

Research Paper

Cryptocurrency Q&A

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With cryptocurrencies' meteoric rise, most notably bitcoin since late 2013, many investors questioned whether cryptocurrencies should be considered a distinct and prudent asset class. Today, the non-physical and encrypted online currency is categorized as both a unit of exchange and as a store of value. However, despite its shared characteristics with other common asset classes and its price appreciation of more than 120,000% over the last 5 years, many unique risk factors including volatility, future viability and regulatory uncertainty prove to be a headwind for potential long-term investors.¹

This Q&A provides a high level introduction to the function of cryptocurrencies, the premise for the dramatic increase in price and why we believe they should not be considered as a viable and investable asset class.

Q: What is a cryptocurrency?

A: Cryptocurrency is a digital currency that uses encryption and a public ledger to verify transactions. Unlike traditional fiat currencies like the dollar or yen, the currency is not regulated by a government and has no single party responsible for implementation or monitoring. However, this is part of the appeal of cryptocurrency, given its independence from government manipulation or impediment to transactions. Popular cryptocurrencies include, but are not limited to: bitcoin, ripple and ethereum. There are more than 1,200 cryptocurrencies available today and have an estimated total market cap of over \$450 billion with more currencies being created daily.²

Q: How can I own / trade bitcoin?

A: Bitcoins are “mined” similar to mining for gold, however, since the currency is not a physical product, the mining comes in the form of solving complex mathematical proofs. When the proofs are solved the “miner” is rewarded with bitcoin and the value is determined by the current exchange rate, just as the miner of gold would be after removing the element from the ground. As more participants (e.g. miners) enter this winner-

¹ Coindesk. “Bitcoin Price Index - Real-Time Bitcoin Price Charts.” CoinDesk, 6 Sept. 2017, www.coindesk.com/price/

² Cryptocurrency Market Capitalization. “CryptoCurrency Market Capitalizations | CoinMarketCap.” All CryptoCurrencies, 6 Sept. 2017, coinmarketcap.com/all/views/all

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take-all competitive landscape, the proofs become more difficult to solve and consequentially more difficult to extract. This concept helps self-regulate the amount of currency in the system. With nearly 80% of the total bitcoin supply already mined³ and the cryptocurrency as popular as ever, investors are looking for alternative ways to gain exposure without investing in expensive computing systems. There are several avenues today to directly or indirectly invest in bitcoin including a closed-end fund (The Bitcoin Investment Trust (OTC:GBTC)), bitcoin exchanges (Coinbase, Bitstamp, etc.) and even options and forwards contracts (LedgerX, CBOE, etc.). A few core problems persist through each of these platform options including dramatic premiums to the net asset value, low liquidity leading to large bid-ask spreads and network hacks.

GBTC was one of the first financial products available to retail investors that wanted to gain exposure to bitcoin without the complexity of mining or liability of possessing the digital asset. The first mover advantage for GBTC allows it to consistently trade at a premium to NAV, ranging from a 3% to 130% premium over the past 2 years. With the introduction of bitcoin futures, the fund is increasingly likely to experience a precipitous drop in share price that would eliminate the large premium. In addition, GBTC's expense ratio is 2%, making it an expensive way to gain exposure to the asset class.⁴

The Chicago Board Options Exchange (CBOE) officially launched bitcoin futures on December 10th, 2017, while the CME Group debuted their contracts less than a week later. Shortly after the CBOE's launch, a spike in volatility triggered a five-minute trading halt after a 20% price surge⁵. While the financial derivative is a step forward for the asset class as a whole, the spotlight on bitcoin has derailed the cryptocurrency from their original purpose – sending large and small amounts of money anywhere in the world at little to no fee⁶. This consequence is directly attributable to the number of miners and processing power at their disposal. At the current growth rate, bitcoin mining is estimated to consume the same amount of energy as the entire United States by 2019.⁷

Many brokerage services, including TD Ameritrade and E*Trade, are embracing the CBOE's bitcoin futures contracts. To be eligible on TD's platform, an account must be approved for futures trading, which is a rather simple process requiring margin privileges and options approval. The platform margin requirement is 1.5 times higher than the CBOE's, requiring investors to post 44% of total contract value. Additionally, a minimum account value of \$25,000 is required to trade the futures contracts. In contrast, TD Ameritrade requires a 30% margin and \$2,000 in cash or eligible securities to trade on margin in the equity market. Both contracts offered by the CBOE and CME are non-deliverable, cash settled contracts. The contracts have

³ 2x Countdown. (n.d.). Retrieved January 11, 2018, from <https://bashco.github.io/>

⁴ <https://grayscale.co/bitcoin-investment-trust/>

⁵ Ahmed, S. I. (2017, December 10). Bitcoin futures start trading on CBOE exchange. Retrieved December 15, 2017, from <https://www.reuters.com/article/uk-bitcoin-futures-cboe/bitcoin-futures-start-trading-on-cboe-exchange-idUSKBN1E40XR>

⁶ BitInfoCharts. (2017, December 15). Retrieved December 15, 2017, from <https://bitinfocharts.com/comparison/bitcoin-transactionfees.html#6m>

⁷ Ahmed, S. I. (2017, December 10). Bitcoin futures start trading on CBOE exchange. Retrieved December 15, 2017, from <https://www.reuters.com/article/uk-bitcoin-futures-cboe/bitcoin-futures-start-trading-on-cboe-exchange-idUSKBN1E40XR>

subtle differences which are outlined below.

Bitcoin Futures Comparison		
	CBOE Bitcoin Futures	CME Bitcoin Futures
Symbol	/XBT	/BTC
Contract Size	1 bitcoin	5 bitcoins
Tick Size	\$10 per bitcoin	\$5 per bitcoin = \$25 per contract
Underlying Spot Price	Gemini exchange auction price	CME Bitcoin Reference Rate (BRR) BRR is based on pricing data from several exchanges and trading platforms including Bitstamp and GDAX
Settlement	Cash settled, exchange not possible	Cash settled, exchange not possible
Exchange Margin Requirement	44% of total contract value	47% of total contract value

Source: CBOE & CME contracts

Out of all the options to gain exposure to the asset class, the futures markets represents the best option for several reasons. First, the non-deliverable trait specified in the contract allows market participants to gain exposure without idiosyncratic exchange hacks, secure storing of the digital asset and smaller spreads than those offered on cryptocurrency exchanges mentioned above.

Currently there is not an ETF or active management strategy available through a mutual fund vehicle, though some hedge funds have announced active positions and intentions to trade within the space. We believe it is very likely that the SEC will approve a bitcoin ETF application in 2018 using futures contracts as the underlying asset. Our prediction is attributable to an asset that can be easily transferred to market participants and has a clear and relatively liquid market, unlike the over-the-counter market environment in the past.

Q: What determines cryptocurrency exchange rate?

A: Like any asset, supply and demand determine price. The key difference between a fiat currency and a cryptocurrency is in the factors backing supply and demand. On the demand side of the equation, the drivers for both the USD and bitcoin are similar and include interest rates and trust in the currency (ability to transact with it in the future). The supply side is much different. For fiat currency, the centralized government authority has the ability to affect supply by printing more dollars and supplying them to the market.

With bitcoin and other cryptocurrencies there is no central authority to impact supply, rather, there is a formula that allows a fixed quantity to be created over time. Eliminating market manipulation factors was a founding principle of bitcoin's creation and propelled users to adapt the platform where a third party was incapable of manipulating the market. Said another way, a large portion of the trust in bitcoin was developed by a distrust in central banks.

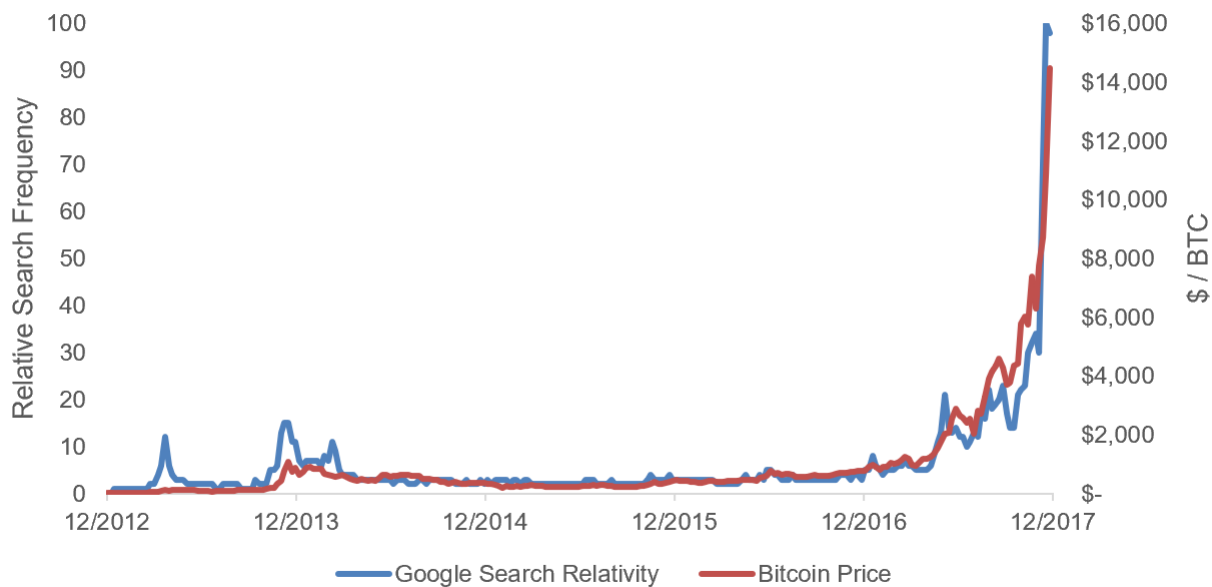
Q: What type of investors own bitcoin?

A: Dating back to the asset’s inception, cryptocurrencies were used to facilitate online transactions for both legal and illicit goods and services including pizzas, cars, guns and website design. Cryptocurrencies were seen as a way to facilitate trade quickly and easily while simultaneously evading regulations.

As cryptocurrencies are now a household term, investors including hedge funds, mining companies and retail investors may choose a buy-and-hold strategy. While several hedge funds recently announced positions in either the digital asset or futures contracts, retail investors appear to be leading the charge.

A Google search trend analysis reveals a large rush into bitcoin by retail investors. Viewing “bitcoin” relative searches on Google Trends shows a 93.1% correlation to bitcoin’s price over the past 5 years. Future bitcoin exchange rates will be determined by the behavior of the largest owners of the digital asset and how they view the offerings and viability of competing cryptocurrencies. The retail driven demand and anonymous concentration in ownership should be an immediate red flag for potential investors.

Google "Bitcoin" Searches and Bitcoin Price



Source: Bloomberg & Google Trends

The previous chart depicts relative search trends on Google for “Bitcoin” with 0 representing the least amount of times over the specified time period and 100 being the most times searched. The search term and price of the asset moving almost in lockstep depicts an interesting correlation. The relationship portrays retail investors rushing to gain exposure in bitcoin hoping to get rich in short order.

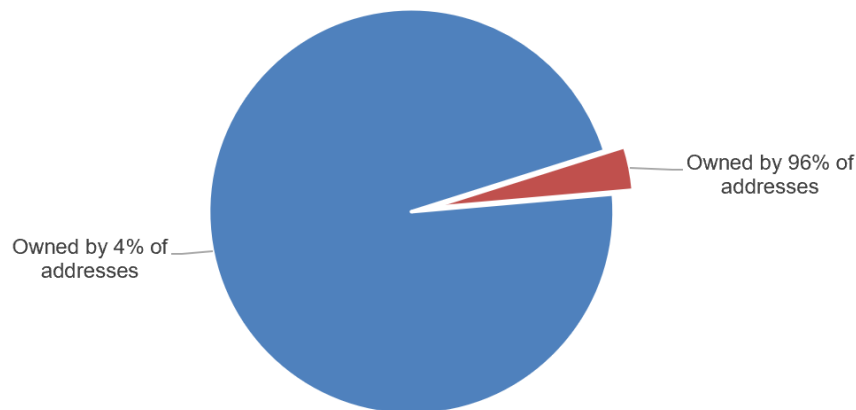
Q: How many investors own bitcoin?

A: Given the embryonic stage of cryptocurrencies and lack of institutional ownership from larger investors, ownership ordered by IP addresses provided by bitinfocharts.com highlights the extreme concentration in ownership. The vast majority of ownership falls to larger mining operations and original investors in the space. It is estimated that nearly 96% of all bitcoins in circulation are owned by approximately 4% of investors; furthermore, 1% of investors control roughly 50% of the market.^{8,9} With retail investors leading the charge in a thinly traded market, bitcoin's exchange rate has appreciated exponentially. The concentrated ownership relationship in bitcoin is similar to a stock that is closely held by founders and large institutions. The shares outstanding seems large, but float is relatively small, leaving the actual supply in the market significantly lower than the total number of shares would imply. Consequentially, large buy and sell orders would cause the price of the stock to swing violently to balance supply and demand.

When all bitcoins are eventually mined (projected to happen in 2140), there will be ~21 million total bitcoins available. Today, around 80% of all bitcoins that can ever be in existence have been mined.³

While the concentrated owners inherently remain anonymous, it is likely that miners and early adopters own the majority of bitcoin outstanding. A popularity shift to another cryptocurrency could force miners to shift operations and liquidate their holdings, consequentially driving the exchange rate down.

Bitcoin Outstanding as of 9/12/2017



Source: bitcoinprivacy.net, bitinfocharts.com

⁸ Amoros, R. (2017, September 18). This Chart Reveals the Centralization of Bitcoin Wealth. Retrieved December 15, 2017, from <https://howmuch.net/articles/bitcoin-wealth-distribution>

⁹ BitInfoCharts." Top 100 Richest Bitcoin Addresses and Bitcoin distribution, 5 Dec. 2017, bitinfocharts.com/top-100-richest-bitcoin-addresses.html

By comparison, the total amount of gold above the ground is estimated to be 165,000 metric tons and an estimated 17% is owned by central banks. Another 18% of gold is owned for investment purposes while 51% is held as jewelry¹⁰. The many uses of gold (technology, jewelry, investment, etc.) inherently make gold ownership diluted and spread out around the world. This is in stark contrast to the concentrated ownership of bitcoin and poses a headwind if any large holders sell.

Q: How should bitcoin be classified?

A: Bitcoin strives to be a currency, used to facilitate transactions and be a medium of exchange for users around the world. However, ease of use and broad acceptance of bitcoin as a unit of exchange remain major headwinds. Bitcoin transactions take around 10 minutes to be approved and have minimal exchange rate stability. Does this make bitcoin a commodity? While bitcoin shares similar supply and demand characteristics to commodities, U.S. regulatory bodies cannot agree on a classification today. Bitcoin is classified as property by the Internal Revenue Service (IRS), a commodity by the Commodity Futures Trading Commission (CFTC) and a currency by the Financial Crimes Enforcement Network (FinCEN).

With many possible uses, bitcoin continues to drift away from a reliable medium of exchange or store of wealth. Due to the unique characteristics and distinct traditional asset classifications, cryptocurrencies remain in a gray area of consensus classification.

Q: What is the volatility associated with bitcoin?

A: The figure below shows bitcoin's volatility relative to other asset classes. Volatility, often used as a gauge of the associated risk of an asset's returns, show that bitcoin has substantially more variability than other asset classes.

Annualized Return Volatility						
	2012	2013	2014	2015	2016	2017
Bitcoin / \$	68.94%	164.82%	80.49%	60.20%	43.73%	86.78%
€ / \$	8.12%	7.25%	6.13%	12.03%	8.13%	7.28%
Gold / \$	14.52%	21.13%	14.39%	13.61%	15.47%	9.98%
MSCI Emerging Markets Index	14.37%	13.18%	11.06%	15.90%	16.79%	9.23%
S&P 500 Index	13.07%	11.05%	11.35%	15.46%	13.07%	6.67%

Source: Bloomberg

¹⁰ The Gold Tree. (n.d.). Retrieved December 18, 2017, from <https://www.trustablegold.com/infographics/the-gold-tree-infographic.jpg> Trustablegold.com Addtl. Sources: U.S. Geological Survey, GFMS, World Gold Council, Trustable Gold

The majority of this volatility occurred to the upside, clearly evident in the past performance, but the associated volatility also occurred to the downside. One of the best examples of the limited downside protection occurred when China's largest bitcoin exchange stopped accepting Chinese yuan deposits, with the quoted price of bitcoin dropping nearly 50% overnight¹¹. These violent and unanticipated price swings are one of our primary concerns for investors that are considering entering the asset class.

Q: Why is bitcoin associated with the black market and other illicit activities? Can public perception be changed?

A: A driving force in the bitcoin exchange rate appreciation in 2011 was the growth of Silk Road, an online black market. The website facilitated illicit transactions across the globe by digitally connecting criminals. As the U.S. government finally brought down the site and its founder in 2013, the senate held a hearing on the virtual currency titled, "Beyond Silk Road: Potential Risks, Threats, and Promises of Virtual Currencies". With a very modest tone to the hearing, bitcoin's value surged over 50% in the following 10 days.¹²

In short, this is not an association that is likely to be shed soon. Bitcoin has historically and continues to be associated with these activities given the inherent properties as an anonymous and secure platform. The platform allows transaction recipients to never have their account assets seized due to complexities of pinpointing a precise location (web address) where the assets are actually stored. Shaking that reputation continues to be an uphill battle and without further improvements in transaction time and merchant acceptance, bitcoin may never be publicly accepted and will fail to be seen in the positive and trusted light that the majority of fiat currencies receive.

Q: What is the future of cryptocurrencies?

A: As headlines continue to center around the appreciation in bitcoin, cryptocurrencies continue to strive for everyday viability. The shortcomings of bitcoin's code have given rise to many other competing cryptocurrencies that hope to capitalize on bitcoin's weaknesses. Cryptocurrencies such as ethereum, ripple, and litecoin all have similarities and differences to the original cryptocurrency, bitcoin. While bitcoin is the mainstream cryptocurrency and attracts the majority of investor capital in the space, any shift in popularity to a competing cryptocurrency could spur a precipitous drop in bitcoin's intrinsic value.

The largest technological advance supporting all cryptocurrencies, the blockchain, has sparked interest from many businesses and industries that see viability in the technology and hope to implement it to facilitate

¹¹ Hern, Alex. "Bitcoin Plummets as China's Largest Exchange Blocks New Deposits." The Guardian, Guardian News and Media, 18 Dec. 2013. Web. 01 Sept. 2017, www.theguardian.com/technology/2013/dec/18/bitcoin-plummets-china-payment-processors-digital-cryptocurrency

¹² Phillips, John, and Matt Clinch. "Bitcoin Hits \$750, up 107% in a Week." CNBC. CNBC, 24 Apr. 2014. Web. 01 Sept. 2017, <https://www.cnbc.com/2013/11/18/bitcoin-surges-24-to-new-high-as-popularity-grows.html>

transactions in a more cost-effective manner. With businesses vying for market share in extremely competitive markets, we continue to see the exploration and adaptation of the technology for businesses to become cost leaders.

Q: What is the blockchain and what other industries could implement this technology?

A: The blockchain in its simplest context is a public ledger of all transactions that have occurred for a specific asset. Unlike a company's transaction ledger that would be internal and audited by a third party accounting firm, the blockchain is publicly available and record kept and verified by all market participants. The public ledger and validation process has many benefits in contrast to old accounting systems including decreased probability of corruption and fraud, evading intermediaries and supported liquidity.

To explain a blockchain transaction the parties involved would include a buyer (using bitcoin as the currency), a seller (receiving bitcoin in exchange for a good or service) and many computers (nodes). The buyer and seller could be completely anonymous to each other and complete the transaction online to protect identities. As the buyer decides to send his bitcoin to the seller, the transaction would be broadcasted to all nodes on the network as independent addresses then the nodes would validate the transaction and user status by solving an algorithm. Once validated, that block would build upon past transactions on the ledger and permanently stay there as a part of the public ledger. The value add in the technology proves to be the community serving as an auditor and taking out intermediaries in the transaction process.

The blockchain technology can be applied to an endless amount of industries and its use is expected to grow. For example, this technology could be used in smart contracts to verify conditions on both sides have been met, corporate governance to improve transparency, supply chain progress to ensure the quality of inputs, the energy grid to sell unused renewable energy from house to house without the need for a utility company and even by regulatory agencies.

Q: As a fiduciary, are bitcoins and more broadly cryptocurrencies, an investable asset class?

A: In their present form, cryptocurrencies are not an investable asset class. The elevated volatility, lack of merchant acceptance, uncertainty in future regulation and explicit ties to illicit activities collectively skew the risk-return dynamic of cryptocurrencies unfavorably for investors. A herd mentality has made many early adopters of the technology rich but, as a fiduciary, it would be nearly impossible to convey the asset class as a good fit for a client's portfolio.

Bitcoin's technological advances, most notably the blockchain, show application in countless industries and could revolutionize the way many do business. On the contrary, bitcoin was originally intended to be a medium of exchange that enabled users to send small or large amounts of a globally accepted currency

around the world with nearly no transaction fees. With so many participants attempting to verify transactions on the blockchain fees have skyrocketed and made the initial claim meaningless.

Others argue that bitcoin represents a safe haven asset, like gold, that can be used as a store of wealth in geopolitical crises. With countless examples, some of which stated throughout this Q&A, it is clear that bitcoin's concentration of ownership and elevated levels of volatility do not pass tests that qualify it as a store of wealth.

As a new phenomenon, cryptocurrencies have caught the attention of many investors. However, bitcoin and other cryptocurrencies remain highly skeptical and due to the amount of mainstream attention to the asset class have moved further from their initial intended purpose. As new investment options appear sporadically, there are often more questions than answers. Currently, we do not believe this is a viable asset class for investors in their portfolio. However, as more questions turn to answers we will continue to review these investments options over time, as we do with all asset classes, for their potential inclusion in a portfolio.

For further information and assistance, please contact any of the professionals at Fiducient Advisors.

About the Author



Michael researches and performs operational due diligence on traditional investment managers and is member of the firm's Global Public Markets Group. Michael joined Fiducient Advisors in 2017. He received a BA in Finance from Michigan State University and is a CFA Level I Candidate in the CFA Program. In his free time, Michael enjoys exercising, traveling and supports all Detroit sports teams.

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