

# Bitcoin Institutional Investor Analysis

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## Opening Premise

In our view, Bitcoin is an important technological development and it may revolutionize monetary economics. If our analysis is correct, Bitcoin could become a widely used form of “money” and it has the potential to become the *numeraire* in monetary economics. That is, the standard by which all other money is valued. This is a large claim but, in our opinion, it is not unrealistic because Bitcoin is the hardest form of money ever invented by mankind<sup>2</sup>. History shows that mankind has always sought to place its excess capital or savings in the hardest form of money, or where it will be treated best. This is a fundamental human trait, and is captured in Gresham’s Law which states that “bad money drives out good”. Or said another way, people will spend money that they believe is depreciating and will save or hoard money that they believe is increasing in value. As a superior form of money (in terms of its characteristics) we believe Bitcoin will increase in value for years to come.

## Background and Philosophy

Bitcoin was designed in 2008 and launched in 2009, and the Bitcoin Network is now comprised of 12,000+ computers or nodes worldwide each of which contains a copy of the digital record of all transactions since inception, what is commonly called “the blockchain”. Bitcoin is a distributed digital ledger that is transparent and open source. Every transaction that has ever taken place on the blockchain is recorded immutably. Every address on the blockchain which contains some Bitcoin is available for inspection. Owning a Bitcoin is nothing more than having a Bitcoin blockchain address that holds a digital entry saying this address represents X Bitcoins. The address is fully visible using the internet. There are no secrets and if someone says “there are X Bitcoins at this address” anyone can verify that worldwide via a simple computer which is connected to the internet. The Public Address or Public Key to each Bitcoin allows anyone to verify how many Bitcoin are present at that address. However, having the Public Key only provides information. To move or spend Bitcoin it is necessary to have the unique Private Key which is paired to each Public Key. If you possess the Private Key you can spend or transfer the Bitcoin to any other address in the network. Control of the Private Key basically constitutes ownership of the Bitcoin at a Public Key address. Private Key security is a large issue. (More on this later)

There is an important point to consider here. This is a new form of accounting. It has been called triple entry accounting. Double entry accounting was a huge innovation and allowed the development of a system of debits and credits. You had an asset, cash at the bank, the bank had a liability, cash that it owed to you. No one else knew about this transaction or could verify it. If the bank failed, you could lose your asset. A third party (the bank) was involved in storing your asset. In the Bitcoin example you have an asset (one Bitcoin on the block chain), the blockchain has a liability (one Bitcoin owed to you), and anyone can verify it. The verification piece is the triple entry. It prevents fraud. This is a very important innovation.

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<sup>1</sup> For more information visit [www.ledgerstatcapital.com](http://www.ledgerstatcapital.com)

<sup>2</sup> Credit for this observation goes to Saifedean Ammous, author of *The Bitcoin Standard: The Decentralized Alternative To Central Banking*. 2018. New Jersey, John Wiley & Sons.

Technologically, Bitcoin is a significant innovation. Until the invention of Bitcoin there was no way to securely send a scarce resource around the world without having to worry about the “double spend” or counterfeit problem<sup>3</sup>. By using cryptology and by creating a “blockchain” of transactions that are verified and distributed, Bitcoin created the first worldwide payment system that does not rely on a third party. Or said in a slightly different way, the third party is the network of nodes which verify and record every transaction.

This leads to several unique characteristics. First Bitcoin is truly peer to peer. There is no middleman or controlling entity. Second, Bitcoin operates 24/7. It is always on. Huge sums can be transferred privately, directly between parties without a bank or a brokerage firm, 24 hours a day, 7 days a week. Furthermore, even though each transaction and address balance is fully available on the block chain, they are all private because nobody knows who controls an address unless the owner of the address reveals that information. It is pseudonymous.

Finally, and perhaps most importantly, Bitcoin is a superior vehicle for storing monetary value because its supply is forever limited to 21 million coins. Nearly every other form of “money” that has been used by mankind has been subject to dilution or an increase in supply. The Central Banks which control our present fiat monetary system are notorious for “printing money” in order to deal with monetary shocks. Because the supply of Bitcoin is limited it has been compared to gold, and some even call it “digital gold”. However, this is not a correct comparison because Bitcoin is in fact even harder than gold. It is harder in two ways. First, there are a limited number of Bitcoins. There is not a limited supply of gold. We still mine gold and the supply of above ground gold is always increasing. Admittedly the increase is at a modest rate per year (1-2%) when compared to the base of gold in existence. However, if the demand for gold increases and gold’s price goes up then the mine supply of gold will increase. This is not an issue with Bitcoin. The second way that Bitcoin is harder money than gold is that all of the Bitcoin in the world is verifiable, trackable and traceable. There is no “paper Bitcoin”. In the case of gold there are huge amounts of paper gold claims that have been created. Some estimates say that there are over 100 paper claims on gold for every gold ounce in existence. If all of these paper claims asked for delivery of real physical metal it would be impossible to meet all of the claims. The price of gold would sky rocket. This problem does not exist with Bitcoin.

Bitcoin is a new system. It is built by humans using computer technology and therefore it cannot be considered entirely risk free. What are the risks? In our opinion there are two principal risks. The first is private key theft. Remember that in the Bitcoin network, transactions cannot be reversed. Bitcoin is like a “bearer bond” and if you have the private key to an address you control that bond. If someone gets your private key they can steal your Bitcoin. It is a real risk and it has happened. Unless you hold your Bitcoin securely in what is called “cold storage” you are at risk of key theft. Even in cold storage there is some risk. If you lose the Private Key to your Bitcoin then those coins are lost forever. The security and custody issues surrounding holding Bitcoin as an investment might be considered one of the larger risks. LedgerStat has developed systems to minimize and eliminate these risks.

The second risk is the risk in the code and the network. The Bitcoin network has been operating for 9 years and there are over 25 million wallets in existence. The Bitcoin blockchain contains over 400 million transactions since inception and every 10 minutes a new block is created. The network has never crashed or been inoperable. At busy times the transaction speed will slow down and transaction fees will

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<sup>3</sup> This problem has been referred to as the Byzantine General’s Problem and until the development of cryptology and the blockchain structure it was considered unsolvable. In Byzantium on the battlefield Generals had no way of knowing which messages were true and which had been compromised by spies and were therefore unable to coordinate their actions.

increase, but the network has never stopped working. There are hundreds of Bitcoin core developers working on the network to grow it and to add functionality. In the early going Bitcoin was an experiment. Because it has operated for so long without trouble we believe that the risk of a network problem is low, but it is not zero.

Apart from the security and technical risk inherent in Bitcoin there are also the more general risks associated with rate of adoption, price per Bitcoin and volatility. Anyone who has been watching the development of Bitcoin cannot help but be aware that the price per coin has been hugely volatile and has periodically grown very quickly and then corrected, sometimes by as much as 80% from its peak price. We believe this is a function of its early development status and we have observed that over time volatility is decreasing. We expect that fully distributed (in say, 10 years) the volatility will be much lower and comparable to other financial assets.

### Characteristics of Money

Money is classically defined as the most liquid good. It is the item that is most widely recognized as having value for savings and transactions and has the deepest market ownership and penetration among wealth holders. It can be traded quickly and efficiently. Many prices are quoted in the senior form of money. The bid and ask spread is low. Today the leading form of money, without a doubt, is the US Dollar. It is closely followed by the Euro, Chinese Yuan and Japanese Yen as other senior currencies. Historically and classically gold and silver were recognized as money and trade was conducted worldwide with settlement in gold and silver. However, shipping gold and silver to settle transactions was cumbersome and expensive and so paper money representing gold and silver was created. This paper money was backed by gold and silver and could be converted into gold and silver on demand, but paper was easier to carry, ship and store. The paper money was issued by banks and Governments and over time the link between the paper claim and the gold and silver backing the paper claim was broken. At this point in time these currencies became “*fiat*” currencies. That is, they had value because the governments said they had value. Fiat is latin for decree. The US Government decrees that pieces of paper with George Washington on them have value, and they do. Governments are responsible for maintaining that value and managing the supply of money. The “money-ness” of the US Dollar is driven by the Government decree and by the collective acceptance of the dollar’s value. It is hard to imagine the US Dollar not having value, but recall that there have been cases where a Government has established a money and yet it has not been accepted as being valuable. Weimar Germany (1921-1923), Argentina several times in the 1900’s, and recently Zimbabwe and Venezuela have all experienced currency collapses where what the Government says is money has not been accepted and its value has collapsed. The important point here is that confidence in the issuing authority and in the form of money is essential.

What Bitcoin represents is a new, technologically driven, form of money. It is not backed by any government. It is backed by a network system and computer code. At the end of the day its value as money will be determined by how many people choose to hold it versus other monetary choices.

People hold money for two reasons. First, because it is useful in transactions and allows them to make purchases quickly. Second, because it holds value and is a form of savings for future purchases. We call these two different uses: 1. Exchange Value. 2. Store of Value.

There is little doubt that the superior form of money today in terms of exchange value is the US Dollar. Nearly all goods and services have a dollar price, and dollars are universally accepted for payment throughout the world. Very few entities will accept gold or Bitcoin as a means of payment for purchases. In the case of Bitcoin this may change over time, but we do not believe that Bitcoin’s value is currently being driven by its exchange value.

This brings us to the Store of Value issue. When people choose not to spend or consume and thereby save money they want their savings to be in a form that will hold its value over time. This is where the present day case for Gold and Bitcoin is very interesting. As we all know Government issued money is continually being diluted and thus loses value or purchasing power over time.

Historically, when thinking about savings people have had a choice about what form of monetary good to hold. The two classical choices are fiat currencies and gold. Bitcoin adds a third choice. For money to be “good money” that people want to hold it must have the following characteristics:

- Durable.
- Portable.
- Fungible.
- Verifiable.
- Divisible.
- Scarce.
- Established History.
- Censorship Resistant.

The following chart grades these three choices:

|                      | Bitcoin | Gold | Fiat |
|----------------------|---------|------|------|
| Durable              | B       | A+   | C    |
| Portable             | A+      | D    | B    |
| Fungible             | B       | A    | B    |
| Verifiable           | A+      | B    | B    |
| Divisible            | A+      | C    | B    |
| Scarce               | A+      | A    | F    |
| Established History  | D       | A+   | C    |
| Censorship Resistant | A       | C    | D    |

Source: Vijay Boyapati. Medium.com

Bitcoin is a superior form of money. In every category above it is equal to or superior to fiat currency and it is superior to gold in every category except: Established History, Durability and Fungibility.

It is widely accepted that the store of value characteristics of fiat money are terrible. Since the US Federal Reserve was established in 1913 the US Dollar has lost 97% of its purchasing power. Since 1971 when

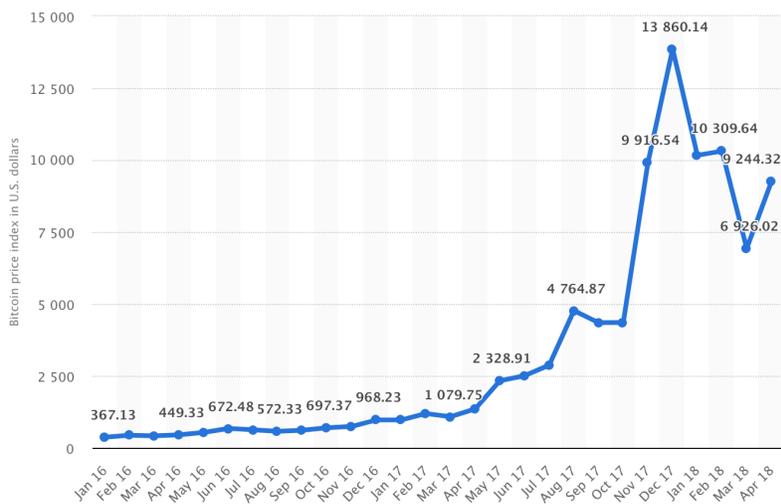
Nixon took the US off of the gold standard the dollar has lost 84% of its value. Monetary store of value is most strongly driven by scarcity. Note that Bitcoin is scarcer than gold.

### Adoption and Value

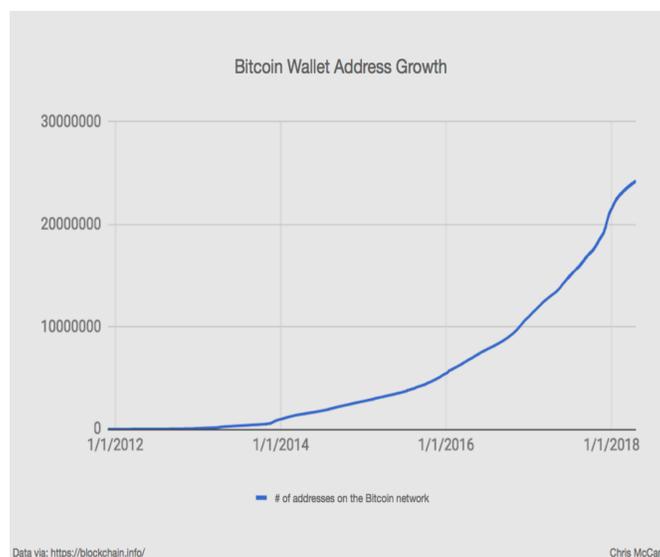
Like any other economic good that is traded in multiple marketplaces the price of Bitcoin is constantly fluctuating and is driven by supply and demand. Presently (June, 2018) there are 17,084,662 Bitcoin in existence and at a price of \$7,500 per coin the entire supply is valued at \$127.5 Billion. In a recent 24-hour period \$3.8 Billion of value was traded, or roughly 3% of the supply.

There is little doubt that growth in the value of each Bitcoin will be driven by more and more people concluding that Bitcoin is a form of savings that they want to hold. When Bitcoin first launched in 2009 only technology geeks and very early adopters were willing to pay cash for a Bitcoin. However, as the word spread and more people became involved the demand for each Bitcoin increased. More Bitcoin brokerages opened up and additional Bitcoin wallets were opened. Initially the growth in users and growth in price was modest. As the schedule below shows, 2017 was a break out year for Bitcoin awareness and the Bitcoin price.

Bitcoin Average Monthly Price 2016 – 2018



Behind the price appreciation is more people worldwide deciding to purchase or hold Bitcoin. To do so you need a Bitcoin wallet or a Bitcoin brokerage account. The schedule on the next page shows the consistent wallet growth which has taken place since 2012.



Also, keep in mind that each Bitcoin wallet address may represent more than one person. The schedule above shows that in early 2018 there are roughly 25 million Bitcoin addresses worldwide. However, a Bitcoin brokerage firm like Coinbase could have only one address and that address could hold all of the Bitcoin for its over 10 million customers. Thus, it is estimated that there are probably 50-60 million people worldwide that own or hold Bitcoin. Consider that out of a total worldwide population of 7.6 billion people 60 million represents 0.7% or less than 1%. That leaves a lot of people who could decide in the future that buying Bitcoin is a reasonable thing to do.

So, herein lies the interesting investment thesis. We have a new form of money. It has characteristics that make it superior to other forms of money (to be fair it also has risks compared to other forms). It has been consistently adopted and has been working for 9 years. Only a small portion of the world has purchased any of this money. However, there has been consistent adoption over the past few years. In our experience an economic trend in motion tends to persist, unless something catastrophic interrupts it.

If more and more of the world's capital or money migrates toward Bitcoin as a vehicle for storage of wealth and savings, there is only one conclusion that we can reasonably draw about the future price of Bitcoin. It will be higher. Perhaps materially higher.

### Ownership and Future Value

In our opinion we are still in the very early stages of Bitcoin adoption. Less than 1% of the people in the world own Bitcoin, however ownership is growing rapidly. We are reminded of the adoption of the internet in 1994 and the rapid growth that followed. The area is still confusing, the brokerages do not work very well, there is a lot of bad information and there is a lot of hype. But, beneath all of this there is a sound technology which provides genuine advantages over the existing system. In his seminal book, The Bitcoin Standard, Saifedean Ammous talks about how gun powder changed the nature of warfare. Axes arrows and spears were just not as effective once gun powder was discovered. Although adoption took time and as late as WW I there were still bayonet charges. We see a parallel here. To our way of seeing it Bitcoin is a very superior Store of Value money. It cannot be printed or corrupted by governments. This is a HUGE benefit. It is also completely private which has very important implications. As more and more people come to see and appreciate the benefits, the demand for Bitcoin

will increase. We do not know how fast the process will occur or how long it will take. But, we can envision a future where Bitcoin is a very meaningful portion of the savings base of the world.

Some people look at Bitcoin's current price of roughly \$7,500 and think they have missed the upside. They look at the people who bought at \$300 or \$1,000 and think they are too late. We strongly disagree. We think that in the future people will marvel at those who bought at \$7,500. We find it interesting how few people hold meaningful balances of Bitcoin. Here are some statistics which show what we mean:

|  |            |
|--|------------|
| Bitcoin addresses worth over \$10 million: | 1,780      |
| Bitcoin addresses worth over \$ 1 million: | 8,761      |
| Bitcoin addresses worth over \$100,000:    | 155,011    |
| Bitcoin addresses worth over \$10,000:     | 729,013    |
| Bitcoin addresses worth over \$1,000:      | 2,410,332  |
| Bitcoin addresses worth over \$100:        | 6,491,881  |
| Bitcoin addresses worth over \$10:         | 16,478,292 |

In the context of a world that has 15,000 billionaires and 25 million millionaires there are not many people who hold meaningful positions in Bitcoin. If wealthy people come to believe that Bitcoin is a good investment then these numbers will grow significantly, and with a fixed supply the price will have to adjust upward. Bitcoin is a new monetary good. It is also an investment. We believe that it will hold its value because the supply is limited. It would take a sustained decrease in demand for it to lose long term value. Given the trends that are in place we think this is unlikely. Because of the adoption curve and the substitution affect we think there is enormous upside in the price of Bitcoin. As more and more people recognize its unique properties and purchase some its price will increase.

As we said, Bitcoin is a monetary good and an investment. The total market value of Bitcoin today is \$130 Billion. Let's put this in the context of other investments and forms of money. Presently the worldwide market for gold is \$8 Trillion. If the Bitcoin market were to grow to be the size of the gold market the value of each Bitcoin would be \$380,000 per coin. Worldwide there is \$30 Trillion of currency in circulation. Worldwide the stock markets are \$75 Trillion in value. The worldwide bond markets hold \$120 Trillion in value. The worldwide money supply is \$80 Trillion. It is impossible to know if Bitcoin will become ubiquitous or will be a specialized niche form of money. It seems unlikely to us that it disappears. Even if it only plays a niche role its value will be much higher than today's price. If it becomes widely adopted we have seen serious analysts who estimate that one Bitcoin could be worth as much as \$1 million. If it were to become the true form of base money it could be worth as much as \$10 million per coin using today's money supply figures.

We have no idea how this will unfold and what the end point will be. However, we do know that the trend is in our favor, this form of money represents a breakthrough and an improvement over other forms of money, and that it is highly likely that it will be more valuable as the years roll by.

By our estimation the upside optionality is so great that only mistake an investor can make is to have an allocation of zero. The downside is 1x your investment (only likely if the network implodes) and the upside is between 10 and 100 times your investment. Investments with a proven trend of momentum and an upside skew that looks like this are very rare and hard to find.