

The Investment Case for Blockchain

Executive Summary

Blockchain is the brainchild of a person or group of persons known by the pseudonym Satoshi Nakamoto. First devised for the digital currency Bitcoin, the technology community is now realizing blockchain's potential beyond cryptocurrency for many different use cases across many different industries. The blockchain is heralded as an **incorruptible digital ledger of economic transactions on a distributed peer-to-peer network**.¹ Imagine a shared ledger that is duplicated thousands of times across a network of computers. The information that exists on the ledger is shared and continually reconciled. Because the blockchain ledger is not stored in one location means that the records are **decentralized, public**, and more **easily verifiable**. Hosted by a peer-to-peer network of millions of computers, information on the blockchain is stored in "**blocks**" that are identical across the network, making data and transactions **more transparent** and **less corruptible**, without the need for an intermediary. Blockchain is a mechanism that brings everyone to a higher degree of accountability. The potential of this foundational technology has led many to liken it to the early days of the internet. According to Research and Markets², the global blockchain technology market is expected to grow at a compound annual growth rate (CAGR) of 48.4% by 2023 to a size of \$6 billion. And this figure does not even take into account the mass economic value of blockchain-enabled applications such as cryptocurrency, tokens and initial coin offerings (ICOs). If growth projections prove correct, blockchain represents a huge early-stage opportunity for investors.

A Brief History of Blockchain

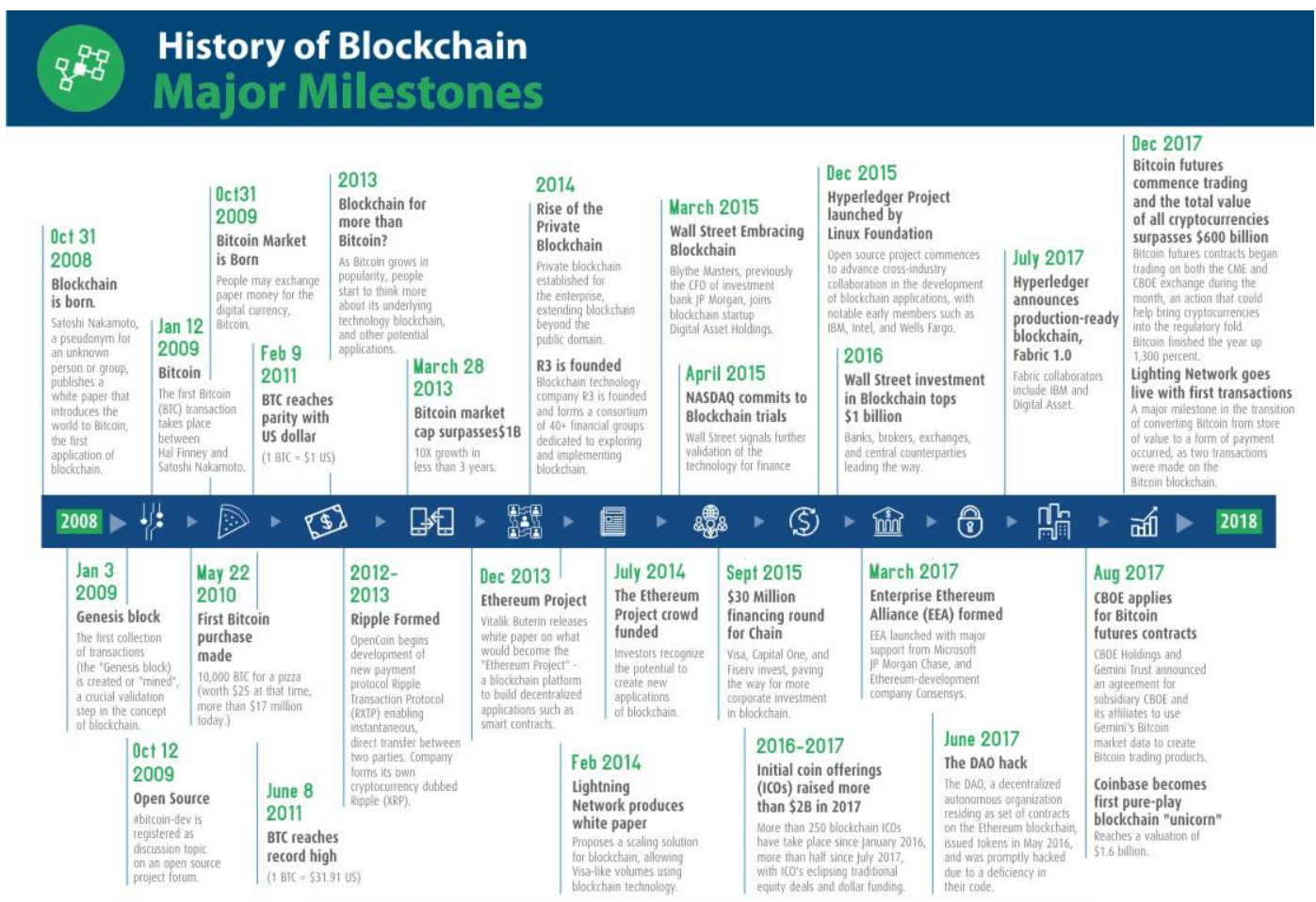
Many of the technologies we now take for granted were quiet revolutions. Think about the extent to which smartphones have changed our lives, creating a mobile nomadic society that is untethered and empowered with information. And the smartphone has only been around a mere decade. Blockchain is another such "quiet revolution," much like smartphones were a decade ago and the Internet was a few decades prior. Consider how blockchain has evolved over the last ten years from a digital currency experiment to the realization that blockchain technology can be utilized for all kinds of inter-organizational cooperation from smart contracts to supply chain to medical research.

¹ Tapscott, Don and Alex, *Blockchain Revolution, How the Technology Behind Bitcoin is Changing Money, Business, and the World*, Portfolio, May 10, 2016.

² Research and Markets, November 22, 2017,

<https://www.businesswire.com/news/home/20171122005212/en/Global-6-Billion-Blockchain-Market-2017-2023-Product>

Here's a brief timeline highlighting some of the major milestones in the history of blockchain.



Sources: GEM, CoinDesk, EQM Indexes LLC, Emerita Capital Indices Inc.

Value Proposition

Certainly, one of the driving forces behind the growth of blockchain is the unique value proposition it provides which is extendable to many business verticals.

The Dynamic Capabilities of Blockchain

The Blockchain economy is fostering innovation and is just beginning to disrupt traditional industries and create new market opportunities. This powerful peer-to-peer technology is made possible by five key attributes:



PUBLIC LEDGER

Nodes maintain ledger entries known as “blocks” and every node can see the transaction data stored in the blocks as it is created.



DECENTRALIZATION

There is no central authority or intermediary required to manage transactions.



SECURE

Database records are immutable and irreversible. Posts to the ledger cannot be revised or tampered with.



TRUSTED

The distributed nature of the network requires computers reach a consensus, thus facilitating transactions between unknown parties.



AUTOMATED

The sophistication of the code prevents conflicting or double transactions. Transactions occur automatically in real time.

Blockchain Disruption

Although still in its nascent stage, blockchain is a foundational technology with the potential to disrupt many different industries over the next five to ten years. As first discussed in an article published by Future Thinkers, “*19 Industries The Blockchain Will Disrupt*”³, here are just a few examples of industries poised for blockchain disruption:

- **Banking and Payments** – Many believe blockchain will democratize banking just as the internet has with media and information. It could give billions of people around the world access to financial services, including those in the Third World without traditional bank accounts. The blockchain could also enable cross-border payments and transactions, that occur instantaneously and for a reasonably low fee.
- **Cyber Security** – Although data on the blockchain is public, the data is verified and encrypted using advanced cryptography techniques. Data is less prone to being hacked or changed without permission.
- **Supply Chain** – The distributed ledger creates a way to monitor items and transactions in the supply chain transparently and securely. It can be used to manage logistics and monitor parts, costs, labor, and even waste and emissions. A more recent application has been in the area of food safety, keeping track of crucial data such as suppliers, how and where food was grown, and who inspected it, giving an accounting from origin to completion.
- **Internet of Things** – The blockchain could facilitate a decentralized network of IoT devices, operating like a public ledger, thus eliminating the need for a center of communications. Devices would communicate with each other, potentially with the assistance of Artificial Intelligence (AI) in order to update software, manage bugs, and monitor energy use.
- **Insurance** – The blockchain could be utilized to verify the many types of data embedded in insurance contracts. So-called “oracles” can be used to integrated real-world data and blockchain smart contracts. The technology is particularly helpful for insurance types requiring inspection. Drones could be deployed to inspect properties, data securely recorded in the blockchain, and then integrated into the insurance contract.
- **Charity** – One of the knocks on charitable contributions is that they often fall prey to corruption or mismanagement. Using the blockchain to track donations, donors can be assured that donations go directly to the intended recipients.

³ “The 19 Industries the Blockchain Will Disrupt,” <http://futurethinkers.org/industries-blockchain-disrupt/>

- **Voting** – The blockchain has the potential to facilitate secure elections, not subject to voter registration and identity fraud and/or the miscounting of ballots. Creating an immutable, public ledger of voting results would be a giant step toward insuring more fair and accurate election results.
- **Healthcare** – One major challenge the healthcare system faces is the lack of a secure platform to store and share medical data and records. This is further complicated by privacy issues. The blockchain could help improve data security and allow medical records to be shared with authorized professionals for the purpose of diagnosis and/or research.
- **Energy** – The energy business is currently a highly centralized industry, requiring intermediaries to facilitate transactions between companies. Energy producers and users cannot transact directly with each other. Blockchain could change that paradigm by enabling peer-to-peer transactions.
- **Media** – The blockchain could be utilized to track the ownership rights and royalties related to music and media. Fans could pay artists directly for content, without involving a record label, studio, or publisher.
- **Retail** – The blockchain could facilitate a retail system not tied to a store or marketplace, but allowing decentralized purchases between buyers and sellers without a middleman. Smart contracts, secure payment, and reputation management could all be provided by the blockchain.
- **Real Estate** – There is much bureaucracy embedded in real estate transactions due to issues such as the lack of transparency, fraud, and mistakes in the public record. The use of blockchain could not only speed up transactions, eliminating the need for paper-based recordkeeping, but could also help with tracking and verifying ownership, ensuring document accuracy, and the secure transfer of assets and property in the transaction.
- **Government** – Imagine a transparent system of government held accountable by the blockchain. Government smart contracts could cut down on bureaucratic inefficiency and prevent corruption. As an example, the country of Dubai is looking to put all its government documents on the blockchain by 2020. Public benefits such as welfare and unemployment could also be managed more efficiently and securely using the blockchain.

Blockchain Market Opportunity

The broad-based potential of blockchain technology across many different industry verticals has driven significant investment into blockchain and its applications, fueling innovation and fostering a growing market opportunity. Investments are being made for public, private, and hybrid consortium blockchain solutions.

Public - The public blockchain that Bitcoin and cryptocurrency operates on is fully decentralized and open to the public, much like the **internet**. Anyone in the world can read, send transactions to, and expect to see them executed if they are valid. The consensus process is also open and decentralized.

Private - A private enterprise blockchain, on the other hand, is shielded by permissions in a closed structure similar to an **intranet** solution. Permissions are central to one organization and read permissions may be restricted.

Consortium - A consortium blockchain is a **hybrid** approach where the consensus process is controlled by a pre-selected set of nodes, such as a consortium of 20 financial institutions, each of which operates a node, requiring that 15 must sign every block for the block to be valid. Some major consortia in existence today are: Hyperledger, the Enterprise Ethereum Alliance, Ripple, and R3.⁴

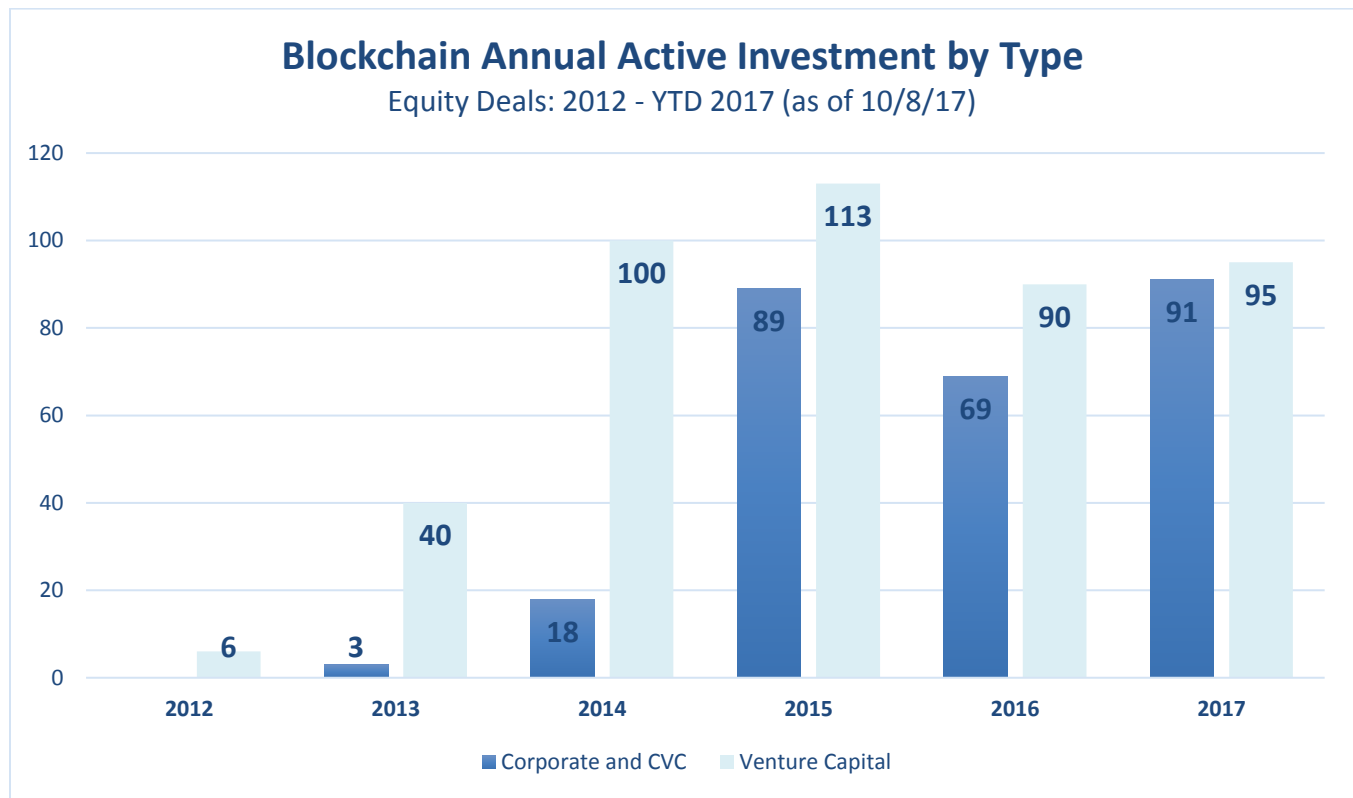
The majority of financial service companies exploring the use of the blockchain are pursuing private or semi-private blockchain solutions. Each approach, public versus private has its distinct features.⁵

	Public	Private
Access	Open read/write access to the database	Permissioned read/write access to the database
Speed	Slower	Faster
Security	Proof-of-Work/Proof-of-Stake	Pre-approved participants
Identity	Anonymous/Pseudonymous	Known identities
Asset	Native assets	Any assets
Costs	Expensive	Cheaper

⁴ CB-Insights, “Blockchain Investment Trends in Review, Q3 2017”.

⁵ Coindesk, “State of Blockchain – Q2 2017”, <https://media.coindesk.com/uploads/research/state-of-blockchain/2017/q2/sob2017q2.pdf>

Corporate investment has primarily steered toward private blockchains and consortiums, but there has also been some investment in public blockchains such as Ethereum. Since 2012, corporates have participated in more than 140 equity investments totaling almost \$1.2 billion. According to data from CB-Insights, the number of active corporate investors stands at 91 YTD in 2017, nearly eclipsing the involvement of venture capital.



Source: CB-Insights, Q3 2107

Corporate and CVC includes diversified financial institutions, investment banks, and commercial banks.

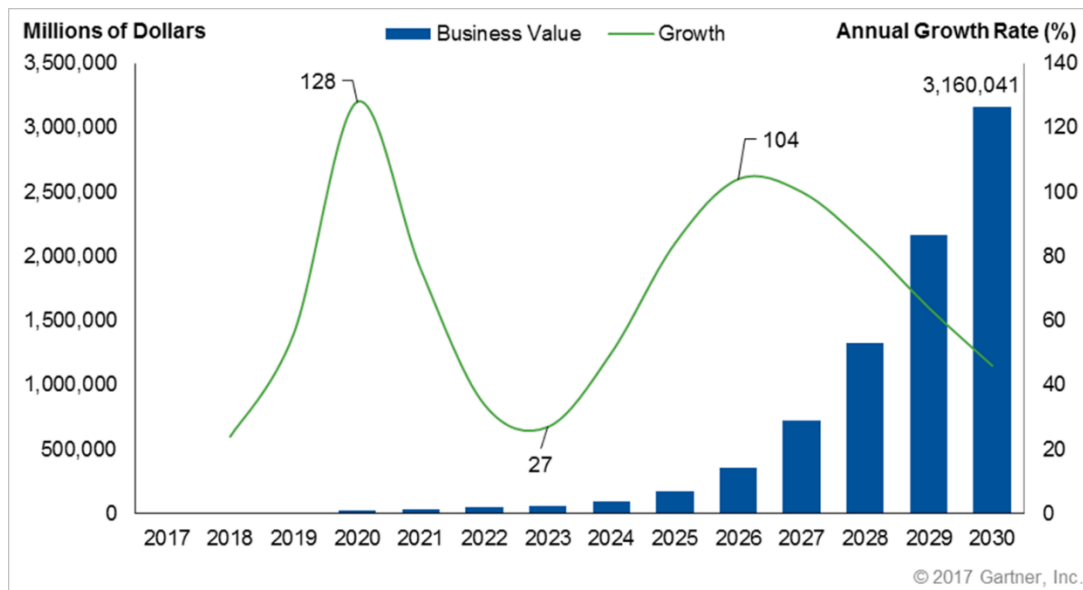
Currently, according to CB-Insights data, some of the most active corporate investors in the blockchain are SBI Holdings (Japan), Google Alphabet, Overstock.com, Citigroup, and Goldman Sachs.

Investment Case for Blockchain

Why are corporate investors investing in the blockchain?

One reason is **cost savings**. A recent report from Goldman Sachs Global Investment Research estimates that the implementation of blockchain technology could streamline the clearing and settlement of cash securities, saving the global capital markets \$6 billion annually.⁶ The report goes on to highlight that blockchain has the potential not only to streamline other existing markets, but to redistribute and create new ones.

Another reason corporate investors are investing in the blockchain is **growth potential**. According to Research and Markets⁷, the global blockchain technology market is expected to grow at a CAGR of 48.4% by 2023 to a size of \$6 billion. And these figures do not even include the market value of blockchain-enabled applications such as cryptocurrency, tokens, and initial coin offerings (ICOs). According to Coinmarketcap.com, the total market value of the cryptocurrency world stood at \$640 billion at year-end 2017. Gartner projects the business value generated by blockchain technology will exceed \$3.1 trillion globally by 2030.⁸



Source: Gartner, March 2017

⁶ Goldman Sachs Global Investment Research, “Profiles in Innovation: Blockchain,” May 24, 2016.

⁷ Research and Markets, November 22, 2017, <https://www.businesswire.com/news/home/20171122005212/en/Global-6-Billion-Blockchain-Market-2017-2023-Product>

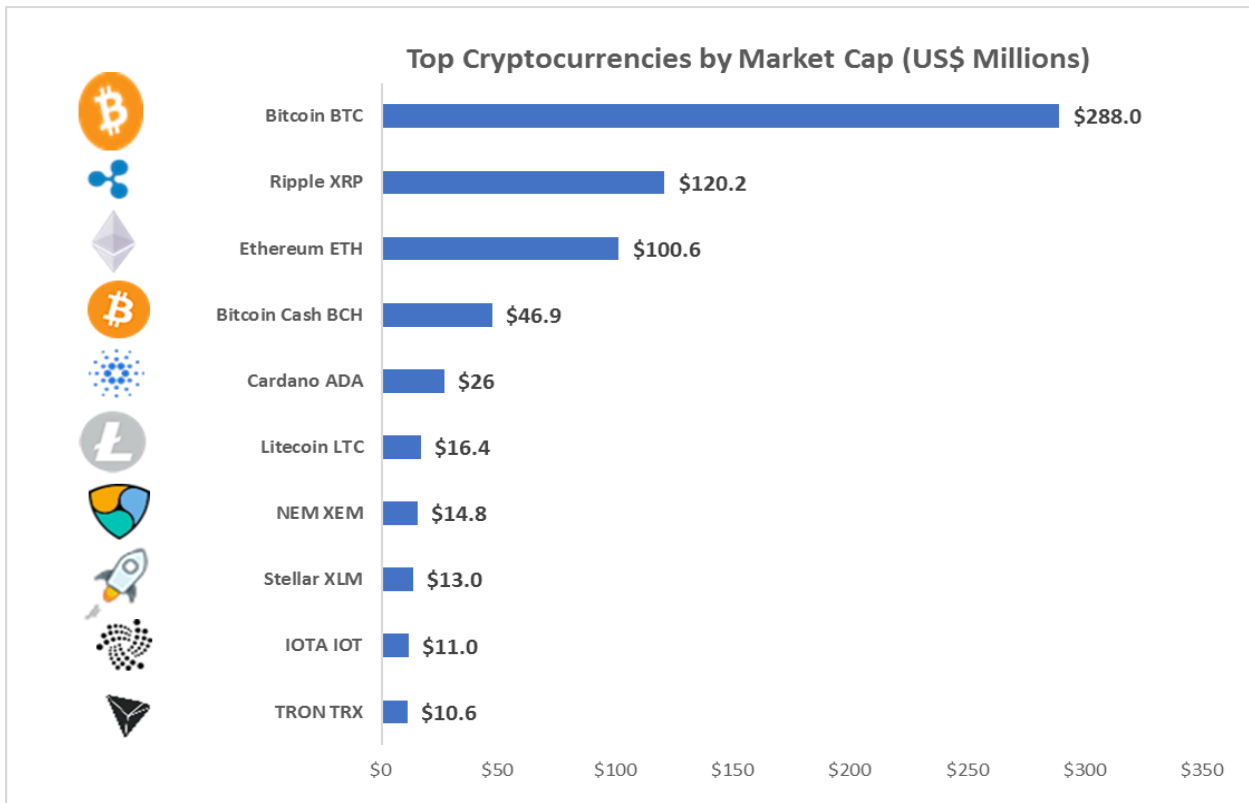
⁸ Furlonger, David and Ray Valdes, March 3, 2017, “Practical Blockchain: A Gartner Trend Insight Report.”

How to Invest in Blockchain

Bitcoin, Cryptocurrency, and ICOs

One way to invest in blockchain technology is through cryptocurrency. Cryptocurrency is a medium of exchange using cryptography to secure transactions and control the creation of new units. Bitcoin became the first decentralized currency in 2009. Since then, numerous cryptocurrencies have been created. One appealing aspect of Bitcoin and other cryptocurrencies is that they are not issued by a government authority and are therefore not subject to central bank devaluation. As of December 31, 2017, there are more than 1381 cryptocurrencies available for purchase over the internet and growing.⁹

Currently, the top 10 cryptocurrencies by market capitalization are as follows:



Source: Coincap, as of 1/6/18

⁹ Wikipedia.org, "List of Cryptocurrencies", 12/31/2017, https://en.wikipedia.org/wiki/List_of_cryptocurrencies

Most investors are familiar with Bitcoin, especially given its huge run-up in value since its launch. In July of 2010, Bitcoin was worth about 8 cents. Today, its value hovers just below \$17,000.¹⁰ But one uncomfortable aspect of owning cryptocurrencies is their price volatility. Furthermore, with so many cryptocurrencies to choose from and limited research on each currency, individual investment is problematic.

“The “killer app” for the early internet was email; it’s *what drove adoption and strengthened the network. Bitcoin is the killer app for the blockchain.*”

— [Harvard Business Review](#)¹¹

Initial coin offerings (ICOs), the sale of tokens or coins offered by blockchain companies, have become a popular way to raise funds as opposed to traditional equity financing. Over 250 blockchain teams have completed ICOs since 2016, with more than 55% raising during or after July of 2017 thanks to the run up in the value of Bitcoin and Ether.¹² Year-to-date (YTD), according to CB-Insights, ICOs have closed more than \$2 billion in funding, despite the fact they are unregulated and quite speculative. In lieu of a prospectus, investors often rely only on a white paper and as is the case with any early-stage financing, many of these companies will fail.

¹⁰ Coincap, as of 1/6/18.

¹¹ Joichi Ito, Neha Narula, Robleh Ail, “The Blockchain Will Do To the Financial System What Internet Did to Media,” Harvard Business Review, March 9, 2017, <https://hbr.org/2017/03/the-blockchain-will-do-to-banks-and-law-firms-what-the-internet-did-to-media>

¹² CB-Insights, “Blockchain Investment Trends in Review, Q3 2017”.

Investing Directly in Blockchain Companies

There are few public companies focused exclusively on blockchain technologies and the majority fall into the category of “penny stocks” with small market caps, share prices below \$3, and limited volume and liquidity. Like cryptocurrency, investment in these companies is highly speculative. There are however, larger publicly traded companies that offer indirect exposure to growth in the blockchain given their direct investment and commitment to the technology.

The **EQM-Emerita Blockchain BLOK 50 Global Index** consists of the top 50 leading public players in Blockchain identified using the following criteria to select constituents:

1. Companies actively engaged in the research and development, proof-of-concept testing, and/or implementation of blockchain technology.
2. Companies profiting from the demand for blockchain-based applications such as cryptocurrency and mining.
3. Companies partnering with and/or directly investing in companies that are actively engaged in the development and/or or use of blockchain technology.
4. Member of multiple consortiums or groups dedicated to the exploration of blockchain technology use.

Some of the **Global Blockchain Leaders** represented in the Index are companies such as:

SBI Holdings – Strategic Business Innovator Holdings is a Japan-based financial services company. It is one of the largest public investors in blockchain. It owns 11% of blockchain payment company Ripple and established Ripple Asia. It also has investments in blockchain startups Orb, Veem, bitFlyer, Coinplug, Omise, and the consortium R3.

Overstock.com – The online retailer has developed a blockchain-focused division of the company called Medici Ventures. The unit’s majority owned subsidiary tZero has emerged as a leading player in applying blockchain technology to trading stocks and digital coins. The company also has direct investments in blockchain startups Settlemint, Factom, Ripio, Bitt, and PeerNova.

Taiwan Semiconductor – The world’s largest independent semiconductor foundry announced it derived 13% of its revenues in the third quarter, equating to more than \$1 billion, from demand associated with cryptocurrency mining activity. Cryptocurrency mining relies heavily on networks of powerful GPUs (graphic processing units) and ASICs (application specific integrated circuits) to solve the calculations necessary to verify transactions on the blockchain.

The Index offers exposure to the companies who are believed to be the 50 leaders in the blockchain industry, playing a leadership role in blockchain technology, blockchain research initiatives, blockchain revenue creation and/or blockchain application usage.

Conclusion

Investment in the Blockchain is likely an early-stage opportunity with the potential and a scope as broad as the Internet. Blockchain technology holds the potential to streamline, disrupt, and transform many industries. It is no wonder then that corporations are actively investing in the development of the blockchain and its applications. Beyond the hype and buzzwords, there is a silent revolution underway that is still in its infancy, creating a huge investment opportunity for those that recognize the growth potential of blockchain and its far-reaching implications. As with any disruptive technology, there will be winners and losers along the way, requiring successful investors to be adroitly positioned, stay well informed, and remain broadly diversified. Beyond its value as an investment opportunity, blockchain holds the opportunity for dynamic and permanent social transformation.

“Blockchain, or distributed ledger technology, could soon give rise to a new era of the Internet, even more disruptive and transformative than the current one. Blockchain’s ability to generate unprecedented opportunities to create and transform value in society will lead to a generational shift in the Internet’s evolution, from an Internet of Information to a new generation Internet of Value.” –

World Economic Forum¹³

¹³ “Realizing the Potential of Blockchain – A Multistakeholder Approach to the Stewardship of Blockchain and Cryptocurrencies, World Economic Forum, June 2017, http://www3.weforum.org/docs/WEF_Realizing_Potential_Blockchain.pdf

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EQM Indexes LLC is a woman-owned firm dedicated to creating and supporting innovative indexes that track growth industries and emerging investment themes. Co-founded by Jane Edmondson, a former Institutional Portfolio Manager with more than 25 years in the investment industry, our index design expertise spans a wide range of asset classes and financial instruments.

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Definitions

Blockchain – Is a continuously growing distributed ledger of transactions, called blocks, which are linked and secured using cryptography.

Cryptocurrency – Is a digital asset designed to function as a medium of exchange that uses cryptography to secure its transactions, to control the creation of additional units, and to verify the transfer of assets.