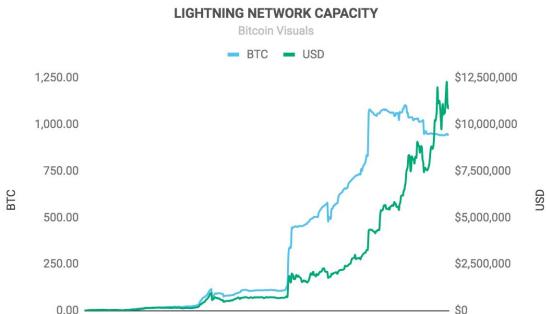
Avg. daily transaction count had mixed monthly performance though was up each month relative to 2018. Daily count is up 17% in 2Q19 q/q and 187% y/y.



Growth in avg. daily value transacted (in \$) m/m has been linear since Jan 2019. Avg. daily value transacted is up 106% in 2Q19 q/q and 13% y/y.



Avg. tx size (tx value/tx count) has also been consistently rising in 2019. It is up 77% q/q in 2Q19 but down 40% y/y due to an y/y increase in tx count.



Lightning Network capacity is up 135% q/q in USD terms due to the rise in the price of bitcoin, but down 11% q/q in BTC terms. It is up 61x y/y and 35x y/y in USD and BTC terms, respectively.

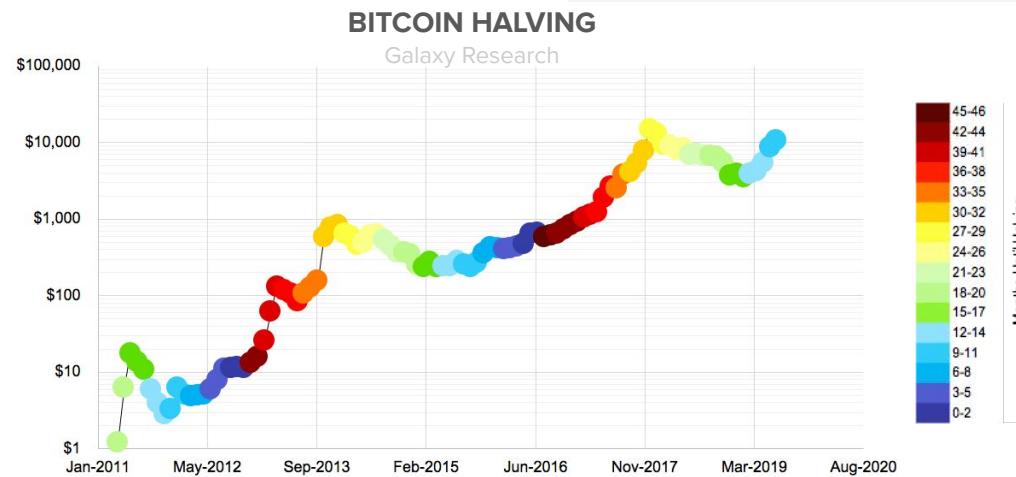
Note: While it's important to track and pay attention to these metrics, they will become less effective at capturing all network activity (1) the more that transactional activity occurs off-chain on centralized exchanges or (2) should more activity shift to layer two platforms (to payment channels like Lightning Network or to sidechains).

BITCOIN

Bitcoin halving in less than 300 days

Bitcoin's issuance rate (or block reward) was programmatically designed to decline by 50% every 210,000 blocks (every ~4 years based on the 10 minute block time); this is referred to as the "halving". Bitcoin has undergone two halvings since its inception and the third halving event will take place in May 2020. This pattern will continue until the block reward becomes zero.

Block reward	Date range	Daily issuance	Yearly issuance
50 BTC	2009-2012	~7,200 BTC	~2.6 million
25 BTC	2012-2016	~3,600 BTC	~1.3 million
12.5 BTC	2016-2020	~1,800 BTC	~657K
6.25 BTC	2020-2024	~900 BTC	~329K
And so on...			



Bitcoin halving in less than 300 days

Historically, this constraint on supply has had an impact on the price before and after the fact. While past performance is not indicative of future results, we can evaluate certain metrics to determine the implications of the event on performance. Note: The magnitude of the impact that halvings have on price will decline as block rewards decline.

- **First halving:** The price of bitcoin rose from a low of \$2.24 on Oct 20, 2011, over 400 days before the first halving on Nov 28, 2012, to \$12.22. The price continued to rally after the halving, reaching an ATH (for that period of time) of \$1,189 371 days later on Dec 4, 2013.
- **Second halving:** After bottoming on Jan 14, 2015, the bitcoin price rallied in the following 542 day period leading up to the second halving and continued to rally through 2017, reaching a peak of \$19,641 on Dec 16, 2017.
- **Third halving:** The bottom this cycle may have occurred on Dec 15, 2018 (at \$3,185) if we assume a similar pattern this time around, 521 days before the expected date (May 19, 2020) of the third halving.

Bottom to halving	First halving	Second halving	Halving to ATH	First halving	Second halving
Relative bottom	\$2.24	\$172	Price at halving	\$12.22	\$654
Price at halving	\$12.22	\$654	Relative ATH	\$1,189	\$19,641
Change	5.5x	3.8x	Change	97x	30x
Days	10/20/11 to 11/28/12 405 days	1/14/15 to 7/9/16 542 days	Days	11/28/12 to 12/4/13 371 days	7/9/16 to 12/16/17 525 days

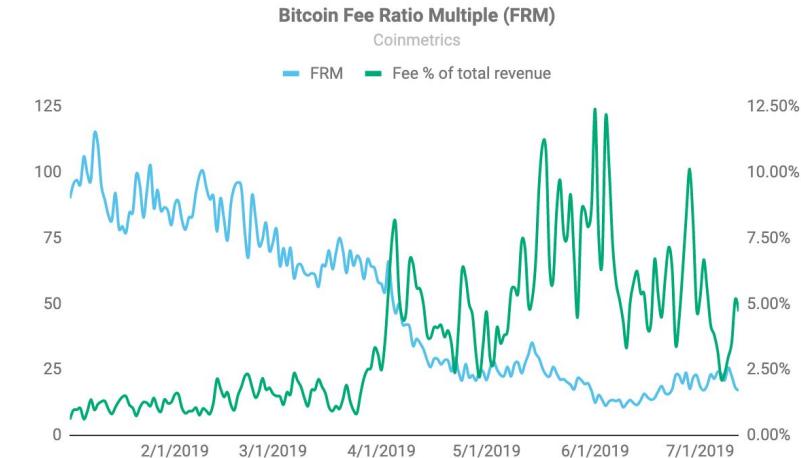
Discussion on Bitcoin's long-term security

Fees are intended to constitute Bitcoin's security budget long-term. As the block subsidy tapers to zero, miner incentive will transition entirely to transaction fees so the system can be inflation free. However, fees only represent ~3% of miner revenue at the moment (though it has been trending up as of late), bringing into question whether transaction fees as miner incentive is a sustainable security model.

The community has discussed a few important theories regarding what constitutes an appropriate miner incentive and how to enhance the Bitcoin's security once the block reward subsides:

Nic Carter: The simplest approach to enhance fee revenues would be to increase economic or semantic (or both) density of transactions via overlay networks (e.g LN) or bundling data from other networks into a single Bitcoin transactions (e.g. Veriblock) respectively.

Dan Held: There is empirical evidence to show that total fee revenue is trending up over time. Further, the growing demand for Bitcoin blockspace will continue to increase the market value of highly secure transfers on Bitcoin. And higher Bitcoin fees would be in-line with (or better than) the cost of transacting traditional stores of value (ie. Real Estate, gold, wire transfers, etc). As a result, Bitcoin's security is fine in its current state.



Fee Ratio Multiple (FRM) is the ratio of total miner revenue (block reward + transaction fees) to transaction fees. According to [Matteo Leibowitz](#), FRM is explicitly about security and measures the strength of an asset's properties as a store of value. A low FRM suggests an asset can maintain its current security budget without having to rely on an inflationary rewards. Bitcoin's FRM has **decreased significantly** YTD (down 75%), though it has been trending up over the last month.

Reorganizations

When Binance suffered a hack worth 7000 BTC (~\$41 million at the time) on May 6, some members of the crypto community suggested the exchange coordinate a “reorg” of the Bitcoin blockchain to rewrite Bitcoin’s history and undo the hack. In the end, Binance decided not to pursue a reorg approach, citing the damage it may cause to Bitcoin’s credibility and within the community as well as the uncertainty surrounding its chance of success.

Why execute a reorg?

Benevolent: Reverse the outcome of a hack or attack (i.e. Binance)

Malicious: Execute a 51% attack to double-spend assets.

Natural: Smaller scale reorgs occur naturally, on occasion in PoW blockchains and have resulted in the need to wait for multiple confirmations

When do reorgs occur?

Reorgs occur when a fork outpaces, in terms of work done, competing chains to become the chain of record. All block rewards earned on the shorter fork since the split become obsolete and any transactions completed are replaced by blocks on the more popular fork.

What is the difference between a hard fork and a reorg?

Both instances start with an alternate extension from a prior block, but the outcomes and the intentions vary. Hard forks are often premeditated and result in separate, co-existing chains. OTOH, reorgs result in a single final chain where actions on the forked chain can impact transactions on the main chain if the forked one accumulates the most work.

What are the implications?

Large scale reorgs, malevolent or not, could be damaging to the credibility of the asset in question. For the benevolent actor or attacker, the chance of success is uncertain. While the economics can be enticing, attempting a targeted reorg is high risk with a burdensome up front fixed cost. Further, public knowledge of a network attack could debase the value of the cryptocurrency to an unprofitable level.

Innovative developments and proposals

Bitcoin proposals

Schnorr: Schnorr signatures makes multi-signature and single-signature transactions indistinguishable on the blockchain, providing significant scalability and privacy enhancements.

Taproot: The Taproot upgrade makes outputs and cooperative spends indistinguishable from each other, enables more complex encumbrance conditions, improves privacy by hiding unexecuted conditions/scripts, and allows inclusion of non-consensus enforced data with very low or no additional cost.

Erlay: Erlay is a transaction dissemination protocol that is projected to reduce bandwidth consumption by 40% while also keeping bandwidth use almost constant as connectivity increases.

Layer 2

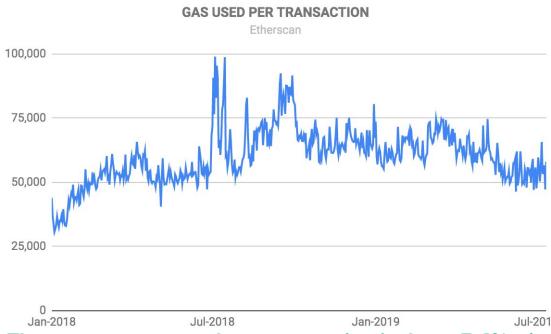
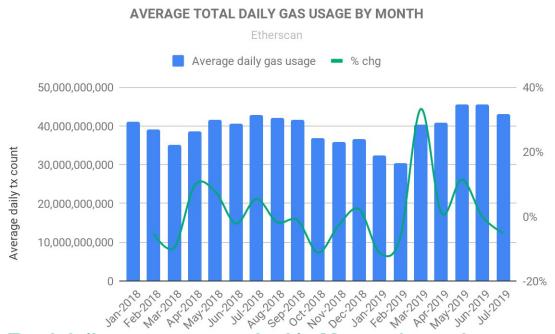
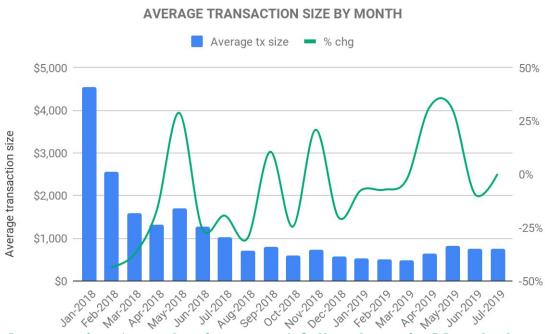
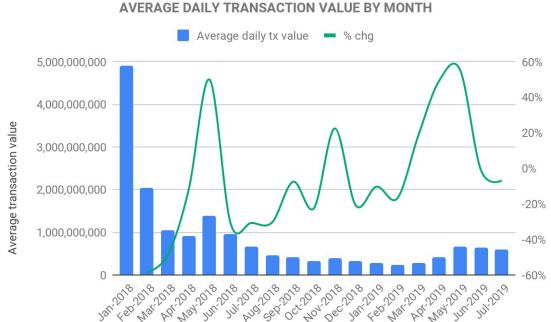
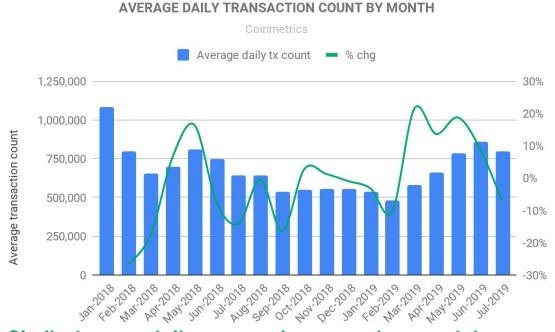
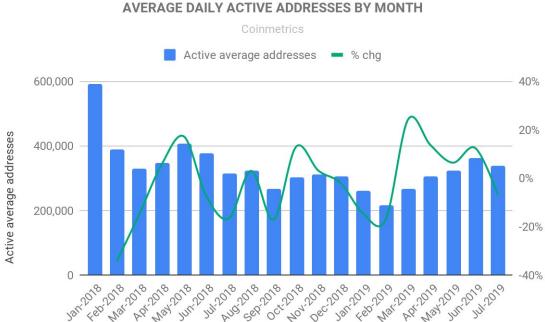
Lightning: The Bitcoin lightning network is a payment channel, or a layer 2 solution that aims to make Bitcoin transactions more private, faster and cheaper. It launched on mainnet in January 2018. We highlight lightning network performance in slides 73-74.

Liquid: The Liquid Sidechain Network developed by Blockstream is an independent blockchain linked to the Bitcoin network via a two-way peg. The network uses a small group of validators (called a federation) to validate transactions and offers accelerated transaction times and enhanced privacy compared to its base layer. In May, Blockstream launched the Liquid Securities platform on top of Liquid, which allows users to launch their own tokens on the Liquid network.

Rootstock: RSK is a sidechain looking to bring smart contract functionality to Bitcoin. RIF Labs, the development team behind the RSK Network, also launched a third-layer scaling solution, called Lumino, in May to help increase transaction throughput.

ETHEREUM

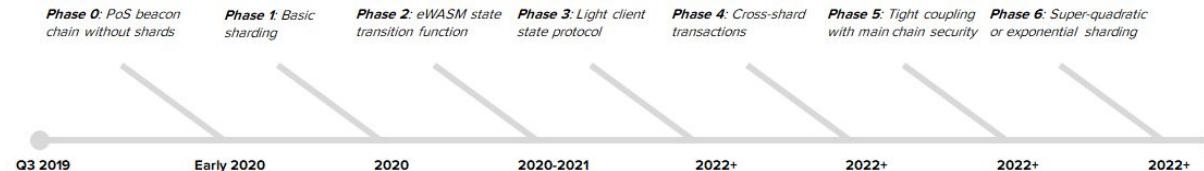
Growth in Ethereum network activity



Ethereum 2.0

Ethereum 2.0 was conceptualized to redesign the protocol and solve many of the bottlenecks of Ethereum 1.0, including its scalability, sustainability, security, and interoperability. It will be the most comprehensive upgrade ever implemented by the Ethereum community.

What's the roadmap for ETH 2.0?



When is Phase 0 intended to launch?

The deposit contract is slated to be deployed onto the ETH 1.0 chain during DevCon V in October. Following the deployment, holders will deposit ETH into the contract and if a “sufficient” number of ETH is staked, the beacon chain will launch with a genesis event. January 3, 2020 is the intended target date for the genesis event.

What are some of the steps until Phase 0 is implemented?

- Networking (libp2p development and testing)
- Client interoperability (Interop lock-in scheduled for September)
- Formal executable spec of the beacon chain (audit completed by Runtime Verification)
- Sufficiently established testnets

Ethereum 2.0 development teams

TEAM	CLIENT	LANGUAGE	TOTAL FUNDING	DESCRIPTION
Prysmatic Labs	Prysm	Go	~\$1.6 million from EF, ECF, Vitalik YOLO fund, WXblockchain and more	Prysm is a sharding client for ETH 2.0 (live on testnet) that will act as a counterpart to Geth
ChainSafe	Lodestar	JavaScript	\$110k from Vitalik YOLO fund and EF	Beacon Chain implementation, Simple Serialize (SSZ), the ETH 2.0 standard serialization algorithm, as well as BLS Signatures and Signature Aggregation, the solutions for signature verification on sharded chains
PegaSys	Artemis	Java	ConsenSys spoke	Artemis is being developed alongside PegaSys' enterprise-grade ETH 1.0 client, Pantheon
Harmony	Harmony	Java	\$90k from EF	Harmony will act as the ETH 2.0 alternative to enterprise-focused Pantheon client
Parity Technologies	Shasper	Rust	\$5 million from EF (and \$750k from seed round led by Blockchain Capital and others)	The ETH 2.0 counterpart to the Parity client
Sigma Prime	Lighthouse	Rust	~\$250k from EF, Vitalik YOLO fund and more	Serenity implementation being built with a “security first mindset”
Status	Nimbus	Nim	\$500k from EF (and undisclosed funding from ConsenSys and private individuals)	Designed to be Ethereum's first mobile-native client
Ethereum Foundation (EF)	Trinity	Python	\$80k from EF	The ETH 2.0 counterpart to the ETH 1.0 Trinity client
Yeeth	Yeeth	Swift	346 DAI from Gitcoin grant	A swift client is efficient on Apple hardware and can be compiled to run on Linux

Ethereum 1.x & Istanbul

ETH 1.x is the codename for a comprehensive set of near-term upgrades for Ethereum's PoW mainnet.

Ethereum 2.0 is being deployed as a separate chain and won't be rolled out for 2 to 3 years, so the current mainnet will need to receive continued improvements during this multi-year transition, particularly as the state size growth degrades performance and increases storage requirements.

The 1.x improvements are centered around:

1. Mainnet scalability increases through client optimizations and block gas limit raises
2. Full node sustainability by reducing and capping space requirements with "storage rent"
3. VM upgrades including eWASM for an improved developer experience.

The first set of upgrades is slated for October 2019 and dubbed "Istanbul." The deadline for proposals passed in May, and research is now focused on major client implementations and testnet upgrades.

- **Included EIPs:** smoother contract upgradeability (EIP 1702), precompiles for faster verification and authentication of data (EIP 2024/2129), and transaction data gas cost reduction (EIP 2028).
- **Debated EIPs:** EIP 1057, or ProgPoW. The EIP proposes a change in the protocol's mining algorithms and reduce the advantage ASICs have over GPUs. There appears to be general support for the EIP amongst the core developers, but the results from third-party audits of the algorithms need to come back before a final decision is made.

Rise of the DAOs

Decentralized autonomous organizations (or DAOs) have seen a recent resurgence in activity, which comes as a slight surprise following the now infamous hack of The DAO in 2016 that led to the ETH-ETC hard fork. This past year has given rise to a number of new DAOs as well as existing DAOs that have experienced exceptional growth, and their presence and notable advantages are increasing in importance.

What is a DAO?

DAOs are internet-native organizations that can execute transactions autonomously based on a predefined set of rules encoded in a transparent, trustless platform (i.e. blockchain). All DAOs manage the allocation of valuable internal capital (e.g. funds to be issued to open source network developers) without relying on hierarchical management. DAO shareholders (e.g. contributors, members, token holders, etc.) at any level can submit and vote on any proposal, but do not take part in the execution process (e.g. the delivery of funds).

What are reasons for launching a DAO?

Since no centralized entity or individual controls a DAO, these organizations can effectively manage the allocation of funds or finalize member-approved decisions in open, distributed networks, which can be ideal for crypto networks and associated applications. Implementing a DAO can remove costs related to labor and security of executing financial transactions as well as centralization risks that favor a single entity over the network as a whole. DAOs also enable open participation by any member and record and share all policies and transactions in a blockchain for enhanced visibility and auditability.

What are the risks and challenges?

- Manipulation, especially by large token holders (as evidenced by an ANT whale [sabotaging](#) a proposal in Aragon's second network vote)
- Plutocracy (long term result of various manipulations by the wealthy)
- Lack of technical expertise among members may lead to uniform decision making
- It remains unclear how DAOs will be regulated (though Vermont has created a [legal framework](#) for blockchain-based organizations)

Recent DAO developments



What

MolochDAO was launched in Feb 2019 to help solve the coordination problems in deploying funds towards core ETH development.

2Q19 notable events

This May, it was revealed Joseph Lubin, Vitalik Buterin and some individuals at ConsenSys and the Ethereum Foundation contributed 1K ETH each to MolochDAO (~\$17k at the time). The DAO now has 65 total members and its guild bank value has climbed past \$1.5 million.



Aragon

What

Aragon is a dapp that provides infrastructure for projects to create and manage DAOs. It is also operating as a DAO.

2Q19 notable events

The second Aragon Network Vote concluded in April, leading to 6 new approved Aragon Governance Proposals (AGPs). Notably, a proposal suggesting Aragon focus only on Ethereum and not Polkadot was rejected, primarily due to the actions of a single ANT holder. Aragon Network Vote #3 began on July 25.



kyber network

What

Kyber Network is an on-chain liquidity protocol that is looking to transition into a DAO so community voting will determine future upgrades and integrations.

2Q19 notable events

Kyber first experimented with DAO governance in March by building an experimental Aragon-based DAO. Kyber launched a second DAO voting experiment in June, using DAOstack's Alchemy platform (another DAO infrastructure provider) this time around. The current DAO manages 17k KNC (~\$4k at the time) that users can submit proposals to request a portion (or all) of the budget.



What

dxDAO is a community-governed DAO created by Gnosis and built using DAOstack to control the DutchX decentralized trading protocol.

2Q19 notable events

dxDAO went live on May 29 after spending ~5 months in testing and development. Since launch, about \$19.5 million from over 300 unique Ethereum addresses has been locked up to earn voting power. Gnosis also announced it will be stepping back from promoting, publishing on, or funding proposals on dxDAO.



What

MakerDAO is a smart contract protocol that manages the DAI Credit System and is governed by the community of MKR token holders.

2Q19 notable events

MKR holders have voted on proposed changes to the annual stability fee 14 times since the end of 1Q. The latest vote raised the stability fee a record high of 20.5%. The Maker Foundation also announced voting on the list of tokens to be considered as collateral for Multi-Collateral DAI (MCD) will begin the week of July 29.

Integration of zero knowledge proofs (ZKPs)

EIP-2028

What? EIP-2028 was accepted into the planned Ethereum hard fork upgrade, Istanbul, which is tentatively scheduled to take place in October. The proposal was introduced by Eli Ben Sasson and other members of the StarkWare team, as well as Alexey Akhunov.

Why? The proposal aims to reduce gas cost of transaction data by a factor of 4x or more based on an [analysis](#) by StarkWare. As a result, Ethereum could see significant gains in scalability to support privacy-focused layer 2 solutions such as Vitalik Buterin's zk-Rollups or StarkWare's StarkDEX.

StarkDEX

What? This June, StarkWare, a startup developing ZK-STARK proof systems, announced the alpha launch of StarkDEX, a STARK based scalability solution for DEXes built in collaboration with OΞ.

Why? Every DEX trade is settled on chain, and thus is bound by the scalability limitations and high transaction fees of the underlying blockchain. These scalability constraints might be one reason for negligible trading volume on DEXes. StarkDEX solves these by batching transactions and generating a single proof, via a transparent process and without requiring a trusted setup, to store on-chain.

[Read more.](#)

Ernst & Young Nightfall protocol

What? EY released its zero knowledge proof technology - dubbed Nightfall - into the public domain in May. The protocol enables the private transfer of ERC-20 and ERC-721 tokens on Ethereum.

Why? Most enterprises have opted for permissioned blockchain approaches to maintain data privacy. But these networks are controlled by a single or small group of entities, introducing centralization risks. And while data may be shielded from external parties, it might still be visible to members of the permissioned network. Also, by releasing Nightfall into the public domain without license, the tech will not be subject to copyright.

[Read more.](#)

Other developments

AZTEC Protocol. AZTEC uses a zero-knowledge proof that enables users to issue and trade assets from private blockchains onto public networks with the same privacy guarantees..

ZkDai. An open source [project](#) looking to implement zero-knowledge DAI transactions on Ethereum.

Zether protocol. Zether is a decentralized, cryptographic protocol that leverages zero-knowledge proofs for confidential payments. In May, JPMorgan open sourced an extension to the Zether protocol that can obscure transaction details like the amount being exchanged or sender identity.

Emerging smart contract platforms

A number of smart contract platforms have launched since the start of 2019 (Algorand and Zilliqa to name a few), and more are scheduled to launch in the coming months (Hedera, Dfinity). This has led some to speculate if new Ethereum competitors featuring better transaction throughput and lower fees will start to eat into Ethereum's monopoly on smart contract developers, decentralized finance applications and token issuances.

The Ethereum network boasts a number of key strengths that make it more appealing to dapp developers than other smart contract platforms, including (but limited to):

- Robust infrastructure and dev tools (composability lock-in)
- The largest developer community
- Greater network security
- Most researched and battle-tested SC platform

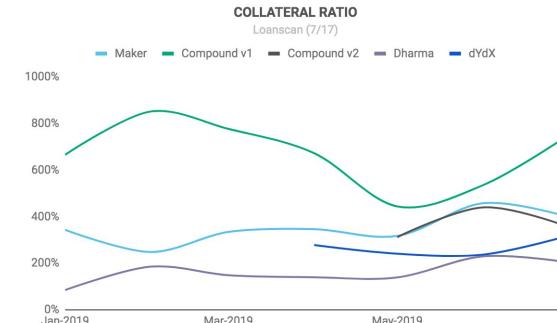
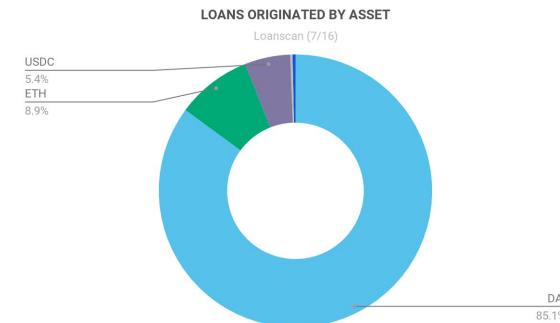
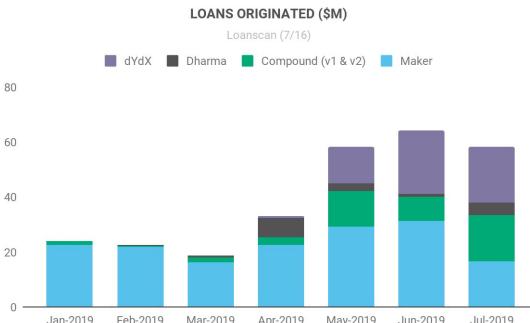
Despite these strengths, Ethereum faces an uphill battle to achieve the ambitious goals set by the ETH 2.0 roadmap. Smart contract functionality for ETH 2.0 may not go live for a few years, so existing Ethereum dapps and users will have to continue to endure 1.0 scalability constraints. This opens the opportunity for other smart contract platforms to encourage developers to migrate away from Ethereum. But Ethereum may already have enough of an advantage in terms of network security, available infrastructure and dev tools and enough of a product-market fit with DeFi to maintain a significant market share.

PLATFORM	CONSENSUS	YEARS LIVE	VALUATION
Ethereum	Casper PoS	5	\$23.1b as of July 24
Algorand*	PoS	<1	\$6b as of July 24
Cosmos	Tendermint BFT (PoS)	<1	\$744m as of July 24
Tezos	PoS	<1	\$678m as of July 24
EOS	Delegated PoS	1	\$2.8b as of July 24
Telegram	PoS	--	\$6.7b (Last round Mar 2018)
Polkadot	Nominated PoS	--	\$1.2b (Last round Jun 2019)
NEAR	Threshold PoS	--	\$120b (Last round May 2019)
Dfinity	PoS	--	\$1.9b (Last round Aug 2018)
Hedera Hashgraph	aBFT (PoS)	--	\$6b (Last round Aug 2018)
Zilliqa	Hybrid Pow/PoS	<1	\$91m as of July 24

Source: Circle Research, Galaxy Research, Messari, Coindesk

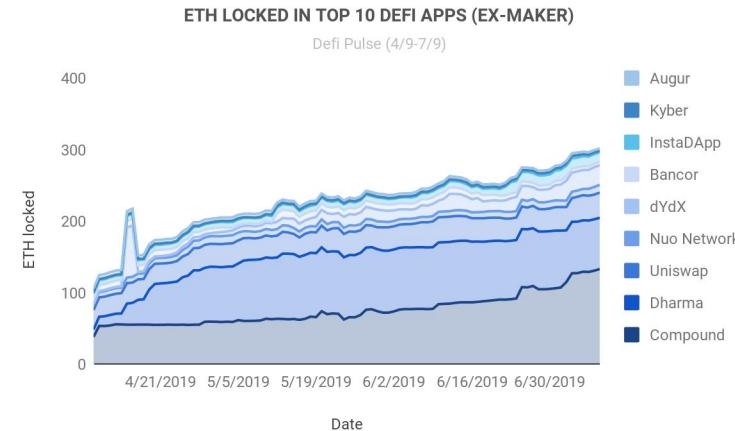
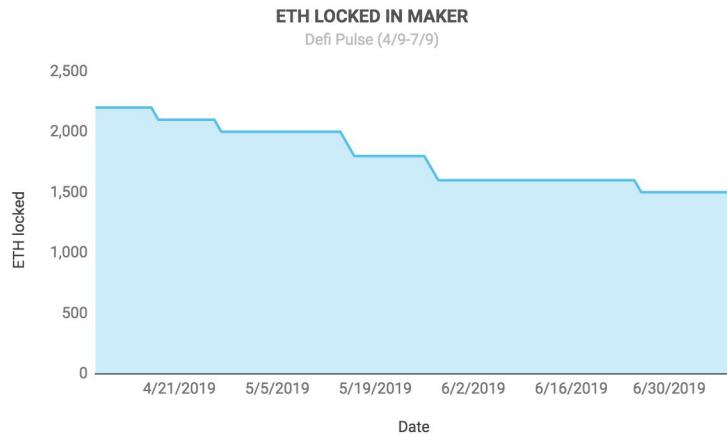
*Note: The last ALGO price was \$0.60, or an implied fully diluted valuation of \$6b. However, very few tokens are in circulation.

Decentralized lending performance soars



The sum of total loans originated across Maker, Compound, Dharma, and dYdX in 2Q19 rose by almost 140% in 2Q19 relative to the prior quarter. This was driven by the launch of dYdX on mainnet and significant growth in activity on Compound. Loans outstanding at the end of 2Q19 rose by 24% versus 1Q19. Maker's dominance of loans outstanding on the platforms listed here fell by 25%. Compound's (v1 & v2) share of loans outstanding grew the most, rising to 17%+ from 3.5% at the end of the first quarter. DAI has been the most heavily borrowed asset, sitting at 85% share at the time of writing.

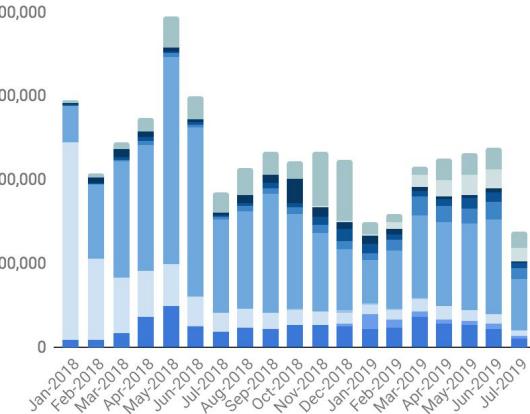
Maker dominance declines



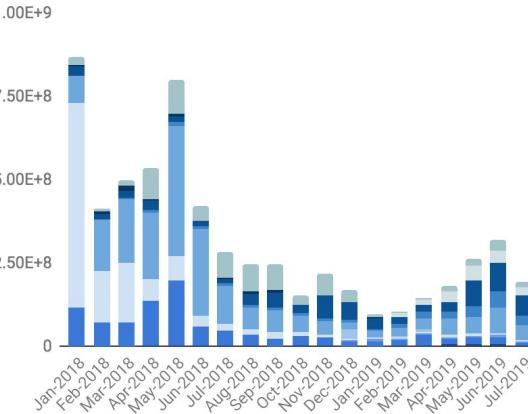
Another notable highlight this quarter was the declining dominance of ETH locked in Maker, which fell from 96% of total ETH locked in DeFi on 3/31 to 83% of ETH locked in DeFi on 6/30 (according to Defi Pulse). It is 84% at the time of writing (7/17). The DAI borrowing rate (referred to as the stability fee) on Maker was higher than the DAI borrowing rate on other lending protocols. The MakerDAO community recently voted to increase the stability fee to 20.5%. Despite that, for the first time, we saw two loans [minting 1 million DAI](#) in June and July this quarter due to the rise in the price of ETH. However, this increase in stability fee has resulted in a commensurate rise in DAI borrowed on alternative platforms offering lower rates, specifically Compound and dYdX. Separately, three of the top ten defi apps by ETH locked (Maker, Bancor, and Augur) saw the amount of ETH locked on their platform fall quarter over quarter (q/q), which contributed to a 22% q/q decline in total ETH locked up.

Increasing volumes at non-custodial exchanges

DEX MONTHLY TRADE COUNT
Bloxy (7/17)



DEX MONTHLY VOLUME (\$)
Bloxy (7/17)



Trade count and trading volume on non-custodial exchanges (aka decentralized exchanges) have been consistently rising m/m since the trough in activity in January this year. Total trade count in 2Q19 across all exchange smart contracts listed here is up 32% q/q but down 28% y/y. The dollar value of trades in 2Q19 is up almost 120% q/q but down 56% y/y. IDEX continues to dominate in terms of trade count, with 45% share in 2Q19 (but down from 62% in 2Q18). Ox and Bancor are second and third, with a share of 10.9% and 10.7% of trade count, respectively. In 2Q19, OasisDEX dominated in terms of trade volume, with 25% share, followed by IDEX (23%) and Uniswap (15%). In 2Q18, IDEX dominated with 49% share, followed by Bancor (22%) and Ox (13%). A key occurrence this quarter was the discovery of a bug in a Ox smart contract related to signatures from external, non-smart contract addresses needed to authorize trades. It was not exploited but could have allowed an attacker to fill orders by faking signatures. We wrote up a summary in our [weekly recap](#) recently.

Strides in composability



What?

PoolTogether is a lossless lottery -- participants receive the full amount of the funds they deposited and a single participant wins the interest earned on a pool of locked funds.

Why?

No-loss lotteries gamify the process of saving money, tricking people into saving their money while getting the opportunity to win (theoretically) free money.

DeFi Protocols Used:

MakerDAO ● Compound ● Aragon

[Read more.](#)

What?

InstaDApp aggregates various DeFi apps onto a single dashboard. Most recently, the platform launched a Maker-Compound bridge.

Why?

The lack of interoperability between DeFi protocols yields a poor user experience and contributes to the disparate lending and borrowing rates across different lending platforms.

DeFi Protocols Used:

MakerDAO ● Kyber Network ● Uniswap ● Compound

[Read more.](#)



What?

DeFi Saver offers “Supply to CDP” - borrow DAI from Compound and pay down a portion of debt with one click - and “Supply from CDP” - deposit DAI generated through a CDP into Compound and earn interest.

Why?

The lack of interoperability between DeFi protocols yields a poor user experience.

DeFi Protocols Used:

MakerDAO ● Compound



What?

Opyn is a decentralized margin trading platform that allows traders to take long or short positions on select ERC-20 tokens in a non-custodial manner. Its platform connected Compound to Uniswap for easier margin trading and went [live](#) on mainnet in June.

Why?

Taking on leverage or shorting crypto positions on decentralized platforms is generally a complicated and technically demanding process.

DeFi Protocols Used:

MakerDAO ● Compound ● Uniswap



What?

Flux is a decentralized prediction market platform with a focus on creating markets that trade startup milestones, such as the success or failure of product releases or investment rounds. Flux [launched](#) a private alpha in April and is still in testing.

Why?

Investing in startups is typically reserved for accredited investors and, within that group, those with the right connections.

DeFi Protocols Used:

MakerDAO ● 0x ● Augur*

INSTITUTIONALIZATION

Maturing market infrastructure and participants

TYPE	EXAMPLES	HIGHLIGHTS
Financial services companies	Custodians Exchanges Banks Accounting/ Consulting	<ul style="list-style-type: none">In May, Fidelity Digital Assets said it is supporting select clients and will continue rolling out additional services. A person familiar with the matter also said it will trade BTC on clients behalf in the coming weeks (back in May). The firm also recently filed an application for a New York Trust.ErisX launches spot trading and receives DCO license to launch regulated futures tradingJP Morgan and Fnality announce stablecoins for B2B transactions and settlementE&Y releases Nightfall zero knowledge proof technology to introduce privacy to public blockchainsCboe did not renew Bitcoin futures contracts after June contracts expire, citing increased competitionE*Trade reportedly to offer bitcoin and Ethereum trading in AprilBakkt begins user acceptance testing of its beta for both daily and monthly contracts on 7/22
Institutional investors	Hedge fund Mutual fund Index fund Endowment Family office	<ul style="list-style-type: none">47% of institutional investors <u>surveyed</u> by Fidelity Digital Assets view digital assets as having a place in their portfolio.Grayscale receives FINRA approval for publicly quoting and DTC eligibility for trading the Grayscale Ethereum Investment Trust (ETHE).
Fintech/ payments	Network Acquirer/processor Online gateway	<ul style="list-style-type: none">Square enables bitcoin deposits and launches Square Crypto to fund Bitcoin developers.Visa, Mastercard, PayPal named members of Libra AssociationVisa leads investment in Anchorage with Blockchain Capital
Tech companies	Social media Consumer hardware Enterprise software	<ul style="list-style-type: none">Facebook announces Libra and its accompanying wallet, CalibraMicrosoft launches decentralized identity solution ('DID') called ION

Incumbents recognize and leverage power of public blockchains

Microsoft ION

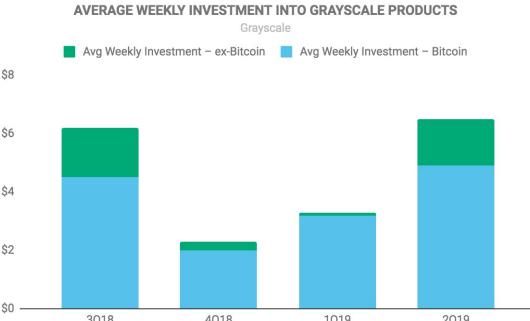
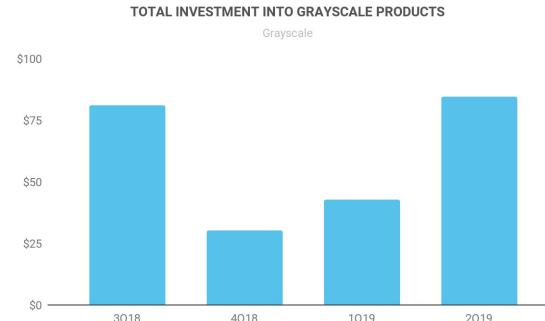
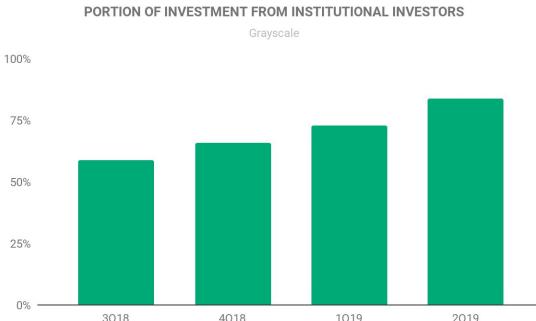
- Microsoft unveiled a DID network called ION (Identity Overlay Network) based on open standards created with members of the Decentralized Identity Foundation (DIF) and W3C.
- ION is an open-source, second layer network based on Sidetree protocol that can be used to cement and maintain ownership rights over DIDs by writing the operations to a public blockchain like Bitcoin.
- There are limited options for protecting our personal identification information as it's needed to access and engage with most devices, applications and digital services.
- Microsoft is designing ION to be globally scalable “while inheriting and preserving the attributes of decentralization present in the Bitcoin blockchain.”

Ernst & Young Nightfall

- EY announced that it will deploy its zero knowledge proof technology (Nightfall protocol) on the public Ethereum blockchain.
- ZKPs enable all of the benefits of public blockchains without the downsides of leaving behind digital clues that can be analyzed by third parties. The result is the ability to transact with complete privacy, inscrutable to the outside world.
- EY’s open source public blockchain approach is different from the private blockchain approach most enterprises have taken thus far, where privacy is enabled through permissioning.
- Potential use cases include supply chain, food tracking, public finance, and transactions between banks and bank branches.

INSTITUTIONALIZATION

Increasing investment and participation from institutional investors



Grayscale recently provided a second quarter update, showcasing continued strength since market lows at the end of 2018. Assets under management were up 125% q/q, driven by an increase in underlying prices, among other factors. The portion of inflows from institutional investors has been experiencing step function growth, rising from 59% in 3Q18 to 84% in 2Q19 -- Grayscale notes this figure was dominated by hedge funds.

Total inflows were up almost 100% q/q, the strongest level since 2Q18. Average weekly investment was up 97% q/q -- average weekly investment into the bitcoin investment trust (GBTC) was up 53%. GBTC portion of average weekly investment was 75.4% in 2Q vs. 97% in 1Q.

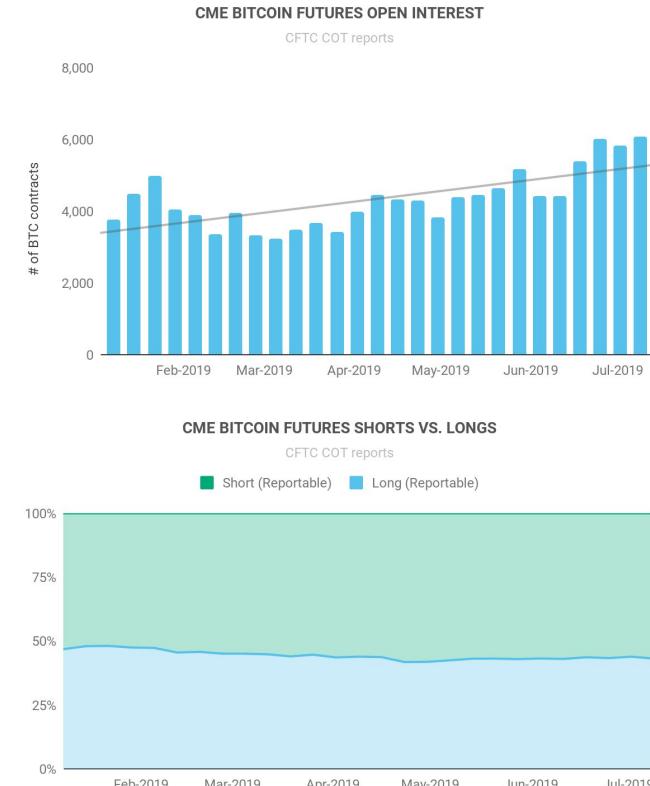
INSTITUTIONALIZATION

Increasing participation in regulated bitcoin futures

The recent Bitcoin rally has been accompanied by rising investor interest in Bitcoin futures. CME reported record months for average daily volume in May — including an intraday high of \$1.3 billion in notional volume on May 13 — and open interest (the number of unfilled contract offers) in June.

According to CFTC's Commitments of Traders (COT) reports, open interest on CME's XBT contracts has increased by 61% YTD and 76% q/q (2Q vs. 1Q). The data also indicates the ratio of longs-to-shorts decreased (in favor of shorts) by 13% YTD. However, this ratio has increased by 5% q/q, meaning more traders have taken long positions as the price of Bitcoin started to rally early in 2Q.

[According to Bitwise's Matt Hougan](#), these rising futures volumes may represent a greater portion of the overall Bitcoin market than meets the eye, given recent reports around potentially fabricated volumes on exchanges. Further, Gareth MacLeod [suggests](#) the surge in trading volume could be a sign traditional finance is taking a greater interest in Bitcoin. Whether the volume surge is retail or institution driven, increasing regulated futures volume and liquidity and an improving market structure will continue to establish legitimacy in the Bitcoin market from the perspective of institutional investors.



INSTITUTIONALIZATION

Defining regulatory developments

Apr 3, 2019 | US

The SEC released an official statement titled “Framework for ‘Investment Contract’ Analysis of Digital Assets” to provide a framework for analyzing whether a crypto asset is a security.

SEC granted Turnkey Jet, a small aircraft carrier, a no-action letter for its token.

Apr 9, 2019 | China

China proposes banning crypto mining if it deems that it does “not adhere to relevant laws and regulations, were unsafe, wasted resources or polluted the environment” in a draft list of over 450 industrial activities that could be restricted

Apr 26, 2019 | China

NYAG announces that investigation of iFinex (Bitfinex' parent) over fraud attempting to cover \$850 in losses using funds from Tether reserves.

May 20, 2019 | US

The SEC has postponed making a decision on the VanEck/SolidX (in collaboration with Cboe) Bitcoin exchange traded fund (ETF). The government agency is seeking more public comments prior to seeking further decisions.

May 29, 2019 | Egypt

The Egyptian government proposed a bill that would give the Central Bank of Egypt (CBE) the ability to regulate cryptocurrencies and issue licenses to businesses looking to offer crypto related products.

April

Apr 1, 2019 | Canada

Canadian police freeze assets of owner of Vanbex as a part of investigation into project's ICO.

Apr 9, 2019 | US

Warren Davidson (Ohio Representative) re-introduced the Token Taxonomy Act (to exclude digital tokens from US Securities law and address the way they are taxed) to Congress.

NYDFS grants Bitstamp a Bitlicense, the 5th awarded by the regulator this year

Apr 11, 2019 | France

The French Parliament adopts the PACTE Act, which provides a framework for digital assets.

May

May 9, 2019 | US

FinCEN issues guidance on how BSA applies to crypto. The guidance touches on the designation of software wallet providers, multi-signature wallets, DEXs, and other non-custodial venues, as well as, privacy-preserving cryptocurrencies and services.

May 16, 2019 | US

The U.S. Internal Revenue Service (IRS) announced it is working on new tax guidance for cryptocurrency. This would be the first such effort made by the government agency since 2014.

INSTITUTIONALIZATION

Defining regulatory developments

Jun 4, 2019 | US

The SEC files lawsuit against Kik, alleging the \$100M sales of Kin tokens was the sale of unregistered securities.

Kik issued a response stating it intends to take the SEC to court. It also launched the Defend Crypto campaign to fund the legal battle.

Jun 10, 2019 | Global

The G20 group of nations agreed to support the new AML and countering the funding of terrorism (CFT) standards proposed by the FATF. This may be tough on crypto exchanges who would be required to verify and share user information.

Jun 25, 2019 | US

A group of democratic representatives have introduced a Bill to the House that aims to outlaw political party contributions or donations in cryptocurrencies such as bitcoin.

Jul 3, 2019 | UK

The U.K. FCA proposed a ban on the sale of crypto derivatives and exchange traded notes (ETNs) to retail investors. The regulatory body believes these products are “ill-suited” to retail investors, citing “extreme volatility,” risk for cyber theft and insufficient market knowledge

Jul 15/16, 2019 | US

Facebook/Calibra's David Marcus sat in front of the U.S. Senate and House of Representatives on back-to-back days to field questions and concerns regarding the tech giant's proposed payments platform, Libra, and consortium of network partners.

June

Jun 7, 2019 | India

India's government proposed a bill intending to ban all use of crypto assets. The bill would render any crypto mining, holding, or trading illegal with maximum penalty of up to 10 years in prison as well as fines up to three times any capital gains.

Jun 21, 2019 | France

France is creating a G7 task force to understand how banking regulations will be applied to cryptocurrencies like Facebook's Libra, specifically mentioning money-laundering and consumer-protection laws.

July

Jul 2, 2019 | US

U.S. Rep. Maxine Waters and four other members of Congress submitted a letter to Facebook calling for the social media giant to halt development on its Libra network.

Jul 10, 2019 | US

Blockstack announced its \$28 million Stacks (STX) token offering was approved by the SEC under Regulation A+. This is the first time such an offering was authorized by the SEC.

Jul 11, 2019 | US

SEC also approved the token for Props, a loyalty rewards network, under Reg A+.

Jul 13, 2019 | US

Congressional leaders have reportedly drafted a bill titled “Keep Big Tech Out of Finance Act.” The bill would aim to prohibit large tech companies (those with over \$25 billion in annual revenue) from establishing or maintaining a digital asset intended to assume the attributes of money.

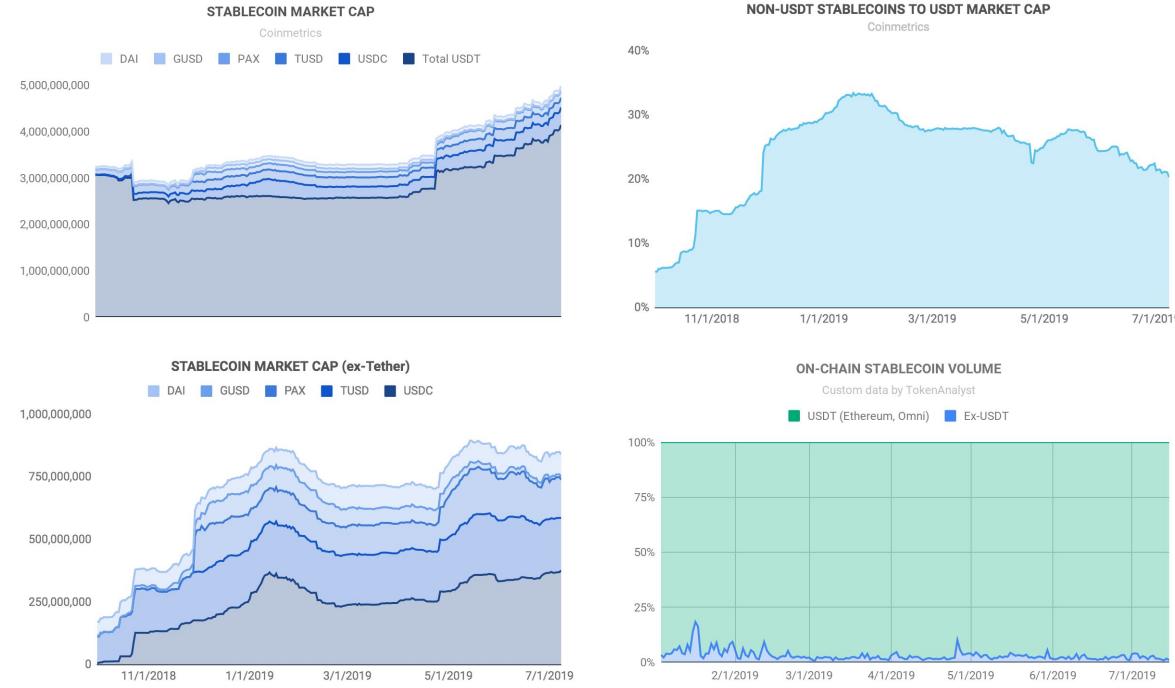
STABLECOINS

Stablecoin dynamics

Custom data provided by [TokenAnalyst.io](#) (as of 7/15)

Tether's dominance was unhindered and even grew this quarter despite the realization in 1Q that USDT is only 74% backed by cash & equivalents followed by an ongoing investigation into Bitfinex and Tether by the NYAG.

- USDC exhibited the greatest growth in market cap in 2Q q/q, rising 48.7%, followed by growth in USDT (Ethereum & Omni) market cap of 46.7%. The market cap of GUSD declined 75% q/q.
- The ratio of the market cap of non-USDT stablecoins to USDT peaked in Jan, at 33% and has since been falling consistently month to month. It now stands at 20%.
- Tether also dominates on-chain volume relative to all other stablecoins.



Libra announcement sparks debate and regulatory scrutiny

Description

Libra is a stable “cryptocurrency” backed by a basket of financial assets intended to launch in the first half of 2020. The protocol is being developed by a Swiss non-profit foundation referred to as the Libra Association. Currently, there are 28 core members in the Association (one of which is Facebook). The association hopes to expand the number of organizations (validators) to 100 by launch.

Libra employs a two-token system: the stable currency, Libra, and the governance token, Libra Investment Token (LIT). Libra will be backed by the “Libra Reserve,” a basket of low-volatility assets to keep the value of the Libra coin stable. At launch, the basket will comprise of major currencies (USD, EUR, JPY, GBP) and eventually include other currencies, commodities, and assets. The basket of assets held as reserves is intended to generate interest on deposits that will fund the broader development of the ecosystem, including grants for research, development, and outreach. Network validators must purchase the Libra Investment Token (LIT), which will be used as a governance/reputation token. Additionally, owners of LIT will receive excess interest from the reserve.

Takeaways

Implications

- Catalyzes the potential for a competitive market for monetary standards
- Lowers the knowledge barriers around blockchain and shows users the capabilities of digital money
- Reshapes the existing financial landscape and potentially ushers in a new order of financial services providers

Challenges

- Transition from centralized to decentralized governance is quite ambitious and difficult
- Significant scalability hurdles particularly as the number of validators, users, and messages increase
- Pushback from legacy finance, regulators, governments, central banks, and other big tech (as seen in recent Congressional hearings)
- Facebook’s privacy concerns in recent years may lead to development and adoption hurdles

STABLECOINS

Bank settlement coins

Multiple financial institutions made announcements stablecoin related announcements. The stablecoins that these institutions intend to launch are targeted at institutional clients and B2B, wholesale transactions rather than retail traders and consumers.

JPM Coin

JP Morgan announced JPM Coin back in February. In June, the company said it will start trials with several corporate clients. Initially, the stablecoin may be used to settle bond and commodities transactions as well as for intercompany remittances. As a reminder, JPM Coin will be issued on Quorum, the company's permissioned blockchain (which could eventually be spun out). However, the company has said it could be "subsequently extended to other platforms" and "be operable on all standard Blockchain networks." JPM Coin is solely targeted at institutional clients (banks, broker dealers, corporates, etc.) passing JPM's KYC and will only be redeemable at JPM.

Fnality

Fnality, formerly known as Utility Settlement Coin, [raised \\$63.2 million](#) in funding from 14 banks in June and is working with Clearmatics to build out the project on a private version of Ethereum. The project is planning to launch tokenized versions of five fiat currencies (USD, GBP, EUR, JPY, CAD) and will be fully collateralized with reserves held at central banks. Fnality's initial intention is to solve the "cash on ledger" problem i.e. old fashioned settlement defeats the purpose and benefits that tokenized securities intend to offer. Additionally, the firm expects multiple banks to launch coins for their own ecosystem -- in such a world, Fnality's asset could be used as a bridge between these native coins.

Goldman Sachs

Speaking of banks launching coins for their respective clients and partners, [The Block reported](#) that Goldman Sachs could launch a similar endeavor as JPM Coin. This was connected to news that the bank is looking to hire a Digital Asset Project Manager on its Digital Assets team, which is separate from the part of the company that trades crypto derivatives.

The rise of exchange tokens

What are exchange tokens?

An exchange token is the native token issued by crypto exchanges that targeted at participants that use the exchange's platform to trade crypto assets.

What are reasons for issuing exchange tokens?

Exchanges use native tokens to incentivize use of their platforms through benefits such as discounted trading fees, ability to participate in governance, ability to generate income by providing liquidity and more, allowing users to participate in the growth of the platform.

What are some examples of ETs?

- Binance (BNB)
- Kucoin (KCS)
- Huobi (HT)
- Bitfinex (LEO)
- CoinFLEX (FLEX)
- LAToken (LA)

What are the key features of ETs?

- Discounted trading fees
- Token burn
- Payment for trading fees
- Participate in IEOs
- Earn reward for making markets
- Participate in governance

What are the risks and challenges?

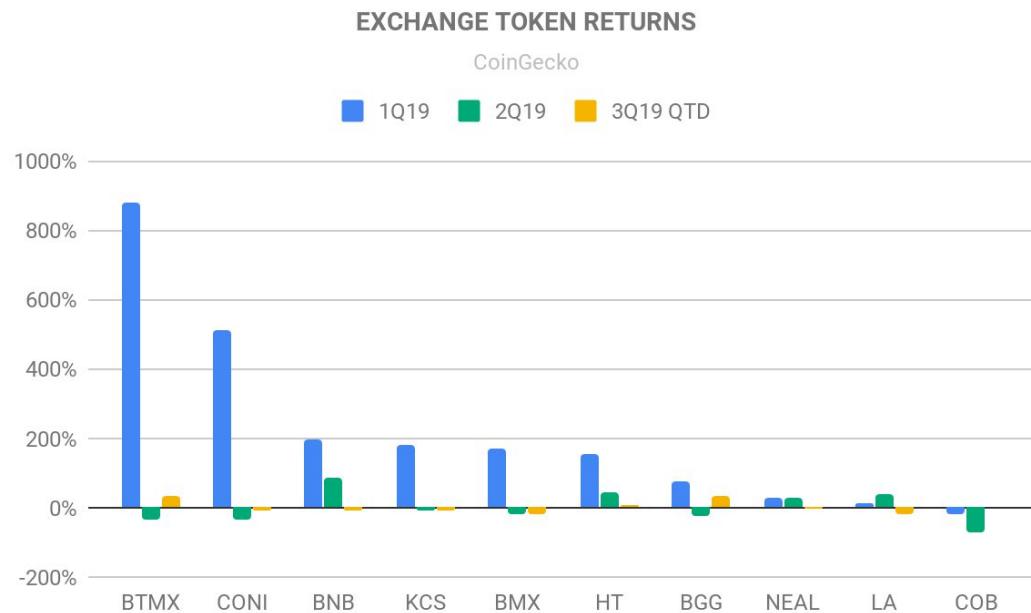
A major challenge that exchange tokens may face is around how they should be classified by regulators - as utility tokens or security tokens. This, of course, depends on their specific characteristics.

TOKEN OFFERINGS

Exchange token performance

While we've seen an increase in the number of exchanges issuing native exchange tokens to attract traders and create stickiness and loyalty, returns were more subdued in 2Q19 and 3Q19 to date relative to the outsized returns seen in the first quarter. Many of the exchange tokens shown here are altcoins with relatively small market caps. A trend we saw in 2Q and are continuing to see is the dominance of large cap crypto assets and even greater dominance of bitcoin.

	1Q19	2Q19	3Q19 QTD
Average return	219.50%	1.55%	0.29%
Median return	162.80%	-12.81%	-5.11%



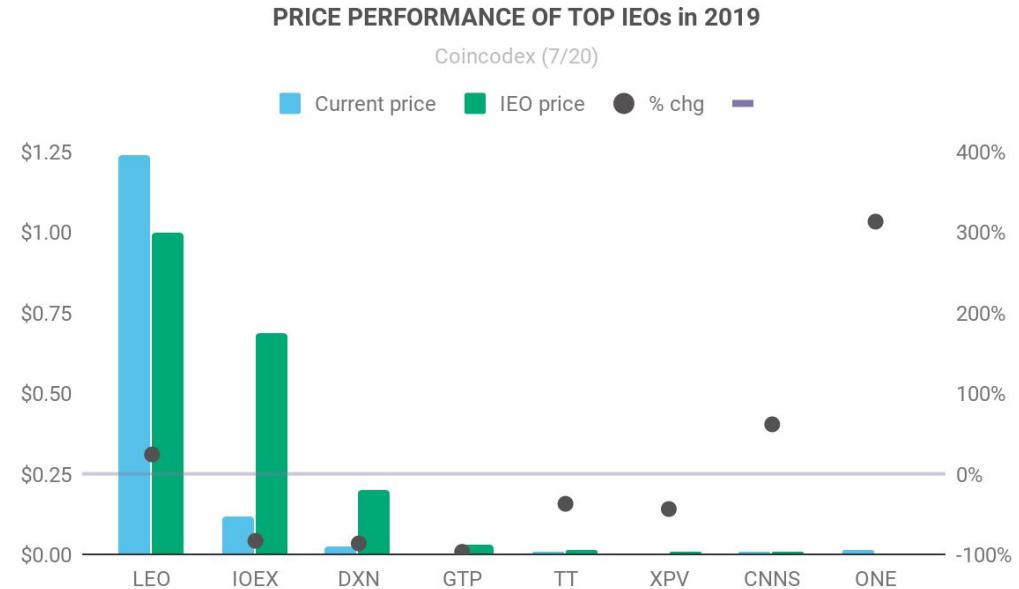
TOKEN OFFERINGS

Returns of largest IEOs

Initial exchange offerings (IEOs) have been all the craze this year. There are now over thirty platforms for hosting IEOs and 166 offerings that have ended successfully* year to date.

They have become the preferred fundraising method of choice relative to their cousin, the ICO. As a reminder, crypto projects that conduct IEOs issue tokens through a third-party exchange platform. Investors (mostly outside the US) purchase tokens through the exchange's platform -- in some cases, they must hold the ET to participate. IEOs are then listed on the exchange they used to raise funds.

However, price performance tells a different story. While a couple of tokens have experienced significant returns since listing, the median performance of the tokens shown here is -40%. This indicates that while IEOs claim to offer benefits over ICOs, the market largely sees these tokens as the low quality projects many of them could be -- this is further exacerbated by the fact that their liquidity is negligible.



Source: CoinCodex, CoinSchedule, Circle Research

*Meaning they've raised the minimum (softcap) they set out to raise.

TOKEN OFFERINGS

Inertia in security token arena

The security token industry is still in an embryonic phase. There has been no clear pattern in STO funding, with mixed q/q performance. We show the ten STOs that have taken place this year according to Coinschedule. While it's possible that their data is incomplete, it's still a low number. Further, based on their data, none of these offerings reached the hard cap.

Challenges

- **Regulation:** Further, in order to offer security token trading, platforms must register as a broker dealer and secure an exchange or ATS license. A recent article [highlights](#) that FINRA has been sitting on 40 broker dealer applications from companies dealing with crypto assets. Additionally, regulation differs by jurisdiction and we're still far from establishing a uniform set of global regulations.
- **Lack of liquidity:** The listing of security tokens on trading platforms has been negligible. Even the few tokens that are listed have very little liquidity.
- **Lock-up:** In the US, investors are subject to a 1-year lockup period, which constrains initial liquidity.

Note: Total funding figures differ based on the source. PwC's recent report indicated \$241m was raised in STOs from January to May 2019. Blockstate's recent report, on the other hand, suggests \$420m was raised in the first five months. Coinschedule reports a \$105m figure -- it considers only successful ended token sales that raised the minimum they set out to raise.

Name	Category	End date	Amount	Hardcap %
Faba Invest	Financial	Jun-2019	\$4,000,000	6%
SocialRemit	Social	May-2019	\$7,203,507	25%
UniCrypt	Mining	May-2019	\$8,412,548	33%
Equitybase	Marketplace	May-2019	\$5,831,278	29%
Renovato	Financial	Apr-2019	\$1,400,000	N/A
Jarvis exchange	Financial	Mar-2019	\$1,494,172	7%
Bolton Coin	Financial	Feb-2019	\$67,830,000	22%
GG World Lottery	Gambling	Feb-2019	\$6,113,210	1%
Victorium	Financial	Jan-2019	\$6,378,899	20%
ZenSports	Gambling	Jan-2019	\$100,000	1%

Crypto funding

2Q19 Crypto Funding Highlights

FUNDS RAISED IN IEOs
\$1.4 billion
+13x q/q

IEO % OF TOTAL TOKEN SALES ENDED
1Q19: +10%
2Q19: +56%

VC FUNDING INTO WALLETS/PAYMENTS CO.
~\$136 million
At least

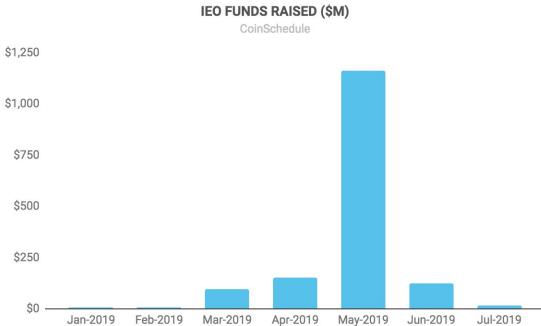
NEW PROTOCOL DEVELOPMENT FUNDING MODELS:
Formalized, DAO, Treasury, Donation

Sustainable funding models for continued ecosystem development

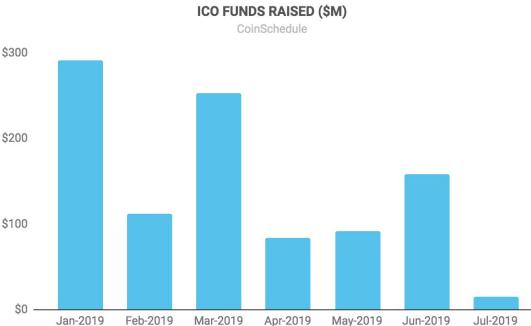
In response to crypto's "tragedy of the commons" problem, multiple funding models have been created to incentivize and reward development.

TYPE	EXAMPLES	HIGHLIGHTS
Formalized funding	Hard Core Fund Square Crypto Blockstream Chaincode Labs ICO/IEO/STO/VC	<ul style="list-style-type: none">• Hard Core Fund: Dovey Wan (Primitive Ventures) and Pan Zhibiao (Bitmain alum) formed Hard Core Fund to support Bitcoin core development. She has gathered 50 BTC that is available to applicants.• Square Crypto: In 1Q19, Square created Square Crypto to hire a few developers and a designer to work on bitcoin full-time. Jack Dorsey says, "Square has taken a lot from the open source community to get us here. We haven't given enough back. This is a small way to give back."
DAOs	MolochDAO	<ul style="list-style-type: none">• Moloch DAO was created in response to slow progress on ETH 2.0, led by a small group of participants with limited funding. It uses a DAO to pool and lock funds in its "Guild Bank" smart contract, streamline fund allocation, and spread costs and benefits across stakeholders.
Treasury funding	Decred Zcash Beam Dash	<ul style="list-style-type: none">• Beam: Beam implemented a 20% dev tax on block rewards, paid out to the Beam treasury to fund future development.• Zcash: Zcash has used a Founders Reward system (10% of block rewards) since its inception in 2016 to fund development (via the Electric Coin company) through 2020. After this expires, the company will have to pursue alternate forms of funding.• Decred: Decred has an on-chain rule that reserves 10% of the block reward in a treasury, which is used to develop and maintain the Decred software and community.
Donation based	Grin Bitcoin Monero	<ul style="list-style-type: none">• Grin is lauded for its fair launch (no ICO, premine, or founder's rewards). It relies on unpaid part-time volunteers and collecting donations for the core developer fund, security audits, marketing and web development, conferences, and more. However, the community recognizes that a project of Grin's scope would be greatly helped by having a consistent source of funding.

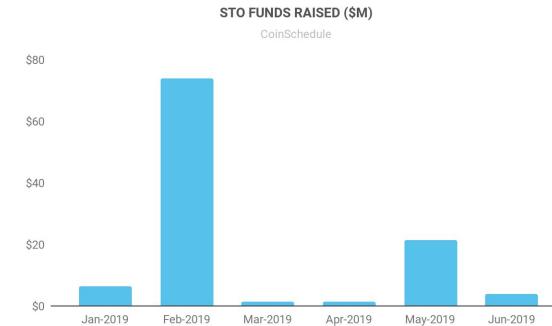
Funds raised in token offerings



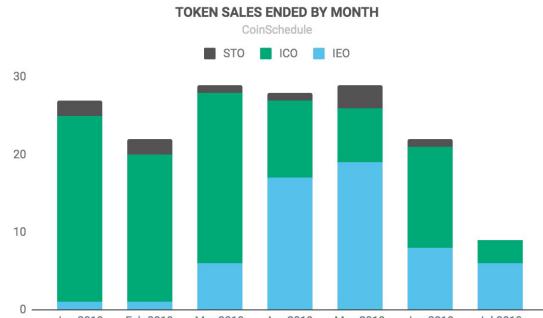
According to Coinschedule, funds raised in IEOs were up 13x in 2Q relative to 1Q. A major contributor was \$1b Bitfinex LEO sale in May.



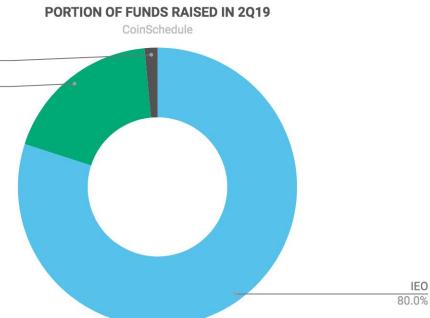
Funds raised in ICOs were down 49% in 2Q relative to 1Q.



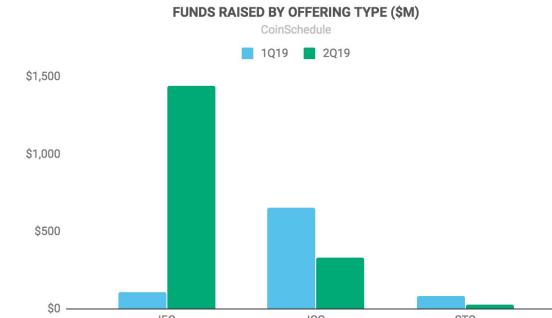
Funds raised in STOs that Coinschedule tracks were down 67% in 2Q relative to 1Q. A big contributor was the ~\$68m Bolton Coin STO in Feb.



At the beginning of the year, ICOs constituted the majority of token sales. This has since shifted towards IEOs. The relative portion of STOs continues to be low.



This is further displayed in funds raised data, with IEOs making up 89% of funds raised in token offerings in 2Q19.



Finally, while funds raised in ICOs and STOs were down q/q in 2Q19, funds raised in IEOs were up significantly (once again, driven by the \$1b LEO token sale).

Successful IEOs in 2Q19; “Infrastructure” emerges as popular category

NAME	CATEGORY	DATE ENDED	AMOUNT	NAME	CATEGORY	DATE ENDED	AMOUNT
VeriBlock	Privacy & Security	Apr-2019	\$7m	everiToken	Finance	May-2019	\$1.6m
Lichang	Mining	Apr-2019	\$500k	BITFINEX	Trading & Investing	May-2019	\$1,000m
MultiVAC	Infrastructure	Apr-2019	\$162m	Trias	Supply & Logistics	May-2019	\$5.6m
Dos Network	Energy & Utilities	Apr-2019	\$1.7m	Allive	Drugs & Healthcare	May-2019	\$6.8m
ioeX	Internet of Things	Apr-2019	\$27.2m	GoWithMi	Infrastructure	May-2019	\$9.8m
RedFOX Labs	Commerce & Advertising	Apr-2019	\$5.65m	Reserve	Privacy & Security	May-2019	\$10m
CNNS	Trading & Investing	Apr-2019	\$24.6m	Chromia	Data Storage	May-2019	\$13m
Dexon Private Sale	Infrastructure	Apr-2019	\$20m	harmony	Infrastructure	May-2019	\$23m
Matic	Payments	Apr-2019	\$5m	MECA Coin	Gaming & VR	May-2019	\$5.5m
Facts	No category	Apr-2019	\$3.7m	MixMarvel	Gaming & VR	Jun-2019	\$7.2m
Moviebloc	Events & Entertainment	May-2019	\$4.1	Bitsdaq	Trading & Investing	Jun-2019	\$6.5m
Thunder Token	Payments	May-2019	\$50.5	Tron Game Global	Payments	Jun-2019	\$80m

Funding trends: Wallet/Payments, Exchange, Security/Privacy/Identity

Wallet, payments

Collectively raised:

\$135.8 million

Companies

Wallet: ZenGo, Ledger, Samourai Wallet, Torus

Payments: Celo, Flexa, BOLT Labs, Fnality, Crowdz, MoneyGram, Roll

Exchange

Amount raised:

\$37.5 million

Companies

Custodial: Liquid, ErisX, Kraken

Non-custodial: SparkSwap, Ramp

Security, identity, privacy

Collectively raised:

\$23.3 million

Companies

Security: Fluree, Fireblocks

Privacy: Samourai wallet

Identity: 3box

Companies that fall into the wallet, payments, and exchange category received a significant amount of investment in the second quarter through July. We think this makes sense for a few reasons. For one, these are the essential building blocks needed to interact with crypto assets. Wallets are needed to hold and transfer assets. Payments companies are needed to tailor solutions for different segments of the market (i.e. Roll), different regions globally (i.e. Celo) and bridge blockchain and traditional finance. Which brings us to exchanges, which bridge the fiat to crypto and crypto to crypto world for retail and institutional traders. Another category that we believe deserves an honorable mention is security, identity, and privacy, which we believe will continue to attract more attention and investment as wallet, payments and exchange infrastructure matures.

Another observation we'd like to highlight is the funds investing in crypto companies - specifically, we noticed that Pantera, Galaxy, Multicoin and CoinFund have invested in multiple projects and companies this quarter.

Venture Investments into crypto companies in 2Q19

COMPANY	DATE	INVESTORS	DEAL SIZE	DESCRIPTION
SparkSwap	Apr-2019	Initialized, Pantera, Foundation Capital	\$3.5 million	Non-custodial exchange
Cambridge Blockchain	Apr-2019	PayPal, Digital Currency Group, HCM Capital	\$3.5 million	Data management
Celo	Apr-2019	A16z, Polychain	\$25 million	Mobile-first crypto payments
GEO Protocol	Apr-2019	Led by Coinfund	Undisclosed	Interoperable payments
Liquid	Apr-2019	Led by IDG Capital	Undisclosed	Japan based crypto exchange
Lucid Sight	Apr-2019	Led by Salem Partners, Galaxy EOS Fund, DCG	\$6 million	Blockchain based gaming
Offchain Labs	Apr-2019	Led by Pantera Capital	\$3.7 million	Enterprise blockchain
Coda Protocol	Apr-2019	Accomplice, Coinbase, Paradigm, General Catalyst	\$15 million	Public blockchain using ZKPs
Horizen Labs	Apr-2019	DCG, Liberty City Ventures	\$4 million	Helping businesses create blockchains
Chainalysis	Apr-2019	Mitsubishi UFJ Financial Group (MUFG), Sozo Ventures	\$6 million	Blockchain analysis
BOLT Labs	Apr-2019	Dekrypt Capital, ZCash Foundation, Xpring	\$1.5 million	Payment channels
ZenGo	Apr-2019	Benson Oak Ventures, Samsung, Elron	\$4 million	Mobile wallet
Flexa	Apr-2019	Pantera, 1kx, Access Ventures, Nima	\$14.1 million	Payments Network

Venture investments into crypto companies in 2Q19

COMPANY	DATE	INVESTORS	DEAL SIZE	DESCRIPTION
Ledger	Apr-2019	Samsung	\$2 million	Hardware wallet
Truffle Blockchain Group	May-2019	ConsenSys	\$3 million	Developer tools
ErisX	May-2019	CIV, Dragonfly Capital Partners, & more	\$20 million (Series B)	Regulated spot & futures exchange
Digital Assets Data	May-2019	DCG, Galaxy Digital, Morgan Creek % more	\$6 million	Crypto data
Crusoe Energy Systems	May-2019	Bain Capital Ventures, Founders Fund Pathfinder	\$4.5 million	“Digital flare mitigation”
Agoric	May-2019	Xpring (Ripple), Outlier, Leminscap	\$4 million	Smart contract programming language
MolochDAO	May-2019	ConsenSys	~\$700K	DAO
Billion	May-2019	European Commission's SME instrument program	€2 million	Document management system
InfStones	May-2019	Danhua VC, Plug and Play Ventures	\$2 million	Staking-as-a-service
Fnality	May-2019	Large banks incl. UBS, Santander, Credit Suisse, Barclays	\$50 million	Payments, transaction settlement
Unstoppable Domains	May-2019	Draper Associates, Boost VC	\$4 million (Series A)	Decentralized web domain
Standardized Token Protocol (STP)	May-2019	Neo Global Capital, BlockVC, AlphaBit & more (token sale)	\$7 million	Token issuance protocol
Crowdz	May-2019	Led by Barclays Bank, BOLD Capital	\$5.5 million (Series A)	B2B payments processor
Fluree	Jun-2019	Led by 4490 Ventures	\$4.7 million (Seed)	Security

Venture investments into crypto companies in 2Q19

COMPANY	DATE	INVESTORS	DEAL SIZE	DESCRIPTION
Samourai Wallet	Jun-2019	Cypherpunk Holdings	\$100K	Privacy wallet
Voatz	Jun-2019	Medici Ventures, Techstars & more	\$7 million (Series A)	Blockchain-based voting
Propy	Jun-2019	Nat'l Assoc. of realtors VC fund	Undisclosed	Blockchain real estate startup
BanQu	Jun-2019	ZX Ventures (Anheuser Busch)	Undisclosed (Series A)	"Blockchain-as-a-service"
Fireblocks	Jun-2019	Cyberstarts, Tenaya Capital, Eight Roads, Galaxy Digital	\$16 million	Security and wallets
Helium	Jun-2019	Multicoin, Union Square Ventures	\$15 million	IoT open mesh network
Bitrefill	Jun-2019	Coin Ninja	\$2 million (Seed)	Bitcoin giftcards and refills
Spring Labs	Jun-2019	Led by Great Point Ventures	\$23 million	Enterprise blockchain
MoneyGram	Jun-2019	Ripple	\$30 million	Remittances
Livepeer	Jun-2019	Led by Northzone	\$8 million	Decentralized streaming platform
Bitcoin core developers	Jun-2019	Hard Core Fund	50 BTC	Developers working on bitcoin full time
Roll	Jun-2019	Led by Arthur Hayes (CEO of BitMEX)	\$1.7 million	Content monetization
Kraken	Jun-2019	2.2k individual investors	\$13 million	Crypto exchange
3box	Jun-2019	Placeholder, CoinFund, & more	\$2.5 million	Decentralized identity tools for developers
dfuse	Jun-2019	Led by Multicoin	\$3.5 million	EOS API integrations and dev tools
ParaFi	Jun-2019	Bain Capital, Dragonfly & more	\$25 million	Fund focused on crypto assets and blockchain

Venture investments into crypto companies in July 2019

COMPANY	INVESTORS	DEAL SIZE	DESCRIPTION
Nebulous (Sia Network)	Led by Bain Capital	\$3.5 million (pre-Series A)	Decentralized data storage
Anchorage	Led by Blockchain Capital, Visa	\$40 million	Crypto asset custody
NEAR protocol	Led by Metastable Capital, Accomplice	\$12.1 million	PoS blockchain
Ramp	Fabric, MakerDAO, Seedcamp & more	€1 million (Seed)	Non-custodial fiat to crypto exchange
Torus	Led by Multicoin	\$2 million (Seed)	Web 3.0 key management solution
Horizon Games	Led by Initialized Capital	\$3.75 million (Seed)	Blockchain-based games
Bitcoin core development	HDR Global (parent of BitMEX)	\$60,000	Developers working on bitcoin full time

Crypto market performance

Market musings

2Q19

Starting 3rd Bitcoin cycle. Bitcoin's price rally in 1H 2019 suggest the starting of a new market cycle (1st cycle was 2013-2015, 2nd cycle was 2016-2018) and in a much more mature position relative to the last cycle. High quality assets have seen differentiated performance YTD, and do not see the entrance of new, low quality assets that was pervasive in 2017. While the prior two cycles were mostly driven by retail investors, the slower cadence of institutional investors and market participants should primarily comprise much of the 3rd, longer cycle.

Global macro uncertainty intensifies. The global macro landscape is a plethora of growing geopolitical and financial uncertainties, and have likely driven investors toward safe-haven assets. The trade wars continue to drag on, President Trump's comments on the dollar's strength hint at a potential global currency war, the continued devaluation of the yuan may lead to foreign capital outflows and tighter capital controls, and geopolitical tensions between the United States and Iran threaten to flare up. G3 central banks have turned dovish amid softening growth and reiterated their willingness to inject liquidity into their respective economies if necessary.

July 2019

Libra introduction & institutional signaling. Facebook's Libra has stolen headlines in 3Q19 QTD, but broader institutional signaling this year has been a strong sustained driver of price action. Positive announcements from existing market participants throughout 1H 2019 like Bakkt (began UAT in July), Fidelity, and E*Trade signaled the continued infrastructure development in the space. New entrants with novel use cases, such as Microsoft's Bitcoin Decentralized Identity (DID) solution, reinforce the use cases and viability of permissionless blockchain networks.

Bitcoin dominance at two-year high. Bitcoin's market capitalization dominance has reached a two-year high, surpassing 60%, as the macro story continues to favor Bitcoin over alts. Bitcoin dominance peaked on July 16 at 67%, the highest its been since May 2017.

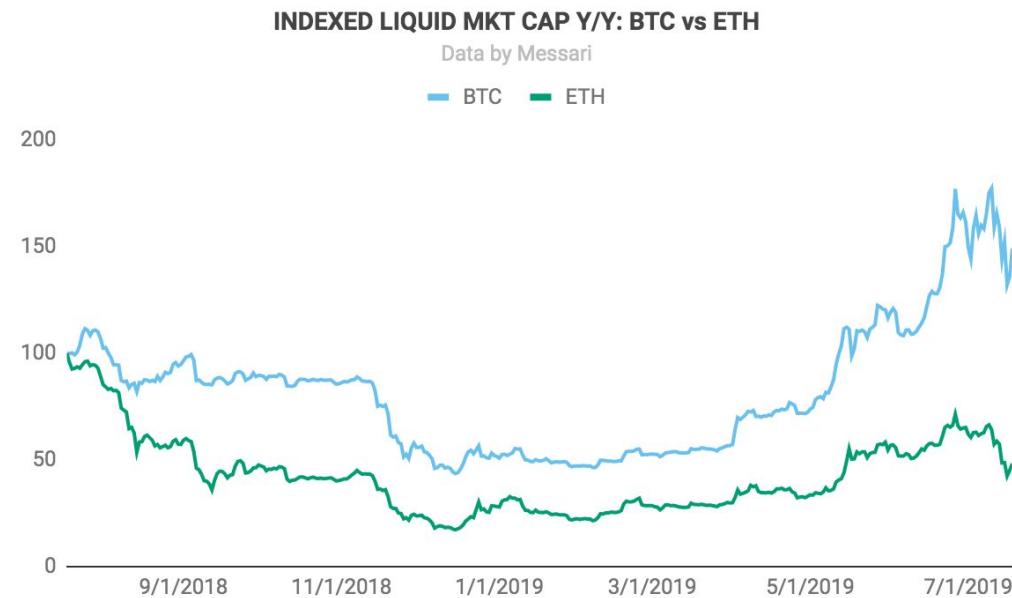
Bitcoin realized capitalization at all-time high. Bitcoin reached an all-time high realized market capitalization of \$94.4 billion on July 21. A crypto asset's realized cap is calculated by valuing each unit of the supply at the price at the last time it moved on-chain.

Significant gains in liquid market cap

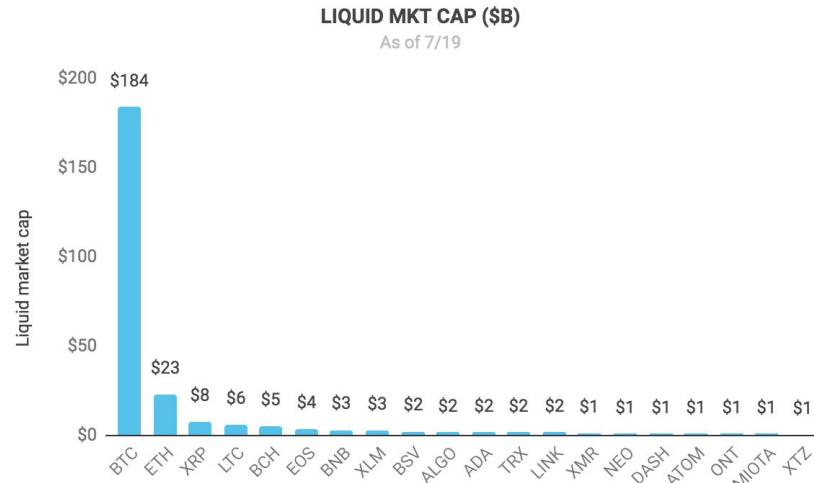
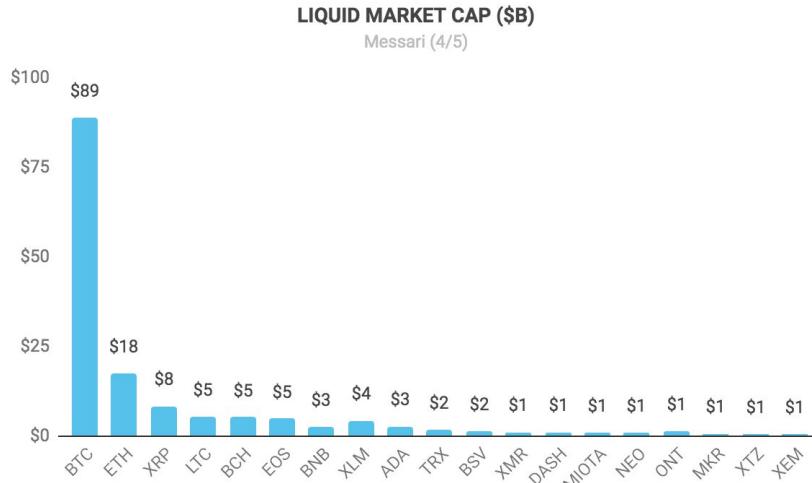
Custom data provided by [Messari](#) (as of 7/20)

BTC's liquid market cap was up 185.2% q/q and 218% YTD. ETH liquid market cap was up 118.8% q/q and 133.5% YTD. The majority of the gains occurred for both assets in 2Q19. While BTC and ETH liquid cap are down 7.7% and down 26%, respectively, in 3Q19 QTD since the end of the second quarter, it's still up 193.5% and 72.9%, respectively.

As a reminder, Liquid cap is calculated as Messari's liquid supply metric by its volume weighted average price. Liquid supply is meant to [standardize the definition of "supply"](#) across different cryptoassets. Liquid supply is supply that is visible on-chain and is not known to have contractual or programmatic restrictions.



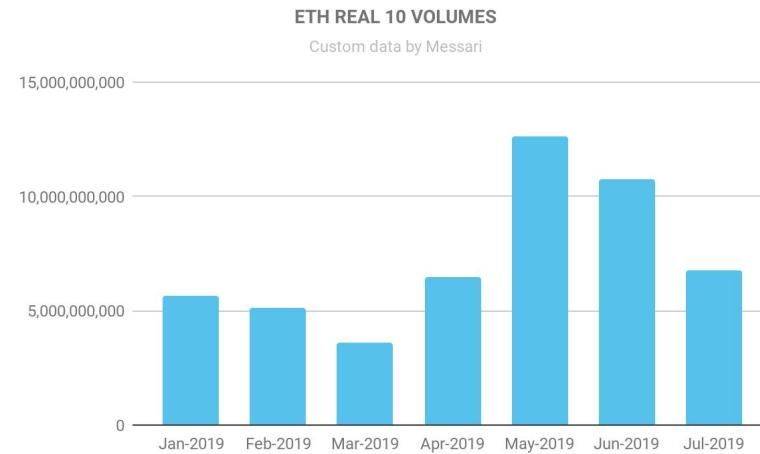
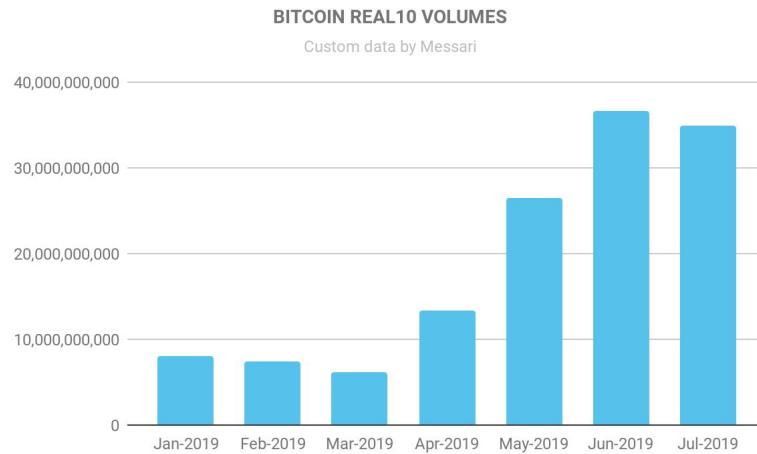
Liquid market cap almost doubles and changes composition



The combined liquid market cap of the top twenty assets on April 5, 2019 was \$152 billion. It rose to \$292 billion (as of 7/5), an increase of 92% and now sits at ~\$234 billion (7/25). The composition has also changed -- new additions include CRO (Crypto.com), Algorand (ALGO), Chainlink (LINK), and Cosmos (ATOM). Crypto assets no longer in the top twenty include Maker (MKR), Tezos (XTZ), NEM (XEM), and VeChain (VET). Polkadot and Dfinity are assets with estimated \$1+ billion valuations that are expected to launch later this year.

Real 10 volumes up significantly in 2Q19

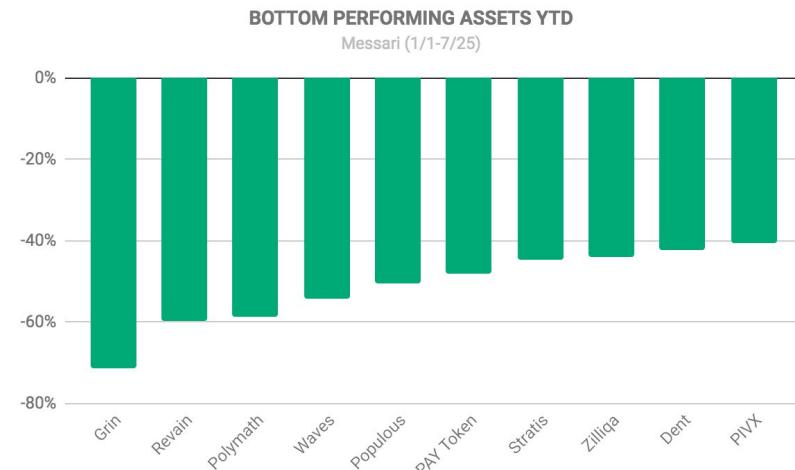
Custom data provided by [Messari](#) (as of 7/20)



In 2Q19, real 10 volume was up significantly for BTC (+255% q/q) and ETH (+108% q/q), though month over month performance was more mixed for ETH, peaking in May rather than June. As a reminder, real 10 volume [refers to](#) the sum of trading volume on exchanges that Messari deems to have legitimate volume. It serves as a proxy for total exchange volume, which can be misleading as it often includes volume driven by wash trading. It does not currently include *all* legitimate volume, including from exchanges that are known to have wash trading but do have some portion of legitimate volume.

YTD returns: Top & bottom performing assets of top 100 by market cap

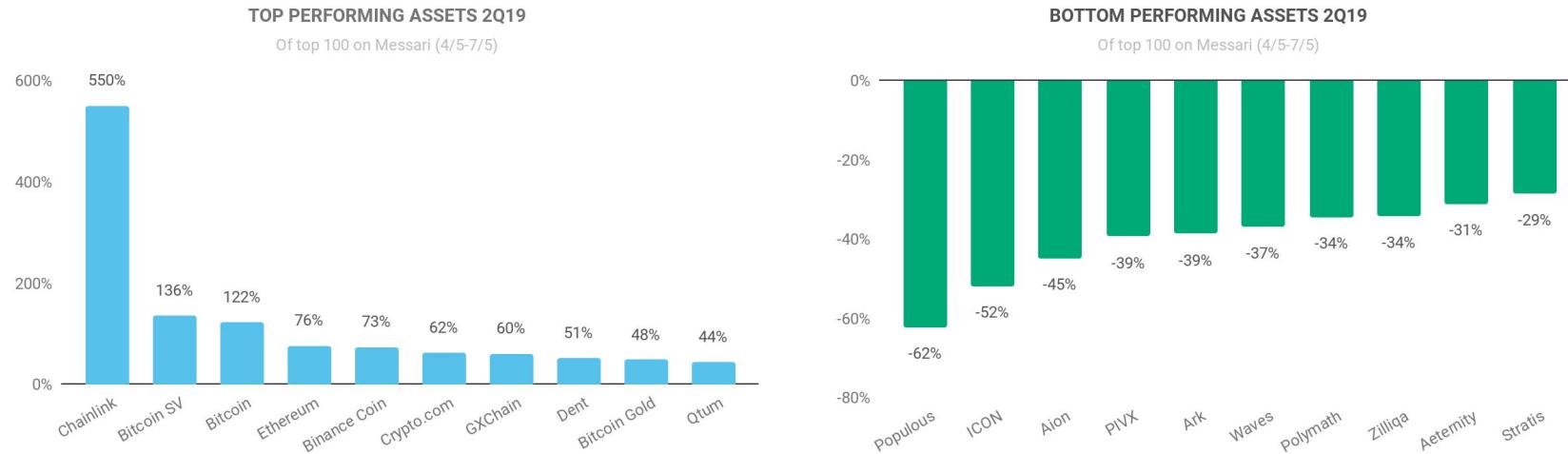
As of 7/25



As a continuation of a trend we identified in 1Q, performance this quarter seems to be driven by fundamental news. Chainlink (LINK), a general oracle solution, is up over 700% YTD, driven by a series of announcements, including (1) launching mainnet, (2) inking a partnership with Google, and (3) getting listed on Coinbase. Binance Coin (BNB) has been a top asset year to date. Binance requires users to hold BNB to participate in IEOs on Binance. Further, BNB is Binance Chain's native token. Litecoin (LTC) will experience its second halving this August - this event is cited as a key reason for the asset's outperformance this year. As we explained in our slide on the bitcoin halving, stakeholders bid up the price of an asset in anticipation of the upcoming constraint on supply and reduced selling pressure. Bitcoin (BTC) has been a top performer in the top assets by market cap and the broader crypto market at large, and boasts 68% dominance at the time of writing. Many believe the relative outperformance of bitcoin relative to "altcoins" may be a sign that the market is maturing. The TIE has a [tweet thread](#) on Chainlink and Delphi Digital has a [report](#) on Enjin.

2Q19 returns: Top & bottom performing assets of top 100 by market cap

4/5-7/5



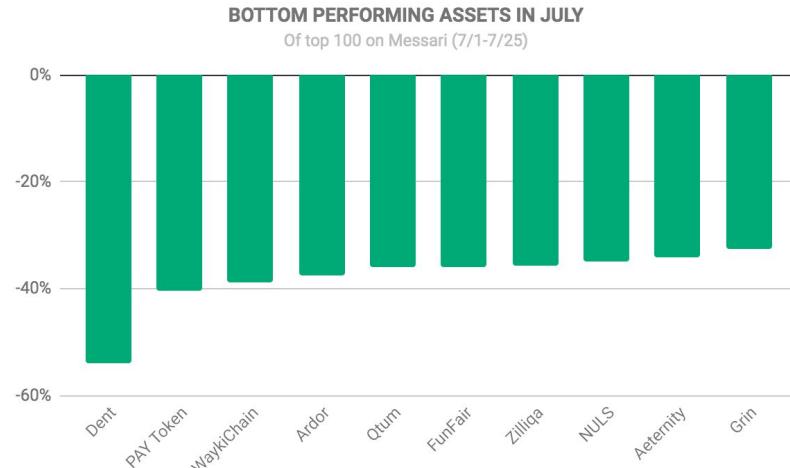
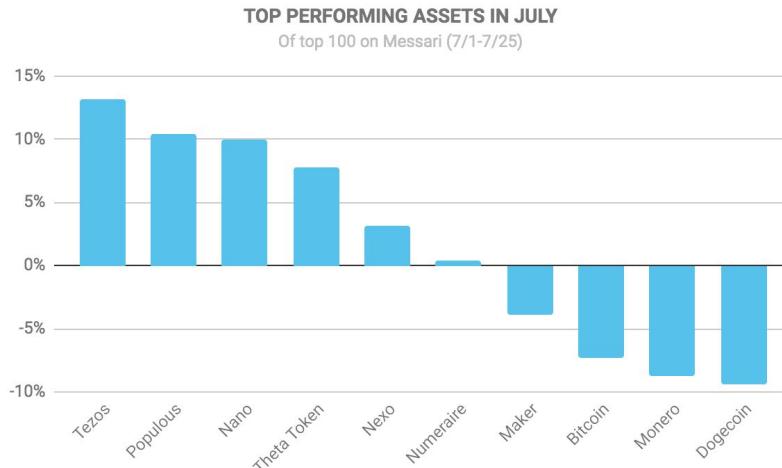
Multiple coins that are up YTD also outperformed in 2Q19. As mentioned, smart contract and oracle startup Chainlink (LINK) announced it partnered with Google Cloud on June 14 to help share BigQuery data with Ethereum dapps. Its native token, LINK, was later listed on Coinbase (June 28). Bitcoin SV (BSV) surged in value shortly after Craig Wright, the BSV supporter and self-proclaimed individual behind the pseudonym Satoshi Nakamoto, filed a copyright registration* for the Bitcoin whitepaper and the original 2009 Bitcoin code in May. Bitcoin (BTC) went parabolic in 2Q19, hitting a 1 year high of ~\$13.8k on June 26 before retracing slightly. Ethereum (ETH) echoed Bitcoin's price movements in 2Q19 (though to a lesser degree), which is relatively unsurprising as BTC and ETH price movements have been strongly correlated YTD.

Source: Messari, Circle Research

*Note: The Copyright Office does not investigate the validity of any copyright claims. Anyone can register anything, and there is no way to challenge the registration.

July returns: Top & bottom performing assets of top 100 by market cap

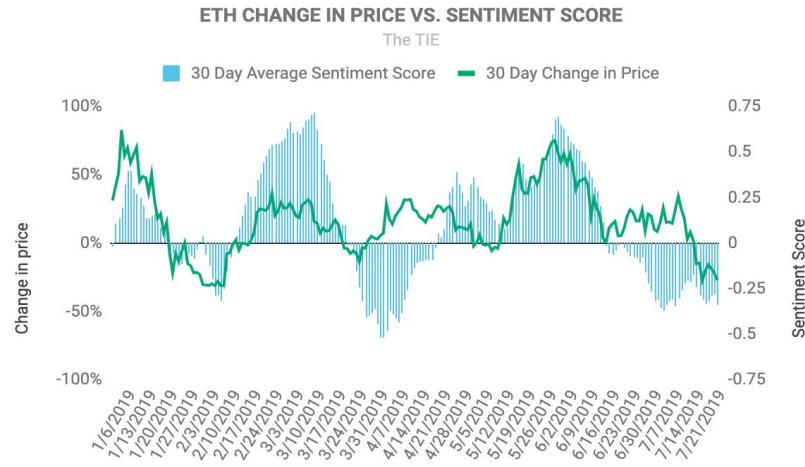
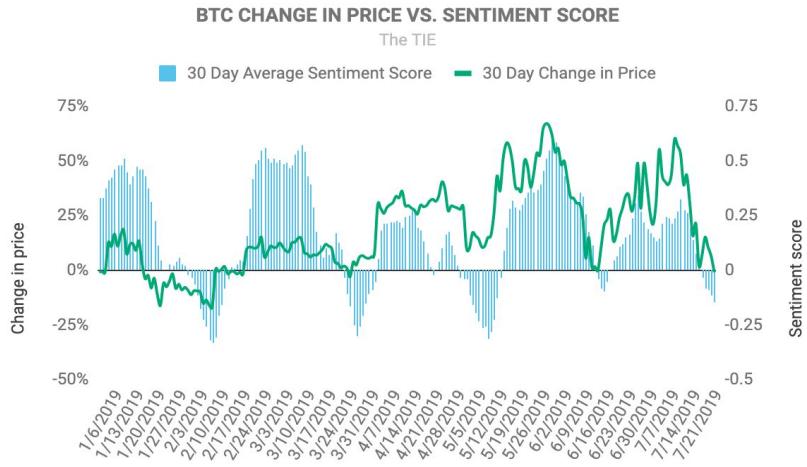
As of 7/25



The market has cooled off in July following a strong rally throughout the second quarter. A notable movement in Tezos was driven by the project's early July announcement regarding a \$1 billion deal to serve as a platform for tokenized traditional and alternative assets to be issued by Brazilian investment bank (BTG Pactual) and Dubai-based asset management firm Dalma Capital. While bitcoin is slightly down QTD, it is still among the top 10 performing assets by liquid market cap on Messari.

Sentiment Data: Price vs. Sentiment Score

Custom data provided by [The TIE](#) (as of 7/21)

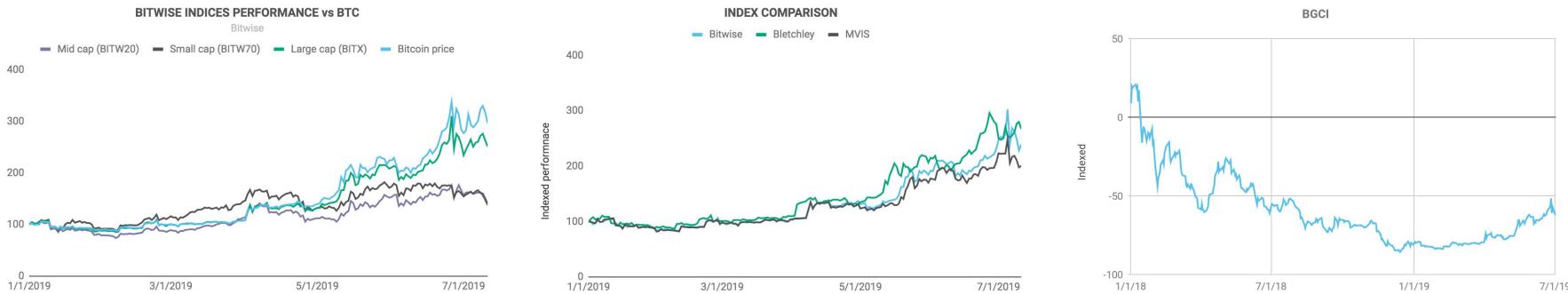


Market sentiment (via Twitter) has appeared to be a leading indicator for most BTC and ETH price movements. BTC has seen a prolonged period of positive sentiment, which is strongly correlated ($r=0.71$ in 2Q19) with BTC's second quarter price surge. The brief periods of negative sentiment line up with the Binance hack (May 7), the announcement of Libra and its associated partners (June 14) and the negative comments made by President Trump and Treasury Secretary Steven Mnuchin regarding Bitcoin and cryptocurrency (July 11 and 15).

On the other hand, ETH sentiment score has been less correlated with its change in price relative to BTC in 2Q19 ($r=0.56$ vs. $r=0.71$). However, ETH exhibited a much stronger correlation to BTC price ($r=0.96$) over the same timeframe, suggesting price of BTC still has a greater impact on ETH compared to market sentiment. ETH market sentiment remains negative despite recent positive developments (e.g. ETH 2.0 launch announcement, Istanbul hard fork spec freeze, increase in loans originated on Ethereum DeFi platforms, etc.)

Large cap indices outperform small and mid, but bitcoin dominates all

The leftmost chart shows the performance of the Bitwise 10 Large Cap (BITX), Bitwise 20 Mid Cap (BITW20), and Bitwise 70 Small Cap (BITW70) indices over time. As we can see in the chart, the large cap index outperformed relative to small and mid cap, with bitcoin further outperforming large cap. This is very different from the picture at the end of 1Q19, when the small cap index was outperforming. This trend highlights one of the key themes this quarter - bitcoin dominance and the maturation of the market.



The Bloomberg Galaxy Crypto Index (BGCI) is a market cap weighted index that tracks up to the twelve largest crypto assets, including Bitcoin, Ethereum, Ripple, Litecoin, Bitcoin Cash, and EOS. A unique characteristic of the BGCI is that it places a maximum weight, or cap, of 30% of the index on each constituent and minimum weight, or floor, of 1% to provide a diversified snapshot of the most liquid assets. Thus, by design, the weight of BTC in BGCI is less than the weight of BTC in certain other comparable indices displayed here. As a result, the BGCI ended the quarter lower relative to other indices given bitcoin's relative outperformance this quarter.

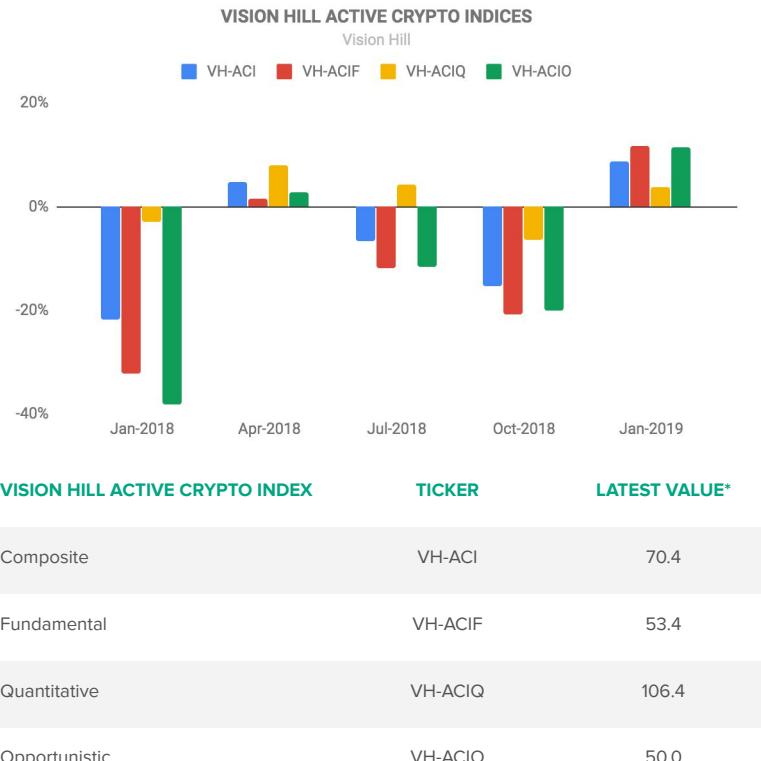
Vision Hill active crypto benchmark indices

Vision Hill Group recently rolled out their proprietary Active Crypto Indices. The team created these to serve as non-investable reference indices that provide insight into the crypto and blockchain hedge fund ecosystem. These indices are an extension of Vision Hill's in-depth quarterly benchmarking reports.

Vision Hill divides the crypto hedge fund universe into three main categories: Fundamental, Quantitative and Opportunistic, and has created an index that corresponds to each category. Composite combines all hedge funds into a single index.

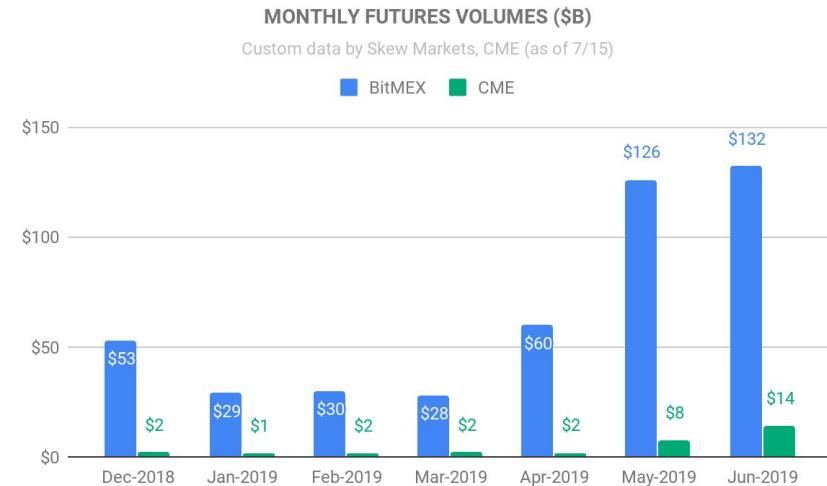
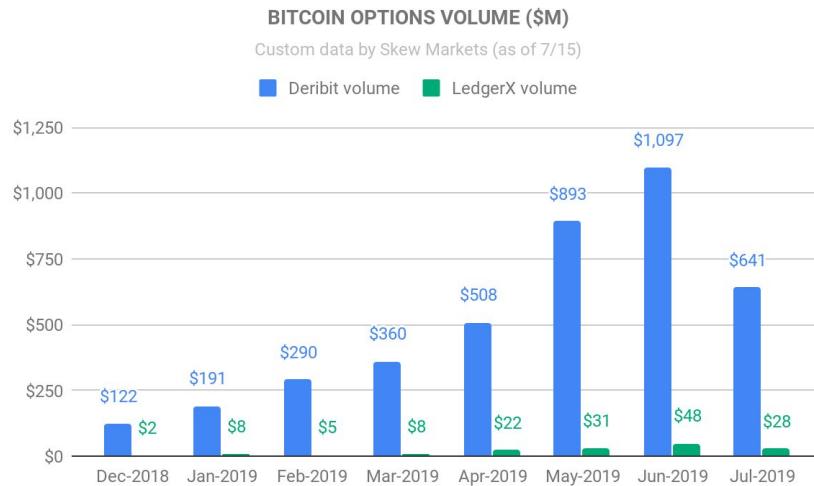
- **Fundamental includes:** Fundamental long only, fundamental long/short, hybrid
- **Opportunistic includes:** Credit, active network participation/generalized mining, other
- **Quantitative includes:** Directional, market neutral, long volatility,

In 1Q19, the Vision Hill Fundamental index was the best performing index, up 12% q/q. Vision Hill's Quantitative index was the bottom performing index. However, all indices were collectively up for the first time since 2Q18. We expect Vision Hill to release data for 2Q19 next month.



Derivatives volume

Custom data provided by [Skew Markets](#)



Derivatives volumes spiked in line with the price of bitcoin in 2Q19. Combined bitcoin options volume on Deribit and LedgerX was \$2.6 billion in 2Q19, up over 200% q/q. Interestingly, the daily volume of options on Deribit peaked on 6/24 at ~\$150 million. Depending on the price feed, the bitcoin price spiked to almost \$13K within a couple of days before cooling off slightly. LedgerX had a record trading day on 7/9, trading \$11.4 million in notional. Bitcoin futures volumes on BitMEX and CME combined were \$342 billion, up over 270% in 2Q, with both platforms experiencing month over month gains throughout the quarter. Deribit and BitMEX dominate their CFTC regulated counterparts, holding over 90% share of combined options and futures volume, respectively though BitMEX share fell to a year to date low of 90.4% in June.

Innovation on valuation metrics and market signals

METRIC	CREATOR	DESCRIPTION
NVT NVT signal (NVTS) UTXO adj. NVTS	-NVT: Willy Woo -NVTS: Dmitry Kalichkin -UTXO adj. NVTS: Delphi Digital	<p>NVT: Ratio of network value to transaction value, smoothed using moving average. It is inspired by the PE ratio in traditional markets. Transaction value (money flowing through network) is considered proxy for firm's earnings.</p> <p>NVTS: Seen as more responsive than NVT and a more actionable trading indicator. NVTS applies the moving average only to the volatile transaction component (denominator).</p> <p>UTXO adj. NVTS: Delphi believes their UTXO adjustment improves upon NVTS by accounting for different stages of bitcoin's price cycle to create a more consistent buying/bottom indicator.</p>
MVRV	Murad Mahmudov David Puell	Ratio of market cap (tokens outstanding x current price) to realized value (token x price at which token last moved). The MVRV ratio may be used to determine a more accurate value for UTXO coins outside of current investor psychology. Realized value was introduced by Nic Carter as a more accurate measure of "market cap".
NNTV	Placeholder VC	NNTV is a new ratio that aims to provide a new and less manipulable way to evaluate smart contract platforms. It stands for the Network Value (of a smart contract platform) to the Token Value (of all assets that have launched on it). For example, the NNTV of Ethereum is 2x vs. 234x for EOS. Similar to PE and NVT, a larger ratio may imply a higher speculative value. Read Chris Burniske's thread here.
Bitcoin dormancy	David Puell Reginald Smith	Dormancy is the ratio of coindays destroyed to on chain transaction volume.* High dormancy means more long-term holders are selling their coins (i.e. to take profits), a bearish indicator. Low dormancy is bullish as more coins are being held for a longer period of time. Puell and Smith use dormancy to introduce two additional metrics: DUA ratio (dormancy to UTXO age) and dormancy flow (market cap / annualized dormancy in \$).

Source: Circle Research

*Note: Coindays destroyed is calculated by multiplying a Bitcoin UTXO amount by the number of days since it last moved, attributing more weight to dormant coins, or coins that have not been spent in a while. It is said to better account for transaction volume manipulation.

MVRV As of 7/12

Bitcoin realized market capitalization hits ATH

Bitcoin's realized market cap continues to rise (up **19% q/q** and **3% y/y**), and reached a new all time high of **\$93.9 billion** on July 21. Realize value, RV, (or cap) measures the value of each coin in the circulating supply at the price in which it was last moved, effectively pricing the supply at the time holders realized their gains or losses. According to [Coin Metrics](#), it can be viewed as a proxy of the total amount of USD invested in an asset; therefore, the growth in Bitcoin's realized value is positive signal for the asset as well as the overall market.



Market value vs. realized value rises

MVRV increased significantly in 2Q19 (up **138% q/q**) alongside Bitcoin's price rally. According to Adamant Capital, fluctuations in MVRV can be used to determine if a crypto asset is underpriced (MV below RV) or overpriced (RV is way above MV).

Despite the rapid increase, BTC's MVRV has not yet extended to heights close to previous peaks (nor the 3.7 threshold established by Adamant Capital). The ratio currently sits at **2.3**, suggesting BTC is neither overvalued or undervalued.

Source: [Bitcoin Market-Value-to-Realized-Value Ratio](#), Coinmetrics, Circle Research

Note: [Murad Mahmudov and David Puell](#) said established thresholds may be unreliable over time and that MVRV provides only a long-term market perspective. There is not enough evidence to draw concrete conclusions.

NVT ratio inching up



Change in NVT: -2.7% q/q | -11.3% ytd



Change in NVT: -9.9% q/q | +3.8% ytd

The NVT ratio considers both the value and the utility of the asset or network. This metric has been used to determine whether a crypto asset is overbought (high NVT ratio → high price speculation) or oversold (low NVT ratio → high demand as a utility). YTD, bitcoin's NVT (backward looking 14-day moving average) has been in the **57-78** range and ether's NVT has been in the **35-78** range. In 2Q19, bitcoin's NVT was between **57-76** and ether's NVT was between **35-52**.

Willy Woo (the creator of the ratio) suggests the NVT ratio can help discern a crash from consolidation *after* price has peaked. However, it is not as useful at identifying a bubble ahead of time--it is a lagging indicator in that the spike in NVT follows the bubble months later. Another challenge is that it does not account for off-chain transaction volume (i.e. on centralized exchanges), which is another factor that could skew the ratio upwards and give a false sense of being overbought.

NVTS range is normal territory



Change in NVTS: -5.7% q/q | -6.4% ytd



Change in NVTS: -20.4% q/q | -4.2% ytd

The NVT signal is the ratio of network value to the 90-day moving average (MA) transaction (or transfer) value. The NVT signal attempts to address the idea that crypto assets exhibit reflexivity by using a longer period moving average (90 days rather than 28 days). Reflexivity refers to the idea that, in the short run, a rapid increase in price leads to an similar increase in on-chain transaction value. Every time price rises sharply, off-chain trading activity increases in tandem, which is shortly followed by growth in on-chain transaction volume growth.

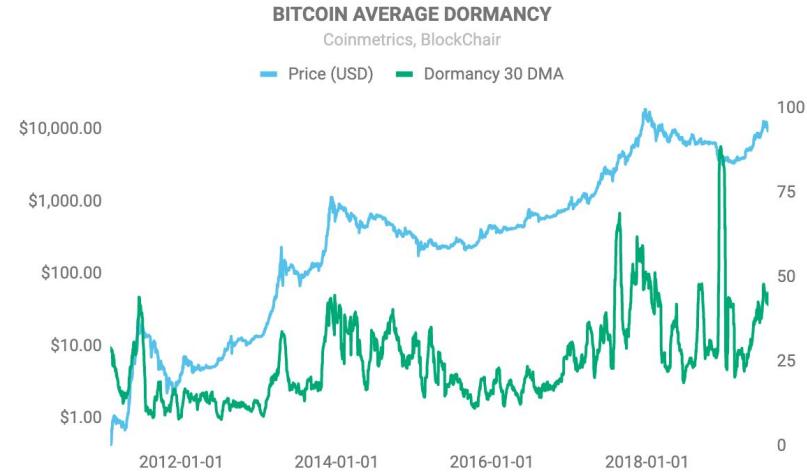
The “normal” threshold for NVTS is between 45 to 150. Above 150 is overbought and below 45 is oversold. YTD, bitcoin’s NVTS has been in the **60-65** range and ether’s NVTS has been in the **39-52** range. In 2Q19, bitcoin’s NVTS was between **60-64** and ether’s NVTS was between **41-52**.

Bitcoin average dormancy is trending up

Bitcoin dormancy* provides yet another actionable valuation method that can shed some light on the state of Bitcoin market cycles and its long-term economic health. It is a ratio of coindays destroyed (or destruction) to on-chain transaction volume, which measures the average number of days each coin transacted remained dormant, or unmoved.

By integrating these narratives into a single metric, Bitcoin average dormancy may simplify the process of distinguishing bullish from bearish market activity. High dormancy means more long-term holders are selling their coins (likely to take some profits), a bearish indicator. In comparison, low dormancy is bullish as more coins are being held for a longer period of time.

Dormancy can be measured in cycles that typically mirror Bitcoin price movements -- one notable exception is the spike in average dormancy in December 2018 when BTC fell to just above \$3k (this also coincided with Coinbase shifting its bitcoin reserves, totaling ~5% of supply at the time, between cold storage wallets). With BTC's recent appreciation price, dormancy has been on the rise, up **103%** q/q. However, it is still down **30%** YTD and is not yet at the level of its 2017 highs.



	Destruction	Volume	Dormany
High	Bearish	Neutral	Bearish
Low	Neutral	Bearish	Bullish

Source: [Reginald Smith and David Puell](#), Coinmetrics, Blockchain

*Caveats: Destruction is prone to false signals and is best used by looking at smoothed medians or moving averages. Dormancy signals can also be impacted by future Bitcoin developments and should be viewed with an increasing caution.

Crypto network activity

2Q19 Network Activity Highlights

ON-CHAIN TX VOLUME (\$)

BTC: +106% q/q

ETH: +113% q/q

CHANGE IN HASHRATE

BTC: +32% q/q

ETH: +19% q/q

AVG FEE PER TRANSACTION

BTC: \$2.50

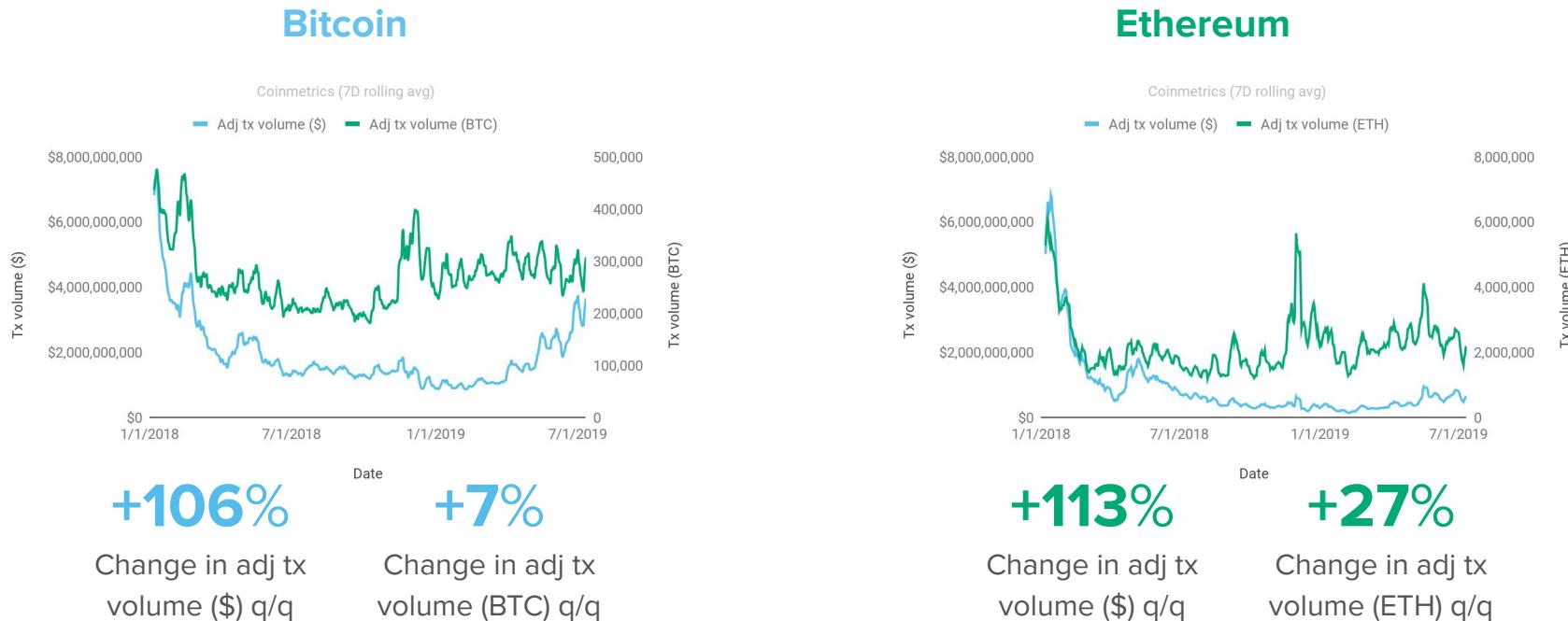
ETH: \$0.14

LIGHTNING NETWORK GROWTH

LN Capacity (BTC): -11% q/q

LN Channels: -12% q/q

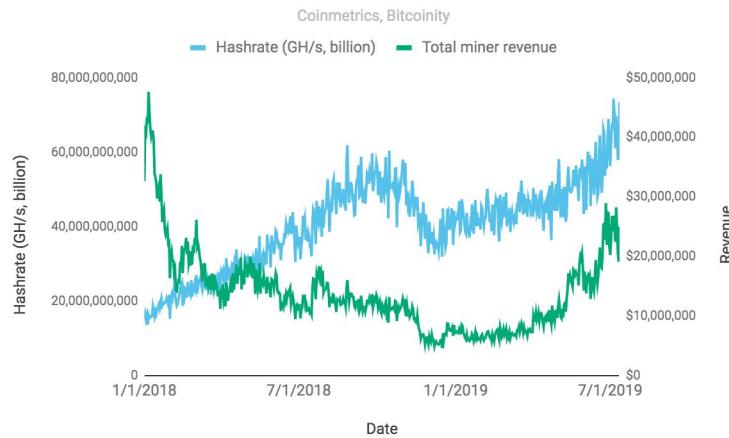
Daily adj. on-chain transaction volume up in both USD and native units



Caveat: Transaction volumes can be misstated due to the existence of mixers, self-churn, privacy enhancements, spam, and change outputs (in UTXO chains). Coinmetrics provides an adjusted transaction volume metric for BTC, ETH, and other coins to isolate and make it easier to compare economically important transactions. However, adjusted transaction volume can be inflated by, for example, large holders repeatedly cycling their coins around wallets they own.

Uptick in hashrate and total miner revenues across the board

Bitcoin



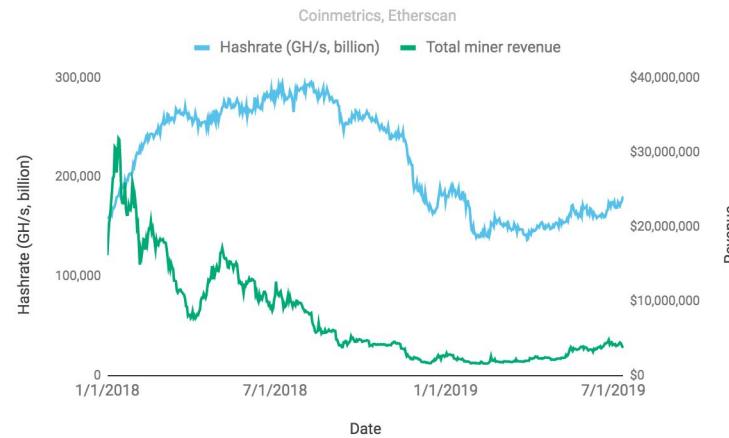
+32%

Change in
hashrate q/q
(4/1-7/1)

+177%

Change in
revenue q/q
(4/1-7/1)

Ethereum



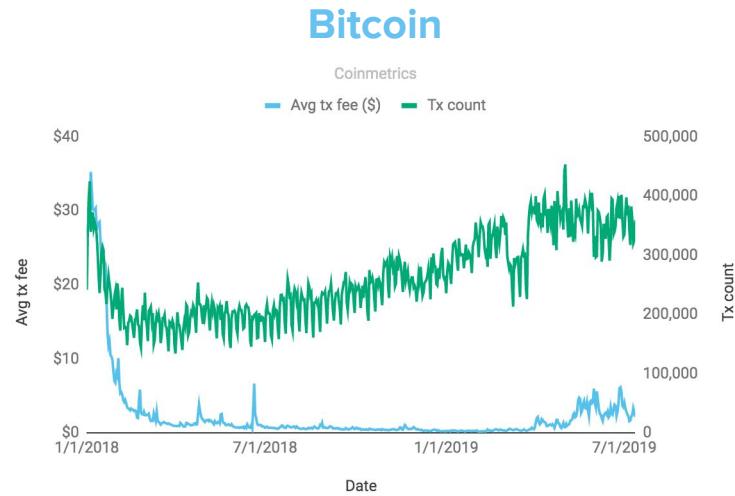
+19%

Change in
hashrate q/q
(4/1-7/1)

+111%

Change in
revenue q/q
(4/1-7/1)

Transaction fees stay low even as transaction count trends upward

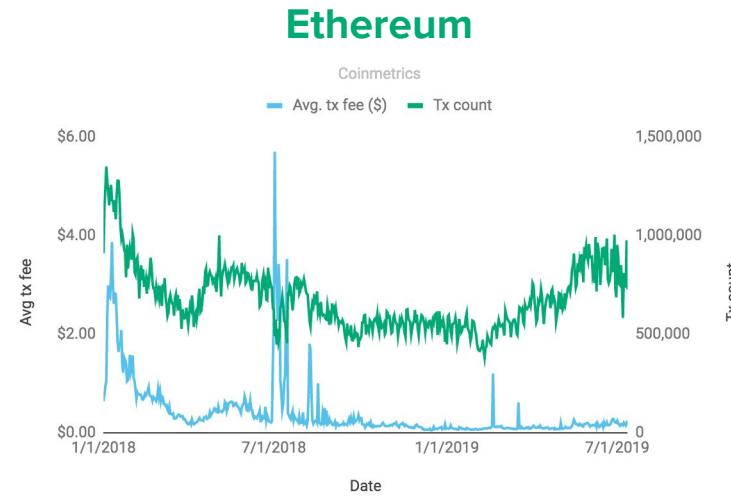


+683%
Change in average
transaction fee q/q

+88%
Change in average
transaction fee y/y

+17%
Change in transaction
count q/q

+87%
Change in transaction
count y/y



+29%
Change in average
transaction fee q/q

-66%
Change in average
transaction fee y/y

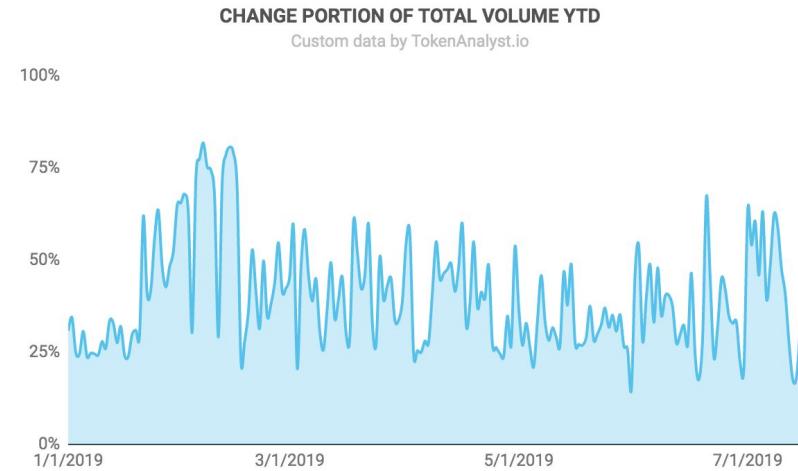
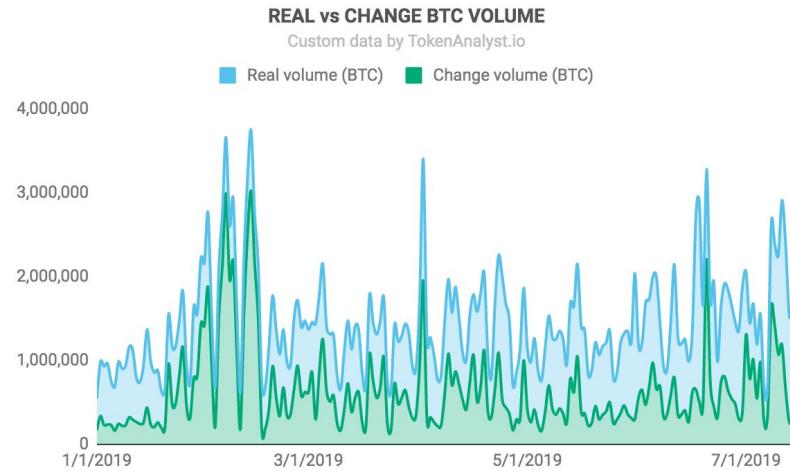
+44%
Change in transaction
count q/q

+2%
Change in transaction
count y/y

Coinmetrics [highlights](#) that UTXO networks like Bitcoin can batch multiple transactions into one. Just counting transactions for UTXO chains might not yield a reliable estimate of actual count. Further, comparing transaction count on a chain where users employ batching to a chain where users don't could yield inaccurate conclusions. Transaction count can be easily gamed on low fee chains, making it difficult to compare the metric across different chains.

Change volume made up over 40% of gross BTC transaction volume YTD, on average

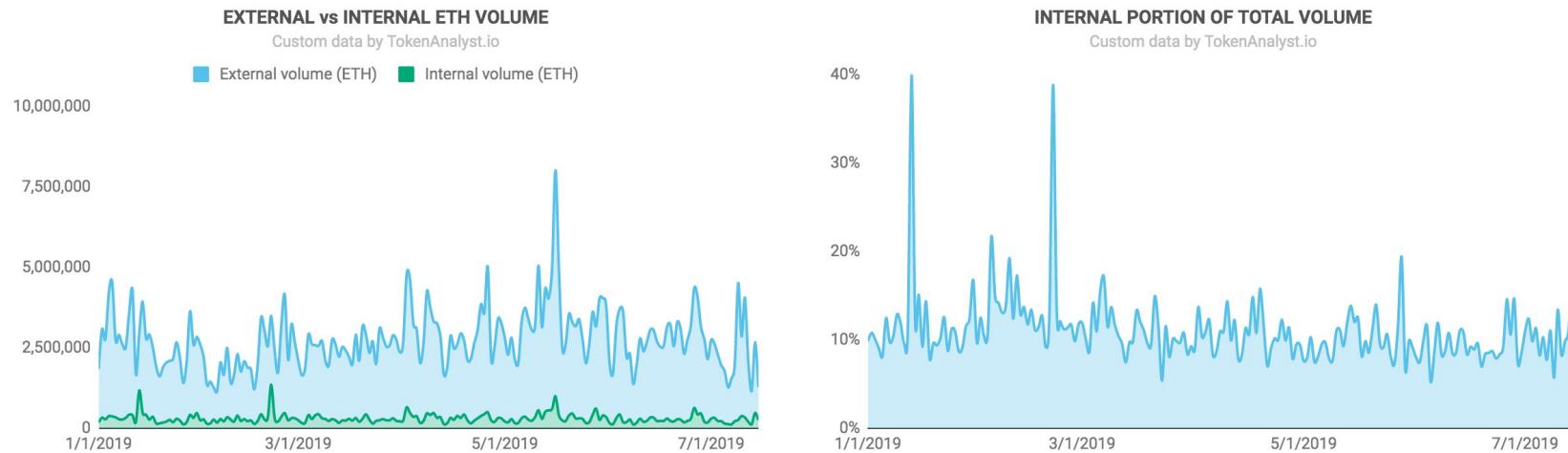
Custom data provided by [TokenAnalyst.io](#) (as of 7/15)



[TokenAnalyst](#) provides data highlighting real vs. change on-chain volume on Bitcoin. According to their historical data, on average, change volume comprised 34% of gross volume in 2018. In 2019 YTD, average change volume has comprised 40% of gross volume. This reinforces the idea that taking raw transaction volume at face value on UTXO-based chains can be misleading.

Internal volume made up ~10% of total on-chain ETH volume in the second quarter

Custom data provided by [TokenAnalyst.io](#) (as of 7/15)



Similarly, internal volume on ETH comprised 10% of gross volume in 2018, on average. In 2019 YTD, average internal volume has comprised 11% of gross volume. Internal volume refers to smart contract initiated transactions vs human initiated. Often times, they can be smart contract to smart contract transactions.

While Bitcoin Lightning Network metrics taper relative to the first quarter...



Growth in key metrics often cited to measure the performance of the lightning network were more subdued than the first quarter this year. The number of Lightning nodes with open channels saw a modest increase while the number of unique channels decreased q/q. The cumulative BTC capacity across all LN channels also declined but the USD value continued to rise due to BTC's significant appreciation in price relative to USD in 2Q19. Despite this slight stall in growth, development on the underlying network remained strong (as detailed on the next slide).

Source: bitcoinvisuals.com, Circle Research

Note: Elizabeth Stark has mentioned that the number of lightning nodes will become increasingly harder to measure as nodes/channels will be unadvertised by default for privacy preserving purposes.

...underlying development on the network remains strong

Non-custodial mobile & desktop wallets	Lightning Network watchtowers	Neutrino protocol	Other developments
<p>Who? Lightning Labs launched new desktop and mobile wallets for Lightning payments in 2Q19.</p> <p>What? Lightning Labs' app is a non-custodial mobile wallet for iOS and Android. It follows the release of its desktop wallet in April. Both the desktop and mobile wallet leverage the Neutrino protocol and Autopilot (automates function of connecting to reliable nodes).</p> <p>Why? Prior to Lightning Labs' mobile app, most mobile wallets were custodial. The motivation was to create more secure, private, easy-to-use non-custodial wallets for users of the Lightning Network</p> <p>Read more.</p>	<p>Who? Lightning Labs rolled out the most complete build of a Lightning Network watchtower in v 0.7 of LND.</p> <p>Why? Users that run their own Lightning node have to periodically go online if they have payment channels open to make sure that counterparties do not steal funds by broadcasting old and invalid states.</p> <p>What? A watchtower is a service that monitors Lightning channels to check whether invalid commitment transactions are being broadcast on-chain.</p> <p>Read more.</p>	<p>Who? Lightning Labs' mobile and desktop wallets incorporate its Neutrino light client technology.</p> <p>What? Wallets that use Neutrino must only download and verify 10s of MB of filter and block headers (takes minutes). Also, wallets receive a summary of full block data rather than requesting specific data from a given block (with SPV).</p> <p>Why? Neutrino was designed to address security risks associated with centralized wallets, the complex and time consuming process of downloading a full Bitcoin node, and the UX and privacy challenges of simplified payment verification (SPV).</p> <p>Read more.</p>	<p>IoT. Nayuta, a Japan based startup, is working on a lightning network implementation targeted at IoT devices.</p> <p>Mesh networks. goTenna released a paper highlighting how it could leverage bitcoin's lightning network to incentivize running mesh infra.</p> <p>More non-custodial wallets. Breez launches first iOS mobile wallet leveraging Neutrino tech.</p> <p>Casa launches Sats App, allowing users to manage their lightning node from their mobile device as well as earn rewards ('Sats Back').</p>

Crypto staking: The rise of value and attention in staking networks

Value Locked in Staking Networks: \$6.5 billion

Value locked in staking networks is up 12% q/q, up 790% YTD, and up 128% y/y. The YTD increase is driven by (1) the launch of new PoS networks (Cosmos, V Systems, etc.), (2) potentially a rise in tokens engaged in staking, and (3) the rise in prices of underlying assets locked in these networks. The total market cap of staking networks is up 129% YTD (as of 7/22).

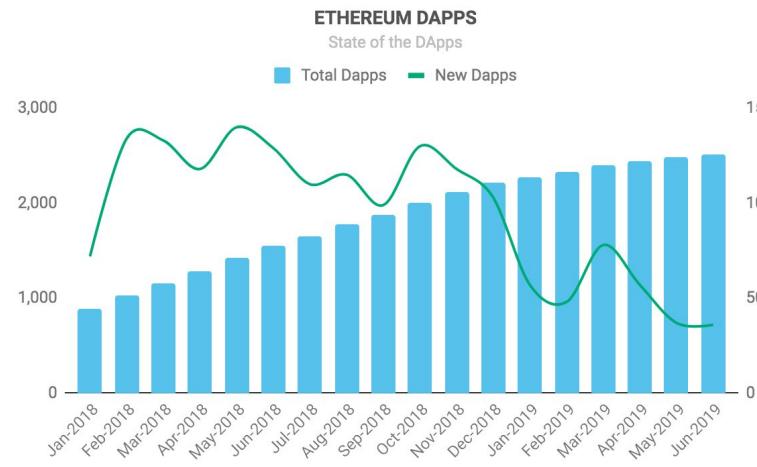
Messari lists twenty four tokens that allow or require users to stake or engage tokens to earn a return by participating in the network. Messari introduced a new metric called **real staking yield**, which is the real annual yield participants earn by staking after accounting for the network's inflation (calculated as the nominal staking yield adjusted using circulating supply inflation).

Here, we list the top fifteen staking networks by liquid market cap on Messari. The median staking yield for these networks is **7.1%**. However, the median real staking yield is negative at **-1.15%**. There are additional factors that must be taken into account to arrive at a net yield--these are often more difficult to back into (i.e real slashing and misbehaving risk, code/smart contract risk, etc.) or quantify (i.e. governance rights) and require us to make assumptions that may not be true in practice.

Token	Liquid cap (\$)	Engaged (% of Total)	Staking yield (%)	Real staking yield (%)
EOS	\$4,245,246,092	48%	1.84%	-0.34%
TRON	\$1,531,322,481	12%	4.35%	-30.67%
Dash	\$1,032,258,771	56%	6.37%	-1.15%
Ontology	\$969,608,311	15%	3.89%	-0.16%
Tezos	\$728,477,679	71%	7.13%	-3.47%
NEM	\$593,995,879	43%	4.21%	3.61%
Qtum	\$300,200,549	13%	8.45%	1.42%
Decred	\$275,557,352	49%	9.92%	-6.18%
Lisk	\$217,440,959	61%	3.12%	-2.23%
Waves	\$139,243,564	40%	7.53%	7.53%
Zcoin	\$76,701,980	69%	15.16%	-15.15%
Ardor	\$68,409,925	42%	0.19%	0.19%
Ark	\$57,127,552	73%	10.21%	4.45%
NULS	\$55,317,464	56%	12.17%	-1.99%
Horizen	\$47,690,629	35%	27.43%	-9.15%

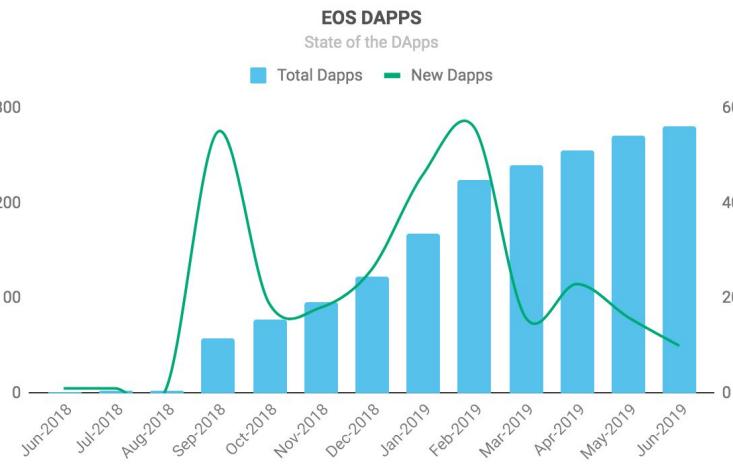
Source: *Messari, Staking Rewards, Circle Research*
As of 7/25

Dapp Platform Activity



+43
-29% q/q

Average number of dapps added per month in 2Q19



+16
-58% q/q

Average number of dapps added per month in 2Q19

While the number of total dApps on Ethereum and EOS went up in the second quarter, average new dApps added this quarter was down for both Ethereum and EOS this quarter relative to average new dApps added in 1Q19.

Glossary

2019 crypto trend update

Open finance: Open finance refers to traditional financial tools such as exchanges, lending, prediction markets, or derivatives built on a blockchain — specifically Ethereum.

Security token: Security tokens are regulated tokens backed by assets or securities that provide rights and ownership benefits akin to traditional securities.

Stablecoin: Stablecoins are price stable crypto assets often pegged to a fiat currency.

Initial exchange offering (IEO): IEO stands for initial exchange offering. It is a fundraising tool for early-stage crypto projects. IEOs are often referred to as rebranded ICOs.

Initial futures offering (IFO): A token offering for a coin that doesn't exist, pioneered by CoinFLEX for the sale of Polkadot's native tokens (DOT).

Gas: Every transaction on Ethereum is secured by gas, which is essentially a small fee paid to miners confirming actions and transactions, denominated in ETH.

Glossary

Crypto market performance

Liquid cap: Messari's liquid supply metric multiplied by its volume weighted average price. Liquid supply is supply that is visible on-chain and is not known to have contractual or programmatic restrictions.

Real 10 volume: The sum of trading volume on exchanges that Messari deems to have legitimate volume.

XBT: Another abbreviation for Bitcoin, or BTC. The [abbreviation](#) is in line with standards by the International Standards Organization (ISO) highlighting that if a currency is not connected to a specific country, it should begin with "X".

NVT: Calculated as network value over on chain transaction volume. It is often compared to the PE ratio, a valuation metric used in equity markets.

MVRV: Stands for market value (price x supply) to realized value, the aggregated market price of all BTC UTXOs (or those of a UTXO based coin) when last moved.

Glossary

Crypto network activity

Adjusted transaction volume: A metric released by [Coinmetrics](#) that aims to display economically meaningful transactions.

Bitcoin change volume: Refers to outputs in a transaction that are sent back to the originating address as change.

Lightning node: Lightning nodes open payment channels with each other that are funded with bitcoin.

Lightning channels: Payment channels opened between nodes on the Lightning Network to transact with one another.

Proof of stake: Proof of stake is a consensus mechanism that requires participants to stake (or lock up) tokens to validate blocks.

Staking: In proof-of-stake systems, token holders are responsible for creating blocks. Token holders lock up, or “stake”, a minimum amount of tokens to validate transactions. In return, they are rewarded for doing so in tokens created through inflation.

