

# FEATURE ARTICLE: THE CRYPTOCURRENCY CONUNDRUM



## THE CRYPTOCURRENCY CONUNDRUM

Bitcoin has been around for a year short of a decade, but up until the last two years, news on the cryptocurrency front had been relatively quiet. That tune has changed over the past couple of years, particularly the past few months. This is not surprising given that in 2016, the price of Bitcoin (in US dollars) increased by 120%, and in 2017 it posted a return of 1,400%. Those that were early investors are celebrating the quadruple digit returns.

In this month's feature article, we delve into the rising tide of cryptocurrencies, particularly Bitcoin. First, we provide a high-level overview of the history, motivation and basics of cryptocurrencies, and the accounting method underlying them – blockchain. We discuss both the appeal and downfalls of cryptocurrencies, particularly in comparison to the more traditional system for e-commerce. Economic theory is at the heart of the price increases, both the more gradual increases in Bitcoin's past and the sharp increases more recently. We explore why we consider Bitcoin to be a bubble, one that will have implications for those that have invested in it.

### 1.1 Cryptocurrency 101

As of mid-January 2018, there were more than 1,400 different cryptocurrencies available for purchase over the internet, but Bitcoin is by far the most popular one. In the sections that follow, we discuss the history, motivation and fundamental characteristics of Bitcoin in particular, but note that while most cryptocurrencies are similar in nature, some have distinct differentiating features.

#### 1.1.1 History & Motivation

In 2008, a whitepaper entitled *Bitcoin: A Peer-to-Peer Electronic Cash System* was distributed via a cryptography mailing list. The whitepaper outlined a unique peer-to-peer electronic cash system called Bitcoin which enabled the direct transfer of online payments, without the involvement of any intermediaries. The paper's author, Satoshi Nakamoto, who continues to remain anonymous, noted the following issues with e-commerce as it stood in 2009:

- it relies almost exclusively on financial institutions serving as trusted third parties to process electronic payments, which means the system suffers from the inherent weaknesses of the trust-based model;
- completely non-reversible transactions are not possible since financial institutions cannot avoid mediating disputes, and mediation costs are

passed on via transaction costs. Increased transaction costs limit the minimum practical transaction size and cut off the possibility for small, casual transactions;

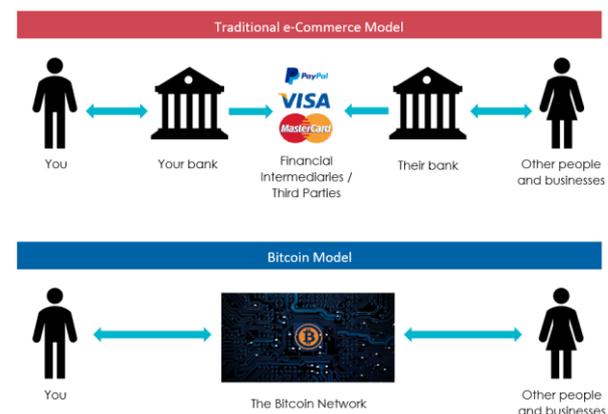
- the possibility of reversal of payments causes an increased need for trust. In other words, merchants need to be more wary of their customers, given that transactions are reversible in more traditional e-commerce; and
- a certain percentage of fraud is unavoidable.

Satoshi argued that electronic payment systems could be made significantly more robust, and do away with the need for trust altogether, if they harnessed the security benefits of cryptography. Per the whitepaper, the proposed system's benefits are as follows:

- two parties can transact directly with each other without the need for a trusted third party;
- transactions that are computationally impractical to reverse would protect sellers from fraud; and
- routine escrow mechanisms could be implemented to protect buyers.

Bitcoin was implemented and released in January 2009. The figure below illustrates a simplified version of the traditional e-commerce model, as well as that for the Bitcoin model. If fully implemented and adopted, the Bitcoin model would do away with banks and any third-party financial intermediaries.

**Figure 1: Illustrations of Current e-commerce Model and Bitcoin Model**



Source: Whitehelm Advisers

#### 1.1.2 The Basics of Bitcoin & Blockchain

First, it is important to distinguish the difference between Bitcoin and blockchains given that they are often confused. Bitcoin is the electronic cash system, while blockchain is the underlying accounting method for Bitcoin. Blockchains were developed for the implementation of Bitcoin, however, they have a variety of other commercial uses today.

A single bitcoin is an entry on a massive global ledger called the blockchain, which records every confirmed Bitcoin transaction that has ever occurred. As a result, Bitcoin wallets (akin to personal bank accounts) can calculate their spending balance, or the bitcoins that are owned by a spender, at any one time. There is no single official group that is responsible for updating the ledger. Additionally, bitcoins can be directly transferred from person to person, without having to go through a bank or clearinghouse. This is what gives Bitcoin its status as being decentralised – it does not have a central issuing authority or state government overseeing it.

### **What is a 'Blockchain'?**

Blockchains are based on distributed ledger technology, and used primarily to verify transactions within digital currencies. The distributed ledger is somewhat like a decentralised database that is continuously being updated with a record of who owns what. When a digital transaction is carried out, it is grouped together with other transactions that have occurred at about the same time. The group of transactions, and the details pertaining to the transactions, are called a 'block'. In the case of Bitcoin, the block contains details about a transaction, such as the sender, the receiver and the amount of coins involved in the transaction. The unique identifying details regarding each transaction within a block define a unique identification code.

The block is then sent out to the blockchain network and members in the network (also called miners) compete to validate the transactions by solving complex coded problems. The first miner to solve the problem and validate the block receives a reward. In the case of Bitcoin, the reward is a sum of bitcoins, as well as transaction fees paid by the users. The computationally challenging problems are a feature that is often coined 'proof-of-work', and is considered to be one of the features of blockchain technologies that make them so secure. Computers have to generate guesses to the solution until the correct solution is guessed and tested. Currently, computers that were specifically designed to solve such problems typically take about 10 minutes to guess the correct solution to a single problem.

The validated block is timestamped and added to the chain of other blocks in a linear and chronological order. The block is sent to everyone in the network and each person is required to verify the block to make sure it has not been tampered with. If each person agrees that the block has not been tampered with, the block gets added to each blockchain. This system ensures that every transaction made in the history of the blockchain is stored. The entire chain is continually updated so that everyone maintaining a ledger in the network has record of the same chain.

As a result, any one member can prove how many bitcoins are owned by any one person at any time.

### **Bitcoin's Limited Supply**

Every single bitcoin that exists was created to reward a bitcoin miner. One of the founding principles of Bitcoin is that, unlike fiat currency, it cannot just be created arbitrarily (for example, during a financial crisis to ease monetary conditions). Similarly to gold, it must be 'mined'. Nakamoto stipulated that Bitcoin has a limited and finite supply (like any other resource), in that in total, only 21 million Bitcoins will ever be mined.

When Bitcoin was first released in 2009, the reward for adding a block to the blockchain was 50 new bitcoins, but the reward decreases by half every 210,000 blocks, or approximately every four years. Currently, the reward for mining is 12.5 bitcoins per block. As more and more bitcoins are created, the difficulty of the mining process, and in turn, the required computing power required, increases as per the design of the Bitcoin framework. When Bitcoin was launched in 2009, the difficulty of the mining process was rated at a level of 1, by the end of 2009, it was rated 1.18, whereas in December 2017, it is rated at 1.87 *trillion*. The difficulty has increased such that the rate of block discovery (and thus, bitcoin creation) is kept relatively constant.

### **Who are the Miners?**

Anyone can volunteer to be a miner in the network, however competing to win bitcoins does not come without significant cost. The competitive nature of Bitcoin mining has resulted in a race among miners to amass the fastest and most energy efficient computers. When Bitcoin was first launched, a normal computer had enough computing power to be able to solve the coded problems, but as the required computing power increased, significantly more powerful computing machines were needed. The hardware is incredibly energy intensive and often needs to be located in expansive warehouses. With that comes the need for powerful air conditioners that must work overtime to cool the computers. Thus, the cost of mining a single bitcoin has increased dramatically since its implementation in 2009. However, nailing down an exact cost is difficult given that electricity and warehousing costs can vary significantly depending on the country in which the mining is being done. That said, while estimates vary, it has been reported that it currently costs up to US\$3-4 thousand to produce a bitcoin.

### **The Uses of Bitcoins**

The financial cost that miners face because of both the computers needed and the resulting electricity bills entices miners to sell their bitcoins so that they

cover their expenses. This puts bitcoins into circulation for people who need or want to buy them (via online exchanges), but do not want to participate in the mining process.

The first bitcoin transaction reported was for two pizzas for 10,000 bitcoins in 2010 (expensive pizzas given the current value of a single bitcoin!). The extent of the use of Bitcoin has expanded beyond pizzas, as several retailers with an online presence offer for their goods and services to be purchased in bitcoins. As we discuss later in the feature article, the volatility of the price of a single Bitcoin makes it incredibly difficult for retailers to benefit from offering it as a payment method. This has encouraged some retailers to stop offering it as a payment method, or from not offering it altogether.

## 1.2 The Allure of Bitcoin

While Bitcoin's price has increased dramatically over the past few months, many people bought bitcoins when they were just a few cents apiece. What features of Bitcoin did these early investors believe would cause it to be a wise investment?

### **Fear of Long-Term Value of Fiat Currencies**

Fiat currency is legal tender, the value of which is backed by the government that issued it, rather than a physical commodity (gold standard). As a result, fiat currencies are backed by the expectation that the corresponding central banks will manage them prudently. In the management of the currencies, central banks are typically tasked with meeting stated goals, which can include low levels of inflation, low unemployment and strong yet stable economic growth. Many have adopted a steadfast focus on meeting these goals, which has, at times, had impacts that were far from ideal. For example, the Fed's expansion of its balance sheet by approximately US\$4 trillion through its QE program, paired with ultra-low interest rates following the financial crisis had the effect of inflating asset prices given that the extremely easy monetary conditions encouraged the investment in risk assets, including stocks, real estate and corporate bonds. While it is broadly believed that the Fed's response staved off what could have been a worse crisis, many of its impacts were far from ideal. In turn, this has raised concerns regarding the long-term value of fiat currencies.

Bitcoin's creator was passionate about the flaws of the traditional money system. The finite supply of Bitcoin is believed to be a reflection of Nakamoto's disdain for the loose monetary policy that central banks had maintained for so long. Its technology has been designed such that the money supply can be controlled objectively, particularly in environments where central banks have had difficulty doing so.

### **Lack of Centralised Control and Regulation**

Given the premise that Bitcoin does not require trust between any of its users, there is no need for a central authority responsible for enforcing laws or resolving disputes. It also allows users to transfer funds to anyone anywhere in the world at any time. Transferring funds across borders in the current system is complicated, expensive and can take time. The decentralised model is designed to eliminate these complexities. The lack of control by a central body also eliminates censorship implemented by a regulator. The process cannot be manipulated by any one government, bank or regulator.

### **Anonymity**

Bitcoin is considered anonymous but not private. It is anonymous because the identities of buyers and sellers in the Bitcoin network are unknown. It is not considered private because the quantity of bitcoins bought or sold can be known by anyone. Anyone can access the public ledger, and so the transactions are completely transparent. That said, most users of Bitcoin buy and sell the cryptocurrency through a third-party exchange, and must provide personal details to set up an account (or a wallet), and thus their bitcoin holdings are linked to their identity. However, if bitcoins are acquired through the mining process or through a private transaction, then the holder's identity can remain anonymous. This is what many Bitcoin believers consider to be the cryptocurrency's most attractive characteristic.

## 1.3 All That Glitters is not Gold

We consider that there are some worrying characteristics of Bitcoin, that run counter to the current price of the cryptocurrency. These limitations could prevent the widespread adoption of cryptocurrencies, at least in the medium term. These limitations could support a price crash if and when there are signs of the Bitcoin bubble cracking.

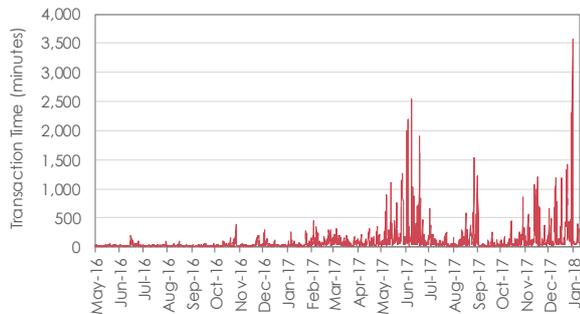
### **Transaction Costs & Payment Times**

One of Nakamoto's original selling points for Bitcoin was that the payments would be fast and cheap. When Bitcoin was less popular than it is today, transaction fees were indeed cheap, costing less than a dollar per transaction, which was often less than the fees that merchants had to pay to credit card companies in order to accept credit card payments.

The recent surge in popularity of Bitcoin, particularly the rush of retail investors flooding the market, has left the Bitcoin network unable to meet the growing demand. The way that Bitcoin deals with the growing demand is by allowing customers to opt to pay a higher fee in exchange for a faster payment time, or pay a lower fee and wait until the congestion

reduces. Thus, average transaction costs and payment times have been driven up dramatically. During the price crash of Bitcoin in late December 2017, the average transaction fee was US\$55. The chart below shows the average transaction time for trading days, noting spikes as high as 3,500 minutes.

**Chart 1: Average Transaction Time, 2016 - 2018**



Source: *blockchain.info, Whitehelm Advisers*

Given that one of the original visions for Bitcoin was to enable ‘small casual transactions’, this is a significant concern. Transaction fees of this size have encouraged businesses trying to use Bitcoin as a payment method to opt to use a different cryptocurrency platform that have an improved model for dealing with heightened demand.

**Liquidity**

The increase in transaction costs and payment times, particularly during a sell-off illustrate the illiquidity of Bitcoin. This has not yet caused significant hardship, but it is not hard to imagine a situation where it could. Suppose there is an announcement of negative news regarding Bitcoin, and a few owners of large amounts of bitcoins try to sell their holdings. The transaction queue would get congested, and the price would start falling. Additionally, the sellers would likely have to pay inflated transaction costs.

Illustrating this illiquidity is that, according to Bloomberg, approximately 1,000 people own 40% of all bitcoins in circulation. Further, just 100 people control 17% of the market. Many of these investors are thought to be those that strongly believe in Bitcoin and its model, and have not invested just because the price has skyrocketed recently. If a handful of these people were to sell a small portion of their shares, it could cause Bitcoin’s price to fall dramatically. Investors in Bitcoin who only bought in because of the skyrocketing price would, in turn, try to sell, potentially triggering a price correction.

**Too Volatile to be Used as a Medium of Exchange**

On 1 January 2016, the price of one bitcoin was US\$434. On 1 January 2017, the price of one bitcoin was US\$1,012. On 1 January 2018, the price of one bitcoin was US\$14,936. A rational person who

bought 20 bitcoins in 2016 would have seen the value of their investment increase by more than 100%, and could have bought a US\$20,000 car with the bitcoins at the beginning of 2017. But they likely would have regretted the purchase, given that if they had waited until the beginning of 2018, they could have afforded to buy a \$300,000 car. This example illustrates why Bitcoin is not in a mature enough state to be used as a medium of exchange. The value of Bitcoin can fluctuate by thousands of dollars in a single day. People who own bitcoins are more likely to hold onto them and use them as a speculative tool, rather than redeem and buy goods using the bitcoins.

**Other Concerns**

Some of Bitcoin’s other characteristics that we find concerning are as follows:

- to date, cryptocurrencies have not had the buy-in from international regulators to be accepted as a mainstream currency;
- cryptocurrencies do away with the need to trust financial institutions, but consumers are still required to trust the mathematics underlying the technology;
- according to Reuters, a third of all bitcoin trading platforms have been hacked, and close to half of those created have been closed; and
- the anonymity of Bitcoin, paired with the lack of oversight by a central regulatory body has meant that the electronic payment system is used for a variety of illegal purposes, including drug dealing and money laundering.

**1.4 The Bitcoin Bubble**

Given the incredible price increase of Bitcoin over the course of 2017, it is not hard to see how Bitcoin has been labelled as a bubble. Bubbles are typically defined as a situation where the price of an asset diverges systematically from its fundamentals, or from its intrinsic value. In the following section, we discuss the main reasons that Bitcoin’s price has increased so dramatically, and then discuss what its actual intrinsic value might be, which validates our belief that Bitcoin is in bubble territory.

**1.4.1 The Reasons for the Madness**

The simple economic theory of supply and demand is at the basis for increases to the price of Bitcoin. The finite and limited nature of Bitcoin’s supply, combined with an increasing level of interest, and in turn, demand, has certainly contributed to price increases. But we need to understand another economic theory to understand where the sudden jump in demand is coming from, which is largely to thank for the 1,400% increase in the price of Bitcoin versus the US dollar over the course of 2017. Greater

fool theory, continued hype about Bitcoin and years of stimulative monetary policy are the main causes for why the price has appreciated so much so fast.

### **Greater Fool Theory**

Bitcoin had early investors, people who believed in the cryptocurrency's potential to replace traditional e-commerce systems. These early investors saw it as a long-term investment, rather than a way to earn some quick cash. Over the past couple of years however, particularly over the past couple of months, retail investors have been flooding into the Bitcoin market largely based on its relatively newfound hype. Such investors expect that the price will continue going up, and that they will be able to sell their purchased bitcoins for a higher price.

The economic theory that underpins this pattern is the greater fool theory, which states that the price of an object is not determined by its intrinsic value, but by the beliefs and expectations of market participants (which are often irrational). A buyer can rationalise buying an overpriced item (or in this case, currency) because there will always be someone (a greater fool) willing to pay a higher price for it. Simplistically, people are buying bitcoins because the price is going up. And the price of Bitcoin is going up because people are buying them.

### **Hype and News**

For several years, news on the cryptocurrency front was a slow burn. In more recent months, there are news stories about it every single day. Good news stories, such as when the Cboe and CME Group announced that they would be accepting futures contracts on the price of Bitcoin as legitimate contracts, caused the price to rally. Such stories legitimise the backers of Bitcoin's belief that it will be viewed as a legitimate currency at some point in the future. Such news stories have caused prices to rally. On the other side of the coin, news stories about security breaches, hacks and new entries into the cryptocurrency market can cause massive price corrections, including 20% falls in a matter of hours.

### **Easy Monetary Policy**

Speculative bubbles often result when there is a lot of easy money around, and there has been a lot of easy money around since the end of the financial crisis given the loose monetary policies that most developed market central banks have had in place since then. Expansive quantitative easing programs paired with an extended period of ultra-low interest rates have paved the way for cheap and accessible credit, which in turn provides a means for speculation, and excess leverage. This enables investors across the spectrum to bid up assets of all types. Equities, bonds and property (particularly in

Australia) are all expensive. Cryptocurrencies are just another asset class to ride the wave.

### **1.4.2 The Intrinsic Value of Bitcoin**

In our view, Bitcoin is considerably overvalued at current prices and is ripe for a price correction. But we note that our view is not a unanimous one – Bitcoin supporters believe it has much higher to go yet, and we recognise that it could. Over the longer term, we expect its price to approach its intrinsic value. So, what is the intrinsic value of Bitcoin?

It is difficult to measure Bitcoin's intrinsic value as it cannot be classified as a normal investment. It cannot be compared to stocks and bonds because behind both sit companies earning money, and in most cases, providing regular interest or dividend payments. In the case of bonds, the company will repay the principal at a defined point in the future. Comparing it to other currencies is simpler, but still fraught with issues. Fiat currencies 'have value' as they are backed by the faith and credit of central banks and governments. Both bodies have a vested interest in ensuring the stability of their countries' currencies. Nevertheless, critics of this system call this backing into question, as faith in central banks has fallen since the end of the financial crisis.

Supply and demand factors explain why the current price (or the total *market value*) of Bitcoin is so high. Its market value does not illustrate its intrinsic value however. Rather, it illustrates the amount that someone is willing to pay for a bitcoin. The sum of its intrinsic value and its extrinsic value makes up its market value. The main factor affecting its extrinsic value is the faith that investors have in it. The introduction of newer or more advanced cryptocurrencies, the lack of Bitcoin's adoption by regulators, or a security breach, could cause Bitcoin's extrinsic value to fall suddenly and sharply.

An intrinsic value of a particular asset is often based on a fundamental analysis of its cash flow, or on the asset's convertibility into a stream of cash flows. An intrinsic value for Bitcoin cannot be determined using either of these methods. In the case of currencies, intrinsic values are often a function of their utilities. For example, fiat currencies have an intrinsic value because citizens are required to pay taxes in such currencies.

If Bitcoin is considered as a currency, its intrinsic value should be based on its utility – specifically, its utility as a medium of exchange. We have already discussed some of the major issues that we see with Bitcoin being considered as a legitimate medium of exchange, particularly the volatility of its price and its illiquidity. In other words, if Bitcoin is only used as a speculation tool, rather than a currency with

which goods are bought and sold, it will have no practical utility, and in turn, no intrinsic value. Bitcoin advocates argue that its intrinsic value comes from the strength of the underlying technology, particularly its relative security and anonymity. Unfortunately, such characteristics do not suffice for determining its intrinsic value.

The competitive mining feature of Bitcoin is likely the primary factor by which we can predict its intrinsic value. Theoretically, anyone can mine bitcoins by putting in the effort to process transactions, and so it is possible to make a profit from Bitcoin independent of its use as a medium of exchange. Bitcoin has been intentionally designed to reward miners, in that the more miners trying to solve the cryptography problems, the harder it is to compete and earn bitcoins. Alternatively, if less miners participate, the easier it is to be awarded bitcoins. Thus, the intrinsic value of Bitcoin could be viewed as the cost of the effort in mining it.

As discussed earlier, it has been estimated that it currently costs between US\$3-4 thousand to produce a single bitcoin, considering the cost of the computers, as well as the related warehousing and electricity costs. This cost of production is a function of demand, so the current incredibly high cost is a direct result of very strong demand. We consider it is flawed to suggest the cost of production is a valuation floor for Bitcoin, given the direct relationship between demand and production cost. Accordingly, it is impossible to nail down a single intrinsic value. This is in part what has fuelled the rapid price increases over the past year, because investors believe that any value could be possible.

### 1.4.3 What if the Bubble Bursts?

It should be clear at this point in the feature article that we believe the cryptocurrency market is incredibly frothy, and Bitcoin in particular is in a bubble. Given that we believe the Bitcoin euphoria could and will likely come crashing down eventually, what does this mean for broader financial markets?

We believe that the cryptocurrency market, and any crashes associated with it, are unlikely to have widespread implications for broader financial markets. While it was unexpected that the subprime mortgage market would have been the cause for the global financial crisis in 2008, we consider the Bitcoin bubble to be a bubble of quite a different nature. First, there are far less people invested in cryptocurrencies than there were in the subprime mortgage market, or even in technology stocks in the late 1990s. Presently, most people who hold bitcoins can typically be classified as one of the following: a steadfast Bitcoin believer who has been invested since the beginning, Bitcoin miners and speculators.

If the price were to crash for any of the reasons already discussed, we would expect these people to be impacted severely, particularly those that spent a considerable amount of money on their entry into the market. However, the implications would be relatively muted compared to past popping of asset price bubbles, given that those directly affected by a price crash is a small and relatively contained group.

Additionally, there is far less evidence of leverage being used in this bubble, as compared to that in the subprime mortgage market back in the mid-2000s or in the dotcom bubble. While there have been a few reports of people taking out mortgages to buy bitcoins, such activity has been minimal. This is positive in terms of any unintended spill-over effects caused from a fall in the Bitcoin price. When an investor buys something with borrowed money and cannot repay the loan, then the lender loses too. This problem is exacerbated if the lender is leveraged as well. Another positive sign is that trading on the futures market has been relatively light so far, in part because the wild volatility of the Bitcoin price can make it unappealing for investors to get involved.

This example shows that while we consider the Bitcoin bubble to be of relatively little harm to broader financial markets, there are scenarios where certain pockets of people could be incredibly affected by the popping of the cryptocurrency bubble.

## 1.5 How will Central Banks Respond?

Bubble or not, the emergence of cryptocurrencies requires thought, and perhaps even action from global central banks given that the main thesis to the development of Bitcoin was getting rid of the need of central banks altogether. We consider the following points those to be of concern for central banks:

- the volatility of the prices of cryptocurrencies, as well as Bitcoin's recent introduction on regulated derivatives exchanges presents issues for how central banks will deal with this space from the perspective of regulation;
- issuing currencies is a lucrative business for central banks given that they profit from the difference between the cost of issuing banknotes and their face value. If cryptocurrencies become more mainstream, central banks may lose its current control of the payment system;
- their ability to control the payment system may wane, which is concerning given their ongoing fight against organised crime and terrorism;
- the nefarious uses of cryptocurrencies may require central banks to completely outlaw or restrict their use as a medium of exchange;
- they will likely need to try to make their own currencies more appealing, such as more efficient methods for electronic payments; and

- they will need to consider whether or not they should issue their own official cryptocurrencies.

Responses from central bankers regarding cryptocurrencies have been across the spectrum. The following list highlights some of the responses from the most prominent central banks:

- Jerome Powell said he has *'nothing against Bitcoin, nothing against, you know, private currencies. We generally look at some of the risks of cryptocurrencies associated with money laundering and those sorts of issues, but we're not broadly opposed or supportive of alternative currencies.'*
- Mario Draghi, President of the ECB, has ruled out any potential impact of cryptocurrencies on the ECB's control of the money supply. He also said that the cryptocurrency mania will have little to no impact on the euro area economy.
- RBA Governor Philip Lowe has been sceptical of cryptocurrencies, saying that they are likely to appeal far more to criminals than consumers. He also said: *'The current fascination with these currencies feels more like a speculative mania than it has to do with their use as an efficient and convenient form of electronic payment.'*
- Bank of England Governor Mark Carney is open to the idea of cryptocurrencies, deeming their introduction as a potential *'revolution'* in finance. Carney has argued that technology based on blockchain should be very appealing for central banks, particularly from the perspective of strengthening defences against cyber attacks.

The institution that sits above these central banks, the Bank of International Settlements (BIS) has warned that central banks should not ignore the emergence of cryptocurrencies. The BIS has said that central banks will need to consider if it is sensible for them to issue their own cryptocurrencies in the future. One option would be a digital currency made available to the public, and issued by central banks. The units of the digital currency could be directly converted into cash and reserves. The BIS notes that there are many risks with this plan however, including that it could entail a greater risk of bank runs, leaving commercial lenders facing a shortage of deposits.

### **Where to From Here?**

Bitcoin was created because of the belief that there are significant problems with having governments in charge of the money supply. A decentralised cryptocurrency which is completely devoid of any government intervention has been proposed to be the solution to this problem. Is that really the only solution? This is an example of the Black and White

fallacy, in that, for a particular argument, the only options are the two most extreme positions, ruling out any possibilities for a solution somewhere in the middle. In the case of cryptocurrencies, we believe that the likely outcome going forward is one in the grey zone. We certainly do not expect them to replace fiat government-backed currencies in the short or medium term, nor do we expect the interest in them to fizzle out. A more likely scenario is one somewhere in the middle. Central banks may choose to make their systems more robust, and could go as far as to adopt blockchain technology, or even further, issue their own digital currencies.

In present conditions, it is impossible to see how any of the current cryptocurrencies could replace ordinary currencies. People do not want to adopt a currency that can fluctuate by thousands of dollars in an hour. Additionally, liabilities continue to be denominated in fiat currencies – you cannot take out a mortgage denominated in a cryptocurrency just yet. The price volatility of cryptocurrencies will need to subside drastically for this to be even feasible (a crypto-denominated mortgage taken out a year ago would be incredibly painful today). We consider that the only way that cryptocurrencies could gain even a small amount of traction in being considered as a replacement for the current system is if fiat currencies in developed market countries were to suffer from a serious loss of trust.

### **1.6 Conclusion**

We consider that there could be a place for cryptocurrencies in financial markets as a legitimate investment eventually. However, they are still very much in their infancy, and are miles away from being a reasonable medium of exchange. There are believers in their prowess, but their price volatility encourages them to be used entirely as a tool for speculation, rather than a legitimate currency. In our view, it is only a matter of time until something triggers the bursting of the Bitcoin bubble, one made worse by the unique characteristics of the cryptocurrency itself (illiquidity). We do not expect the bursting of the Bitcoin bubble to spell the end of cryptocurrencies, rather we believe that it will take many more years for the cryptocurrency market to work through its technical challenges, with the hope that this translates to stable prices, low transaction fees and real-time transaction processing.

*This feature article is a condensed version of a more in-depth article. If you are interested in accessing the longer-form version, contact Nicole McMillan at [Nicole.McMillan@WhitehelmCapital.com](mailto:Nicole.McMillan@WhitehelmCapital.com)*



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