A New Asset Class in the Making

THE RISE OF B̅I̅T̅C̅O̅I̅N

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Bitcoin has gradually entered the financial media spotlight in recent years. A combination of the technological novelty of digital currencies and their increasing adoption as a means of payment and investment, has significantly increased investor interest in the cryptocurrencies.

Cryptocurrencies are becoming accepted as a new, innovative, and possibly very disruptive asset class. For perspective, only six major asset classes have been created since the first, 8,000 years ago. The revolutionary aspects of digital currencies are only starting to be explored and Bitcoin currently holds the largest market capitalization of over 1,200 cryptocurrencies in existence. In this white paper, one can find answers to these important questions:

• Are digital currencies a new asset class?
• Does Bitcoin correlate to any other asset class?
• What is Bitcoin’s largest advantage and disadvantage as an asset class?
• Are there financial industry cryptocurrency investment vehicles besides the currency itself?
• Do governments recognize or regulate these digital currencies?
• Is it time to consider Bitcoin as a potential asset class for portfolio allocation?
Before delving into the specific nature of Bitcoin as a potential asset class, it is worth reiterating its most important and specific features.

• It is not issued, like a normal currency, by a central bank. Rather, it is a decentralized peer-to-peer payment system. There are no bank accounts but rather online digital “wallets” where bitcoins are kept.

• Unlike fiat currencies, bitcoins cannot be arbitrarily issued. They have to be “mined” into existence, meaning software has to be used to perform the calculations that unlock a subsequent “block” of new bitcoins. Due to technical software specifications, the maximum mathematical number of possible bitcoins is fixed at 21 million, a level expected to be reached by 2140.

• It is entirely digital and without a physical or tangible format.

• It does not rely on existing financial infrastructure for transactions. Bitcoins instead rely on the blockchain, namely a decentralized database composed of many computers that maintain a shared public ledger of all transactions.

• It has low fees when used for remittance/fund transfer purposes. This is estimated to be approximately 1.00% per transfer, compared to the average of 7.45% calculated by the World Bank in 2016.¹

The combination of these characteristics makes bitcoin a hybrid financial instrument, incorporating both the characteristics of a fiat currency and a commodity — namely a lack of intrinsic value (currency) accompanied by inherent scarcity and non-centrality (commodity).²

These characteristics have also led many financial observers to ponder whether bitcoin constitutes a de facto new asset class. Academic definitions of asset class define it as a collection of financial investments that:

• Have a similar risk and return characteristic;

• Have in common a series of major economic factors that influence the value of the asset class and, as a result, highly correlate with the returns of each member included in the asset class.³

Alternatively, an asset class is also defined as such “simply because the managers of these assets promote them as an asset class.”⁴

If these two definitions are assumed to be correct, can Bitcoin be called an asset class?

³ Baur et al., “Bitcoin,” 2
⁴ Wiley Online Library, accessed August, 9, 2017, http://onlinelibrary.wiley.com/doi/10.1002/9781118656761.app1/asset/app1.pdf;jsessionid=4DCE46BBCB416DFD62DEB17AC2D6BB.46463v1?tx=a676c478e=abc06f8b77a35c6fa8e4d72351a88ce694c36b#systemMessage=Wiley+Online+Library+will+be+unavailable+on+Saturday+12th+August+at+3%3A00+EDT+%2B%2F+8%3A00+BST+%2B%2F+12%3A00+IST+%2B%2F+15%3A00+SGT+for+4+hours+for+essential+maintenance.+Apologies+for+the+inconvenience.
Although there are more than 1,200, albeit lesser known, digital currencies in circulation, Bitcoin has a significant lead regarding total value, use, and name recognition. Up-and-coming digital currencies, particularly Ethereum and Ripple, have also seen their price significantly appreciate in 2017. While bitcoin is up over 1,500% year-to-date as of December 2017, Ethereum has increased 3,262% and Ripple over 500%. Similar to returns, volatility is very significant in all cryptocurrencies.

In the second case, bitcoin is now being openly promoted as an investment instrument by a variety of financial institutions. The creation of investment funds such as the Greyscale Bitcoin Investment Trust (OTCMKTS:GBTC), and the many proposals to create bitcoin ETFs, testify to a strong interest in the financial community to promote bitcoin as an asset class. Part of this interest, undoubtedly, is a result of the price performance of bitcoin itself.

Since the day of the first-ever bitcoin transaction (January 9, 2009) to the present day, the price increase of bitcoin has been extremely significant. After consistent price tracking was established around the $0.01 level in the spring of 2010, the price subsequently reached dollar parity in February 2011. Prices since have continued to rise, often accompanied by extreme volatility, reaching an all-time high of over $15,000 USD in December 2017.

**CAN BITCOIN BE CALLED AN ASSET CLASS?**

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**Bitcoin Appreciation rates**

During the period of August 2012 to August 2017, bitcoin cumulatively appreciated by more than 3,000%. This compares to returns of 74% and -22% for the S&P 500 and gold, respectively, over the same period. Bitcoin has appreciated at a compounded annual growth rate of 286% from 2011 to 2016. What are the implications of this performance on Bitcoin’s position in the asset class universe?
THE HISTORY OF MONEY

11000BC
In China people started using small replicas of goods cast in bronze. (source)

9000BC
Bartering was first recorded in Egypt. Early man would barter goods they had in surplus for ones they lacked. (source)

4000BC
Commodity-based money and markets began when Sumerians first used clay tokens sealed in a clay vessel, then clay writing tablets represent the amount - for example, the number of goats, to be delivered. (source)

1290BC
Marco Polo’s travels to China introduced idea of paper money to Europe. (source)

600BC
First official currency minted in Lydia (modern day Turkey) (source)

334BC
Alexander the Great’s defeat of the Persians introduces the concept of acquisition of real estate. (source)

2009
Bitcoin released, with Satoshi Nakamoto mining the first block of bitcoins ever (known as the genesis block), which had a reward of 50 bitcoins. (source)

2008
European banks began offering Mobile Banking with primitive smart phones. (source)

1999
John Biggins invented the “Charge-it” card, the first credit card invented. (source)

1946
Western Union spearheaded e-money with electronic fund transfer via telegram. (source)

1860
The first ever bond issued by a national government issued by the Bank of England to raise money to fund a war against France. (source)

1694
Packaging company Stora Enso, still in existence today, is derived from the oldest known limited company, and issued the first recorded example of a share certificate in 1288. (source)

1288
Bartering was first recorded in Egypt. Early man would barter goods they had in surplus for ones they lacked. (source)

0000BC

The first striking feature of bitcoin's price performance since 2012 has been its extremely low correlation to all other asset classes and investments. The chart below shows the correlation of bitcoin versus a selection of major asset classes from 2011 to 2016. A continuation of such a characteristic would make bitcoin a potentially valuable element in increasing diversification and reducing the risk within an investment portfolio.

*Figure 1: Bitcoin Correlation Table*

**CORRELATION TABLE**

<table>
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<th></th>
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<tbody>
<tr>
<td>S&amp;P 500</td>
<td></td>
<td>-0.67</td>
<td>0.35</td>
<td>0.48</td>
<td>0.87</td>
<td>0.73</td>
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<td>-0.52</td>
<td>0.57</td>
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<td></td>
<td>-0.51</td>
<td>-0.39</td>
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<tr>
<td>Gold</td>
<td>0.48</td>
<td>0.53</td>
<td>-0.51</td>
<td>0.45</td>
<td>0.45</td>
<td>0.52</td>
</tr>
<tr>
<td>US Real Estate</td>
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<td>-0.39</td>
<td>0.45</td>
<td>0.63</td>
<td>0.74</td>
</tr>
<tr>
<td>Oil</td>
<td>0.73</td>
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<td>-0.37</td>
<td>0.52</td>
<td>0.63</td>
<td>0.63</td>
</tr>
<tr>
<td>Emerging Market Currencies</td>
<td>0.83</td>
<td>0.57</td>
<td>0.27</td>
<td>0.62</td>
<td>0.74</td>
<td>0.63</td>
</tr>
</tbody>
</table>

Low correlation (-0.4 to 0.4)  Mid correlation (absolute value 0.4 to 0.666)  High correlation (absolute value > 0.666)

Numbers in the table were chosen based on the maximum “absolute value” one-year rolling correlation that paired assets displayed since 2011.

*source: ARK Investment Management LLC & Coinbase, data sourced from Bloomberg and CoinDesk BPI*

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11Burniske and White, “Ringing the Bell,” 16.
This is still the case even when considering the significant volatility bitcoin has experienced while producing this performance. The Sharpe ratio (which measures the ratio of return achieved versus volatility) shows that bitcoin produced better risk-adjusted returns than either equities or gold over the 2011 to 2016 period.\footnote{Ibid. 23.}

At this point, an important caveat to mention is that past performance is of course not indicative of future performance. In other words, a portfolio allocation to bitcoin would only be warranted depending on expected future return and volatility figures. Bitcoin’s structure could help in understanding how things could unfold.

First, the technologically limited number of overall bitcoins that can be created represents a finite supply limit. This is, in essence, the variable that makes bitcoin unlike any government-issued currency. If demand were to continue to grow to the point where bitcoin supply is fixed, the price would continue to rise. For that to happen currently, demand would need to rise faster than the increments of bitcoins in circulation. In the long term, the number of bitcoins in existence will continue increasing, but at a decreasing rate.\footnote{Ibid., 11.}

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\textbf{Figure 2: Sharpe Ratio}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Sharpe_Ratio}
\caption{Sharpe Ratio}
\end{figure}

\textit{Source: ARK Investment Management LLC & Coinbase, data sourced from Bloomberg & CoinDesk BPI}
\textit{Note: Data as of December 30, 2016}

\textbf{Figure 3: Bitcoin Average Annual Rate of Supply Increase}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Bitcoin_Average_Annual_Rate_of_Supply_Increase}
\caption{Bitcoin Average Annual Rate of Supply Increase}
\end{figure}
On the other hand, governments may significantly increment the amount of fiat currency in circulation for various reasons: from deficit spending to an increase in export competitiveness, from the financing of military operations to boosting GDP growth. Consequently, when investors lose faith in a currency’s viability or in a government’s policies, a currency depreciates versus other currencies and assets. A recent notable and extreme case is that of Venezuela, which has seen its currency lose more than 83% of its value versus the U.S. dollar in the last 12 months.14

As an investment vehicle, bitcoin’s advantages and disadvantages have to be put in perspective with those of other main asset classes.

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What stands out is that bitcoin, unlike any of the other asset classes, did not exist 10 years ago. That means that any analysis or projection of future performance based on historical performance has a limited number of data points on which to rely.

Second, the volatility that bitcoin has exhibited makes it an outlier compared to other asset classes. In 2013, the price reached $1,100 only to fall to $700 within months, finding a bottom around the $200 level in early 2015 at more than 80% below its 2013 highs. The trend in bitcoin volatility, however, has seen an overall decrease since 2011.

Nevertheless, with daily fluctuations often in the 10%+ range in 2017, volatility should remain a major investor concern when considering bitcoin.

One further concern is that of security. At various times in the past years, bitcoin exchanges were either hacked or disappeared with hundreds of millions of dollars’ worth of client bitcoins. Due to the anonymous and untraceable nature of bitcoins, restitution is very unlikely in most instances. Governments internationally have also voiced their concerns over the use of bitcoin as a money laundering vehicle. A crackdown by Chinese authorities over bitcoin purchases in early 2017 was the driver of a 25% fall in bitcoin prices in less than a week. With improvements in cybersecurity, and new measures and regulation by governments, fears over the safety and legitimacy of Bitcoin custody may well be assuaged. This would positively impact what today is still, by all measures, an extremely small asset class.

*Figure 5: Bitcoin Daily Price Change*

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Another fundamental aspect of bitcoin is its relatively small overall size of the market. As of August 2017, there are a total of approximately 16.4 million bitcoins with a total value of $56.5 billion. Below are the comparable market valuations of some investments and major asset classes:

- World Equity Market Capitalization: $73 trillion
- World Bond Market Capitalization: $215 trillion
- Value of All Gold in Circulation: $7.7 trillion
- World Coins & Banknotes in Circulation: $7.6 trillion
- Market Cap of Apple: $807 billion
- Market Value of All Cryptocurrencies (Aug. 7): $300 billion

Bitcoin's value, therefore, represents less than 0.10%, 0.04%, and 1.00% of that of global equity markets, global debt markets, and gold, respectively. The disparity, although decreasing with the relative outperformance of bitcoin, is still significant. This is also the case if taking into account the value of all remaining cryptocurrencies combined, which is roughly equivalent to that of bitcoin. Should investors, at this or future stages, choose to re-allocate part of their investment from these asset classes into bitcoins, it would have a disproportionately large impact on bitcoin’s price. The newly found interest of institutional investors may be the key to fostering this development.

The estimated number of users of cryptocurrency wallets has more than quadrupled between 2013 and 2017.

How is the financial industry responding to bitcoin? The answer shows a sector still in its infancy. The Greyscale Bitcoin Investment Trust launched in September 2013 as the first publicly listed security solely invested in bitcoin. Another, the Winklevoss Bitcoin Trust ETF, has been waiting since July 2013 for SEC approval. The push to allow retail clients to become bitcoin investors is also increasing. The UK’s largest online brokerage began allowing clients to invest in bitcoin in June 2017. In the U.S., the Commodity Futures Trading Commission approved for a bitcoin options and futures exchange to begin operations in the fall of 2017.

At the same time, financial institutions are setting up the technological infrastructure to allow bitcoin transactions. Starting in September 2015, nine major investment banks, including Credit Suisse and Goldman Sachs, have begun to develop a common framework for blockchain technology to broaden its use in financial services. Outside of North America, the trend is similar. In May 2017, Norway’s largest bank, Skandiabanken, announced the opening of bitcoin accounts for customers. The overall direction is towards a greater role of bitcoin both as an investment vehicle and as a means of transaction. As the financial sector develops the necessary instruments and infrastructure to make this happen, the public sector may accelerate this process.

The Next Phase

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### Bitcoin and the Government - Rising Recognition

Like the financial sector, governments have also begun to realize the potential of bitcoin within the economy. Many countries, including Spain and Japan, are now accepting bitcoin as a legal payment method. Others, like Australia, have improved tax legislation to facilitate the use of bitcoins in commercial transactions. Although the most bitcoin-friendly jurisdictions are still to be found in OECD countries, the rest of the world is moving in the same direction. Russia, which had previously instated a bitcoin ban, is now looking to legalize it by 2018.

The implications for the future of bitcoin are significant. With more transactions at the governmental level allowed to be conducted in bitcoins (such as tax payments and international debt settlements), demand for bitcoin will likely rise. As governments deal with budget deficits, in some cases in the hundreds of billions of dollars, the impact on bitcoin prices could be substantial.

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28 Rizzo, “SecondMarket.”
An Investment to Consider

Bitcoin is still at the beginning of its journey as an asset. Despite its historically strong performance and volatility, and in addition to issues of viability as a currency, there remains cause for investor prudence.

Are you looking for more information on Bitcoin technology to help you make important investment decisions? Read the first paper in this series “An Investor’s Guide to Understanding Bitcoin Basics” for a general understanding of Bitcoin technology and bitcoin as a currency.

The third paper in the series “The Cryptocurrency Sector Beyond Bitcoin - An Overview” will be available soon. Sign up for our newsletter to receive your copy, available below.

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Glossary

**Asset class** - A type of asset (such as stocks, bonds, or real estate) regarded as a discrete category, especially in the context of asset allocation.

**Bitcoin/bitcoin** - For this series, Bitcoin refers to background technology, and lowercase bitcoin refers to the currency. Bitcoin is a digital currency and store of value that uses encryption techniques to regulate the generation of units, its transfer, and operates independently to central banks.

**Blockchain** - A digital ledger of continuously growing records, called blocks, which are stored and secured using cryptography.

**Commodity** - A raw material or primary agricultural product that can be bought and sold, such as copper or coffee.

**Compound growth** - The compound annual growth rate (CAGR) is the mean annual growth rate of an investment over a specified period of time longer than one year.

**Digital wallet** - A system that securely stores users' payment information and passwords for numerous payment methods and websites.

**Fiat currency** - Fiat money is currency that a government has declared to be legal tender, but it is not backed by a physical commodity.

**Intrinsic value** - The intrinsic value is the actual value of a company or an asset based on an underlying perception of its true value including all aspects of the business, in terms of both tangible and intangible factors.

**Risk-adjusted returns** - Risk-adjusted return refines an investment's return by measuring how much risk is involved in producing that return, which is generally expressed as a number or rating.

*Definitions provided by Oxford Dictionaries Online and financial terms by Investopedia.com.*