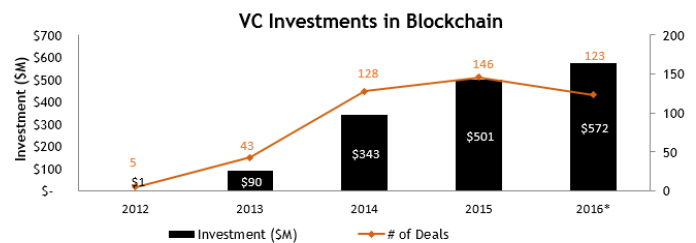




In November 2008, a white paper was posted on the internet under the name Satoshi Nakamoto titled "Bitcoin: A Peer-to-Peer Electronic Cash System." The white paper outlined the concept for a peer-to-peer version of electronic cash that would allow online payments to be sent directly from one party to another, anonymously and without counterparty risk or intermediation from financial institutions. Soon thereafter, in early 2009, the first block of Bitcoin was mined launching the world's first cryptocurrency. Since that time, Bitcoin has grown to over \$10 billion in market capitalization and has spurred the launch of numerous other cryptocurrencies. While Bitcoin and other cryptocurrencies have tremendous potential value as a medium of exchange, it is the underlying distributed ledger technology, blockchain, which has emerged to truly capture the interest of entrepreneurs, venture capital firms, financial institutions and other corporations. The size and scope of potential applications for blockchain technology is tremendous, spanning a wide range of use cases in nearly every industry.

Entrepreneurs have launched businesses built around Bitcoin and other cryptocurrencies and have also decoupled the underlying blockchain technology from Bitcoin to develop new tools and services. There are over 250 active venture-backed startups in the space and more than 200 venture capital firms have already invested \$1.3 billion into companies across the emerging ecosystem.<sup>1</sup> It remains early in the development of businesses around the technology, with many startups still in the proof-of-concept stage - however, if successful,

these companies are poised to generate tremendous value. Here we will examine the rise of blockchain technology and implications for startups and venture capital investors.



### Blockchain Technology: A Primer

A blockchain is a list or a decentralized ledger of all transactions that take place in a peer-to-peer network. Blockchains act as a digital record of all transfers of data on a network, updated chronologically, and distributed then sealed cryptographically. In its purest form, blockchain is a digital platform that enables the recording and verification of transactions in an open and tamper- and revision-proof manner. Each block collects a batch of transactions that are timestamped to be included in the master ledger, and is identified by a unique cryptographic signature. Each block refers to the unique signature of the block in the chain before it, and therefore can be traced back to the initial block ever created in the ledger. As such, the blockchain contains an un-editable record of all the transactions ever made. Information can be fed in, but it cannot be erased. One of the important features of blockchain is the elimination of reliance on intermediaries heavily present in the current digital economy. Because of the distributed nature of the blockchain database, data corresponding to all new transfers must be

<sup>1</sup> Coindesk

circulated across the entire network so that the blockchain stays in sync as a master worldwide ledger. The technology enables a distributed consensus where all online transactions that involve digital assets both past and present can be verified in the future at any time. All this is done without compromising the security and privacy of the parties and the digital assets involved.



### Bitcoin and the Wave of Cryptocurrencies

Bitcoin, invented by Satoshi Nakamoto as the first blockchain application, became the first major currency in the world not controlled by a government or central bank. Bitcoin's successful application of blockchain technology as a cryptocurrency spawned a new wave of cryptocurrencies that are collectively commonly referred to as altcoins. Most altcoins behave similarly to Bitcoin but each has its own unique characteristics. Some of the most common altcoins in circulation include Litecoin, Dash and Ether.

- *Litecoin* was created to democratize the mining of cryptocurrencies and has a market capitalization of over \$185 million. The platform is similar to Bitcoin but allows standard consumers without professional mining equipment to gather and use the coins.
- *Dash*, formerly known as *Darkcoin*, utilizes a system called Darksend to add another layer of privacy to secure transactions. It utilizes some of the most advanced cryptography in the digital currency space, and is considered by many to be the only truly anonymous currency.
- *Ether* is a currency primarily used to purchase raw computing power for applications running on the ethereum blockchain platform. Ether allows any software to run as programmed without the risk of censorship, fraud or government interference, and has a market cap of over \$900 million dollars.

Widespread use of blockchain technology to date has come predominately through cryptocurrencies, which have done well to demonstrate the power of the technology and stimulate interest in new applications. However, in the past year, there has been a rapid shift in startup activity and investment dollars to a wide range of new blockchain applications.



### Startup Activity

Given the rate of adoption of Bitcoin and other cryptocurrencies and the rapid emergence of a wide range of applications for blockchain technology, it should come as no surprise that startup activity in the space has been dynamic. Companies being formed to take advantage of emerging opportunities have primarily targeted Bitcoin and other cryptocurrencies, blockchain technology applications, or have been hybrid in nature.

Over 1,000 companies now exist in the cryptocurrency category and new companies continue to be established with unique services.<sup>2</sup> Meanwhile, some of the more established companies are beginning to emerge as dominant players. One example is *Coinbase*, a digital currency service backed by venture capital firms such as Andreessen Horowitz and Union Square Ventures. The company allows users to buy and sell Bitcoins and other cryptocurrencies, as well as use those Bitcoins to transact with online merchants. *Coinbase* has nearly five million users and has raised nearly \$120 million over five rounds of financing since 2012.

In the past year, there has been an acceleration of new companies developing blockchain technology applications outside of cryptocurrency. This is the area where many investors believe the greatest potential lies. The permanent, undisputable, digitized and secure nature of blockchain records lend the technology well to a wide range of applications,

<sup>2</sup> Angel List data and Fairview Capital research - November 2016

including: securities settlement, digital identity verification, smart contracts, and property management. Blockchain technology can cut out the substantial intermediary costs, security risks, and record keeping infrastructure traditionally associated with such applications resulting in reduced cost, fewer time delays and less human error. While initial applications focused on the financial services industry, the potential for blockchain is so broad that many other industries present opportunities, including: cybersecurity, academia, government, transportation, entertainment, real estate, insurance, healthcare, energy management, and information technology. One example of a company in the space is *Everledger*, a provider of an immutable ledger for diamond ownership and related transaction history verification for insurance companies, owners, claimants, and law enforcement agencies. *Everledger* is a digital, global ledger that tracks and protects items of value. Although currently focusing on diamonds, *Everledger* seeks to address the \$1.7 trillion global counterfeiting issue across all assets of value.

## The Evolving Blockchain Ecosystem

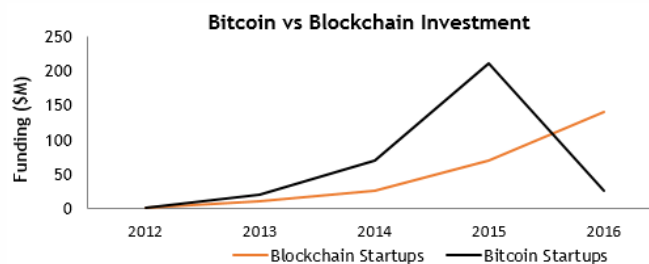


Source: Fairview Analysis

As cryptocurrency and blockchain markets mature, there has also been an increase in new “hybrid” companies. These companies provide services, often technical in nature or infrastructure-related, to the growing cadre of cryptocurrency and blockchain companies. They also can provide specific applications of the technology. One example is *Bitfury*, a startup that began as a Bitcoin mining company and has since evolved into a full-service blockchain security and technology firm. It has

developed proprietary hardware and software solutions that have helped the blockchain world scale securely. The company is currently exploiting blockchain to build a new secure property rights registry.

In 2016, there were four times as many blockchain and “hybrid” startups launched compared to 2015. An interesting aspect of the blockchain market is that it has been global in scope from the very beginning. The majority of startups in the space, over 60%, are based outside of the United States, led by the United Kingdom, Canada, China, Israel and Singapore.<sup>3</sup> The broad nature of the applications of the technology as well as its inherently distributed, internet-based roots have driven the global scope. Entrepreneurs launching companies in the space come from diverse backgrounds. Most are self-taught in the field, which given its nascence, is found sparingly in technology curriculums. Only very recently have select universities begun offering courses on the topic - for example, MIT this year started offering its first course on blockchain technology and cryptocurrencies. Startups focusing on blockchain technology seem to involve entrepreneurs with strong technical backgrounds and many repeat entrepreneurs with experience building technology businesses. While some companies may develop and scale independently, many of the most impactful companies will require capital to grow and venture capitalists will play an important role.



Source: CB Insights; Fairview Analysis

<sup>3</sup> Outlier Ventures Blockchain Startup Tracker



## Adoption of Blockchain by Venture

 Venture capital investment in cryptocurrency and blockchain startups has been accelerating in recent years. In the past three years, there has been a six-fold increase in the total dollars invested by venture capitalists in the space and a tripling of the number of deals.<sup>4</sup> As blockchain technology applications have begun to emerge, venture investment in the space has also shifted towards startups in that category. Rather than investing in companies that may have too much of their business tied to the value of one or more cryptocurrencies, or in an increasingly crowded market for exchanges, many venture capital firms have instead decided to progressively focus on investments where the application of the underlying technology can exploit inefficiencies and disrupt established industries. In the first quarter of 2016, blockchain investments had outnumbered investments in Bitcoin startups by more than five to one - a major shift from 2015 when Bitcoin startups receiving venture investment outnumbered blockchain startups by more than twenty to one.

Given the nascence of the market, the vast majority of investments in the space have historically been seed stage financings - 100% of all venture deals in 2012 and 70% in 2015. In 2016, we began to see breakout companies develop and make the leap to raising larger series A and even B rounds of financing - 26% of investments made during the year were for series A and B rounds.

Investment in the space has been global in scope and has been bolstered by corporate and strategic investors. Each of the five largest deals in 2015 involved corporate investors and the same level of involvement has been observed in 2016. Banks and financial services companies have been the most active investors - either through internal venture capital arms

or through other strategic initiatives. The level of interest from these firms serves as a point of validation of the value and potential of the technology and talent that is being developed in the space. Notable financial services firms active in the space include: Goldman Sachs, MasterCard, American Express, New York Life, Santander and CIBC.

We have also seen the formation of a number of new venture capital firms dedicated to investing specifically in blockchain technology. In some cases, these firms are part of larger organizations investing in or advocating for cryptocurrency and blockchain technology. Examples include Blockchain Capital, Digital Currency Group, and Pantera Capital.

Traditional information technology focused venture capital firms have also been active, though some much more than others. Certain firms have developed a thesis and expertise in the space and have decided to pursue investments under the framework of a theme alongside others in the technology space. These firms have tended to focus increasingly on the application of the technology to verticals they are already familiar with or on companies developing infrastructure and frameworks for the technology to be built out on. Active firms include Khosla Ventures and Lightspeed Venture Partners.

Exits in the form of IPOs and acquisitions involving cryptocurrency and blockchain companies have been limited. Early exit activity is beginning to materialize - 13 exits were recorded in 2015, up from just three in 2014 - but most transactions have been relatively small in scale. Strategic investors, such as financial services firms, have been the most active through acquisitions of emerging companies. Some of this activity can be chalked up to curiosity in a space that could significantly impact their business. There has also been a fair amount of consolidation within the industry as

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<sup>4</sup> CB Insights

startups look to grow through acquisition. Looking ahead, companies in the space must demonstrate their ability to scale and generate meaningful and sustainable business before we can expect major exits.

### Final Thoughts

Blockchain technology today stands at an important inflection point. The technology is more broadly understood, and is being applied by entrepreneurs in ever creative ways, yet the ecosystems around blockchain companies, including cryptocurrencies, is still young. Early hype has somewhat subsided and now the question is not around the potential of the technology but how its applications will be adopted by the market. The dynamic nature of the technology sets it up to potentially disrupt a very wide range of industries.

At Fairview, we have developed exposure to a number of the leading companies in the space, including bitcoin, blockchain and hybrid startups, through diversified portfolios of best in class venture capital firms. These firms have been highly selective in the market, and believe that there is significant potential to be unlocked. Fairview shares in much of this enthusiasm and looks forward to participating in the breakout businesses built on blockchain that might emerge in the near future.

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### Examples of venture capital firms investing in blockchain technology:



#### Blockchain Capital:

The first firm to raise a VC fund dedicated solely to the blockchain ecosystem. The firm has invested in forty-three portfolio companies in the past three years and has even accepted capital calls in Bitcoin. Notable investments include *Bitfury* and *Coinbase*.



#### Khosla Ventures:

Khosla's Bitcoin portfolio includes 21 Inc, a developer of Bitcoin mining chips which has amassed more than \$120 million in startup capital to date, *Blockstream*, a company focused on innovation in sidechains to improve blockchains, *Chain*, the leading blockchain platform for enterprises and *BlockScore*, an identity verification and anti-fraud solution for online transactions.



#### Lightspeed Ventures:

Lightspeed was one of its earliest and most vocal public supporters of Blockchain. The firm made an early investment in Bitcoin-focused incubator Boost VC in 2013. Lightspeed has since made investments in Bitcoin wallet provider *Blockchain*, *BlockScore*, an identity verification and anti-fraud solution for online transactions, *Melotic*, a cryptocurrency technology company and China-based Bitcoin exchange *BTC China*.



#### Pantera Capital:

One of the largest institutional holder of Bitcoins, Pantara is focused exclusively on blockchain technology. The firm seeks to act as a catalyst for widespread blockchain adoption and innovation. Prominent investments include *Bitstamp*, the first nationally regulated Bitcoin exchange and *Chain* an enterprise software company that builds blockchain networks for traditional financial institutions.