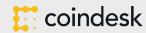


Q3 2017 State of Blockchain: Table of Contents



- 1. EXECUTIVE SUMMARY
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 - A. Bitcoin
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- 3. ENTERPRISE BLOCKCHAINS

- **4.** INVESTMENT
- **5.** GOVERNMENT & REGULATION
- **6.** SENTIMENT SURVEY
- **7.** COINDESK
 - A. Research Framework





1

EXECUTIVE SUMMARY







Market grows despite regulatory challenges:

- Multiple executive regulators announced aggressive action, markets boom to all-time high above \$170bn.

Bitcoin tested by soft and hard fork:

- Often debated soft fork resulted in segregated witness, opened Bitcoin to cryptographic innovations; hard fork resulted in big block Bitcoin Cash.

Key metrics up across public blockchains:

- Hash rate, >1MB Bitcoin blocks; ethereum hit a record for blockchain transactions.

ICOs and VC hit new highs:

- ICOs raise \$1.24bn, led by Filecoin, Tezos. Coinbase raises \$100mn: puts valuation at \$1.6bn, becoming the industry's first unicorn.

Token diversity sparks growth of buy side:

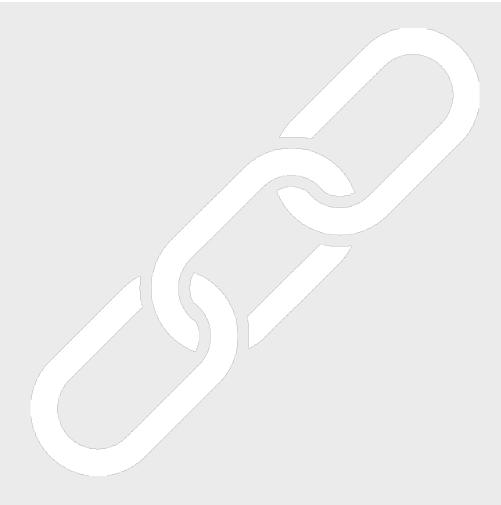
- Cryptocurrencies see development of buy side, and sophisticated analysis for valuations. Major law firms develop blockchain specialties.

Sentiment survey:

- Hedge against monetary policy was BTC's best quality; 83% checked prices everyday (50%) or compulsively, every hour (33%).

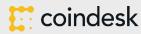


Q3 2017 Trends: Public Blockchains



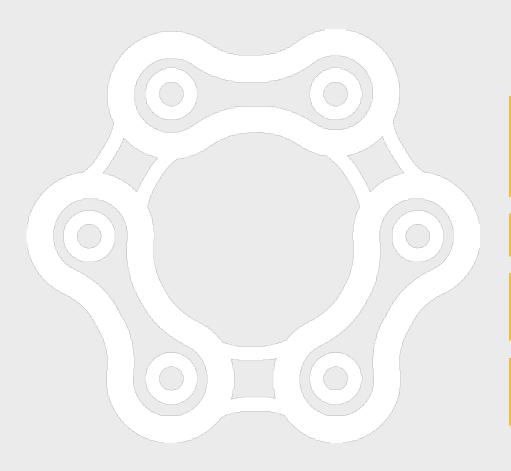
- Bitcoin tested by regulators, forks, breaks all time high of \$5000.
- Bitcoin begins to reassert market dominance over ETH, XRP.
- Global trading volumes accelerate and grow in diversity in terms of geography, exchanges, and currency pairs.
- Major digital assets BTC, ETH, XRP, DASH, and XMR rally ~3000%, almost 5% daily return.
- Transactions on major blockchains increased, except for Bitcoin. Ethereum sets transaction record for any blockchain.
- Industry terms like Bitcoin, Cryptocurrency and Blockchain hit all-time high in Google search frequencies.

Data Sources: CoinDesk, Image
Notes: Expanded upon in Section 2: Public Blockchains





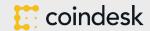
Q3 2017 Trends: Enterprise Blockchains



- 10 law firms that include Cooley, Debevoise & Plimpton, Hogan Lovells, Jones Day, Perkins Coie, Morrison Foerster join Enterprise Ethereum Alliance.
- R3 launches Corda v1.0, works trade finance applications.
- A group of telecom companies that includes Sprint and SoftBank launch Carrier Blockchain Study Group.
- Microsoft and Hyperledger each work on interoperability between enterprise chains.

Data Sources: CoinDesk, Image

Notes: Expanded upon in Section 3: Enterprise Blockchains



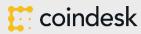


Q3 2017 Trends: Investment



- Q3 sent ICO total funding (\$2.38bn) above total VC funding for blockchain investment (\$1.95bn).
- Token diversification led to sophisticated buy side, 100+ crypto hedge funds launch and pioneer valuations.

Data Sources: CoinDesk, Image
Notes: Expanded upon in Section 4: Investment





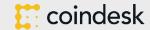
Q3 2017 Trends: Regulation & Government



- Chinese crackdown on ICOs and cryptocurrency exchanges, all exchanges cease operations on final day of Q3.
- SEC published ICO guidance, demonstrates new depth of expertise.
- CFTC granted LedgerX registration as a derivative clearing organization and a swap execution facility.
- Virtual Currency Tax Act tabled in the House, would see an exception to gains tax for small transactions.

Data Source: CoinDesk

Notes: Expanded upon in Section 5: Regulation & Government





2

PUBLIC BLOCKCHAINS



Q3 2017 Public Blockchain Summary

Aggregate market cap breaks \$100bn:

- Public blockchain assets rallied 4x, over \$75bn in value within the quarter.

Trading volume grows and distributes:

- Exchange trading volumes increased worldwide, now more distributed than ever.

Sector sees all-time high interest:

- Google searches for blockchain terms (except ethereum) see new highs.

Bitcoin dominance returns to 50% range:

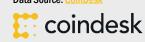
- Bitcoin reasserted market dominance it ceded in Q1 and Q2 (trend continued into Q4).

Some major assets grew ~30x YTD:

- ETH, XRP, and DASH are all up approximately 3,000%

Transactions hit new highs:

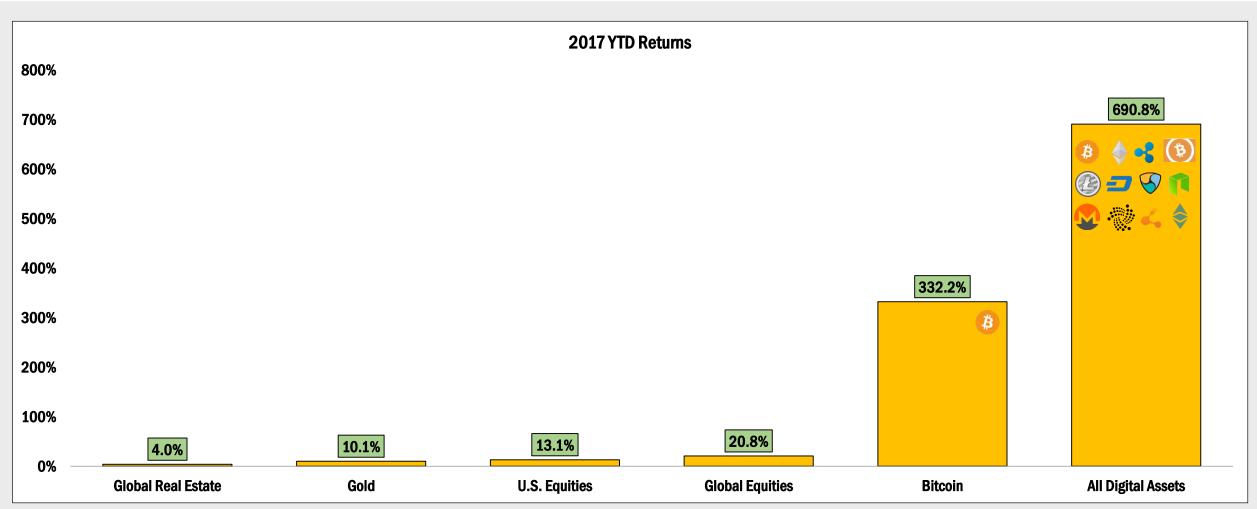
- Transactions on major blockchains increased, except for Bitcoin; ethereum broke records.





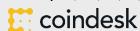
Digital Assets Outperformed Traditional Assets

Nearly 7X Return YTD



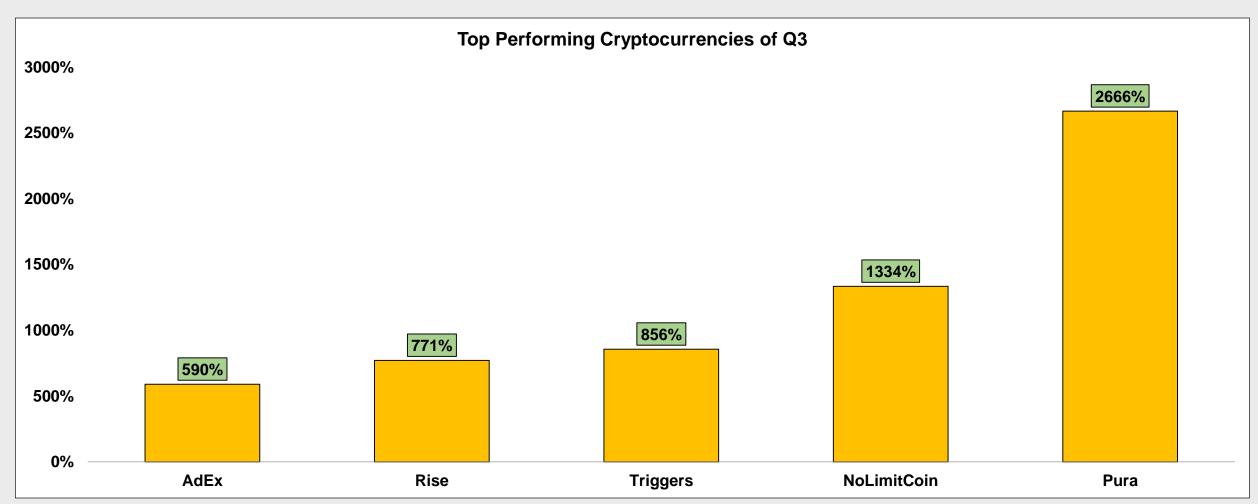
Data Source: Yahoo! Finance, Coincap, Coin.dance

Notes: Daily data, RWO, GLD, SPY, CWI, & BTC prices, all cryptocurrency market cap, data through 9/30/2017



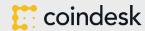


Five Cryptocurrencies Returned At Least 500% in Q3



Data Source: Coinmarketca

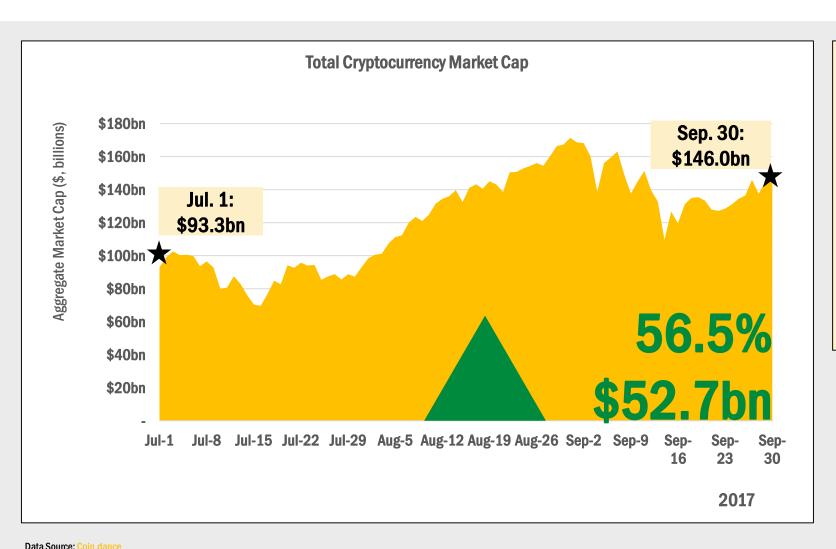
Notes: Limited to cryptocurrencies with >\$20 MM market cap, launched by 7/1/2017; based on 7/1/2017 USD open compared to 9/30/2017 USD close





Total Cryptocurrency Market Cap Increased Over 50%

Reached All-Time High Above \$170bn in Q3



For some context, the market cap of:

Western Union ≈ \$9 billion

Ether≈\$30 billion

Bitcoin ≈ \$70 billion

All Cryptocurrencies ≈ \$150 billion

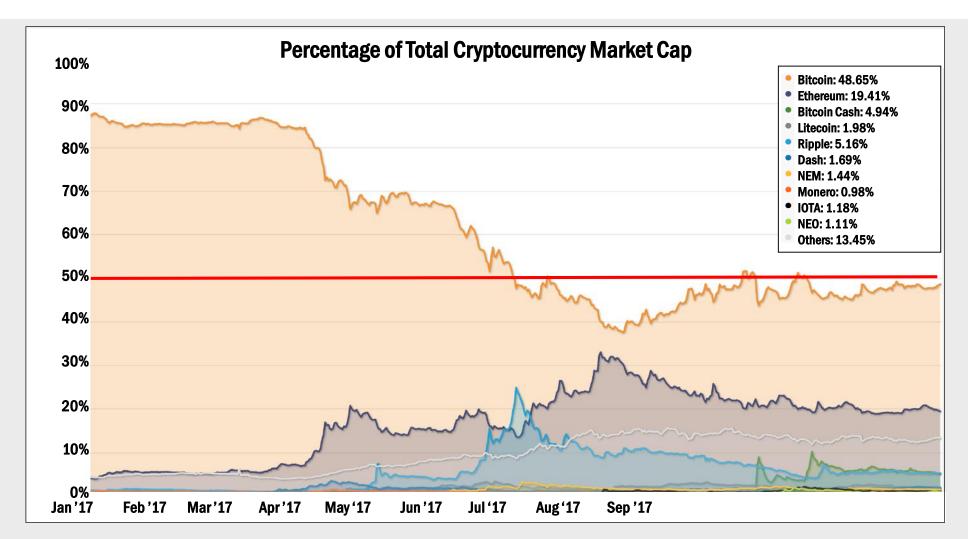
Visa ≈ \$240 billion

Gold ≈ \$8 trillion



Bitcoin Regained Share

Approached 50% of Total Cryptocurrency Market Cap in Q3

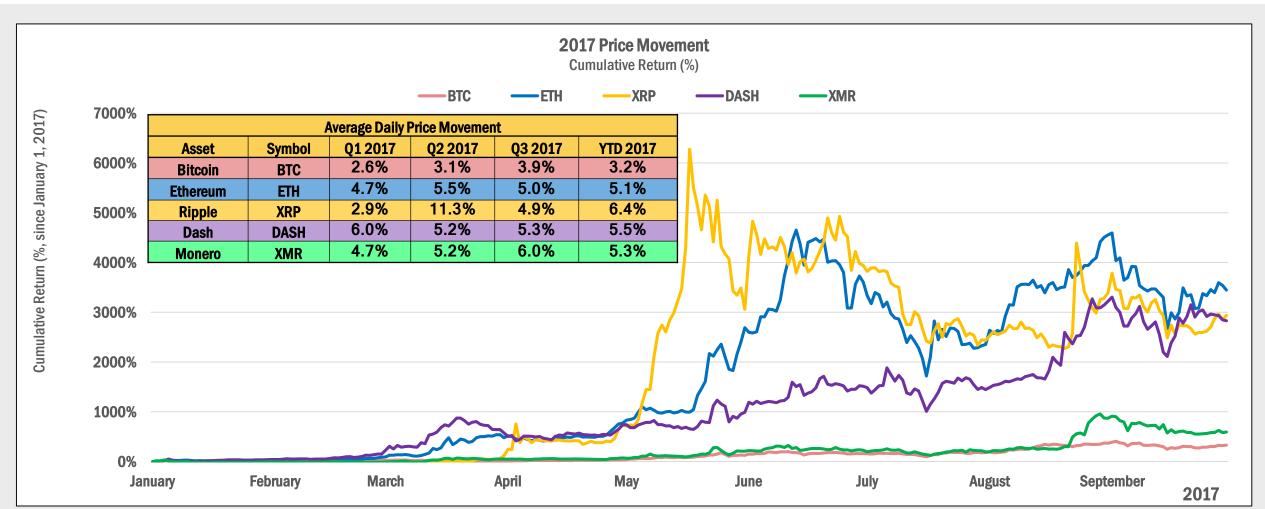






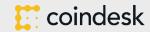
Major Asset Prices Rallied ~3000% Year to Date

Exceeded 5% Average Daily Volatility



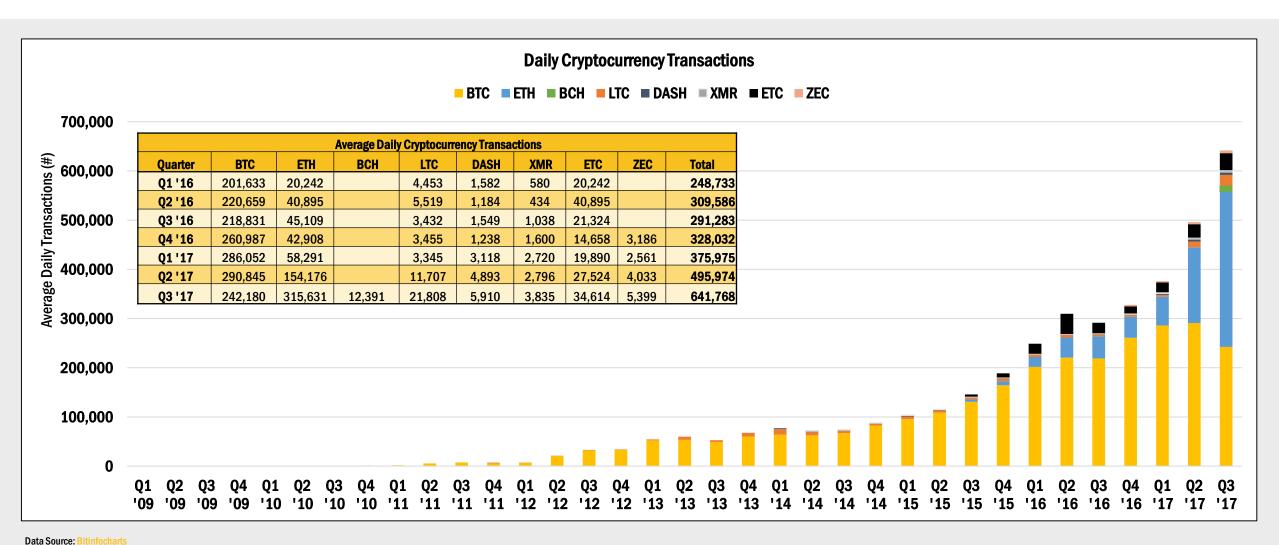
Data Source: Coincar

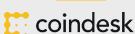
Notes: Average day over day price movement (absolute value)





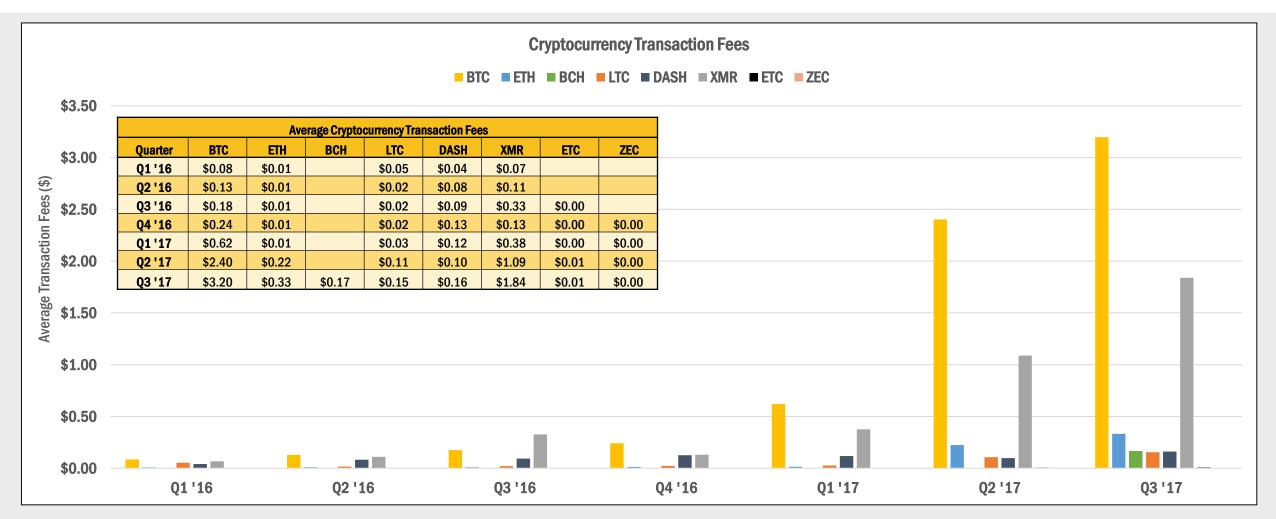
Transactions on Major Blockchains Increased, Except for Bitcoin



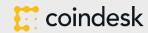


Average Transaction Fees Rose for All Major Cryptocurrencies

BTC Fees Above \$3

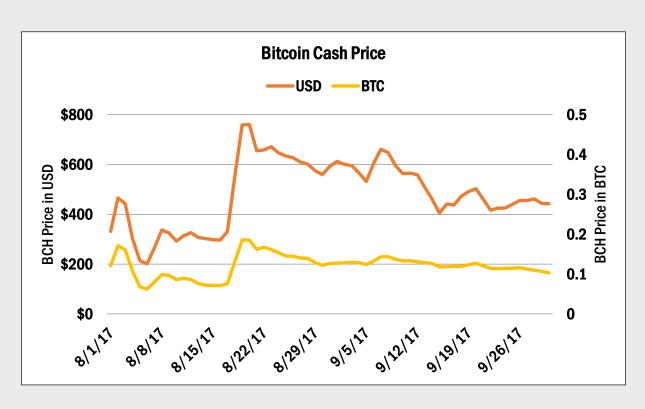


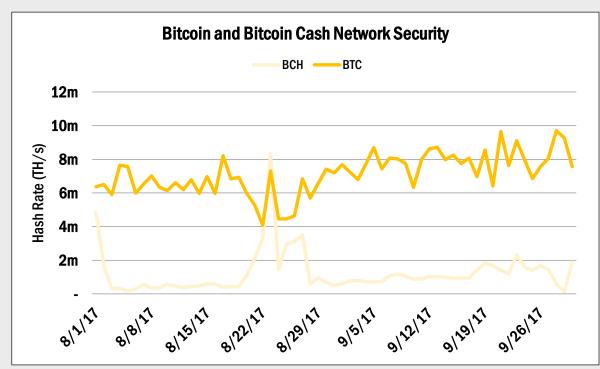
Data Source: Bitinfocharts



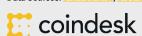
Bitcoin Cash Forked Off of Bitcoin on August 1st

Bitcoin Cash Difficulty Adjustment Led to Hash Power > Bitcoin for One Day





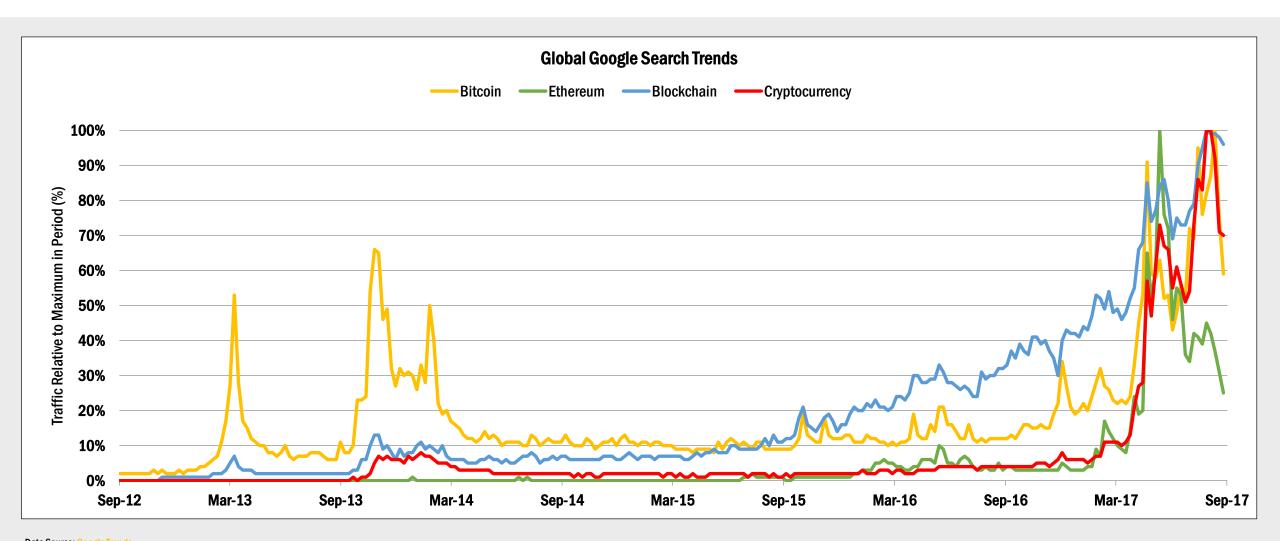
While the BCH Hash Rate started off near BTC, it generally fell below in subsequent weeks

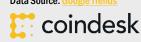




Many Blockchain Terms Hit an All-Time Google Search High

Ethereum Searches Fell from a Peak in Q2 2017







2A

BITCOIN







Bitcoin breaks \$5,000:

- Most variation in history, second straight largest quarterly \$ variation.

Important soft and hard forks occur:

- Segregated witness adopted after a soft fork, Bitcoin Cash created after a hard fork.

First > 1MB blocks mined:

- At block 48197, BitFury mined first ever >1MB block.

Transaction fee surge slowed:

- Average transaction fees rose 33% after nearly tripling in Q2.

Global trading volume continues growth:

- JPY, USD dominate, KRW jumps.

Hash rate up 50% to new all time high:

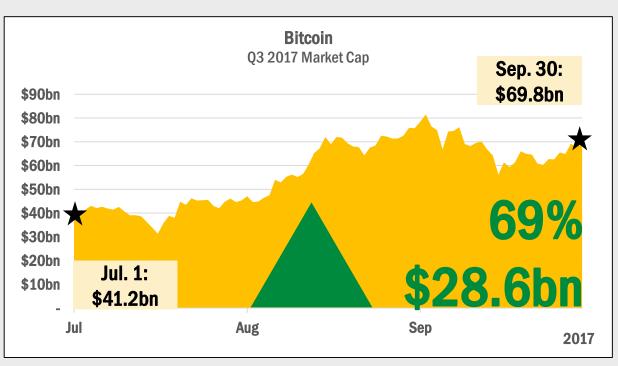
- Network security grows, but hash rate slipped one day from competition.



Bitcoin Ended Volatile Quarter Up 69%

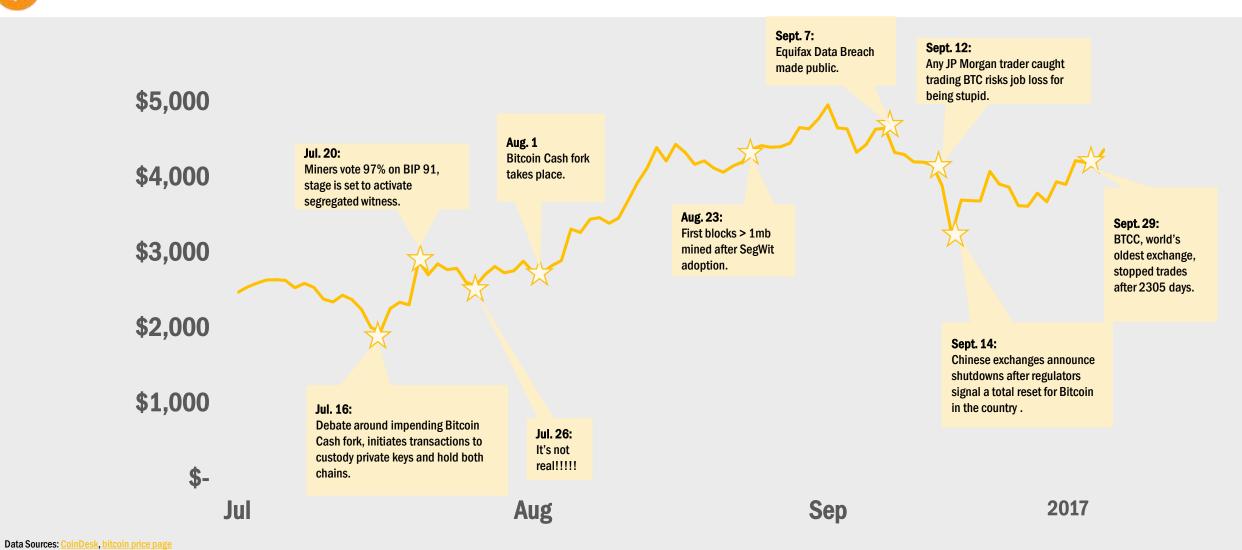
Set a New All-Time High Above \$80bn







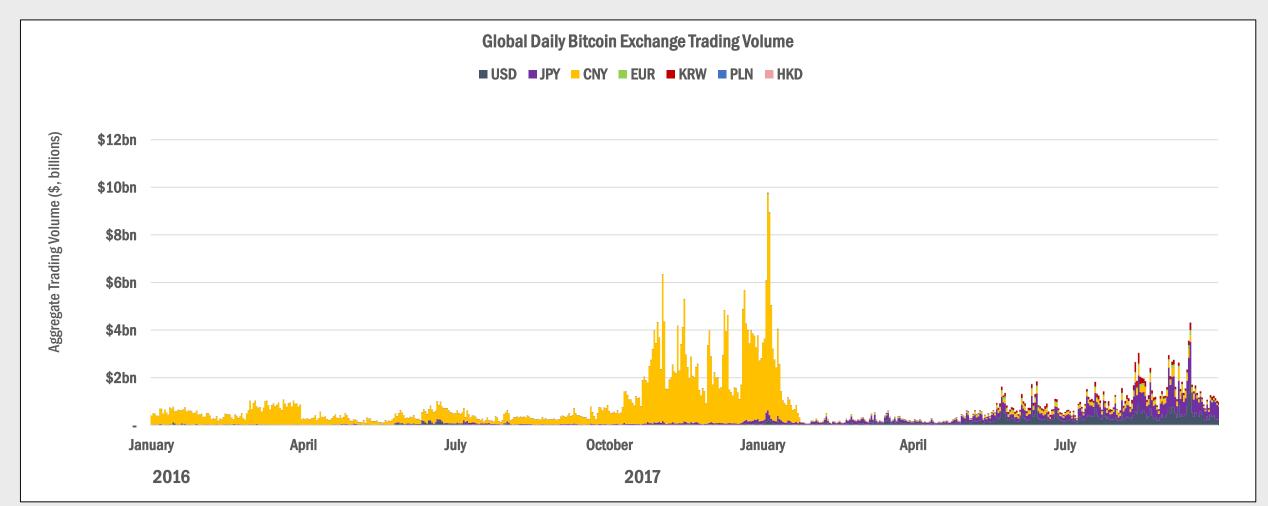
Bitcoin: Key Market Events



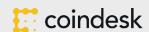


Global Trading Volumes Began to Rebound

Other Markets Grew Despite People's Bank of China Actions



Data Source: Cryptocompare





Bitcoin Behaves as 'Crisis Currency' in Venezuela and Zimbabwe

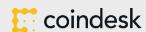
Exchange Rates at Premium as Demand Surges





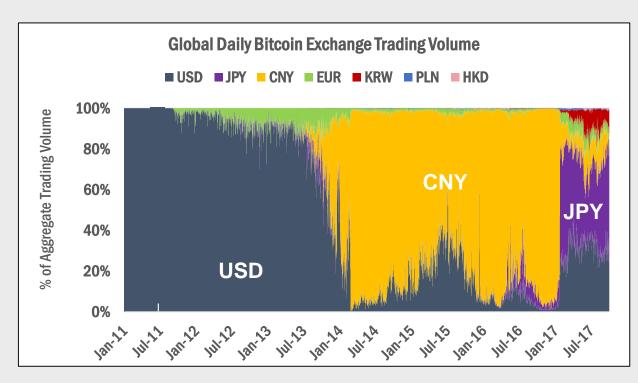


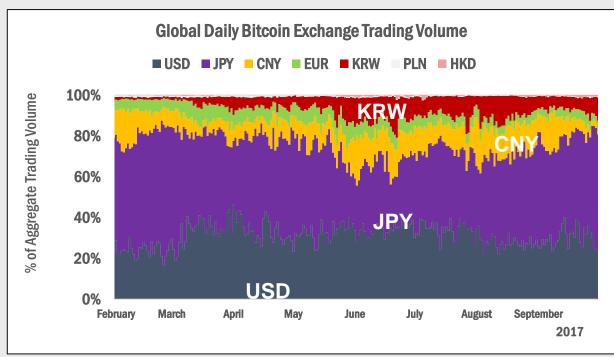
Data Source: Coindesk, The Street, The Atlantic





Global Trading Volume Dominated by USD and JPY



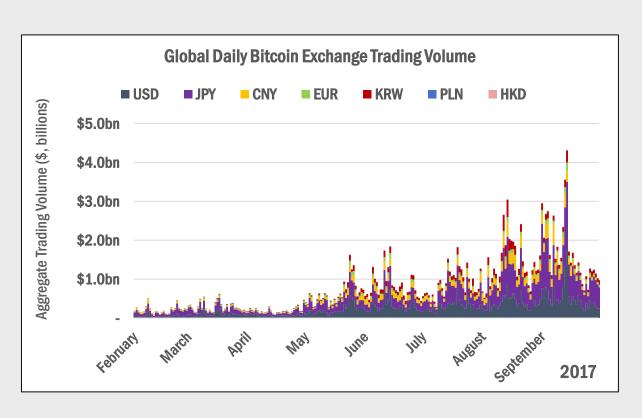


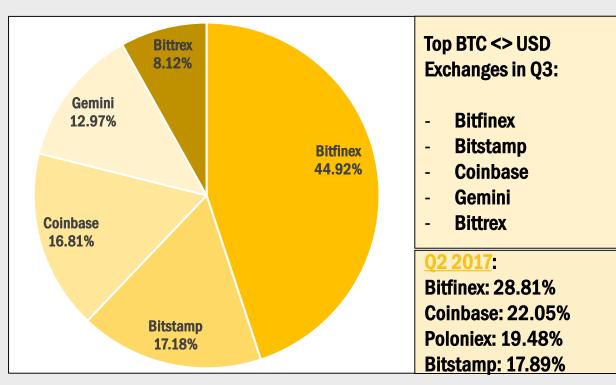
Data Source: Cryptocompare



Exchange Trading Volume Increased

Bitfinex, With Margin Trading, is the Largest USD Exchange

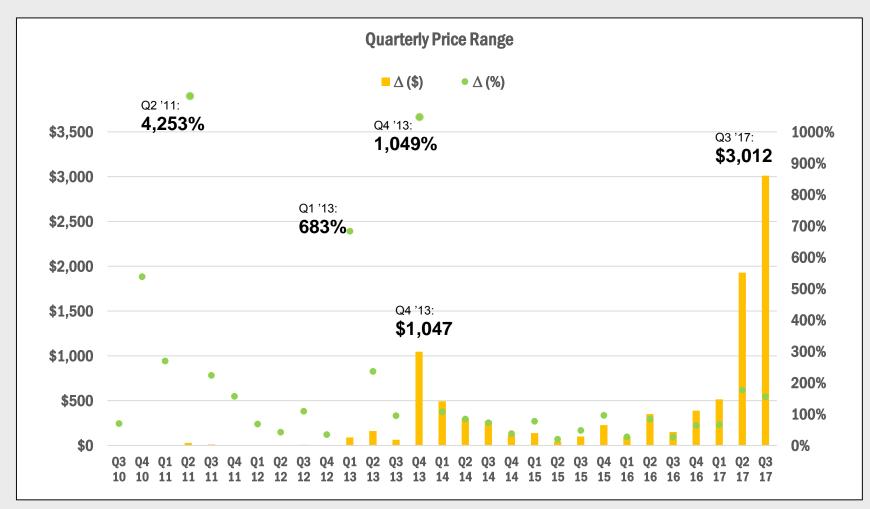






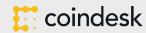
Bitcoin Price Varied From \$2,000 to \$5,000

Second Straight Largest Quarterly \$ Variation



Quarter	High	Low	∆ (\$)	∆ (%)
Q3 10	\$0.09	\$0.05	\$0.04	69.9%
Q4 10	\$0.39	\$0.06	\$0.33	538.3%
Q1 11	\$1.09	\$0.30	\$0.80	269.5%
Q2 11	\$29.60	\$0.68	\$28.92	4252.9%
Q3 11	\$15.44	\$4.77	\$10.67	223.7%
Q4 11	\$5.27	\$2.05	\$3.22	157.0%
Q1 12	\$7.11	\$4.22	\$2.89	68.5%
Q2 12	\$6.69	\$4.69	\$2.00	42.7%
Q3 12	\$13.50	\$6.45	\$7.05	109.3%
Q4 12	\$13.70	\$10.17	\$3.53	34.7%
Q1 13	\$104.00	\$13.28	\$90.72	683.1%
Q2 13	\$230.00	\$68.36	\$161.64	236.5%
Q3 13	\$129.46	\$66.34	\$63.12	95.1%
Q4 13	\$1,147.25	\$99.81	\$1,047.43	1049.4%
Q1 14	\$951.39	\$458.50	\$492.89	107.5%
Q2 14	\$665.73	\$360.84	\$304.89	84.5%
Q3 14	\$647.34	\$374.73	\$272.61	72.7%
Q4 14	\$427.24	\$309.87	\$117.37	37.9%
Q1 15	\$314.59	\$177.28	\$137.31	77.5%
Q2 15	\$262.48	\$218.27	\$44.21	20.3%
Q3 15	\$309.98	\$209.13	\$100.85	48.2%
Q4 15	\$465.50	\$237.40	\$228.10	96.1%
Q1 16	\$458.28	\$358.77	\$99.51	27.7%
Q2 16	\$768.24	\$417.01	\$351.23	84.2%
Q3 16	\$703.69	\$552.82	\$150.87	27.3%
Q4 16	\$997.69	\$609.38	\$388.31	63.7%
Q1 17	\$1,290.79	\$775.98	\$514.80	66.3%
Q2 17	\$3,018.55	\$1,089.51	\$1,929.03	177.1%
Q3 17	\$4,950.72	\$1,938.94	\$3,011.78	155.3%

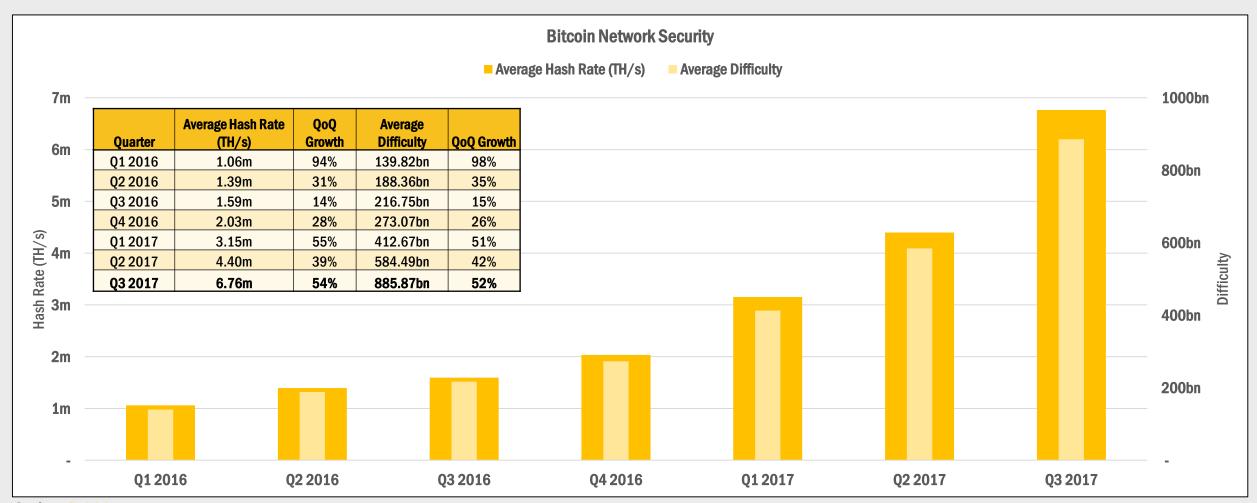
Data Source: CoinDesk bitcoin price page





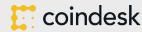
Hash Rate

Hash Rate and Mining Difficulty Up 50% to Another All-Time High



Data Source: Blockchair

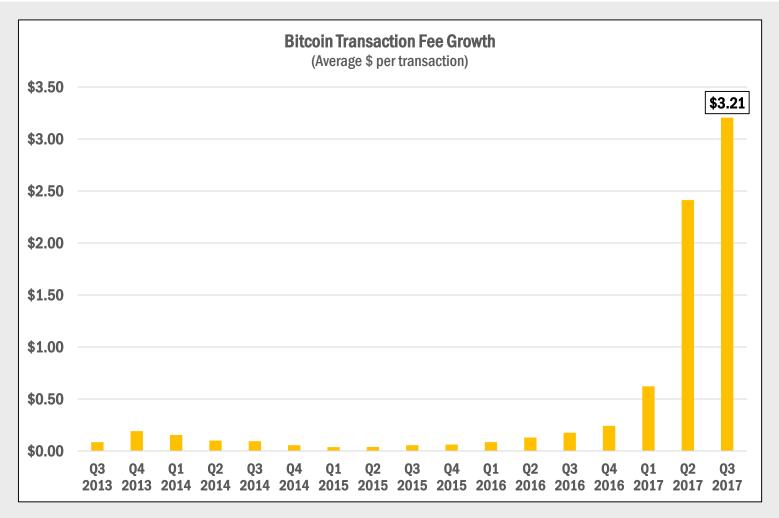
Notes: Daily data. 'TH/s' is the estimated number of tera hashes (trillions of hashes) per second, 'difficulity' is a relative measure of how difficult it is to find a new block, which is adjusted periodically as a function of how much hashing power has been deployed.





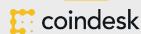
The Transaction Fee Surge Slowed

Fees Rose 33% After Nearly Tripling in Q2



	Average Daily	
Quarter	Bitcoin Transaction Fees	QoQ Change
Q3 2013	\$0.08	
Q4 2013	\$0.19	125.8%
Q1 2014	\$0.15	-19.6%
Q2 2014	\$0.10	-35.3%
Q3 2014	\$0.09	-4.9%
Q4 2014	\$0.06	-40.8%
Q1 2015	\$0.04	-32.8%
Q2 2015	\$0.04	2.9%
Q3 2015	\$0.06	42.8%
Q4 2015	\$0.06	12.4%
Q1 2016	\$0.08	36.4%
Q2 2016	\$0.13	51.9%
Q3 2016	\$0.18	36.5%
Q4 2016	\$0.24	37.9%
Q1 2017	\$0.62	156.4%
Q2 2017	\$2.41	288.5%
Q3 2017	\$3.21	32.9%

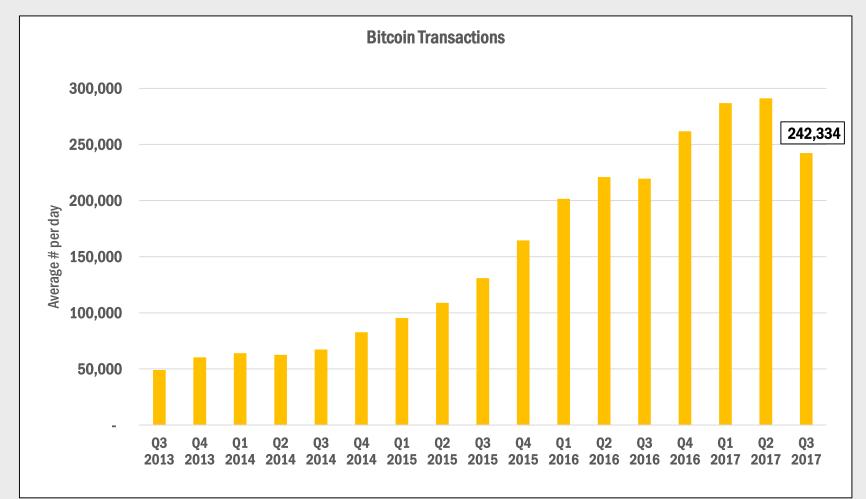
Data Source: Blockchain





Transactions

Transaction Volumes Fell By 17%



	Average Daily	
Quarter	Bitcoin Transactions	QoQ Change
Q3 2013	49,042	
Q4 2013	60,280	22.9%
Q1 2014	63,991	6.2%
Q2 2014	62,639	-2.1%
Q3 2014	67,260	7.4%
Q4 2014	82,724	23.0%
Q1 2015	95,344	15.3%
Q2 2015	108,910	14.2%
Q3 2015	130,834	20.1%
Q4 2015	164,488	25.7%
Q1 2016	201,595	22.6%
Q2 2016	221,018	9.6%
Q3 2016	219,624	-0.6%
Q4 2016	261,710	19.2%
Q1 2017	287,098	9.7%
Q2 2017	291,091	1.4%
Q3 2017	242,334	-16.7%

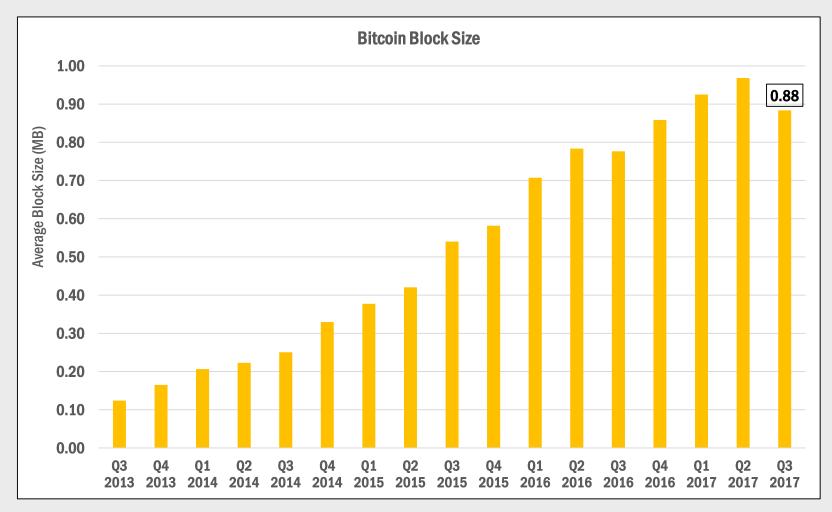
Data Source: Blockchain





Blocks

Average Block Size Also Fell by 9% to 0.88 MB as Transactions Decreased



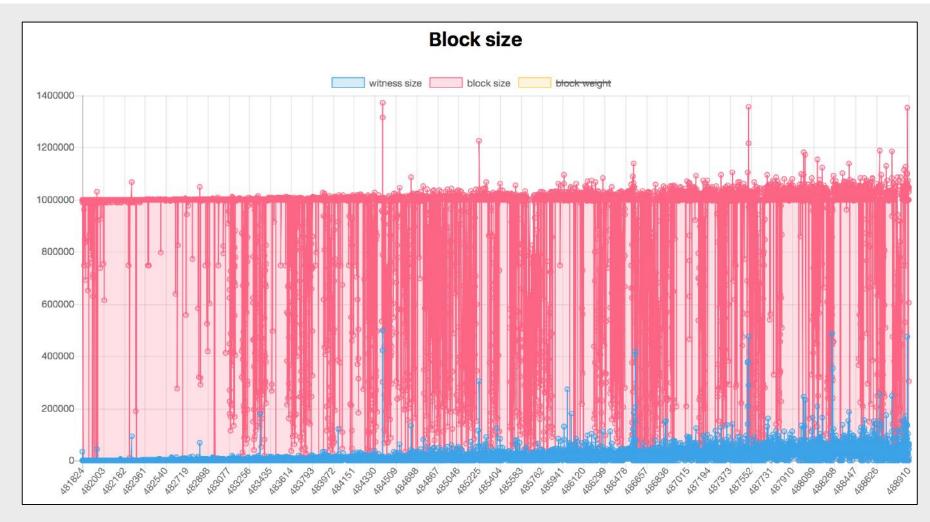
	Average Daily Bitcoin	
Quarter	Block Sizes (MB)	QoQ Change
Q3 2013	0.12	
Q4 2013	0.16	32.9%
Q1 2014	0.21	25.3%
Q2 2014	0.22	7.8%
Q3 2014	0.25	12.5%
Q4 2014	0.33	31.6%
Q1 2015	0.38	14.4%
Q2 2015	0.42	11.5%
Q3 2015	0.54	28.4%
Q4 2015	0.58	7.7%
Q1 2016	0.71	21.6%
Q2 2016	0.78	10.8%
Q3 2016	0.78	-0.9%
Q4 2016	0.86	10.6%
Q1 2017	0.93	7.8%
Q2 2017	0.97	4.6%
Q3 2017	0.88	-8.7%

Data Source: Blockchain

coindesk



SegWit Activated on August 23 BitFury Processed the First BTC Block Over 1MB





2B

ETHEREUM







New trade pairs emerge

- The South Korean Won passed the USD as ether's top trade pair.

Innovations on test net:

- Ethereum Byzantium testnet launches to prepare for Metropolis hard fork, verifies zk-snark proof

Value rise slows after record breaking Q2:

- Ethereum's USD exchange value grew 5.4% in Q3 while trade volume fell.

Network Hash Rate continues rise:

- Hash rate tripled for second consecutive Quarter.

Transactions per day passes bitcoin:

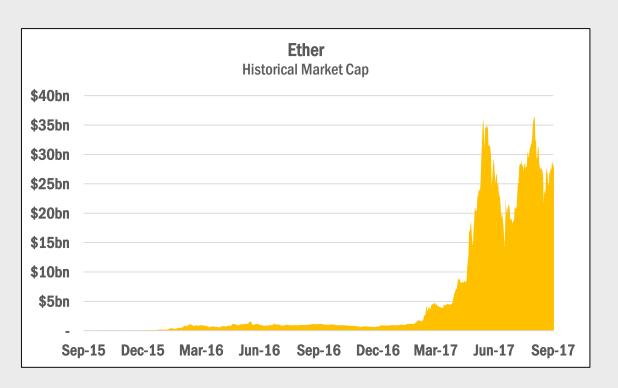
- Ethereum transaction volumes skyrocket, sets all time record for any blockchain ever, signals scaling milestone

Several security issues lead to lost ETH:

- Partity wallet breach and ICO hack highlight losses.



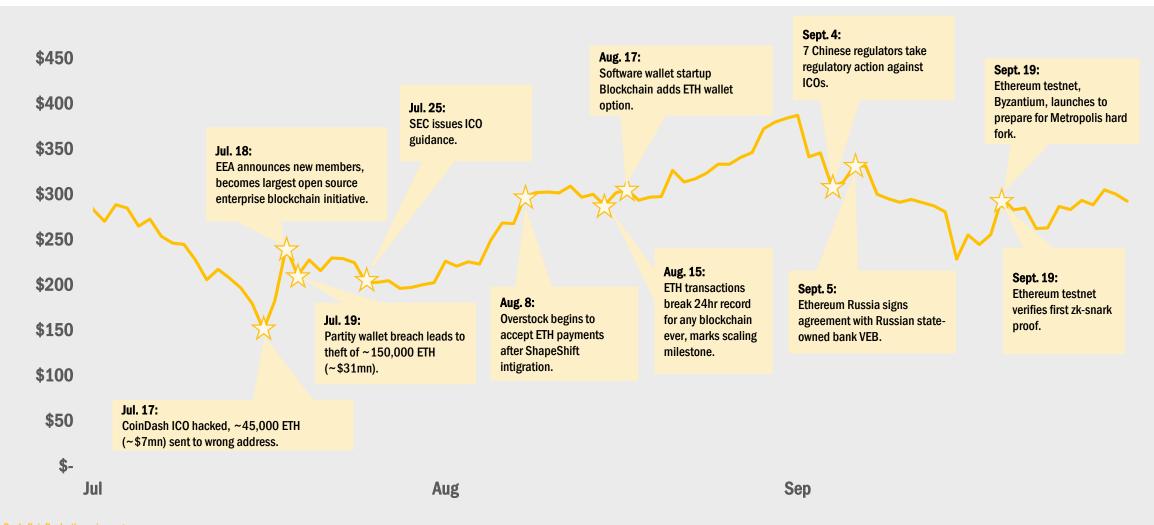
Ethereum Increased 5% Over Q3 Reached All-Time High of \$36.5bn in Market Cap



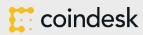




Ethereum: Key Market Events

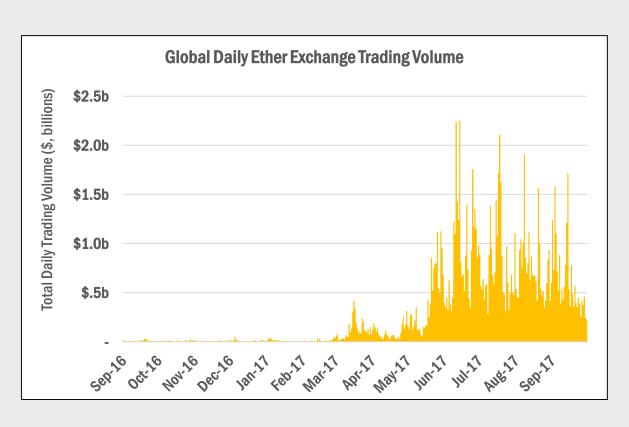


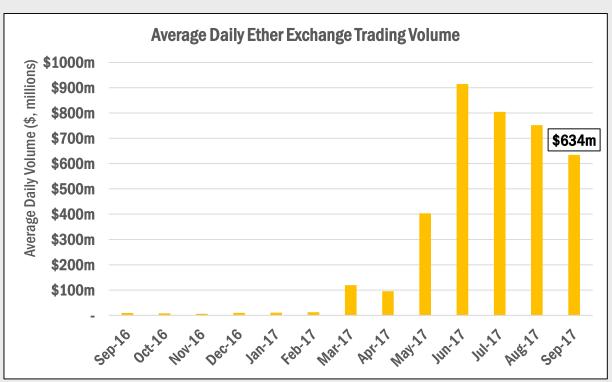


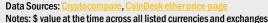


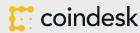


Ether Exchange Trading Volume Fell In Recent Months



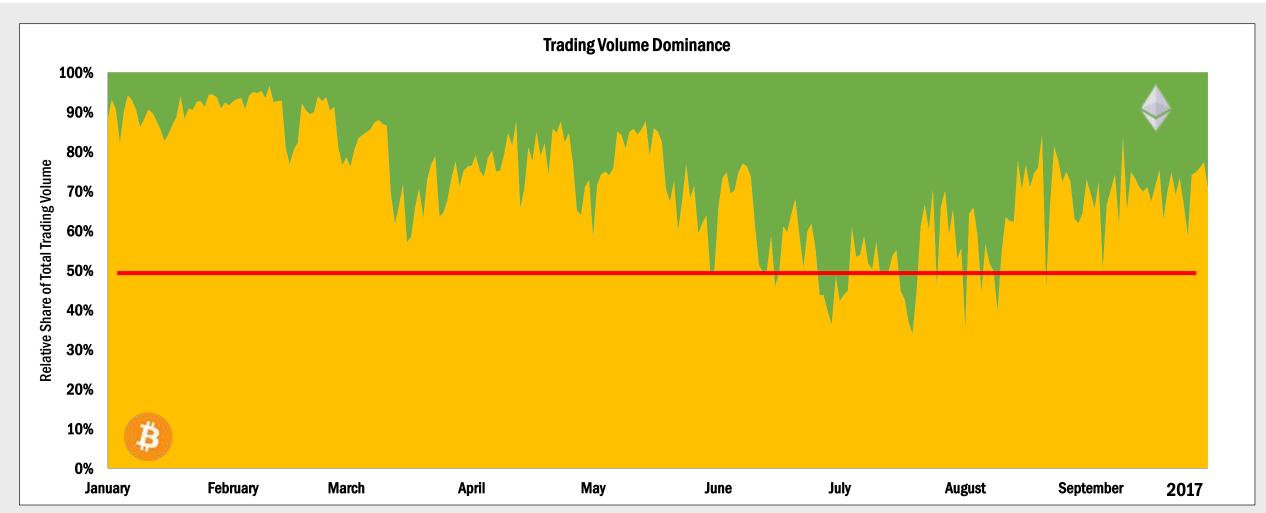








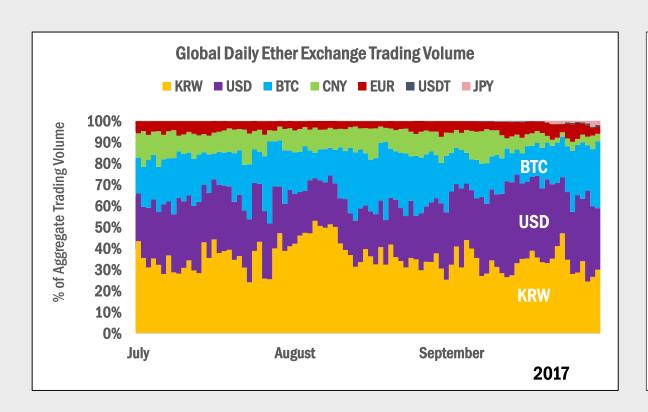
Ether Exchange Trading \$ Volume Fell to Earlier Levels After Surpassing Bitcoin

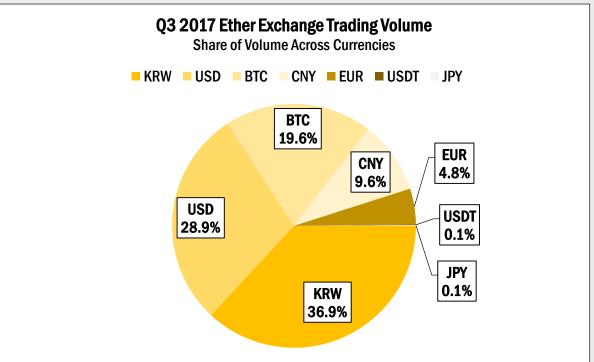




ETH Most Heavily Traded with KRW

BTC Lost Market Share to USD and KRW





01 2017:

BTC: 58.5%

USD: 25.5%

KRW: 5.5%

02 2017:

BTC: 38.8%

USD: 25.1%

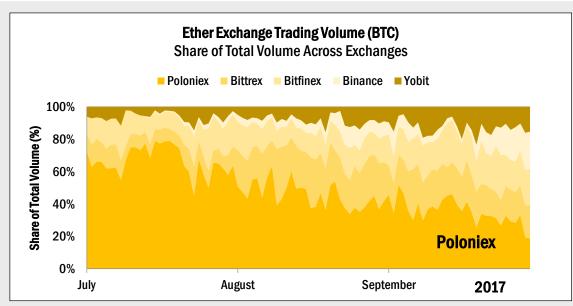
KRW: 24.0%

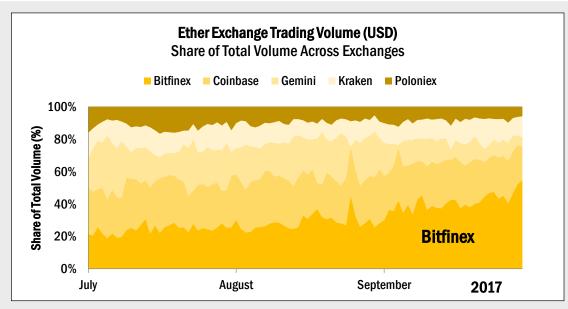


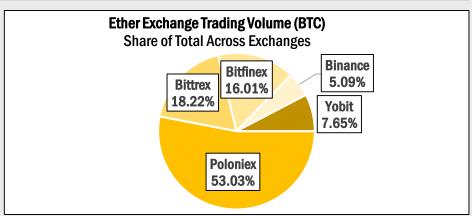


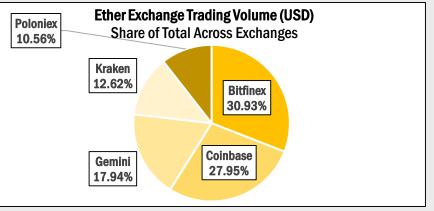
Poloniex Led Volume in BTC Markets

Bitfinex Displaced Coinbase with USD







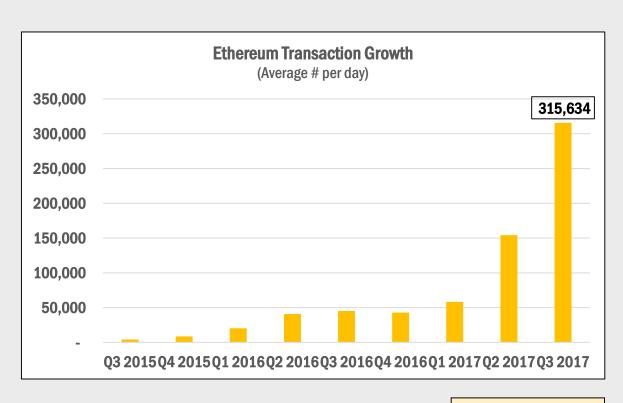


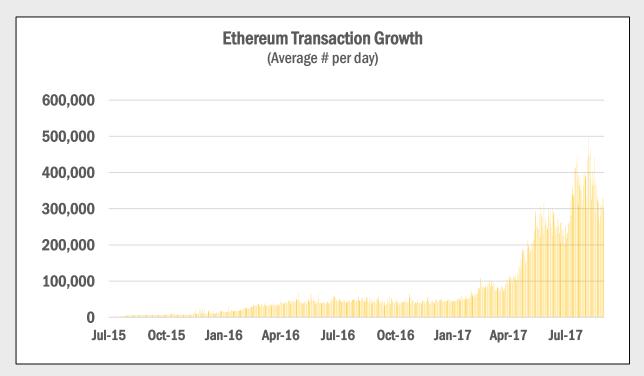




Transactions

ETH Transaction Numbers Doubled Surpassed BTC in Quarterly Average





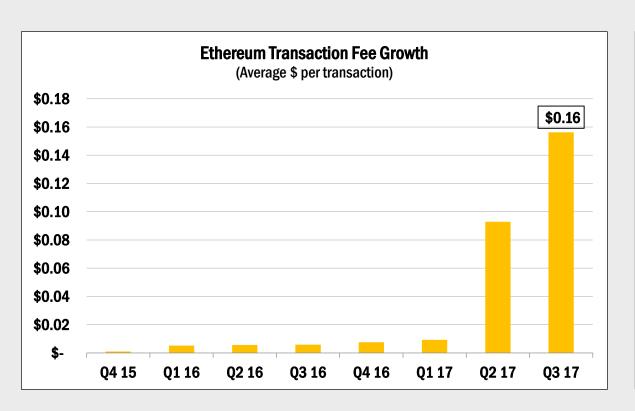
Q3 2017:

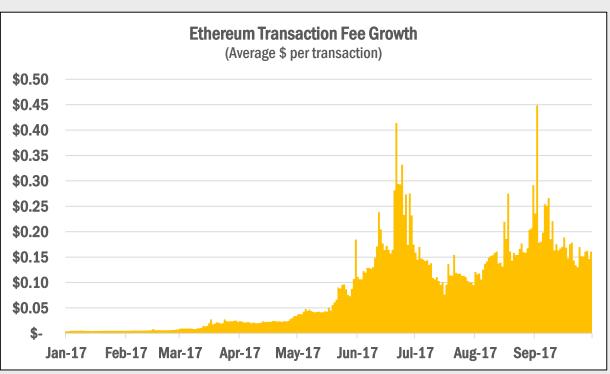
BTC: 242,334





Transaction Fees Continued to Increase Rose from 9¢ in Q2 to 16¢ in Q3 2017





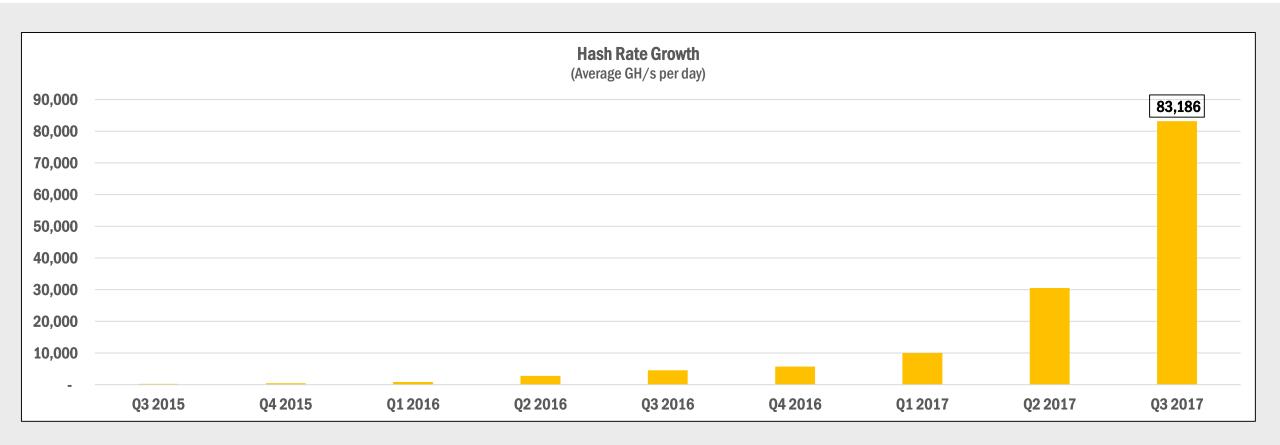
Upward demand on price as well as ICO demand caused a few spikes in transaction fees





Hash Rate

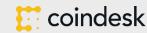
Hash Rate Securing the Network Nearly Tripled for Second Consecutive Quarter



Hashing power on the ethereum network grew 273% from Q2 to Q3 2017

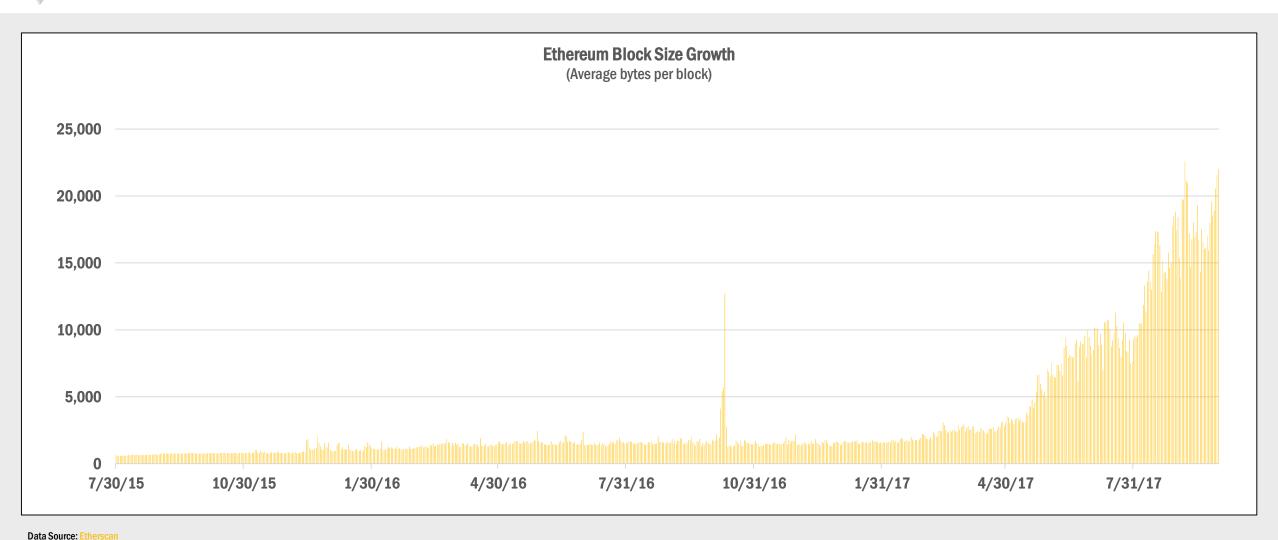
Data Source: Etherscan

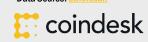
Notes: 'GH/s' is the estimated number of gigahashes (billions of hashes) per second





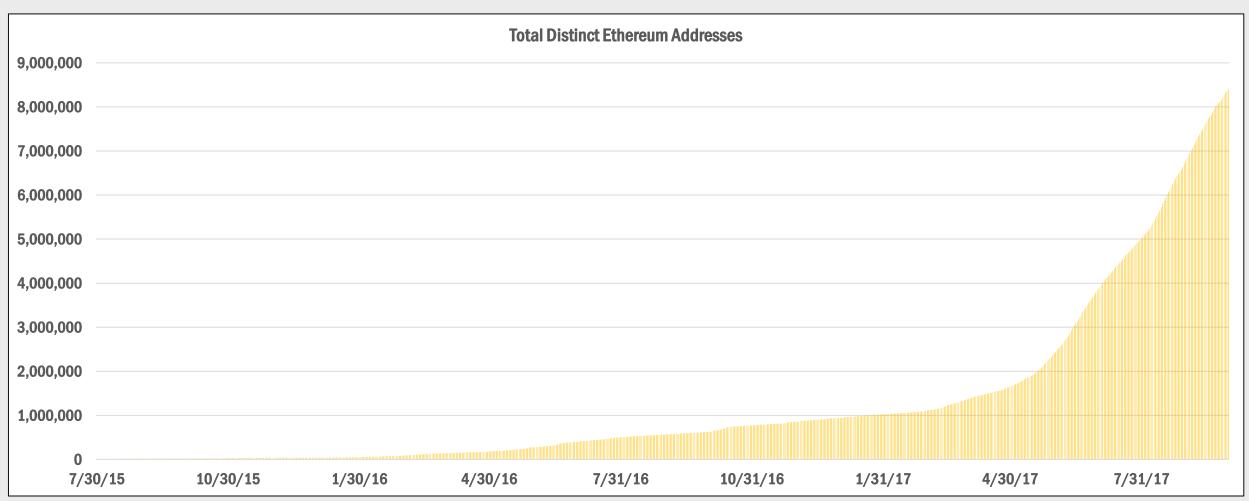
Block Size Increased to New All-Time Highs As Transactions Increased





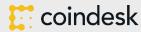


Over 8 Million Ethereum Blockchain Addresses, Doubled Quarter-Over-Quarter



Data Source: Ethersca

Notes: Distinct addresses do not directly correlate to unique users, individuals frequently control the private keys to multiple addresses and exchanges frequently control the private keys to addresses that store multiple users' funds





3

ENTERPRISE BLOCKCHAINS



Q3 2017 Enterprise Blockchain Summary

Enterprise Ethereum Alliance grows:

- Enterprise Ethereum Alliance adds members, organizational structure, makes big legal push, becomes largest open-source blockchain consortium.

R3's projects take shape:

- R3 adds members, launches Corda version 1.0. Projects include cross border payments, ID management, FX management, bills of lading, and trade finance tools.

Cellular providers move into industry:

- Major cellular providers launch study group, look into payments systems, account recharges across carriers, and authentication solutions.

Interoperability between enterprise chains:

- Microsoft makes enterprise blockchain interoperability play with Coco, Hyperledger launches Quilt.

Hyperledger

- Hyperledger adds high profile members, including Baidu, Cisco, and Oracle; launched education efforts with free online course via edX.





Permissioned Blockchains: Enterprise Ethereum Alliance Update

Membership

Now 200+ members, recent additions include:

Indian State of Andhra Pradesh







New Organizational Structures

Quorum Working Group

Communications Protocol Working Group

Integration and Tools Working Group

Standards Working Group

Marketing and Communications
Committee

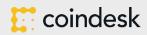
Legal Push

10 law firms and four legal institutions join Legal Industry Working group, including:





Data Sources: Enterprise Ethereum Alliance, CoinDesk





Permissioned Blockchains: Hyperledger Update

Membership

Now 100+ members, recent additions include:



Education

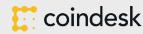
- Hyperledger launched a free online course via edX
- Blockchain for Business: An Introduction to Hyperledger
- Option to add a verified certificate for \$99



Projects

- Fabric, originally donated by IBM, was released as a 1.0. It is the first production ready solution for building apps
- Quilt was launched, a Java implementation of the Interledger protocol, for making transactions across ledgers. It established a global namespace for accounts, and a protocol for synchronized atomic swaps between different systems
- Sawtooth Ethereum "Seth" revealed: a proof of concept for smart contracts on Hyperledger Sawtooth, originally donated by Intel

Data Sources: <u>Hyperledger</u>, <u>CoinDesk</u>





Permissioned Blockchains: R3 Update

Membership

Now 100+ members, recent additions include:



First Middle Eastern Bank to join



Chilean Banking Regulator

Corda v1.0

- Corda v1.0 released
- Corda is a platform for smart contracts focused on privacy and security
- Codebase developed with 50 financial services and tech firms
- Open source release of platform occurred in 2016



Projects

- Cross-border payments platform built on Corda with 22 member banks in North America, Europe, and Asia
- HP Enterprise leveraging Corda and HPE's NonStop for payments and identity management infrastructure
- BBVA piloting foreign exchange matching
- Mizuho and Bolero leveraging Corda for electronic bill of lading
- Commerzbank, KfW Banking, and MEAG replicated security sale
- 11 banks developed a trade finance application

Data Sources: R3, CoinDesk





Major Cellular Carriers Around the World Launch Study Group, CBSG

Members









Projects

- The Carrier Blockchain Study
 Group (CBSG) officially unveiled
 during the Mobile World Congress
 Americas on September 12.
- Already tested mobile payment systems, prepaid phones recharge across different carriers
- Study group will look at applications for connected computing, personal authentication, and debt resolution.

coindesk



Coco, Blockchain Interoperability Play

Projects

- Microsoft revealed a framework designed to make it easier to build enterprise networks using any distributed ledger.
- The Coco platform aims to speed up transactions speeds simplify governance decisions
- It will work with popular open-source blockchains and distributed ledgers, including ethereum, R3, Corda, Hyperledger Sawtooth, and JP Morgan's Quorum
- Aims for compatibility with Intel's SGX chip, other hardware that protect private cryptographic keys.

Interoperability

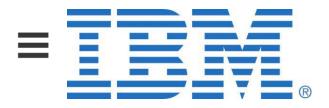












Accelerator Partnership

HyperFab

- HyperFab is a new growth lab for enterprise blockchain focused on Hyperledger Fabric, originally donated by IBM
- In partnership with IBM, the accelerator will foster innovation startups in the enterprise space
- IBM will provide training and support to participants
- HyperFab is also associated with Boldstart Ventures

Education

- The IBM Academic Initiative provides open resources to over 1,000 universities worldwide
- Recently added blockchain resources to the initiative, including access to the IBM Blockchain Platform, six months of access to IBM Cloud, and use of the IBM Blockchain cloud sandbox
- In addition, there are resources and guides for educators

Projects

IBM Update

 ZF Friedrichshafen and UBS on mobile payments system: Car eWallet

Permissioned Blockchains:

- PSA International working on a blockchain trial for supply chain document flow
- Food safety consortium based on initial Walmart pilot now includes Dole, Unilever, Kroger, Nestle, and others







4

INVESTMENT







Token sales raise 8X over VC:

- Total raised by ICOs hits \$1.2bn in Q3, pass all time cumulative VC raised in blockchain.

ICO deals break records:

- Led by Filecoin (\$262mn) and Tezos (\$232mn).

Two important VC deals:

- Coinbase raised \$100mn, becomes first industry unicorn. Miner Bitmain raises \$50mn.

<u>Token diversification sparks sophisticated buy side:</u>

- More than 100 crypto hedge funds launch.

ICOs emerge as killer app:

- Celebrity endorsements push crypto into mainstream, blockbuster boxing hype.

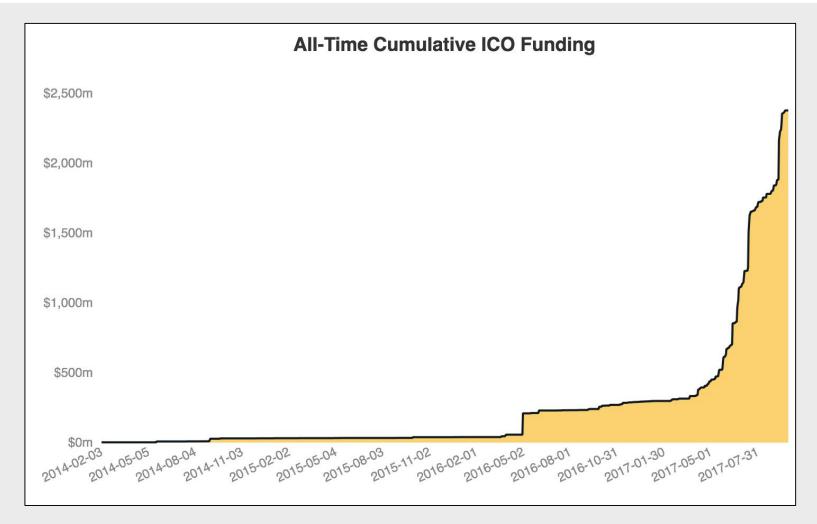
Regulation enters:

- SEC releases ICO guidance, charges several for fraud, China bans ICOs.

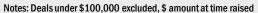
Data Source: CoinDesk

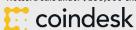


Blockchain ICOs Cumulatively Surpassed \$2bn





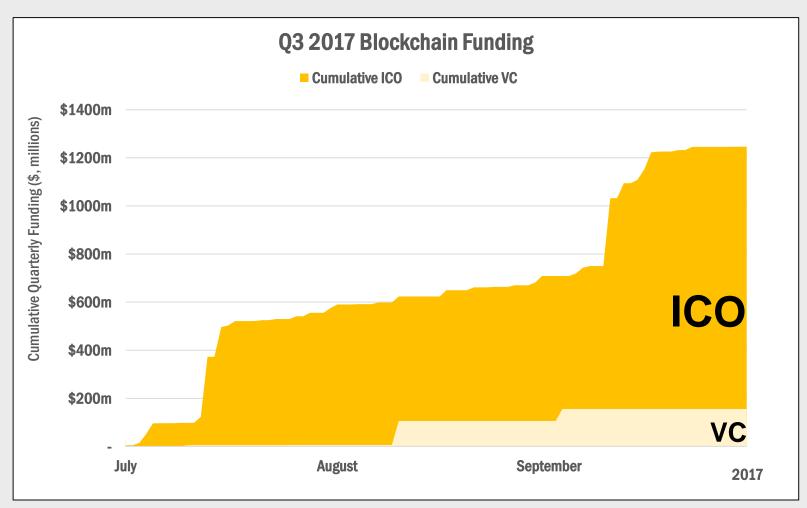






ICO Funding Raised \$1.2bn in Q3

ICOs Exceeded VC by Over 10x



ICO \$1,246m

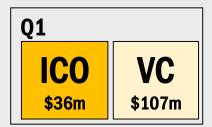
VC \$156m

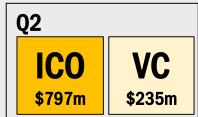
Top ICO Deals:

Filecoin - \$262m Tezos - \$232m TenX - \$83.1m MobileGo - \$53.1m

Top VC Deals:

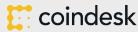
Coinbase - \$100m Bitmain - \$50m Conjoule - \$4.5m Bitcoin.com.au - \$0.8m





Data Sources: CoinDesk venture capital database, CoinDesk ICO Tracker

Notes: Deals under \$100,000 excluded, \$ amount at time raised, including only fundraisers ending in 'Q3 2017' (7/1/17 - 9/30/17)





Two Blockchain ICOs Above \$200m in Q3

Dwarfs VC Investments in Blockchain

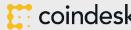
MO			
VC		Q3 2017VC	
	Date	Project	VC Round (\$mn)
	7/10/17	Conjoule	\$4.50
	7/11/17	Provenance	\$0.80
	9/03/17	Bitmain	\$50,00
	8/10/17	Coinbase	\$100.00
	Total		\$156

100			
ICO		Q3 2017 ICOs	
	Date	Project	ICO Round (\$mn)
	7/1/17	EncryptoTel	\$4.52
	7/3/17	Rialto.Al	\$10.00
	7/4/17	OpenANX	\$18.76
	7/4/17	Rialto	\$10.00
	7/4/17	Starta	\$5.00
	7/4/17	CrypViser	\$3.93
	7/5/17	Polybius	\$31.65
	7/5/17	Santiment	\$12.09
	7/6/17	OnPlace	\$0.92
	7/9/17	LeviarCoin	\$0.77
	7/12/17	Nimiq	\$14.53
	7/12/17	ATBcoin	\$10.84
	7/13/17	Fuck	\$0.30
	7/13/17	Tezos	\$232.00
	7/13/17	InsureX	\$17.27
	7/14/17	Orocrypt	\$0.14
	7/15/17	PressOne	\$82.00
	7/15/17	SONM	\$42.00
	7/16/17	Mothership	\$4.69
	7/16/17	Bitquence	\$1.23
	7/17/17	Pillar	\$18.53
	7/17/17	CoinDash	\$0.00
	7/17/17	Sumerchain	\$0.00
	7/20/17	Gilgam	\$0.22
	7/20/17	Gilgam.es	\$0.21
	7/21/17	SkinCoin	\$3.32
	7/23/17	Eros	\$4.86
	7/26/17	GeoFounders	\$0.23
	7/26/17	Primalbase	\$6.82
	7/26/17	Dent	\$4.10
	7/28/17	Blocktix	\$6.89
	7/28/17	RootProject	\$3.50
	7/28/17	TrueFlip	\$4.04
	7/31/17	FundYourselfNow	\$0.74
	7/31/17	11.97	\$18.68
	8/1/17	district0x Network	\$13.19
	8/1/17	SunContract	\$2.41
	8/4/17	MonsterByte	\$0.97
	8/4/17	CoinDash	\$0.14
	8/7/17	Blocktix	\$6.98
	8/10/17	Tierion	\$25.04
	8/17/17	Agrello	\$26.14
	8/21/17	DMarket	\$11.97

Date	Project	ICO Round (\$mn)
8/24/17	Opus	\$1.38
8/24/17	Paguarium	\$0.62
8/27/17	Corion	\$1.88
8/27/17	DimCoin	\$4.70
	XPlay	\$10.91
	FinShi Capital	\$9.64
8/31/17	Moeda	\$0.58
8/31/17	ATB Coin	\$17.60
9/5/17	Viberate	\$10.71
9/6/17	Revain	\$0.70
	Substratum	\$12.21
9/6/17	WorldWide Anonymous Messaging	\$0.17
9/6/17	COSS	\$2.36
9/6/17	Indorse	\$7.98
	Hubii	\$6.68
9/10/17	Prospector	\$0.60
9/10/17		\$13.63
9/10/17		\$1.51
	Filecoin	\$262.00
9/10/17		\$2.01
	Alpen Coin	\$2.43
	Ahoolee	\$0.14
	StuffGoGo	\$0.24
	Aventus	\$17.31
9/12/17	Enigma Catalyst	\$45.00
	Social(SCL)	\$5.22
9/14/17	BitDice	\$8.72
	ATB Coin	\$16.55
	Smart Investment Fund Token	\$1.75
9/15/17	Trackr	\$0.29
9/15/17	Propy	\$12.52
9/15/17	FaceCoin	\$0.84
9/15/17	ICObox	\$12.05
9/16/17	KyberNetwork	\$53.01
9/16/17	KICKICO	\$17.12
9/17/17	Intelligent Trading Tech	\$3.12
9/18/17	SilentNotary	\$0.12
9/20/17	Hackspace Capital	\$4.80
9/20/17	Impak Finance	\$1.05
9/20/17	DetectorToken	\$0.29
9/22/17	Modum.io \$13.	
9/27/17		
9/28/17	Internxt	\$0.16
Total		\$1,246

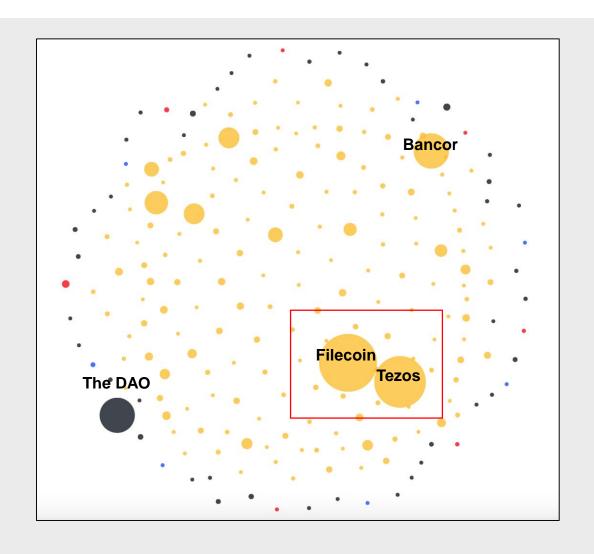
Data Sources: CoinDesk venture capital database, CoinDesk ICO Tracker

 $Notes: Deals \ under \$100,000 \ excluded, \$ \ amount \ at \ time \ raised, including \ only \ fundraisers \ ending \ in \ 'Q3\ 2017' \ (7/1/17 - 9/30/17)$



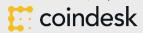


The Two Largest ICOs Ever Launched in Q3 2017



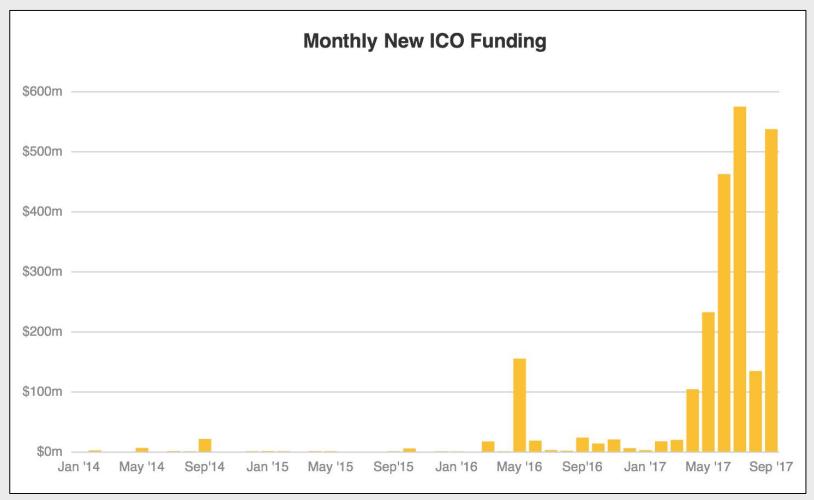


Notes: Deals under \$100,000 excluded, \$ amount at time raised



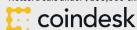


August Saw a Dip in ICO Launches in Terms of Quantity and Amount Raised



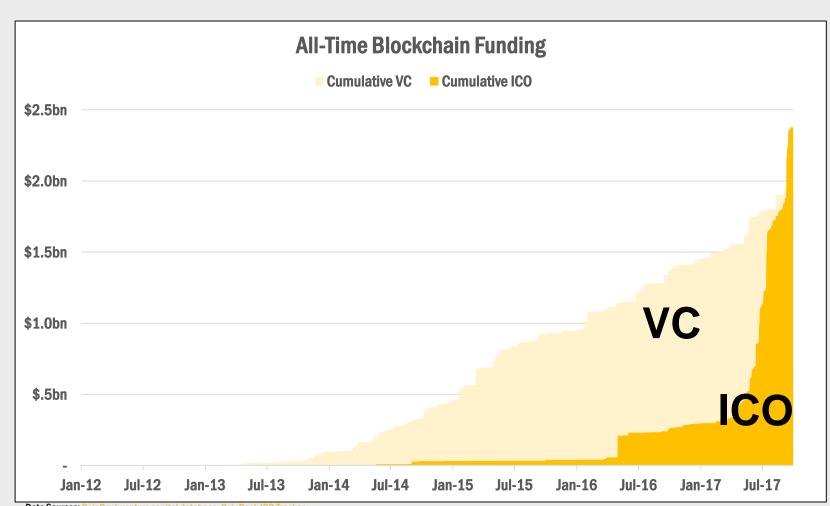








Q3 2017 Sent ICO Total Funding Above Total Venture Capital Blockchain Investment



ICO \$2.38bn **VC** \$1.95bn

Top ICO Deals:

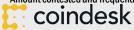
Filecoin - \$262m Tezos - \$232m Bancor - \$153m The DAO - \$152m

Top VC Deals:

21 - \$116m* R3 - \$107m Coinbase - \$100m Digital Asset - \$60m

Data Sources: CoinDesk venture capital database, CoinDesk ICO Tracker

Notes: Deals under \$100,000 excluded, \$ amount at time raised *Amount contested and frequently reported between \$75m - \$116m





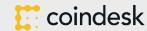
Celebrity Endorsements Were Prevalent on Twitter and Instagram







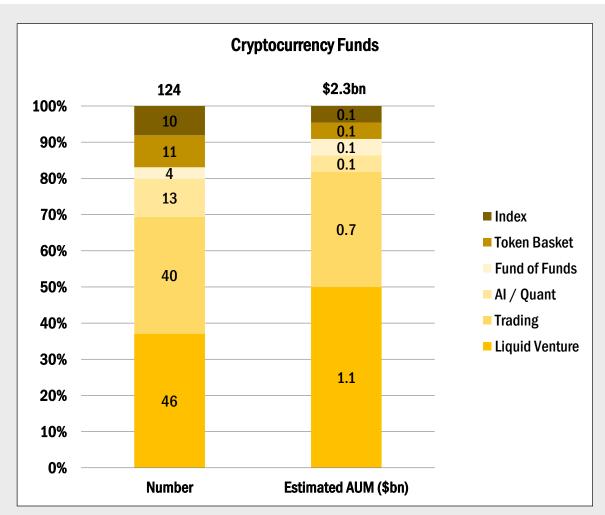
Data Sources: Instagram, Twitter



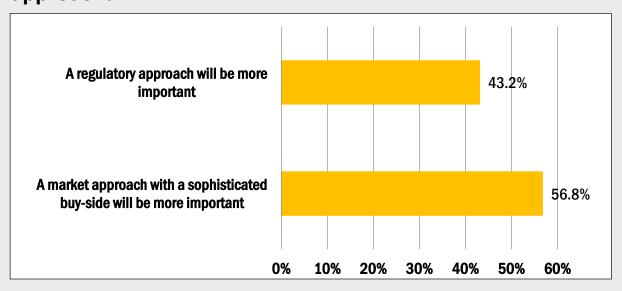


Rise of a Sophisticated Buy Side

Crypto Hedge Funds Boom, ~100 New Firms Launch in 2017



*from CoinDesk sentiment survey
Which will have a greater effect on the quality of
tokens or ICO projects, a sophisticated buy-side of
professional crypto-hedge-funds, or the regulatory
approach?



Data sources: CoinDesk, Autonomous NEXT

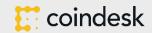




Rise of Specialized Legal Services

Law Firms	Actions in Cryptocurrency
Cooley	Lawyers include an author of the SAFT Project whitepaper, and a co-founder of the Bitcoin Foundation. Cooley is a member of the Enterprise Ethereum Alliance Working Group.
Debevoise & Plimpton	Recent briefs on the SEC blockchain report and DAO decision. Released A Securities Law Framework for Blockchain Tokens with Coinbase. Member of the Enterprise Ethereum Alliance Working Group.
GOODWIN	Host a Digital Currency & Blockchain Perspectives blog. Represented Coinbase in IRS case. Advised ICOs, venture funds, exchanges, and bitcoin ATM companies.
Katten Muchin Rosenman LLP	Represented LedgerX in CFTC registration as a derivatives clearing organization. Written periodic advisory statements on blockchain regulation including the NYDFS BitLicense.
MME	Assisted a variety of protocols and Dapps: Ethereum, Tezos, Golem, Lisk, Wings, etc.
Perkinscoie	Assisted Civic on their ICO. Practice includes a Blockchain Technology & Digital Currency industry group. Member of the Enterprise Ethereum Alliance Working Group.

Data sources: CoinDesk, Firm Websites





5

GOVERNMENT & REGULATION





Q3 2017 Government & Regulation Summary

Chinese crackdown on ICOs and cryptocurrency exchanges:

- After Q1 PBOC currency control measures, Q3 saw a ban on ICOs and trades stopped on all exchanges.

SEC published significant ICO guidance, demonstrates new depth of expertise:

- Other jurisdictions applied similar tests as in guidance.

CFTC granted LedgerX registration as a derivative clearing organization and a swap execution facility:

- Important steps for maturity of asset class.

Virtual Currency Tax Act Tabled in the House:

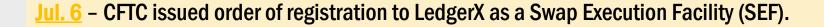
- Law would see an exception to gains tax for small transactions.

Data Source: CoinDesk



Americas: Important moves by SEC, CFTC

Charges Filed in Two Cases With Major Implications



<u>Jul. 24</u> – CFTC, by unanimous vote of the Commission, granted LedgerX registration as a Derivatives Clearing Organization (DCO).

<u>Jul. 25</u> – SEC released ICO guidance, demonstrated new subject matter expertise, underlined importance of Howey Test, exempt market status. Other important notes: no action taken against DAO founders.

Sept. 6 – Quebec's Autorite des Marche Financieres (AMF) admitted ICO for Impak Coin to regulatory sandbox.

<u>Sept. 7</u> - Cryptocurrency Tax Fairness Act tabled in Congress, would see an exception to gains tax for small transactions.

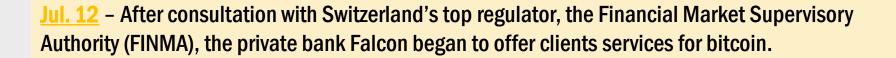
<u>Sept. 21</u> - CFTC filed charges against several defendants alleging a Bitcoin ponzi scheme (though not involving a derivative contract).

Sept. 29 - SEC filed fraud charges against 2 ICOs; REcoin and DRC World





Europe: Studies, Consultations, Signals Suggest Open Environment



<u>Jul. 5</u> – UK cybercrime watchdog suggested recent surveillance law, the Investigatory Powers Act, which gave sweeping privacy invasion powers, could pave the way for cryptocurrency adoption.

<u>Aug. 22</u> – Managers of the Estonian government's popular e-residency announced they were considering launching an ICO for Estcoins, which would be managed by the Republic of Estonia.

<u>Sept. 22</u> – Germany's central bank, the Deutsche Bundesbank, published research paper that stated their experts saw "little prospect of DLT being put to widespread use in the field of individual and retail payments."

<u>Sept. 29</u> – Switzerland's top financial markets regulator FINMA announced it is investigating a number practices on an undisclosed number of ICOs.





Asia: Bans, Shutdowns Mark Most Aggressive Executive Action Against Bitcoin

Aug. 1 – Monetary Authority of Singapore (MAS) underlined similar logic to SEC, will regulate ICOs that are securities.

Sept. 4 – People's Bank of China (PBOC) banned ICOs, declared them illegal and disruptive to financial stability.

<u>Sept. 15</u> – People's Bank of China ordered shutdown of all cryptocurrency exchanges operating in the country.

Sept. 29 – Korea's Financial Services Commission (FSC) banned domestic ICOs, declared violators will be dealt with in a Virtual Currency Detention Center.

Sept. 29 – Japan's Financial Services Agency (FSA) issued licenses to 11 cryptocurrency exchanges after best practices guidance released in March.





Middle East and Australia: AML and ICO Warnings



Aug. 17 – Australian Minister of Justice introduced bill that would put cryptocurrency exchanges on Digital Currency Exchange Register, make them follow current national anti-money laundering law that forces KYC reports on any international transaction >1\$. (The USA enforced a KYC law for transactions above \$10,000).

Sept. 13 – The Dubai Financial Services Authority (DFSA) issued warning on ICOs – should be considered high risk.

Q4 Preview: Oct. 20 - The Islamic Development Bank (IDB) of Saudi Arabia announced plans to create Halal transaction authorization blockchain, partner with startups Ateon and SettleMint.



6

Blockchain Sentiment Survey

SPOTLIGHT STUDY



Q3 2017 Blockchain Sentiment Survey: Demographics – ~400 Respondents



12% Full-Time Blockchain, 25% Part-Time

8% work at Blockchain Technology Companies, 5% at Investment Services

16% Accredited, 84% Unaccredited investors

93% bought cryptocurrency in 2017, 81% in Q3, 67% in Q2, 47% in Q1

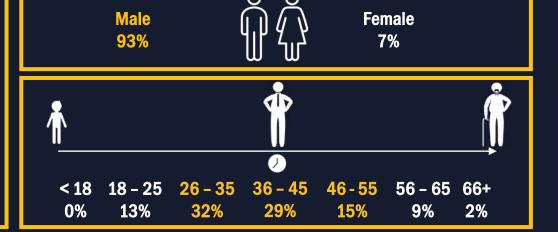


Median respondent owned 4 unique digital assets, mean 5.8, top 10% over 12

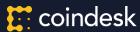
23% own \$10k - \$50k worth of cryptocurrency, 18% own \$1k - \$5k, 14% own \$0 - \$1k

83% check prices at least daily, 50% every day, 33% every hour, 12% a couple times a week











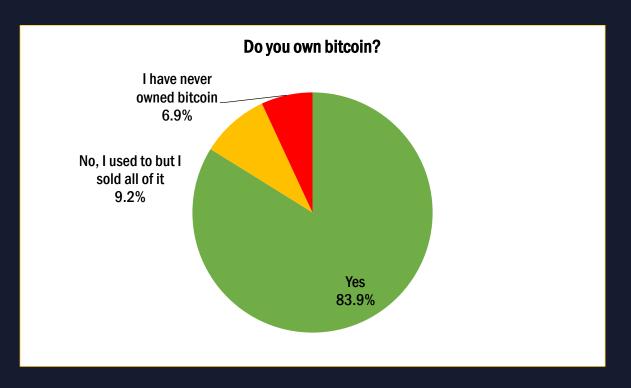
Q3 2017 Blockchain Sentiment Survey: Key Takeaways

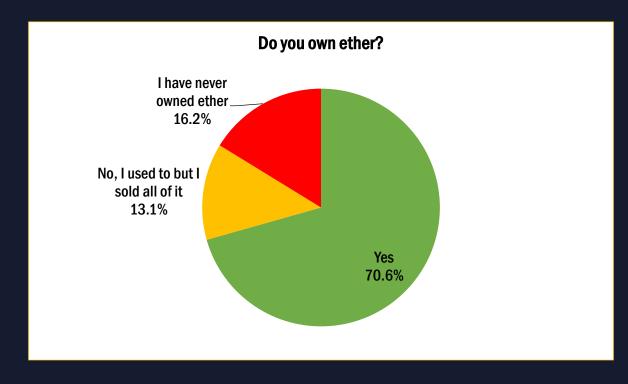
87%	feel positive about the current state of bitcoin, up 30% from last quarter	33%	kept Bitcoin Cash after the fork, 29% exchanged for BTC
3.2	most positive aspect of bitcoin was hedging against central bank policy, highest weighted score	50%	believe cryptocurrencies not in a bubble, most common single response (23%) was they were slightly in a bubble
83%	checked prices everyday (50%) or compulsively, every hour (33%)	72%	followed the scaling debates with 43% aware of proposals and positions, and 29% having a personal position.





Most Respondents Own Bitcoin and Ether

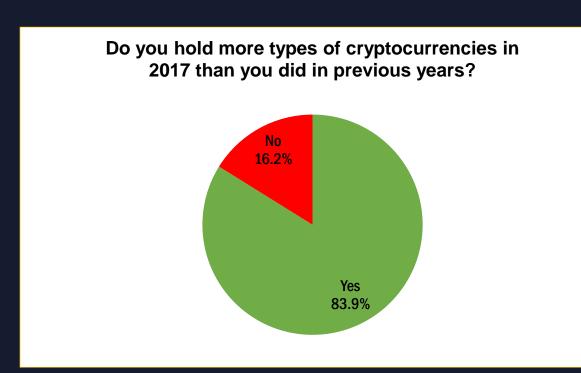


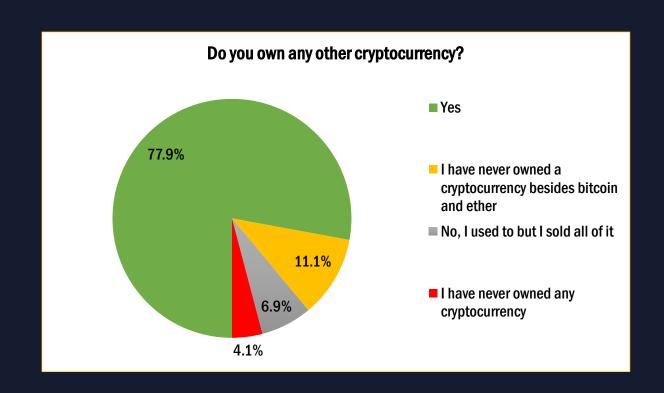




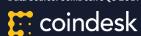
84% of Respondents Increased Their Variety of Cryptocurrency Holdings

78% of Respondents Owned a Cryptocurrency Other than Ether or Bitcoin





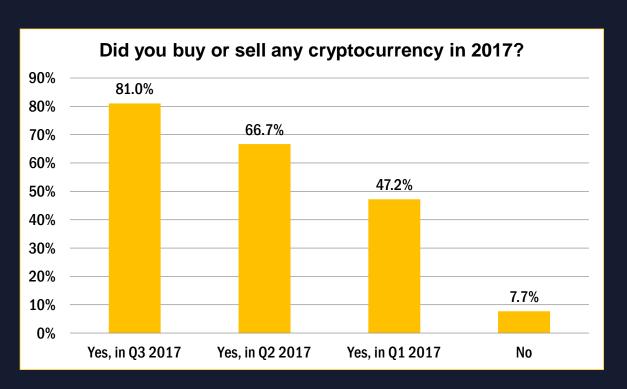
Top 5 other currencies: Litecoin, Ripple, Monero, NEO, OmiseGO

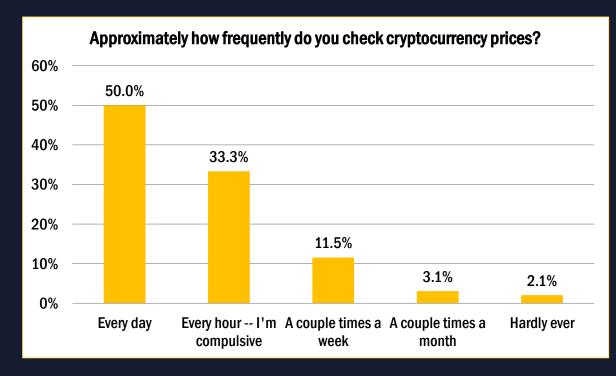




92% of Respondents Purchased Cryptocurrency in 2017

83% Checked Prices At Least Daily

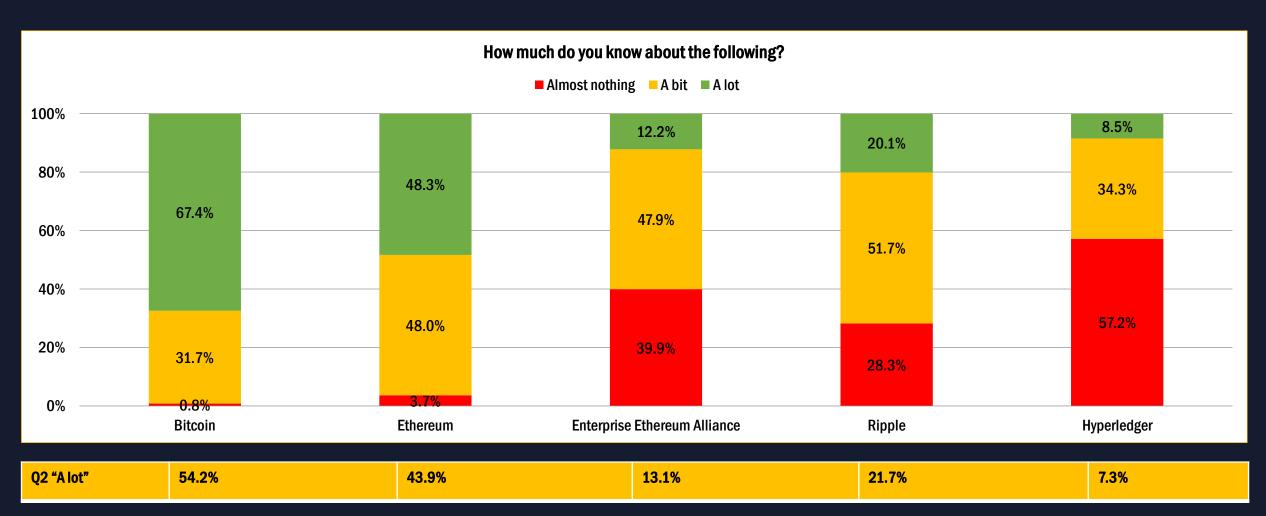




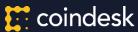


Knowledge of Major Public Blockchains and Assets Grew

Knowledge of Enterprise Projects Relatively Unchanged

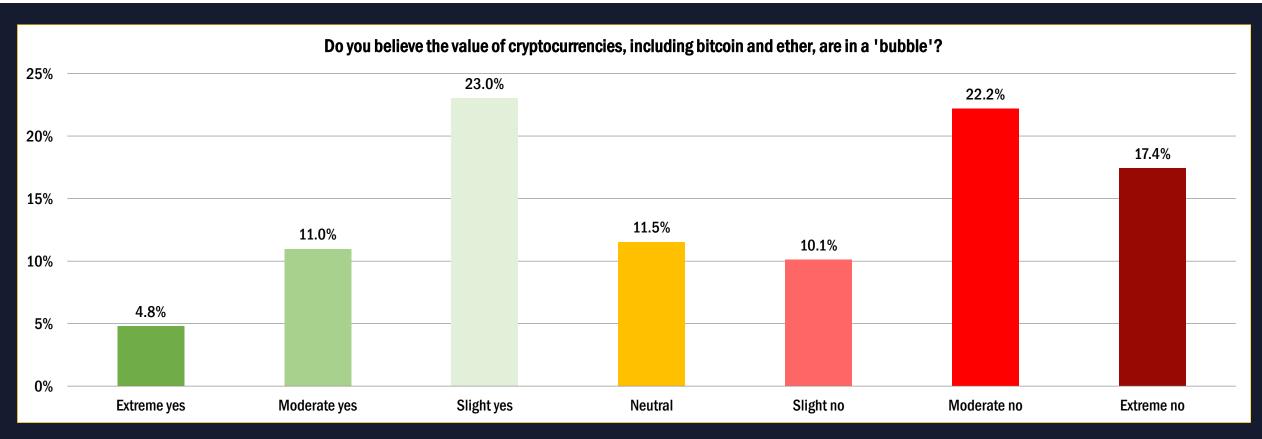






Approximately Half Believed Cryptocurrencies Are Not in a Bubble

Most Common Response Was 'Slight Yes'



—

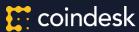
38.7% yes 49.7% no





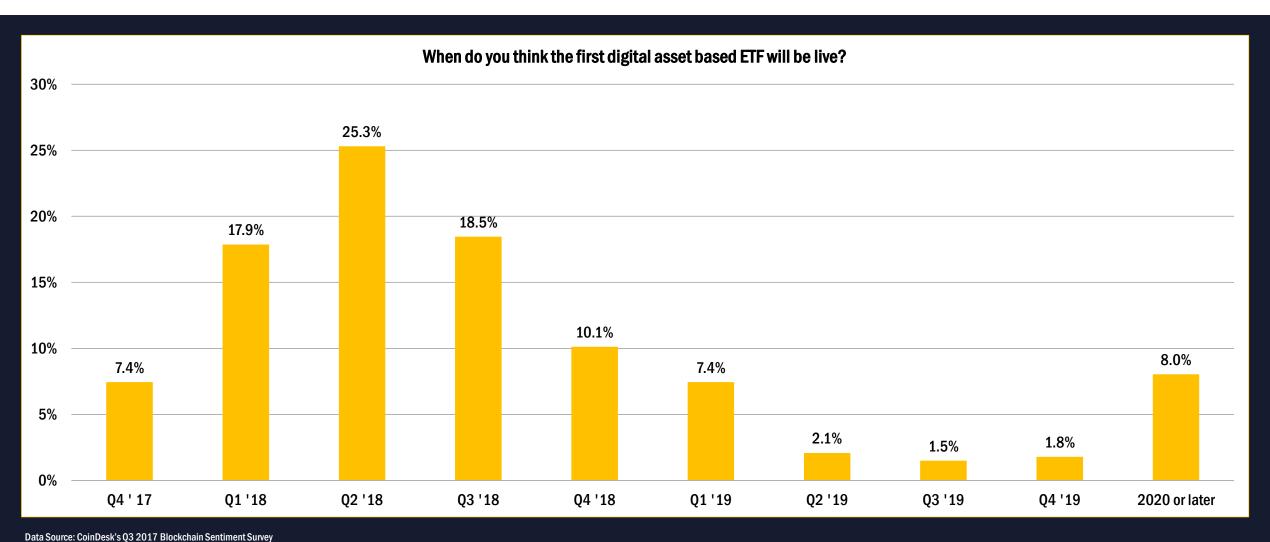
Community Was More Bullish on Bitcoin and Ethereum Prices in Q3



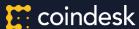




79% Believed the First Digital Asset ETF Will be Live by the End of 2018

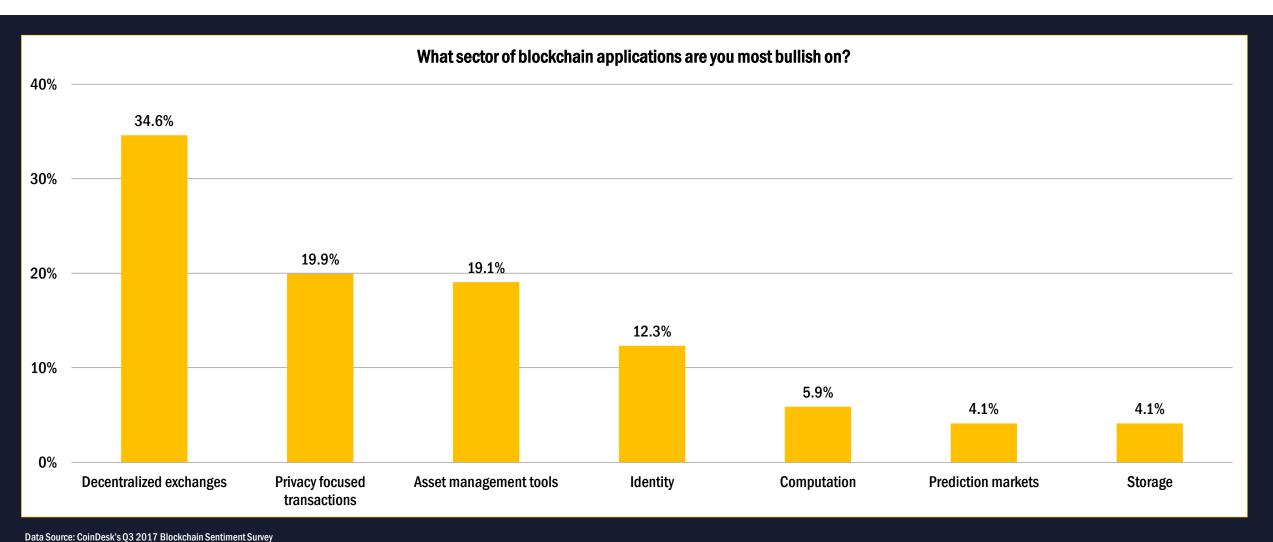






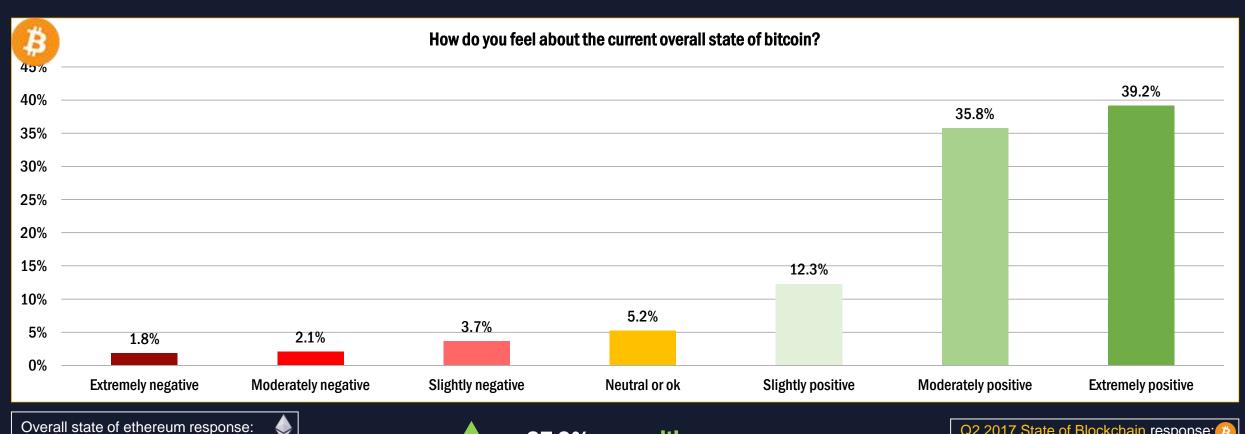


Community Was Most Confident in Decentralized Exchanges





The Overall Sentiment Towards Bitcoin Was Very Positive in Q3



76.7% positive

8.6% negative

87.2% positive 7.6% negative

Q2 2017 State of Blockchain response:

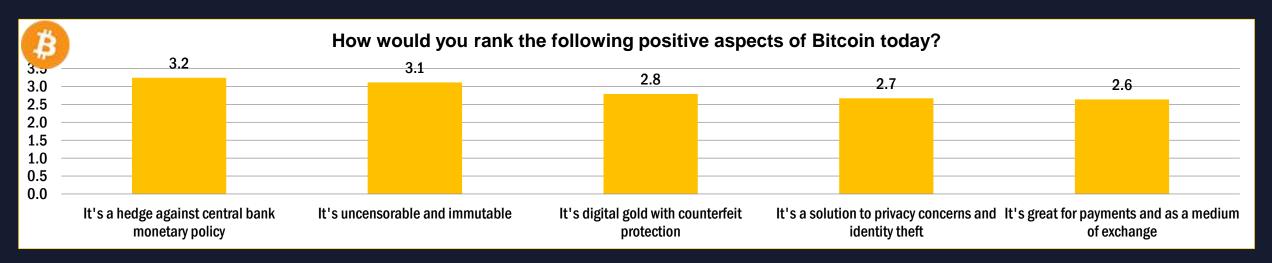
57.3% positive
26.7% negative

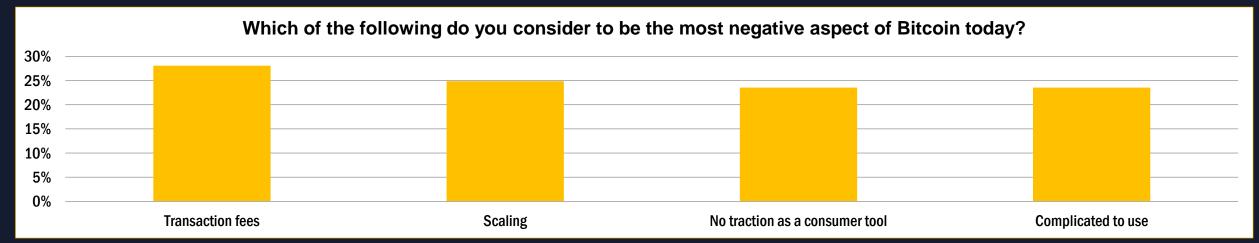




Most Positive Aspect of Bitcoin Was Hedging Against Central Bank Policy

Most Negative Aspect Was 'Transaction Fees'

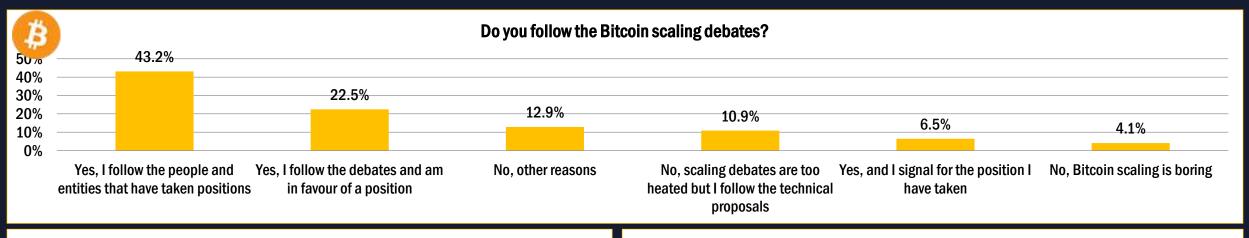




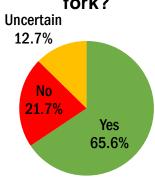


Most Members of the Community Followed the Bitcoin Scaling Debates

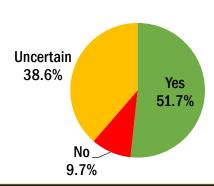
Most Were Aware of the SegWit Soft Fork and Expect a Segwit2X Hard Fork



Did you notice or hear that blocks larger than >1MB were mined in Q3 2017 as a result of the SegWit soft fork?



Do you think the proposals for 2X blocks will result in a contentious hard fork or blockchain split of Bitcoin this year?

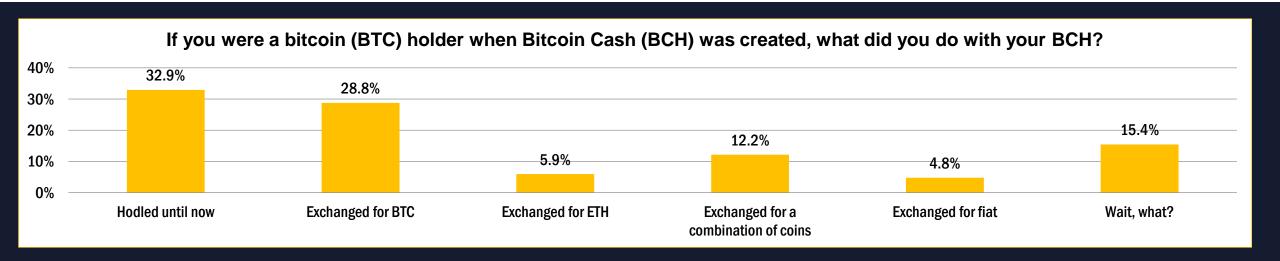


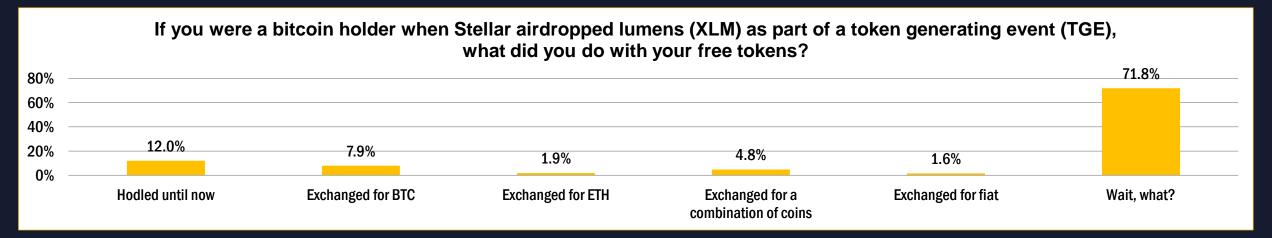




After the BCH Hard Fork, 33% 'Hodled Until Now'

72% Were Unaware of the Lumens Airdrop

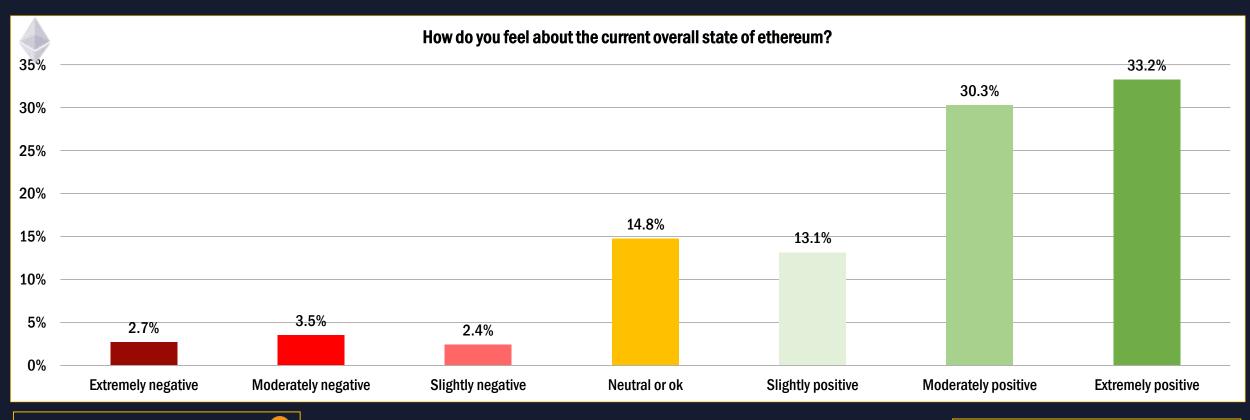






The Overall Sentiment Towards Ethereum Improved in Q3 Relative to Q2

Ethereum Sentiment Slightly Lower than Bitcoin



Overall state of bitcoin response:

87.2% positive
7.6% negative

70

76.7% positive 8.6% negative

Q2 2017 State of Blockchain response:

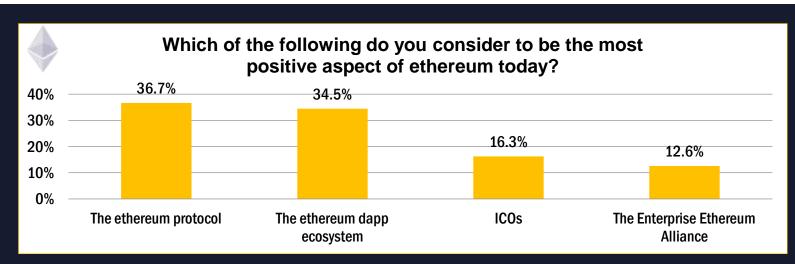
64.8% positive

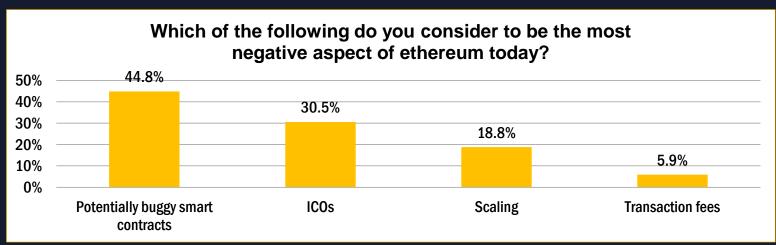
22.7% negative

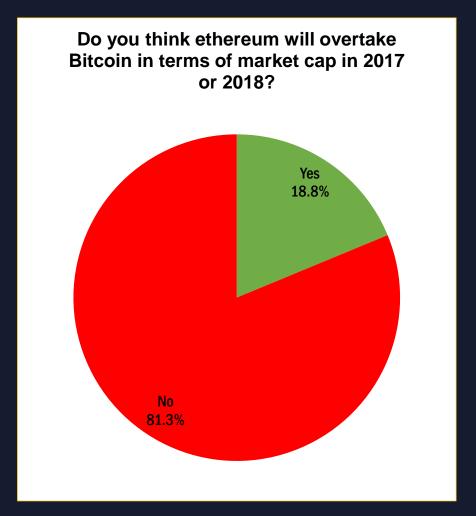


Most Positive Aspect of Ethereum Was the Protocol

81% Don't Expect Ethereum to Overtake Bitcoin's Market Cap by 2018



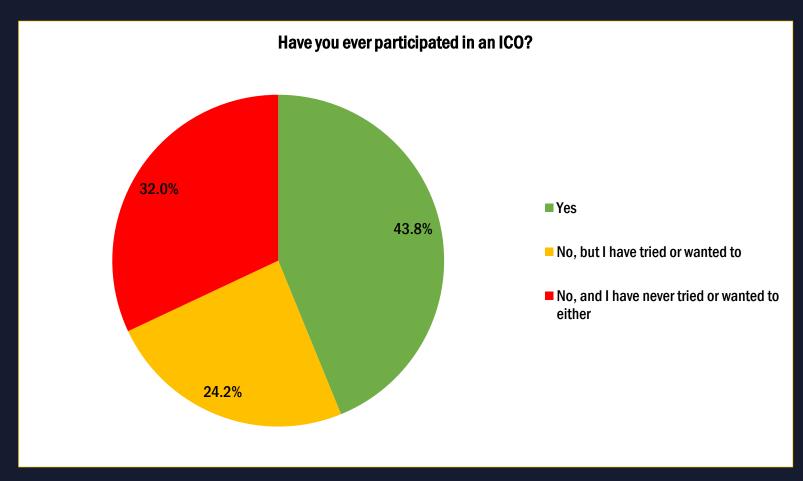




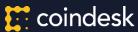


44% Participated in an ICO, Up From 39% in Q2

Nearly Half Who Haven't Participated Had Tried or Wanted To



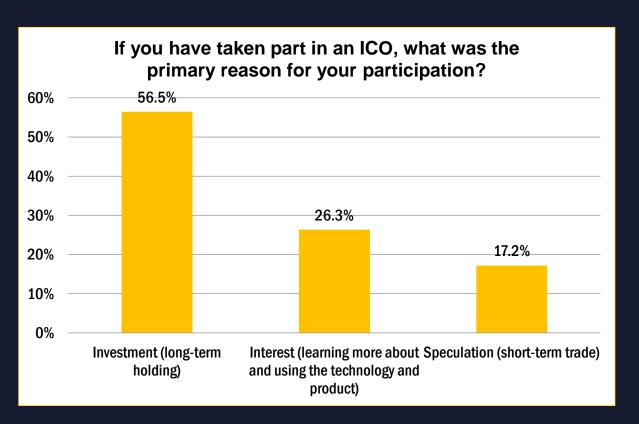
39.2% had participated in Q2 2017 State of Blockchain

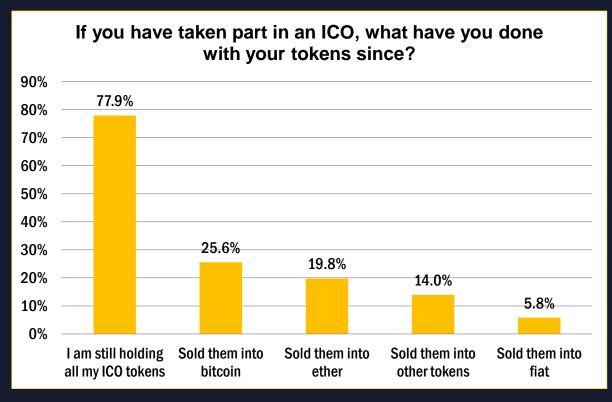




Long-Term Investment Was the Most Common Reason for ICO Participation

Most Who Have Participated Are Still Holding Their ICO Tokens

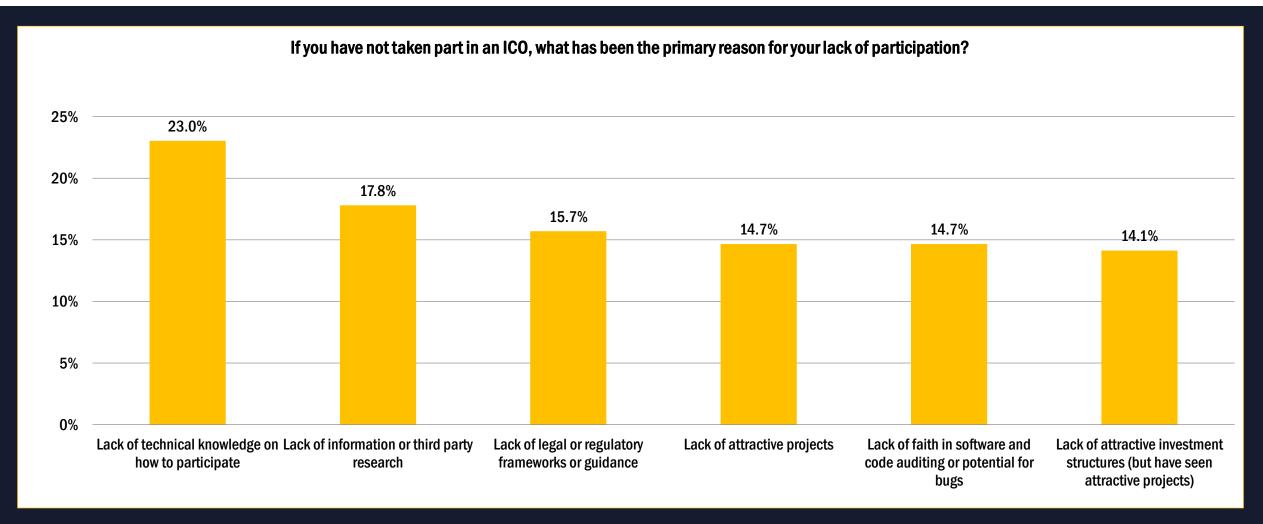








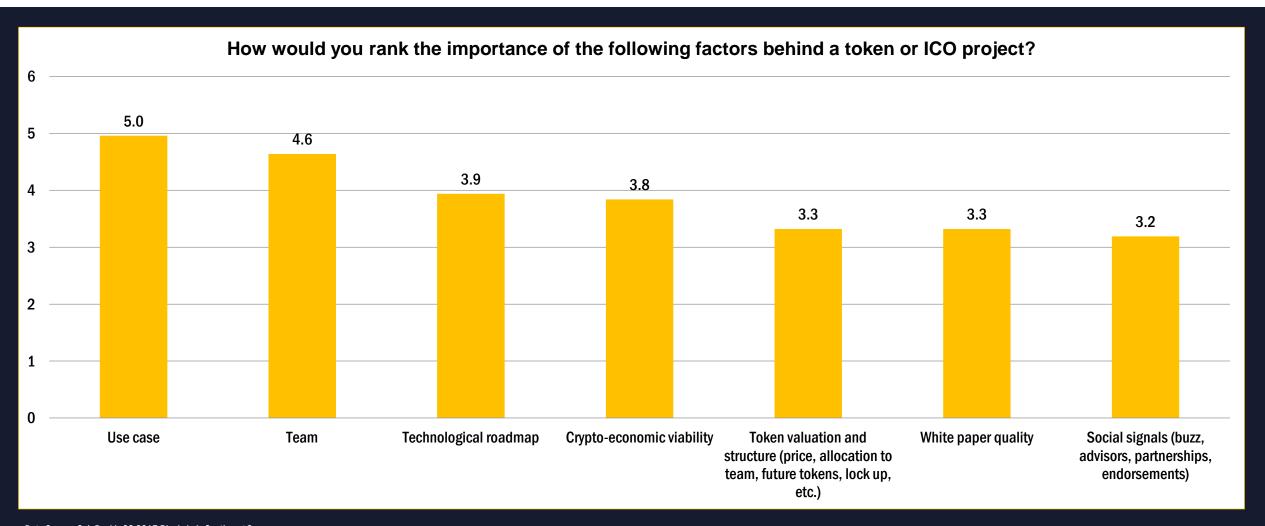
Lack of Technical Knowledge Has Kept Out the Most Respondents







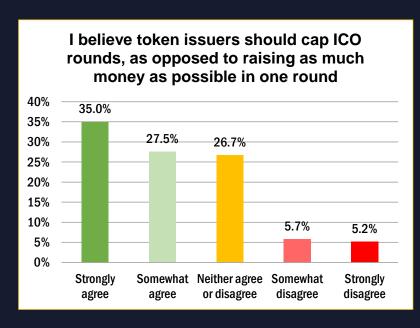
ICO Participants Considered Use Case Their Primary Driver of Analysis

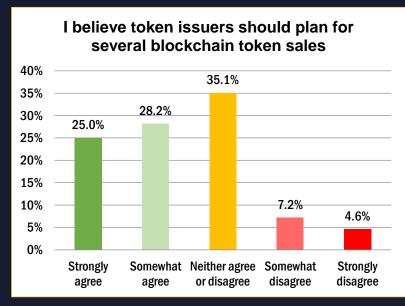


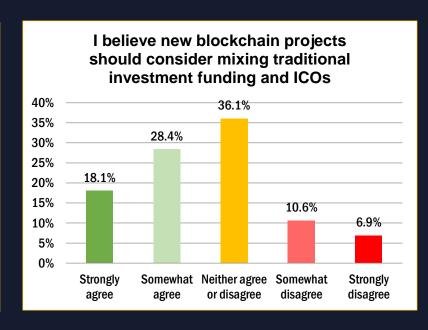




Respondents Indicated Blockchain Projects Should Structure ICOs With a Cap, Over Several Rounds, and With Other Forms of Fundraising









62.5% agree 10.9% disagree



53.1% agree



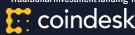
46.4% agree



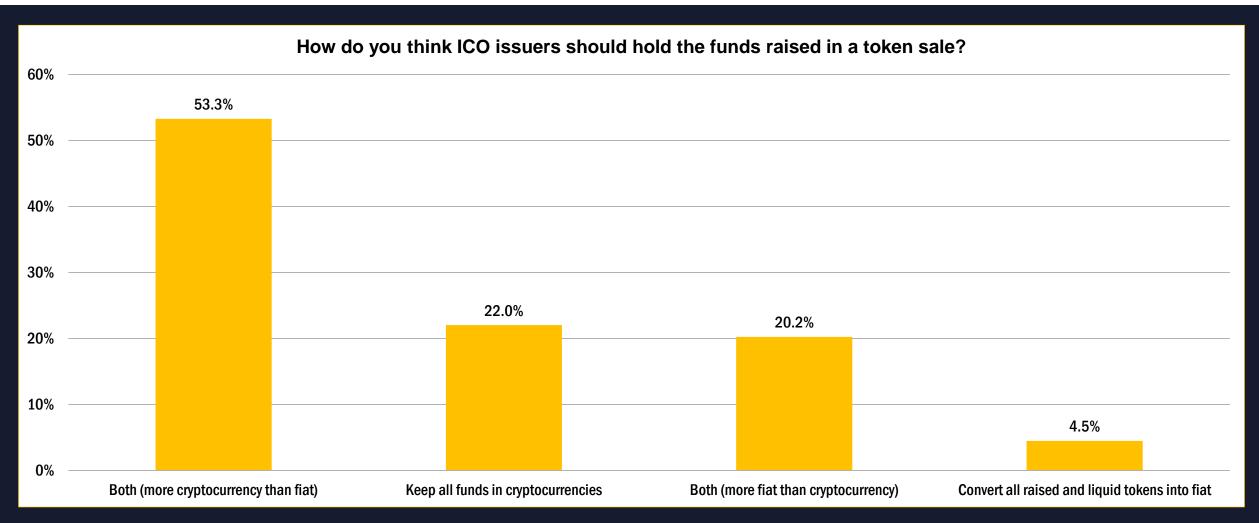
11.8% disagree

17.5% disagree

Data Source: CoinDesk's Q3 2017 Blockchain Sentiment Survey Notes: 'Cap' meaning not raising more than some amount like \$10m or 100k ETH in a sale 'Several token sales' meaning similar to startups raising traditional funding in rounds like "Seed", "Series A", "Series B", etc. 'Traditional investment funding' meaning sources like venture capital firms and accredited angel investors

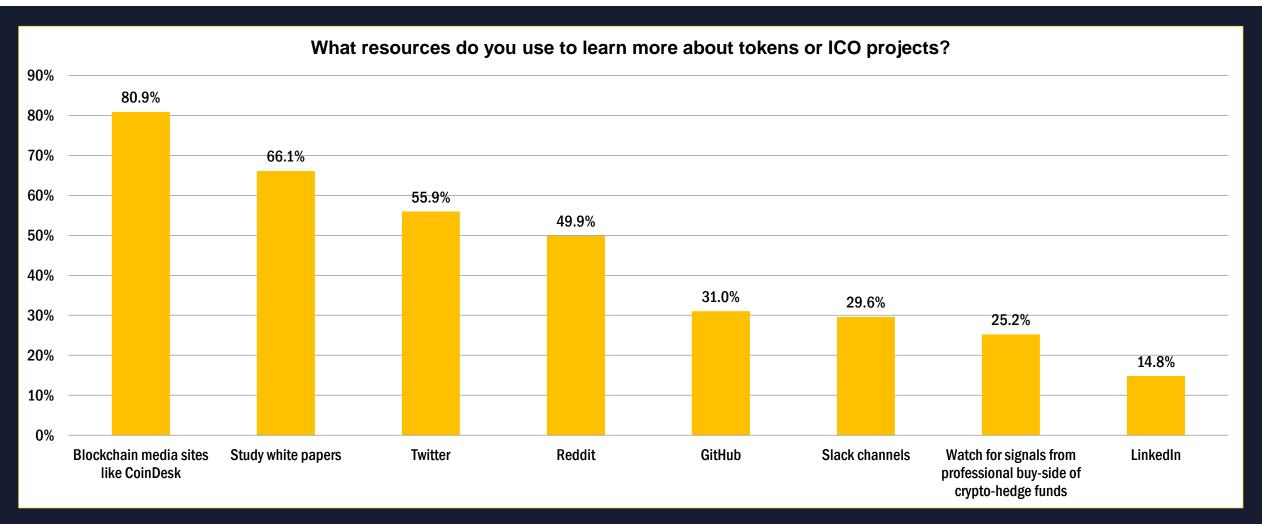


Most Respondents Believed Issuers Should Convert Some Funds to Fiat, But Primarily Hold Funds in Cryptocurrency





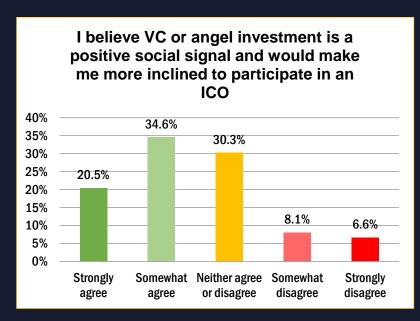
Blockchain Media Sites and Study White Papers Were Most Commonly Used to Learn More About Tokens or ICO Projects

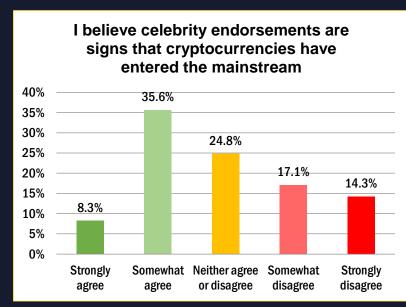


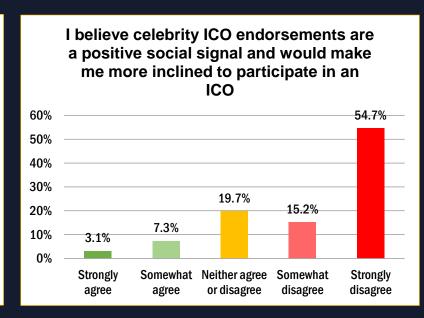


Respondents Believed VC Investments Were a Positive Sign for ICOs

Celebrity Endorsements Made Respondents Less Enthusiastic









55.0% agree14.7% disagree

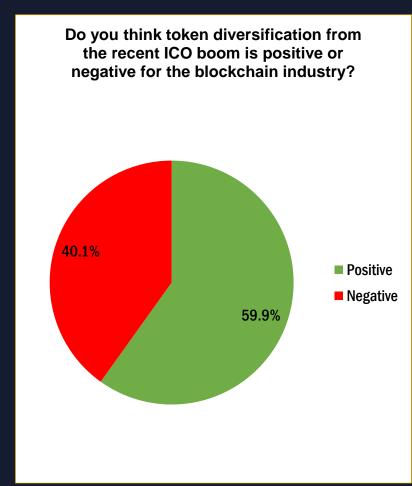
43.9% agree 31.3% disagree

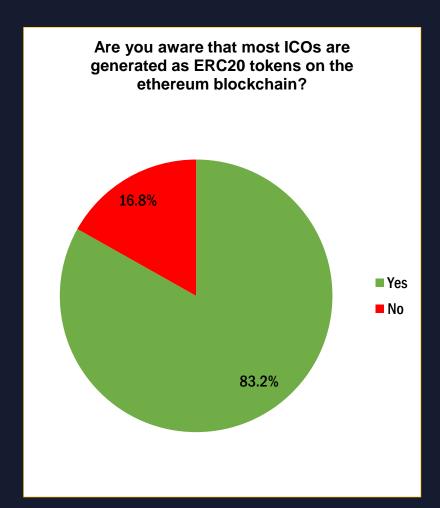
10.4% agree 69.9% disagree

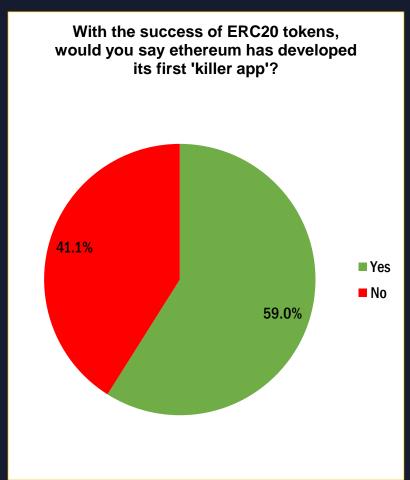




Respondents Thought Token Diversification Was Positive for the Blockchain Industry, And Considered ERC20 Tokens a 'Killer App'



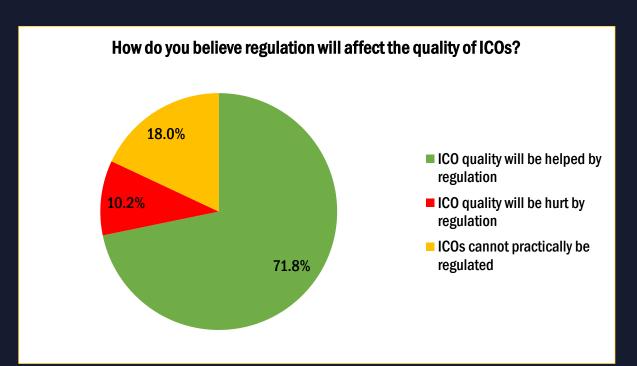


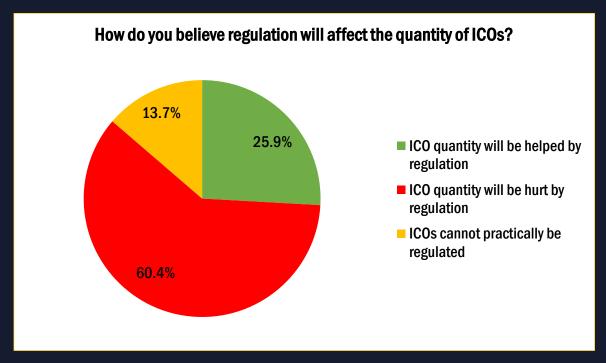






Respondents Believed ICO Quality Will Be Helped By Regulation But ICO Quantity Will Be Hurt By Regulation

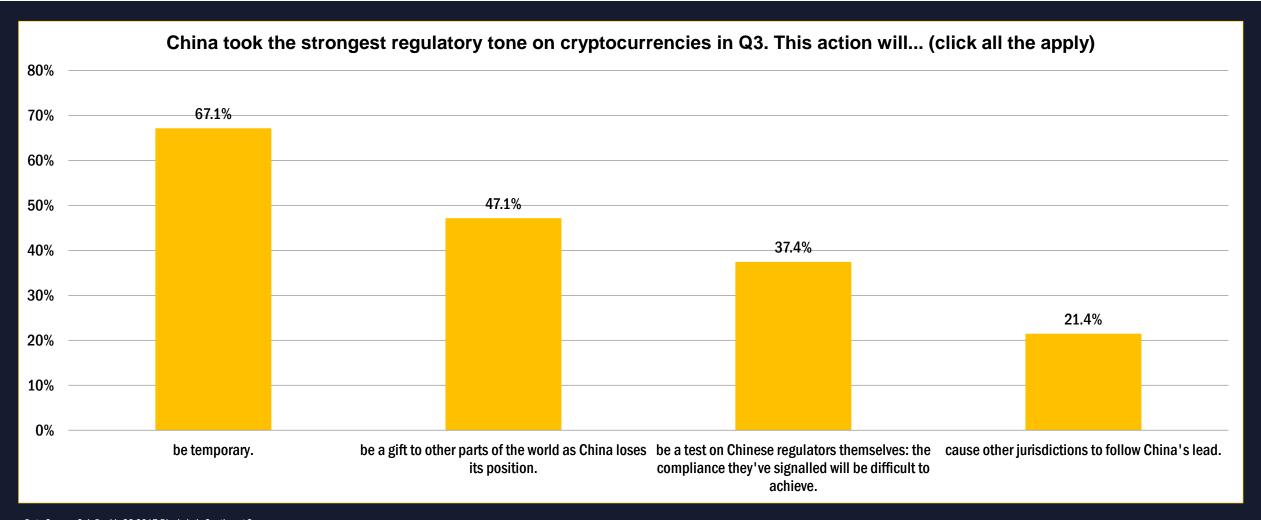








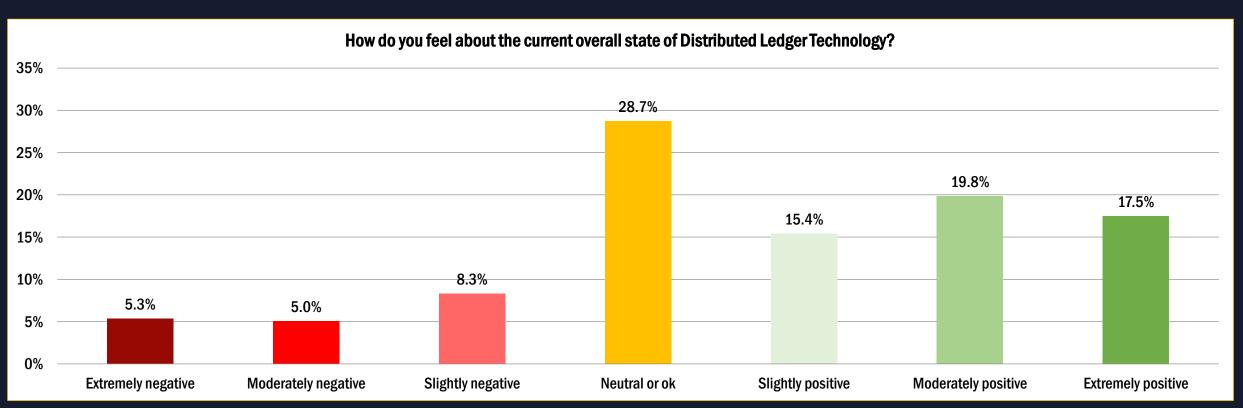
Most Respondents Expected China's Action Against Cryptocurrencies Would Be Temporary





Most Respondents Felt Positive About the Overall State of DLT

The Largest Group Felt 'Neutral' or 'OK' About DLT



▲ 52.7% positive **18.6%** negative

Often called 'DLT', 'permissioned' or 'enterprise' blockchains





6 COINDESK





CoinDesk - News, Events, Research and Data for Blockchain Technology



Headquarters: Midtown Manhattan, New York City

News: 35 million online readers since 2013

Events: 4,000+ attended our 2017 <u>Consensus</u>, <u>Invest</u> and <u>Construct</u> conferences in New York City and San Francisco

Data: Industry reference points including <u>Bitcoin</u> and <u>Ether</u> prices and <u>Venture Capital</u> and <u>ICO</u> databases









For three years, CoinDesk has analyzed the 'State of Blockchain' in our quarterly industry overview reports

We cover:

- **Technical trends** within the top open-source developer communities
- Major product updates from well-funded startups
- **Digital currency market data**, utilization rates, public sentiment and network performance metrics
- **Enterprise adoption** rates and new proofs-of-concept
- Venture capital, corporate, and public investment trends
- **Public policy** updates from around the globe

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- Subscribe to our email newsletters for the latest blockchain news
- If you have data you think should be included in future 'State of Blockchain' reports, email stateofblockchain@coindesk.com
- We also welcome any general feedback you have on the report



CoinDesk Events







- We are the leading events firm in blockchain
- Our annual <u>Construct</u> and <u>Consensus</u> events have attracted thousands of entrepreneurs, investors, executives, regulators, journalists and more to <u>San</u> <u>Francisco</u> and <u>New York City</u>
- Join us in November for the debut of our newest event, Consensus Invest!





6A

RESEARCH FRAMEWORK





Defining The Blockchain Technology Market

A **public blockchain** is an internet protocol that manages the distribution of provably unique data that:

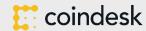
- Acts as a unit of account for transactions on that ledger
- Incentivizes early adopters and developers to use, support and verify the ledger without the need for a trusted intermediary

An **enterprise blockchain** is a distributed ledger that provides:

- Consensus via trusted intermediaries, making digital currencies unnecessary
- Solutions to clients who wish to use cryptographic databases managed and shared by trusted parties

Many companies employ **hybrid** models where they:

- Build on public blockchain infrastructure
- Provide technology for permissioned networks





The Internet-Intranet Comparison

We believe both public and enterprise blockchains have useful applications, much like the Internet and corporate intranets

PUBLIC BLOCKCHAINS







public (inter-)
The internet





ENTERPRISE BLOCKCHAINS



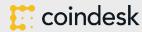




private (intra-)
Intranets & IT



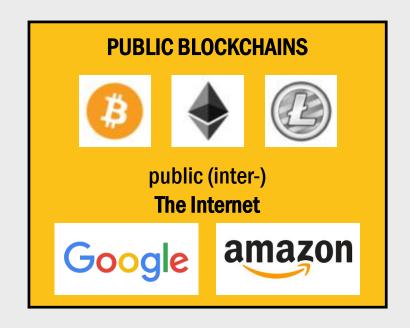


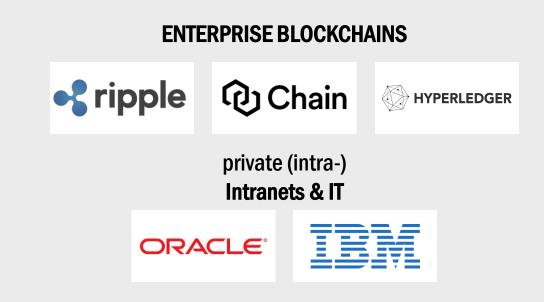


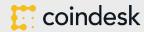


The State of Blockchain Focuses Primarily on Public Blockchains; Enterprise Data is More Opaque

The majority of development work to date has been done using open-source tools and public blockchains like bitcoin and ethereum





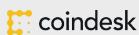




'Public' (Open) vs 'Enterprise' (Permissioned) Blockchains: Generalized **Features Comparison**

PUBLIC	ENTERPRISE
PUBLIC	ENTERPRISE

ACCESS	Open read and write	Permissioned write and/or read
SPEED	Slower	Faster
SECURITY	Open network	Approved participants
IDENTITY	Anonymous or pseudonymous	Known identities
ASSET	Native assets	Any asset





Strengths and Weaknesses of Public Blockchains

We believe public blockchains will have the greatest impact on developing economies (reduced need for trust) and the connected device, IoT economy (immutability, auditability)

STRENGTHS

Immutable ledger	Imm	utab	le	led	ger
------------------	------------	------	----	-----	-----

Relatively fast settlement time

(e.g., 10 minutes or less)

Reduced security risks associated with centralization-trusted third party

Easy to audit

Reduced need for trust

WEAKNESSES

Irreversible transactions

Slow transaction clearing

(e.g., 3 – 7 transactions / second)

More vulnerable to attacks

(e.g., 51%, spam, DDoS)

Reduced privacy

Energy consumption





Blockchain Ecosystem Breakdown

When producing market maps and following investment trends, we look for business shifts between these models:

	PUBLIC	ENTERPRISE
PROTOCOL		⊕ Chain TIM
COMPANY	bitpay coinbase	Digital Asset
APPLICATION	augur golem	

The company layer crosses protocols and is heavily comprised of <u>bitcoin related businesses</u>, while the application layer is dominated by ethereum applications



Notes: Numerous protocols are also maintained by open source communities, non-profits like the Ethereum Foundation and consortiums like R3 and Hyperledger



Blockchain Project Funding Models

Entrepreneurs have begun considering blockchain token sales ('ICOs') as <u>fundraising alternatives</u> to traditional venture capital and angel investment

	ICO	HYBRID I	VC I
PROTOCOL	LISK	FACTOM	— Co Chain
COMPANY	LISK	PACION PACION	coinbase Digital Asset
APPLICATION	augur golem "IICONOMI		

ICOs rather than VC has driven the development of most public blockchain applications, as well as numerous protocols and companies, a line which is becoming increasingly blurred



Notes: Numerous protocols are also maintained by companies like the Zerocoin Electric Coin Company, open source communities, non-profits like the Ethereum Foundation and consortiums like Hyperledger



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This presentation does not constitute financial advice or an investment recommendation in any way whatsoever. It is recommended you perform your own independent research and/or speak with a qualified investment professional before making any financial decisions.

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