
Quarterly crypto update

An assessment of financing sources for blockchain companies

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Key takeaways

- Venture capital (VC) investment in blockchain startups increased considerably in 2017 to \$911 million, an 88% jump from 2016. Nearly one-third of VC equity deals in 2017 were in “hybrid” or “protocol” companies that issue their own tokens, as opposed to “centralized” companies that have a more traditional structure.
- In December 2017 alone, investors poured 50% more into token sales (ICOs) than VCs invested in the space over the course of the entire year, and 3x more than all blockchain-related VC deals in 2016.
- While Ethereum will continue to be a nexus for development, other Turing-complete platforms like Cardano, RChain and others will also attract developers looking for increased scalability and security.
- In response to regulatory action on ICOs, early-stage investors will demand equity in addition to rights to discounts on tokens as a hedge against regulatory action on ICOs.

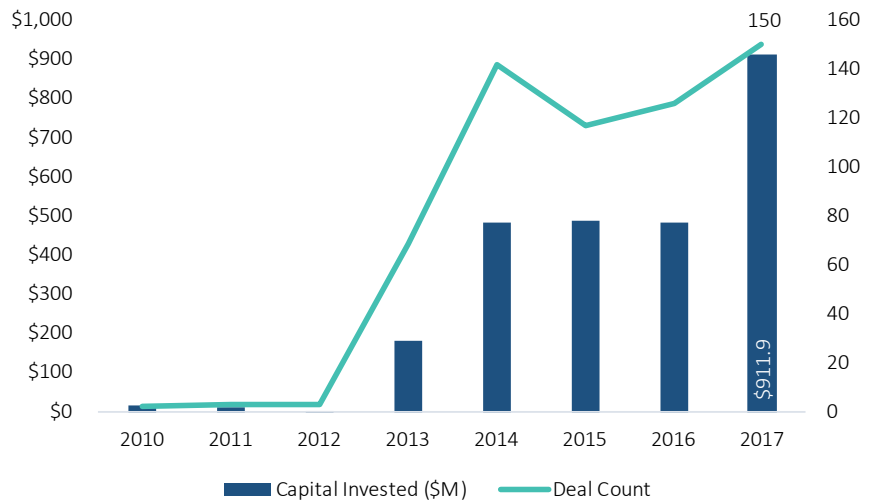
Note: We assigned companies to one of two categories: (i) "centralized" which include wallet software, centralized exchanges, blockchain consulting, and other network services; and (ii) "protocols," including companies creating tokenized distributed applications (dapps) using a proprietary token, smart contract platforms, and cryptocurrencies.

VC investment in blockchain update

Deals

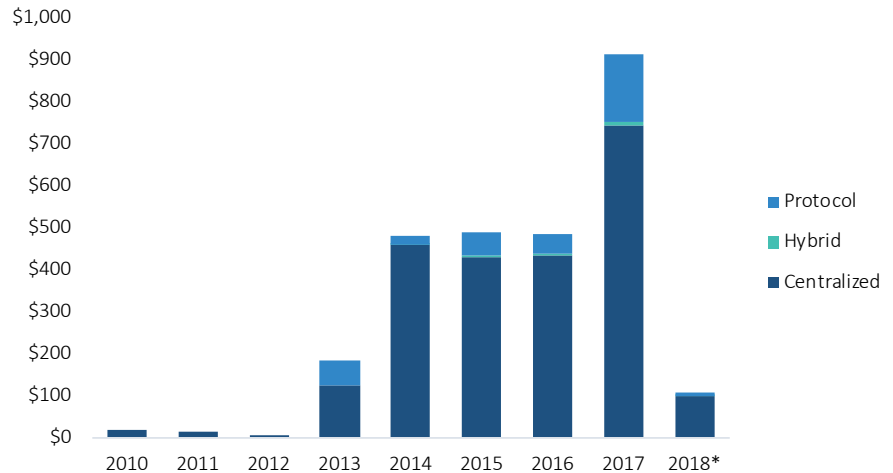
VC investment in blockchain startups increased considerably in 2017 to \$911 million, an 88% jump from 2016. This acceleration coincided with the massive increase in crypto asset prices, but it failed to capture the entire magnitude of the shift. By comparison, Bitcoin increased from less than \$1,000 at the start of the year to peak around \$20,000 in mid-December.

Global VC activity in blockchain companies



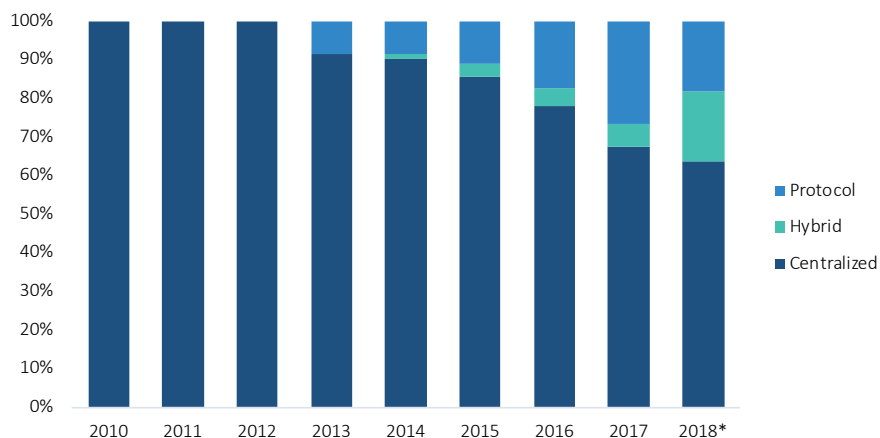
Source: PitchBook
*As of 2/12/2018

Global VC invested (\$M) in blockchain companies



Source: PitchBook
*As of 2/12/2018

Global VC activity (#) in blockchain companies



Source: PitchBook
*As of 2/12/2018

Over the last several years, VC investment activity in blockchain startups has largely mirrored price movements in crypto assets, namely Bitcoin. Prior to the uptick in 2017, yearly VC equity funding going into the sector had been static, varying by less than 2% year-over-year (YoY) since 2014. The last time VC activity had spiked was back in 2013, when the price of Bitcoin was \$1,000—the same level it was at entering 2017. In spite of a bear market in Bitcoin during these years, a sustained level of VC financing helped to build many of the prominent application-layer cryptocurrency infrastructure companies, such as Coinbase and Circle, as well as enterprise-focused companies like Chain and Ripple—denoted as “centralized” in the chart.

Centralized

| Rank | Company name | VC raised to date (\$M)* |
|------|---------------------------|--------------------------|
| 1 | Coinbase | \$225.31 |
| 2 | Circle Internet Financial | \$136.00 |
| 3 | Earn.com (formerly 21.co) | \$116.05 |
| 4 | R3 | \$107.00 |
| 5 | Digital Asset | \$100.00 |
| 6 | Ledger (Bitcoin Security) | \$83.57 |
| 7 | Blockstream | \$77.28 |
| 8 | Blockchain | \$70.50 |
| 9 | BitPay | \$62.80 |
| 10 | BitFury Group | \$60.00 |

Source: PitchBook
*As of 2/12/2018

Now that those initial investments have provided a foundation for the industry, VCs are beginning to expand into new areas of the market as the technology develops rapidly. In 2017, VC investment activity continued to shift away from centralized services, which have fallen from 90% of blockchain deals in 2014 to 64% last year. VCs have been gravitating to “protocol” or “hybrid” companies, which accounted for 49 out of 150 VC equity deals in the recent full calendar year. Protocol projects seeking equity capital have turned to VCs even as the rise of initial coin offerings (ICOs) has created a source of non-dilutive funding for projects, a topic which we will discuss in the next section.

Hybrid

| Rank | Company name | VC raised to date (\$M)* |
|------|-----------------------|--------------------------|
| 1 | RSK | \$4.50 |
| 2 | Radar Relay | \$3.00 |
| 3 | Coinme | \$1.50 |
| 4 | Vault12 | \$1.48 |
| 5 | Skry | \$1.10 |
| 5 | AirFox | \$1.10 |
| 7 | Tokenly | \$0.47 |
| 8 | Indorse | \$0.26 |
| 9 | BurstIQ | \$0.25 |
| 10 | Trustatom | \$0.10 |
| 11 | Revolution Blockchain | \$0.10 |

Source: PitchBook
*As of 2/12/2018

Protocol

| Rank | Company name | VC raised to date (\$M)* |
|------|-------------------|--------------------------|
| 1 | Ripple | \$100.00 |
| 2 | Algebraix Data | \$66.48 |
| 3 | Qtum | \$16.00 |
| 4 | Ethereum | \$15.00 |
| 5 | Rex (Real Estate) | \$14.40 |
| 6 | Lisk | \$11.80 |
| 7 | Gem | \$10.40 |
| 8 | Tezos | \$10.00 |
| 9 | Factom | \$9.93 |
| 10 | Bitcoin (Project) | \$6.70 |

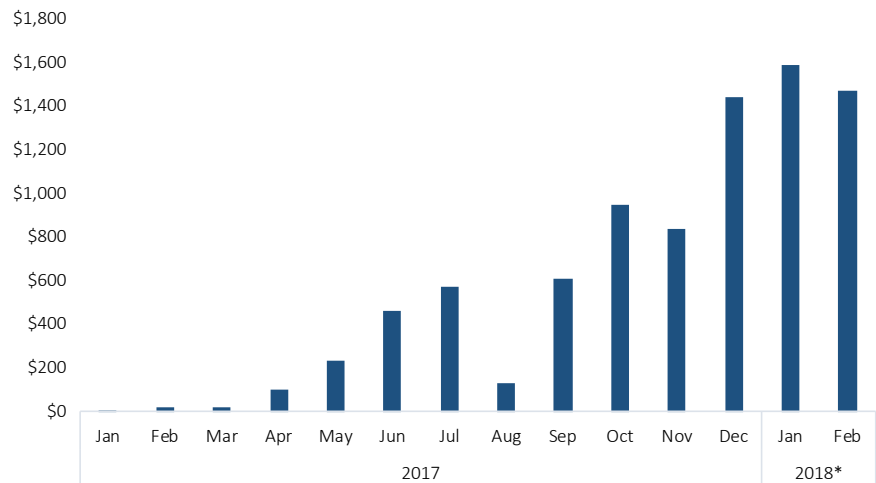
Source: PitchBook
*As of 2/12/2018

ICOs

2017 was the year of the ICO. In December alone, investors poured 50% more into token sales than VCs invested in the space over the course of the entire year, and 3x more than all blockchain-related venture capital deals in 2016.¹

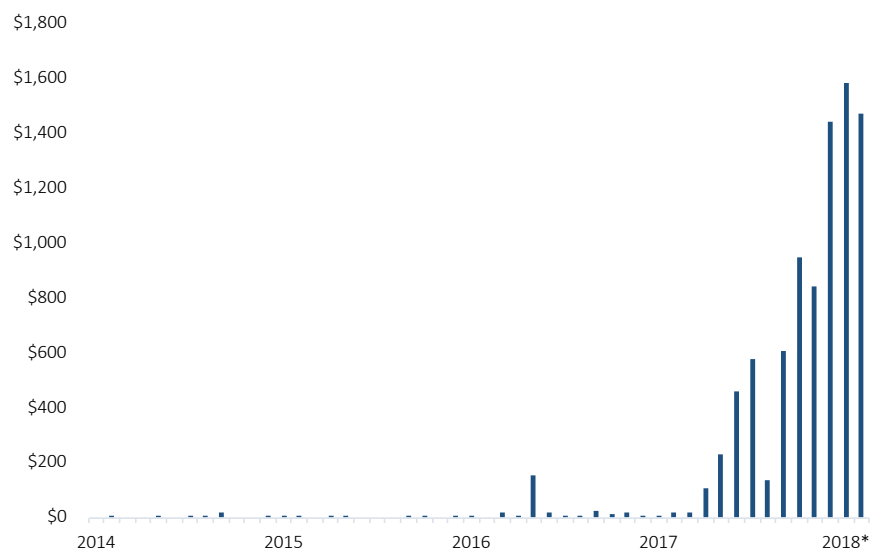
¹: These figures do not include the secretive Telegram private pre-sale, which is underway and is expected to raise over \$1 billion.

ICO capital raised (\$M) by month



Source: CoinDesk ICO Tracker
*As of 1/31/2018

ICO capital raised (\$M) by month



Source: CoinDesk ICO Tracker
*As of 1/31/2018

ICOs are in part a product of the 2016 failure of the DAO (decentralized autonomous organization), a digital, decentralized venture fund meant to replace direct retail investment in ICOs. The ambitious project aimed to usher in a new democratic paradigm in funding for decentralized technology development made possible by the Ethereum blockchain. The rise of smart contracts platforms like Ethereum enabled the beginning of a deluge of distributed applications (dapps) that have significant potential to reshape traditional business models across a wide range of sectors. This development displaced the DAO and created an infinitely more diverse set of investible opportunities than in years past; however, the DAO failure ultimately created a more distributed and robust ecosystem as entrepreneurs and investors experimented to find best practices. At the time, few VCs had expertise in the space, and even for those who did, their limited partner agreements (LPAs) and custody requirements often precluded them from buying tokens. Entrepreneurs seeking capital were forced to go directly to other crypto asset investors.

We view the ICO phenomenon as a direct product of the maturation of the Ethereum smart contract platform. While Ethereum has been a nexus of development, even simple use cases like Crypto Kitties have highlighted its flaws by slowing down the network. Executing a simple computation on the Ethereum platform is 400 million times costlier than AWS, as of late last year.² While this cost multiple is slightly misleading, as not all computation needs to happen on-chain, there is room for improvement.

The ability to experiment with token sales will ultimately lead to some form of self-regulation as both capital-seeking founders and investors learn lessons.

Competing smart contracts platforms, such as RChain or Cardano, promise to be more scalable and/or deserve a serious consideration from developers and investors alike. Cardano has embraced a peer-review process for its technical design and has implemented governance principals that seek to protect it from the hard forks that can affect Ethereum and Bitcoin. RChain has built a scalable platform that enables significantly more transactions per minute than other working smart contracts platforms.

We will see a shift in developers building products on other platforms, especially as ICO projects build out their own ecosystem funds to generate investment returns that can support the long-term maintenance of their platforms. Even with some notable cases of fraud or negligence, the ability to experiment with token sales will ultimately lead to some form of self-regulation as both capital-seeking founders and investors learn lessons. Furthermore, a significant number of VCs are amending LP agreements in order to invest directly in tokens. This is by and large a positive development as it forces teams to appeal to more sophisticated investors with long-term incentives, rather than the lowest common denominator of retail investors.

²: <https://hackernoon.com/ether-purchase-power-df40a38c5a2f>

Spotlight: Consensus mechanisms

A consensus mechanism is the algorithm underpinning a system whereby network participants can reach an agreed state through the verification and addition of new transactions to the blockchain.

As long as each party to a transaction trusts the organization maintaining a centralized database, the validity of a transaction is extremely easy to verify (think of a bank verifying that an account has the appropriate balance to make a debit purchase). This process is more complicated for a blockchain system given the distributed nature of the database, which requires the use of consensus mechanisms to ensure conflicting transactions are not approved. The two dominant consensus mechanisms are proof-of-work (PoW) and proof-of-stake (PoS), which are relatively easy to understand once you understand the technical jargon of hashes, nonces, SHA-256, etc. It seems appropriate to give a brief non-technologist overview of how each consensus mechanism functions given the growing number of PoS protocols and Ethereum's pending transition to a hybrid PoW/PoS.

Proof-of-Work

In the simplest terms, PoW is an algorithm that forces participants (i.e., nodes) on a network to expend energy to find a sequence of numbers or letters that match with the last group of transactions (called the "block") placed on the blockchain, essentially using a guess-and-check system to test millions of different character combinations to find the correct sequence (called the "hash"). Once the correct sequence is found, the node broadcasts the block to all other nodes on the network, which then verify that the transactions and sequence are valid. If the transactions are valid with the correct hash, then the block is added to the permanent chain and the process begins all over again for new pending transactions. For maintaining the network through this process, nodes are rewarded with new tokens, fees or a combination of the two.

The nature of this mechanism can make it extremely expensive to double spend, steal or act against the network for two reasons. One, any breach of the consensus mechanism erodes the trust that underpins any value associated with a digital asset, thereby immediately eroding the value of

the assets obtained via the theft or manipulation of the network. Second, as the network grows, the cost to override the network becomes highly prohibitive. Each block of transactions is digitally tied to all previous blocks through the hash sequence (discussed previously) and nodes on the network automatically consider the longest chain to be the most accurate chain. As such, if an attacker endeavored to deceive other nodes and cheat the network, they would need the computational power to mine each sequential block long enough to become the longest chain.

Proof-of-Stake

Much like PoW, the nature of PoS algorithms vary among protocols. In general, however, they are best thought of as a system through which network participants deposit digital tokens in order to obtain the right to vote on the correct state of the network. These network participants are often referred to as “validators,” and are selected at random from a larger group of validators to vote on the validity of the most recent block of transactions being added to the blockchain. To prevent malevolent actors, a validator or group of validators attempting to verify falsified transactions lose a portion—or all—of the tokens they deposited to become a validator. In return for locking up tokens and verifying transactions, validators are rewarded with new tokens, transaction fees or a combination of the two. The key differentiating factor for PoS is that the validator who receives the award is selected by a random lottery system, rather than solving a computational problem.

2018 Outlook

We see VC deployed into blockchain companies rising significantly over the course of 2018, as more VCs incorporate blockchain- and crypto-related language into their LPAs. In addition to closed-end VC funds, an ecosystem of crypto hedge funds has emerged—the ranks of which doubled between October and February, according to AutonomousNEXT. While blockchain founders have successfully utilized ICOs as a means of raising capital, SAFTs (simple agreement for future tokens) are facing increasing scrutiny from thought-leading investors and their legal counsel. Investors want to make sure they have downside protection in the form of equity at the corporate level in the case of a pivot away from a tokenized offering, or sweeping regulatory action on ICOs.

As the ICO space becomes increasingly crowded with speculators, high-caliber startups will want to attract seasoned investors who can provide more than just capital.

As the ICO space becomes increasingly crowded with speculators, high-caliber startups will want to attract seasoned investors who can provide more than just capital. This will drive entrepreneurs into the arms of traditional VCs, particularly at the seed and pre-seed stage. A commonality across many blockchain projects is that teams are not as seasoned as other emerging technology verticals given the novelty of the space. VCs can add meaningful value to teams by providing in-person feedback based on previous experience building technology businesses. They can also leverage their network to attract new potential users and employees, as well as open their rolodexes to their own LPs as potential token purchasers.

VCs have utilized some of the technology underpinning ICOs for both traditional securities and more complex financial agreements in a new category called tokenized asset offerings (TAOs). This more expansive category includes both ICOs and traditional securities. Tokenized platforms like Templum and Overstock's tZERO will enable enforceable mechanisms for projects to raise capital via equity, debt and token offerings, or some combination of the above. These platforms allow a form of digital investment banking by allowing on-chain enforcement of contracts like subscriptions to a VC fund.

As business models evolve and the regulatory environment shifts, investors want to foster innovation while ensuring that certain stakeholders aren't written out of the will.

We see tokenized asset offerings (TAO) generating momentum in 2018, similar to ICOs in 2017. Some of this innovation in securitization has been driven by the goal to protect investors in early stage projects that hope to eventually operate tokenized business models. As business models evolve and the regulatory environment shifts, investors want to foster innovation while ensuring that certain stakeholders aren't written out of the will, so to speak, and that decisions are made in the best long-term interests of the project, as opposed to token holders.

Furthermore, US-based projects or those that wish to court US retail investors have been hindered by KYC/AML requirements. Some projects have scrapped planned public ICOs following an initial private raise. Since these private sales are denominated in Ethereum or Bitcoin, the dollar value of the initial private raise has increased to the point that these projects simply don't need more capital. While strong tailwinds will prevail, this may only suppress ICO totals by cutting out retail investors until tokens reach secondary exchanges.

Even as regulators place more scrutiny on potential securities law violations related to ICOs, we think that ICO deal totals only look to rise in coming months as entrepreneurs and investors evolve along with the shifting regulatory climate. Several major projects with serious backing are already underway. Telegram, a company that has developed a popular secure messaging tool, recently launched a token sale that will raise in the neighborhood of \$1 billion to \$2 billion, showcasing investor appetite for real world companies with a working product.