

# **Cryptocurrency and its susceptibility to speculative bubbles, manipulation, scams and fraud\***

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## Abstract

It is argued here that because a cryptocurrency has no intrinsic value, problems relating to day-to-day valuation and pricing arise. It is shown how these lead to the reversal of the conventional relationship between supply and demand and the susceptibility of the cryptocurrency markets to irrationality and speculative bubbles arising from the herding instinct. Also, as the cryptocurrency markets are largely free of regulation and the desire for privacy by founders, owners and developers is so great, accountability and disclosure requirements are either minimal or non-existent, leading to the manipulation of cryptocurrency prices, volume and market capitalisation information. Another consequence of their freedom from regulation, particularly surprising given the importance placed on their security through the use of blockchain, is the magnitude of thefts of cryptocurrency (both in terms of frequency and size) levels of which would neither be expected nor tolerated in regulated financial markets.

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# **Cryptocurrency and its susceptibility to speculative bubbles, manipulation, scams and fraud**

## **Introduction**

It is the purpose of this paper to examine the trading and popularity of cryptocurrencies as investments and the susceptibility of their pricing to speculative bubbles, manipulation, scams and fraud. It is well-known that stock market prices are susceptible to such occurrences and I have argued elsewhere the relevance of Keynes' biggest fool theory (BFT) and Minsky's financial instability hypothesis (FIH) as explanations of market irrationality and financial bubbles. However, the workings of cryptocurrency markets are quite different to those of other financial assets making cryptocurrencies even more susceptible to this behaviour. I also argue here that they are particularly vulnerable to manipulation, frauds and scams. The paper is arranged as follows. It is first necessary to briefly identify characteristics of cryptocurrency leading to the problem of day-to-day valuation and pricing. I then briefly describe BFT and FIH as they apply to cryptocurrency and how, because of the lack of an intrinsic value to guide market price, the conventional relationship between supply and demand is reversed. The next section relates to the likelihood of scams such as pump and dump schemes and the manipulation of cryptocurrency prices, volume and their market capitalisation. The paper then addresses the frauds that have occurred in the related ICO market and the thefts of cryptocurrency that have occurred, somewhat surprisingly given the importance placed on security and the use of blockchain. The final section briefly discusses the need for greater regulation.

## **What is cryptocurrency?**

Fiat currencies (money that governments have declared to be legal tender without the backing of physical commodities) exist because we have confidence in them. Money is a concept; if it is not trusted, it will not be accepted and not work. Old U.K. notes contained the words 'I promise to pay the bearer of this note ... [five, ten, twenty pounds and so on, whatever the denomination] sterling' and, theoretically at least, the note could be taken to the Bank of England and exchanged for gold or silver. Other countries' currency notes contained similar wording. Nowadays, notes and coins are not supported in that way but are accepted because users have the confidence that they can be exchanged for goods and services. It is not surprising, therefore that in this

Internet age, cryptocurrencies have been developed and are accepted by users so long as they have confidence they can be used as a means of exchange.

A cryptocurrency is a digital or virtual currency and does not physically exist. It is a type of digital currency that uses cryptography for chaining together digital signatures of asset transfers to create and manage the currency.<sup>i</sup> It is used either as a means of payment for which there are several advantages (e.g. privacy) and disadvantages (cost and lack of universality) or as an investment for which there are attractions (e.g. the chance to make quick profits) and problems (e.g. risk and fraud). The distinguishing feature of cryptocurrencies is their decentralized control as opposed to centralized electronic money and central banking systems by means of what is known as a 'blockchain' which is a public transaction database, functioning as a distributed ledger.

Cryptocurrency can be obtained in the same way as other currency. It can also be traded directly between peers or bought through a broker or service provider and traded on online cryptocurrency exchanges similar to a stock or foreign currency exchange. A cryptocurrency exchange (or digital currency exchange 'DCE') is a business that enables customers to trade cryptocurrencies for either conventional money or other cryptocurrencies. They can either be market makers that typically take the bid-ask spreads as remuneration or simply charge fees as matching platforms. Some are conventional businesses, others are simply online businesses, exchanging electronically transferred money. Their location may determine how or whether they are even regulated as these vary across jurisdictions. Cryptocurrency exchanges are developing, providing the same market trading facilities as the capital markets (e.g. leverage provided by spread betting and derivatives such as Contracts for Difference, 'CFD'<sup>ii</sup>).

Table 1  
**Market information for four of the most popular cryptocurrencies  
(31 October, 2018)**

| Cryptocurrency | Marcap<br>(a)<br>\$bn | Price<br>1 Nov<br>2018 (b)<br>\$ | Price<br>1 Nov<br>2017<br>(b) \$ (c) | Year<br>return %<br>(c to b) | Circulating<br>supply<br>(a/b)<br>m | Volume<br>(24 hr)<br>\$m |
|----------------|-----------------------|----------------------------------|--------------------------------------|------------------------------|-------------------------------------|--------------------------|
| Bitcoin        | 110.9                 | 6,342.61                         | 6124.28                              | 3.5                          | 17.4                                | 4,156                    |
| Ethereum       | 20.55                 | 197.85                           | 306.8                                | -35.5                        | 103.9                               | 1,448                    |
| Litecoin       | 2.942                 | 49.68                            | 56.22                                | -11.63                       | 59.2                                | 352                      |
| Bitcoin Cash   | 7.397                 | 425.36                           | 444.92                               | -4.4                         | 17.39                               | 283                      |

Source: <https://coinmarketcap.com/>

Today, there are more than 2,000 cryptocurrencies available over the internet with a current total market value of \$205bn.<sup>iii</sup> and new ones are created any time. Bitcoin was the first and is still the most famous cryptocurrency successfully demonstrating the viability of a cryptographic-backed public money supply that is open to anyone. Bitcoin was launched in 2009 by Satoshi Nakamoto who designed the cryptocurrency, famously stating that society needed an electronic payment system based on cryptographic proof instead of trust (Nakamoto, 2014) and creating the standardised specifications from which the payment system has and continues to evolve.<sup>iv</sup> Its success led to the creation of other cryptocurrencies (sometimes called altcoins, short for alternative coins) such as Ethereum, Litecoin, Ripple, Namecoin and PPCoin. Table 1 shows basic market information about some of the largest.

Cryptocurrencies have many attractive features. They can be accessed through software and held in 'wallets'. This makes it easier to securely transfer funds between two parties, avoiding the large fees charged by most financial institutions. They are difficult to counterfeit because of their use of cryptography<sup>v</sup> as it is not issued by an official authority, a cryptocurrency is free from government interference ensuring transactions are private but also making it suited for various nefarious activities, such as money laundering and tax evasion.<sup>vi</sup> Cryptocurrency also plays an important role in the adult entertainment and sex work industries. It has been also been embraced by those in poor countries, notably in Africa desperate to supplement their income. See <https://bitcoinafrica.io/>.

On the other hand, because cryptocurrencies are virtual and do not have a central repository, a digital cryptocurrency balance can be wiped out by a computer crash if a backup copy of the holdings does not exist. Also, as the price of a cryptocurrency is based on supply and demand, its 'rate of exchange' (i.e. its value) can fluctuate widely.

### **Trading cryptocurrency**

#### *The problem of valuation*

Because the prices of cryptocurrencies are so volatile, they are seen by punters as an easy way of making profits. It is not clear why prices should rise or fall as there is no means to value them unlike most other financial assets. This section examines these issues.

It is reasonably easy to estimate the value of most types of financial assets in order to assess their price. This is particularly easy in the case of coins and notes, bills of exchange, promissory notes and so on as their payoffs are specified and merely dependent on confidence that they will be paid. Stocks, shares and bonds (and related derivatives) are valued differently. Whilst they are subject to speculative bubbles etc, it is usually possible to calculate an intrinsic value which will help to limit or place a check on irrationality. Buyers and sellers may refer to valuation models, e.g. book- or market-value, the capital asset pricing model etc. and arbitrage and are able to compare returns with comparable alternatives (Barnes, 2019, p.26-38). By comparing the price of a stock with his/her view of its intrinsic value, an investor may decide to buy, sell or continue to hold it. (If the market price is significantly above the intrinsic value, the investor should consider selling it, similarly, if the price is below the intrinsic value, he/she should consider buying more). Hence, the release of new information relevant to the company's prospects is likely to affect its share price as investors are likely to revise their estimates of its intrinsic value. It follows that at any one point in time, the market value of a share represents the market's opinion of its worth and the collective view of investors and experts. i.e. based on all that is publicly known about the stock.

For these reasons, the stock market is said to be 'informationally efficient' leading to an efficient (or 'optimal') allocation of resources within the economy (known as 'allocative efficiency'). However, it was not until the early 1960s that the full implications of stock market efficiency were studied. These were brought together by Eugene Fama in 1970 who developed the 'efficient capital markets hypothesis' ('ECMH') that share prices fully reflect all available information and that there were three forms of stock market efficiency:

**1. The Weak Form:** This states that as all new information about the company is immediately and fully reflected in and by a new price movement. As we are unable to forecast future news, and past news is fully impounded in an existing share price. It is not possible to predict new share movements from old share price movements. It follows that the movement in a share price on one day is not correlated with the share price change the following day. This is often referred to as a 'random walk'.<sup>vii</sup> The principal implication of this is that an investor cannot use past share price movements to predict new price movements in an attempt to outperform the market. It also follows that information about recent trends in stock prices would be of no use in selecting stocks and studying patterns in the movement in a company's shares in order to earn abnormal returns is futile.

There have been many empirical studies of the weak form. They have almost unanimously concluded that there is no correlation between one day's share price change and the next. Economists have usually concluded that this supports the ECMH. However, it should be noted that this also supports an alternative hypothesis - that share price movements are totally unrelated to the provision of new information and, as a result, move randomly. We will examine this later in the paper.

2. The Semi- Strong Form: This states that share prices adjust immediately and once and for all to new information as it becomes publicly available. It follows that as current market prices reflect all publicly available information, no one can consistently out-perform the stock market and earn abnormal returns. There is, therefore, no point in attempting to do so. The important point about the semi-strong form is that it refers only to publicly available information and recognises the existence of inside information in which those in possession of it can out-perform the stock market.

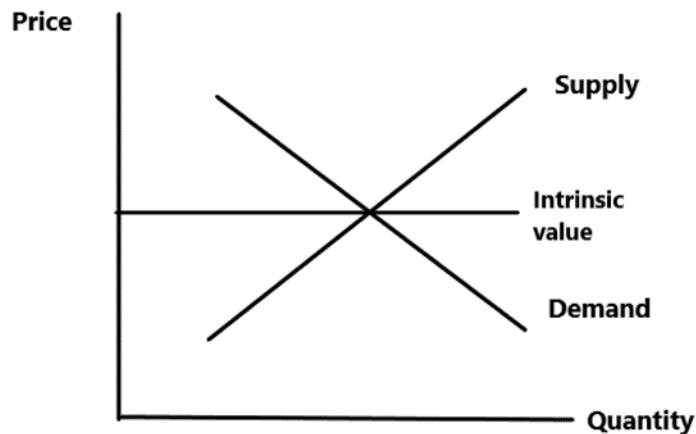
3. The Strong Form: This states that current market prices reflect all relevant information, whether publicly available or privately held. It is generally believed that all large stock markets are efficient in the weak and semi-strong forms but are not efficient in the strong form and insiders and others who profit from inside information exist on a fairly large scale. Whilst academics have had access to the necessary information to test the other forms of the ECMH, they are usually unable to test the strong form because of the secrecy of inside traders.

The prices of foreign currencies, commodities etc are also determined largely by supply and demand as market makers attempt to balance the two. This, together with the effects of arbitrage and the large volume of trade helps stabilise prices and leads to 'efficient' pricing. (For a discussion of these issues see Barnes, 2018.)

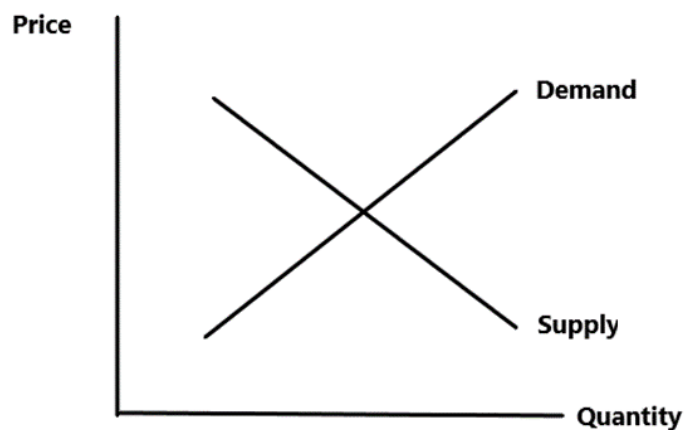
The day-to-day price of cryptocurrencies is similar. The price at any point in time is a result of trading that is happening on the exchanges as market makers attempt to manage order books comprising lists of people willing to buy or sell at different prices. The determination of prices in this way is referred to as 'price discovery' in which the price of the last trade on the exchange forms the basis for the quoted price. Prices may vary slightly across exchanges depending on the last trade price but minimised by 'aggregators' who look into what is happening across exchanges and calculate the average to get an appropriate value.

Figure 1  
The interaction of supply and demand

**1a. Financial assets, where there is an intrinsic value available.**



**1b. A cryptocurrency, where there is no intrinsic value available.**



Most prices are determined by the interaction of supply and demand in one way or another. In the case of goods and services, the demand curve is downward sloping and the supply curve is upward sloping,<sup>viii</sup> the price and output being determined by their intersection. In the case of financial assets where there is an intrinsic value, the supply and demand curves will be similar (upward and downward, respectively) as prices depart from the intrinsic value. See Figure 1a. As the market price falls below the intrinsic value, investors will become keener to buy and more reluctant to sell the investment as they see it is relatively cheap.

Similarly, if the market price rises above the intrinsic value, investors will become keener to sell and reluctant to buy as they see the investment as relatively expensive.

The above analysis assumes that there is an intrinsic value available to investors and (for diagrammatic simplicity) its value is stationary. In the case of a cryptocurrency, where there is no intrinsic value available and a limited number of market makers, the supply and demand curves will be reversed, i.e. downwards and upwards, respectively, as investors' incentives are as follows. If the cryptocurrency's price rises and they expect this to continue (and in the absence of information to the contrary this is reasonable) the demand for the cryptocurrency will rise as its price rises and its supply will decrease. (This is likely to occur (a) because of the reluctance of investors to sell when they expect the price to rise and (b) the restrictions on the supply of new coins from mining). Similarly, if its price is falling and investors are expecting this to continue, then their demand for it will fall and its supply will increase (as investors wish to sell before the price falls further). See Figure 1b.

#### *Trading cryptocurrency for profit*

The stock of a cryptocurrency comprises those coins that were initially issued by the founders and those that were subsequently mined. The supply at any point in time consists of those that founders, miners, brokers and service providers and investors hold, the numbers available for sale depending on the offer price.

Diagram 1a assumed for simplicity that the intrinsic value remained stationary. In practice, of course, this is unlikely as changing economic factors and other news are received and affect a stock's intrinsic value. In the case of a cryptocurrency, as it has no intrinsic value, economic and financial information are irrelevant. As there is no information available to help investors decide whether the price of a cryptocurrency will rise or fall in the short term, all they can do is attempt to estimate supply and demand. And as there is no information about this other than historical information of the daily volume of transactions, the best that can be done is to use this on which to base expectations. For example, if the volume is increasing or relatively high and prices are rising/falling then it may be reasonable to conclude that this will continue.

#### **Market Irrationality**

In the previous section it was argued that it is only possible to out-perform the stock market if an investor is able to forecast better than the market as a whole or has inside information. In this section, it is argued that in order to protect or



maximise his/her returns, it is also necessary for the investor to forecast, not what the market should believe, but what it is likely to believe as it is not always rational but has fads, fashions, moods and susceptible to the herding instinct.

Large price rises ('spikes') followed by collapse, often referred to as 'speculative bubbles', and their irrationality more generally, are nowadays a recognised feature of the financial markets. The term 'irrational exuberance' is also used to describe the phenomenon but, although a recent term, does not represent a new theory or offer a new understanding of the reasons for the occurrence.<sup>ix</sup> The phenomenon was first recognized by Charles Mackay writing in 1841 who cited various examples of what he called 'delusions and madness', the most famous case being 'tulipmania' in Holland.

The story of tulipmania begins in 1559 when the first tulip bulbs were brought from Constantinople to Holland and Germany, and people fell in love with the. Soon tulips became a status symbol for the wealthy, their bulbs hard to get. Although early buyers were people who truly prized the lovely flowers, later buyers primarily considered their bulbs an investment. Soon speculators became involved and tulip bulbs began to be traded on the local exchanges. By 1634, the craze of owning tulips had spread to the Dutch middle classes and merchants and shopkeepers vied with one another for single tulip bulbs. At the height of tulip mania in 1635, a single tulip bulb was worth £20,000 in today's prices. Tulip bulbs were traded on the Amsterdam Stock Exchange and other exchanges in Europe. Trade grew so rapidly that tulip notaries and clerks were appointed to record transactions and public laws and regulations were developed to control the tulip craze. However, by 1636, people began to sell their holdings and the price of tulip bulbs began to weaken, slowly at first, and then rapidly. Confidence was soon destroyed, and panic seized the market. Within six weeks, prices had fallen by 90 per cent and defaults on contracts were widespread. At first the Dutch government refused to interfere but later was forced to act. All contracts prior to November 1636 were declared null and void but prices continued to fall. In Amsterdam, judges unanimously refused to uphold tulip contracts and treated them as gambling activities and no court in Holland would enforce payment. The price of tulip bulbs eventually fell to, in real terms, less than their price today.

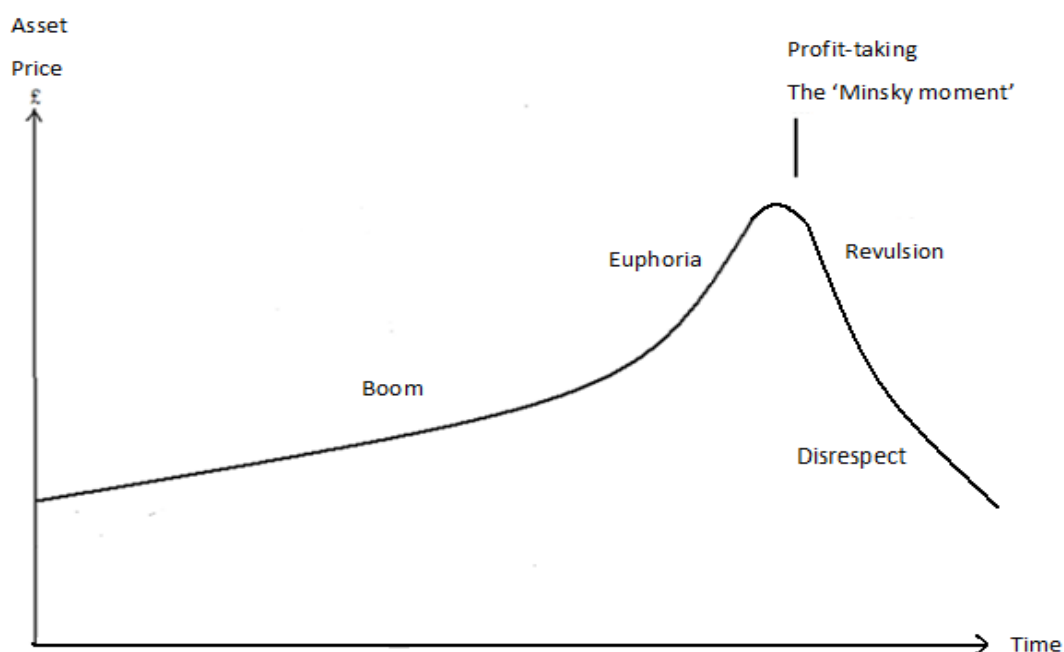
Perhaps the final word on irrationality in financial markets should be left to Isaac Newton who, like Jonathan Swift, had lost money on the South Sea bubble (circa 1720) when he remarked 'I can calculate the movement of the stars, but not the madness of men'.<sup>x</sup>

### *Keynes' biggest fool theory*

Keynes (1936) was the first to develop an explanation of this behaviour: what is referred to as his 'biggest fool' theory. He argued that investors do not estimate an asset's intrinsic value mentioned earlier to compare with the market price. Instead, he said, investors are more interested in whether a share price will rise and, then, if other investors also think it will rise. In Keynes' opinion, this was rational; a company's intrinsic value is largely irrelevant. He used the analogy of attempting to forecast the winner of a beauty contest. Around that time, it was common for London newspapers to run competitions requiring readers to choose a set of six faces from 100 photographs of women that were the 'most beautiful'. The names of those who picked the most popular faces were then entered into a raffle for a prize. The most obvious strategy would be to choose the six faces that, in the opinion of the reader, are the most beautiful. Keynes said that a better approach would be to attempt to identify those faces most likely to be chosen by the public. This could be carried one step further to take into account the fact that other entrants would also be basing their decision on forecasts of competitors' opinions. The strategy could be extended to the next order and so on, at each level attempting to predict the eventual outcome of the process based on the reasoning of others.

Keynes believed that the stock market behaved in a similar way. People priced shares, not on what they thought a stock's intrinsic value was, but on what they thought everyone else thought it was worth. If an investor thought that the price of a share would rise and that other investors would buy it, he/she would also buy, increasing the demand for the stock and forcing its price up further. Eventually, the price would be so far removed from reality that investors would realise this and stop buying. The process would then go into reverse where investors think the share price will fall and decide to sell. The person who bought at the top of the market was described by Keynes as the 'biggest fool'. Although Keynes used the theory primarily to explain the role of interest rate movements in the economy (Keynes, 1936) his understanding derives from his own dealings on the stock market on behalf of his Cambridge college which were very successful earning it millions of pounds.

Figure 2  
**The Minsky moment**

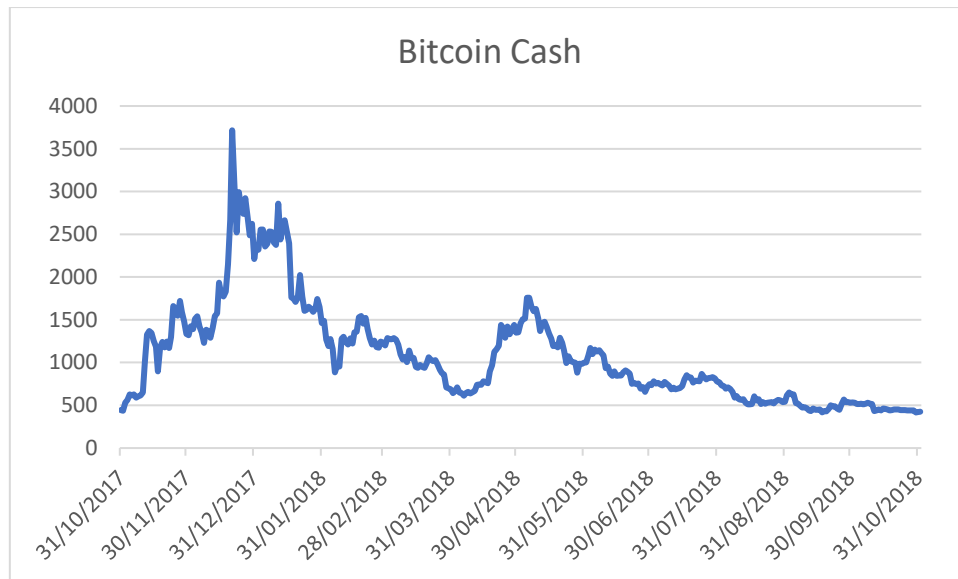


The irrationality of the markets as an important factor in financial history is well known and well documented. Kindleberger and Aliber (2011) argue and present examples to show that financially fuelled boom-and-bust cycles frequently occur. They extend the notion of irrationality of financial markets to whole economies and economic sectors. They cite Minsky's Financial Instability Hypothesis ('FIH') (Minsky, 1977, 1982, 1989) which builds on Keynes' theory (Minsky was a student of Keynes and very much influenced by him) as the principal theory to underpin their observations. The FIH attempts to explain the irrationality of financial markets during periods of extreme boom and bust and leading to a financial crisis. According to Minsky, the cycle takes the following form: boom - overestimation of expected returns - euphoria and band-wagon effect - profit-taking - the recognition that earlier expectations were unjustified. In the final stage as losses occur, panic sets in (the irrational herding instinct) together with revulsion and the overall discrediting of the subject of the boom in the first place. See Figure 2. The theory may apply to any asset and even a whole economy. As expansion develops, optimism increases and beliefs about the proper level of debt and risk change. Here, prices of financial assets rise and

the general level of speculation increases. ('speculation' refers to attempts by investors to bet on the future direction and psychology of the market, Minsky, 1975, pp.120-23).

Figure 3  
Charts of daily prices for four of the most popular cryptocurrencies,  
1 November, 2017 - 31 October, 2018.





### *Empirical evidence*

Over the last year (to 31 October, 2018) there has been a classic speculative bubble. See Figure 3. All the major cryptocurrencies experienced it. The Minsky moment occurred on or around 17 December 2017 for Bitcoin for example when it rose to \$20,089 but then fell to \$5,968.36 on 6 February 2018. Since then, particularly in recent weeks, the cryptocurrencies in my list have continued to decline, causing negative returns for the year as a whole although Bitcoin made a small positive return. (See the fifth column in Table 1). These results are consistent with typical bubbles where ultimately the price falls to below it was in the first place.

Table 2  
**Bitcoin daily volume statistics across market moods**  
**1 November, 2017 - 31 October, 2018.**

|            | Period                              | Daily volume |        |
|------------|-------------------------------------|--------------|--------|
|            |                                     | No           | \$m    |
| Boom       | 1 November to 5 December 2017       | 202,758      | 4,923  |
| Euphoria   | 6 December to 17 December 2017      | 851,776      | 14,414 |
| Revulsion  | 18 December 2017 to 31 January 2018 | 1,003,708    | 13824  |
| Disrespect | 1 February to 31 October 2018       | 705,979      | 5,378  |

It was argued earlier that a high price of a cryptocurrency would result in increased/high demand and high volume of trade, whereas a falling/low market price would result in low volume of trade. Over the year to 31 October, the average volume of trading in Bitcoin was significantly higher during the 'euphoria' period than the 'boom' and 'disrespect' periods. See Table 2.<sup>xi</sup> Presumably the high volume of activity during the 'revulsion' period was a result of disposals.

Table 3  
**Correlation coefficients of daily price changes for four of the main**  
**cryptocurrencies: 1 November, 2017 - 31 October, 2018.**

|                 | <i>Ethereum</i> | <i>Litecoin</i> | <i>Bitcoin Cash</i> |
|-----------------|-----------------|-----------------|---------------------|
| <i>Bitcoin</i>  | 0.635           | 0.605           | 0.427               |
| <i>Ethereum</i> |                 | 0.772           | 0.593               |
| <i>Litecoin</i> |                 |                 | 0.455               |

It has been argued that the prices and price movements are unrelated to economic events as cryptocurrencies have no intrinsic value in the same way that stocks and shares do and simply follow a random walk as market makers attempt to balance their books and maximise their profits. It could also be that as their prices (and price changes) are unrelated to economic events and left to the interaction between supply and demand, cryptocurrency prices may follow one another, e.g. led by Bitcoin the largest and arguably the 'market leader'. It is interesting therefore to see whether, cryptocurrencies move together as the charts in Figure 3 suggest. Table 3 shows the correlations between the chosen

cryptocurrencies in which there is an average correlation coefficient of around 0.6 (1.0 is perfect positive correlation, -1.0 perfect negative correlation and zero, no correlation indicating total independence). This suggests that the main cryptocurrencies tend to follow one another but not entirely.

## **Regulation and Abuse**

There are no international standards for the regulation of cryptocurrencies. Individual countries' regulations range from none to an outright ban. Governments are still struggling to understand the technology and the regulatory implications. In the U.S, there has been a proposal to have a self-regulating body similar to that for the U.S. securities industry. The FinTech industry is resisting this as it believes it will hamper developing technology and cites the Internet as an example.

In the UK, The FCA has warned about the risks of investing in cryptocurrency CFDs and is about to issue an outright ban.<sup>xii</sup> Although as yet it does not have a responsibility for cryptocurrency and ICOs, as the FCA, regulates CFDs, and therefore firms offering CFDs must be authorised and supervised by the FCA, it is appropriate to warn customers about these risks.<sup>xiii</sup>

### *Scams*

There are various cryptocurrency frauds and scams resulting from the anonymity involved in online trading and, in particular, blockchain which makes it difficult to trace the fraudsters.<sup>xiv</sup> Often victims are attracted by promises of large and unrealistic earnings through unique trading systems. In some cases, these systems do not even exist; in others, the high returns claimed are unachievable. Whilst there have been thefts of cryptocurrency, most frauds and scams involve market abuse whether in the form of the manipulation of market prices through pump and dump schemes or ICOs which are usually either Ponzi schemes or simple frauds. Cryptocurrency has its own version of Ponzi schemes involving it simply being stolen or found missing from an exchange.

In the UK, Action Fraud, its fraud and cybercrime reporting agency, has said that crimes linked to Bitcoin increased to 999 in 2017 from 320 in 2016. It has warned the public about the growing problem of criminals using the reputation of prominent people in cryptocurrency scams without their consent.<sup>xv</sup> In March 2018 alone, Action Fraud received 21 reports of this kind, with a total reported loss of more than £34,000 to victims.

### *Pump and dump schemes*

In a pump-and-dump scheme, promoters 'pump' up the price of a security creating a speculative frenzy, then 'dump' some of their holdings at the artificially inflated price.

These schemes are common in cryptocurrency markets. In government-regulated stock markets such as the London and New York stock exchanges, pump and dump schemes are illegal and fraudsters have been prosecuted (Barnes, 2008, 2009a, 2009b, 2011).<sup>xvi</sup> However, cryptocurrency exchanges are, for the moment, unregulated and difficult to police and those involved have escaped prosecution.

The organisers of these schemes openly use social media such as Reddit and other online forums and outlets. They argue that a price spike is evidence of a sustained rally, and that smart traders should get in before the coin goes 'to the moon'. Participants are also asked to 'push' that cryptocurrency on social media networks. They may then discover that the coin's price has risen sharply triggering 'FOMO' ('fear of missing out'). Once a target price has been reached, or the scheme's organizers decide that they've had enough and dumped their holdings, the cryptocurrency's price will collapse.

How this is done has been described by an organiser behind such a scheme.

'Pump and Dump guide

STEP 1: Make sure you register on the exchange and have BTC [bitcoins] ready in your wallet. Keep in mind, it can take a while to transfer BTC.

STEP 2: Group/Channel will announce the coin at the announced start time. Be sure to buy FAST!

STEP 3 (IMPORTANT): Place your buy orders much higher (5x-10x) than the current price. This will ensure that your order is filled and you get it at the best price. If you set lower buy orders, someone else may clear sell walls before you and your order won't go through. You DON'T want to make this mistake. Set a higher buy order and it will be filled at the next best price

EXAMPLE: Let's say the coin has sell orders at 300 and 305 sats. Put a buy order to 1500 sats with all of your BTC and you will buy all 3 orders from their defined price. If someone else acts before you and buys those lowest orders, than you will buy from 311 and 315 which is pretty good. But if you put your buy order at 300 sats, you won't be able to buy at that moment due to the price fluctuating so fast. Be careful and get on that spaceship asap!



STEP 4: Once you have bought your coins, the next step is to promote the coin. Go to the Cryptopia Chatbox and hype up the coin w/o giving away any suspicion of a pump and dump. DON'T mention it is a Pump and Dump. Just big it up! "Wow, what is going on with xxx?" Hype it up in any other forums you are a member of as well. Creating hype and momentum is key!  
STEP 5: Sell with profit!

<https://bitcointalk.org/index.php?topic=2886369.0>).

It seems inevitable that cryptocurrency markets (and, therefore, pump and dump schemes) will be regulated at some stage in the same way as the main stock exchanges.<sup>xvii</sup>

### **Manipulation of the cryptocurrency markets**

Given the lack of regulation and the openness by traders about the existence of pump and dump schemes, it is not surprising that there have been claims that the market is manipulated at the highest levels.

#### *The manipulation of prices*

Griffin and Shams (2018), two academics, have presented empirical evidence showing a pattern of price support for Bitcoin using Tethers, a less popular cryptocurrency. Tethers are created by Tether Ltd. often in large blocks, typically 200 million. Almost all of the new coins are then moved to Bitfinex. Tether and Bitfinex share a management team, although little is known about how the two businesses cooperate. Bitfinex was originally a Bitcoin exchange but now services other cryptocurrencies. Griffin and Shams examined 87 of the largest purchases of Bitcoins with Tether between March 2017 and March 2018 and discovered that when Bitcoins' price fell, purchases with Tether tended to increase, helping to reverse the decline.

There have been other claims of manipulation involving Tether. Bloomberg recently published an article (29 June 2018) entitled "Crypto Coin Tether Defies Logic on Kraken's Market, Raising Red Flags" claiming that whilst the prices of other cryptocurrencies fluctuate in line with buy and sell orders, Tether remains unaffected. They looked at 56,000 trades that were processed on the exchange during May and June and, in consultation with experts, concluded that the lack of movement was unbelievable. None had seen a price fail to react to large transactions in this way.

### *The manipulation of reported volume*

In addition to the manipulation of prices, it has also been claimed that volume data are reported incorrectly in order to raise the visibility and credibility of a cryptocurrency or exchange. CoinMarketCap has recently been criticized for overstating cryptocurrency volumes due to the way data are extracted from exchanges and exacerbated by the way the platforms record trading activity (McIntosh, 2018). McIntosh quotes various experts who support this view but find it difficult to prove. In another article, Ribes identifies LiveCoinWatch and OKex as the main culprits after attempting to check volatility by seeing to what extent cryptocurrency prices would be affected by the selling of \$50,000 of a given coin. He found some massive discrepancies in slippage between exchanges, 'the kind that can only be explained by some [volume] figures being overstated as much as 95% (Golstein, 2018a).<sup>xviii</sup>

Cryptocurrency prices may be affected by bots. Bots are used in financial markets to execute trading decisions for a trader according to a specified algorithm. They are used extensively in cryptocurrency markets but, in some instances, maliciously. A recent case is of a 'harassing bot' which would post an order to sell Ether at a price lower than what other sellers were offering, prompting traders to try to make a buy. However, immediately before traders completed the purchase, the bot would cancel its sell order. As a result, buy orders were posted, raising the Cryptocurrency's price on other exchanges (Golstein, S. (2018b).

The practice of faking orders and then cancelling them is known as 'spoofing', in order to create the impression that the supply or demand for an asset is higher than it actually is. Although this practice has been outlawed in most futures and stock markets, it is claimed it is rampant in the manipulation of cryptocurrency prices and trading (Vigna and Osipovic, 2018).

As a result of these revelations, the US Justice Department has opened a criminal investigation into price manipulation of popular cryptocurrencies like Bitcoin, focused on specific manipulative activities such as spoofing and pump-and-dump schemes.<sup>xix</sup>

### *The manipulation of location*

Some cryptocurrency firms including some major cryptocurrency exchanges, have been accused of having 'fake' headquarters, i.e. their headquarters are stated to be at a certain address, but they aren't actually there (McIntosh, 2018b). The best-known case is that of KuCoin, a cryptocurrency exchange that

stated it was based in Hong Kong. Writing under the name 'Jackson Wong' it has been revealed that what was stated to be KuCoin's headquarters were in fact empty offices. Wong concluded that 'KuCoin has never been there and they lied to us the whole time'. KuCoin issued an official statement: 'There have been rumours that KuCoin's central office in Hong Kong is empty. In fact, KuCoin's public address in Hong Kong is merely a mailing address of one of KuCoin's many subsidiary companies. KuCoin Headquarters is in Singapore. KuCoin has always been a global firm, with over 300 employees and four major offices in China, the Philippines, Singapore, and Thailand'. It did not provide the address of where its offices in Singapore were located. A UK example is that of BlackRock Crypto Asset Management (a firm unconnected to BlackRock) which stated its head office was in London but on investigation of the address there was no evidence.<sup>xx</sup>

It is thought that there are other cases. The reason for this is the transient nature of companies. The location of a company's headquarters is largely irrelevant because most business is conducted online anyway. Companies will move their offices to jurisdictions with more favourable laws and regulations. McIntosh (2018b) points to the crypto-related bans that China imposed in 2017: exchanges located there simply relocated. Binance, the world's largest crypto-exchange's recent decision to relocate from Hong Kong to Malta as an example.

#### *The manipulation of market capitalisation (or 'marcap')*

Despite not having shares in the way limited companies do, cryptocurrencies' market capitalisations are reported. This is a concept in finance related to the number of shares in existence for a limited company, defined as the number of shares multiplied by their market price. There are various problems with applying this to cryptocurrencies, making the data misleading. A company's market capitalisation approximates to its value, representing how much would be needed to buy all its shares - its intrinsic value to use the term used earlier. Certainly, if the marcap is significantly below its perceived value, this may bring about a takeover bid.

A cryptocurrency has no intrinsic value. Its only value is the market price of the coins. But unlike a company, it is unlikely that all of these could, or would, be bought making the marcap unrealistic. There is also the issue of how many of the coins are effectively in circulation. It is possible for the founder/effective owners of a cryptocurrency to issue coins to themselves – conceivably, an unlimited number given their private nature. This is not so easy for a company as it will need agreement by shareholders and will dilute the share price. For example, if a company made a one for one share bonus issue raising no funds, its intrinsic value would be unchanged, the value of each share being halved but

their number doubled. In the case of cryptocurrency, such an issue of new coins would not affect the intrinsic value of the cryptocurrency (as it is zero) but, as the coin's market price would not be affected, this would double its marcap.

In the case of most cryptocurrency exchanges and other service providers, it is reasonably easy to identify their location and legal status. This is not the case with many of the cryptocurrency developers and founders and the entities they use. Whilst some have specified a limit to the number of coins they will issue and the terms on which this will be done (e.g. Bitcoins), many have not. It is also not known how many coins were issued initially and whether these were later sold. The limited evidence suggests that these individuals became very rich out of the issue of large numbers of coins to themselves and they are still holding most of these coins.<sup>xxi</sup>

Whilst this raises questions about the real wealth of these individuals (especially given the recent falls in the market prices of most cryptocurrencies making it even more difficult to realise their holdings) it suggests that there may be a large proportion of coins technically 'in circulation' and part of the marcap calculation that are effectively unrealisable and valueless. It also suggests that marcap may be an inappropriate and inaccurate measure of the size of a cryptocurrency in practice. It is likely to be within the power of such an owner to raise the perceived market value of the cryptocurrency simply by issuing new coins to him/herself. Clearly there is a need for accountability in this area.

### **Initial Coin Offerings ('ICO')**

An ICO (also called an Initial Public Coin Offering 'IPCO') is a largely unregulated means by which usually start-up companies issue virtual coins or tokens (also called 'user tokens' or 'app coins') on a blockchain exchange for legal tender or cryptocurrencies, to raise funds for new ventures. These tokens can be traded on cryptocurrency exchanges or serve various functions, ranging from granting holders access to a service to entitling them to company dividends. Depending on their function, crypto-tokens may be classified as utility tokens or security tokens.<sup>xxii</sup> The term was clearly inspired by initial public offerings that companies do to sell stock to investors. ICOs are very similar to the IPO dot.com bubble of the late 1990's (Barnes, 2009a p. 82-3). However, unlike IPOs, ICOs are usually designed so that investors do not get an ownership stake in the start-ups as if the cryptocurrency does provide an ownership stake, the company must comply with securities law.

By May 2018, over \$7.3bn had been raised in this way, \$5.5bn of which in 2017.<sup>xxiii</sup> 40% of all ICOs (446 transactions raising \$1.76bn) were based in the European Union, the second largest region was North America (244 transactions raising \$1.076bn).<sup>xxiv</sup>

### *ICO frauds and scams*

These include pump and dump schemes, Ponzi schemes and simple theft. There have been three recent authoritative studies to support the view that most ICOs are fraudulent in one way or another.

First, a survey by the Wall Street Journal published in May 2018<sup>xxv</sup> examined documents from 1,450 ICOs. Whilst some of the firms were still active, others had been shut down, investors claiming losses of \$273m according to lawsuits and regulatory reports. The study found that 271 ICOs (nearly one in five) contained what it regarded as ‘red flags’, that is plagiarized investor documents, promises of guaranteed returns and missing or fake executive teams. In 111 cases, entire sections were repeated word-for-word from other white papers.<sup>xxvi</sup> The copied sections included descriptions of marketing plans, security issues and technical features.

Second, a survey by the Satis Group published in March, 2018<sup>xxvii</sup> found that four out of five ICOs were scams. The study examined ICOs with a market cap of \$50m or more and divided them into six categories:

- ‘Scams (pre-trading)’ (81%) - offerings that had no intention of fulfilment and deemed by the investment community (message boards, website or other online information) to be a scam,
- ‘Failed (pre-trading)’ (6%) - offerings that were not completed but were abandoned as a result of insufficient funds raised,
- ‘Gone dead (pre-trading)’ (5%) - offerings that succeeded in raising the necessary funding and completed the process but failed to be listed on an exchange,
- ‘Dwindling (trading)’ (2.8%) - offerings that succeeded in raising the necessary funding and completed the process and listed on an exchange but had one or less of the following success criteria: (1) deployment of a chain/distributed ledger (in the case of a base-layer protocol) or product/platform (in the case of an app/utility token) (2) had a transparent project roadmap posted on their website or (3) had Github code contribution activity in a surrounding three-month period.
- ‘Promising (trading)’ (1.6%) - satisfied two of the above criteria.
- ‘Successful (trading)’ (3.8%) - satisfied all three of the above criteria.

Third, an Ernst & Young study published in December 2017 estimated that 10% of the money raised from ICOs was effectively stolen.<sup>xxviii</sup>

A good example of cryptocurrency as part of a Ponzi or pyramid scheme is OneCoin. OneCoin used a marketing approach in which customers bought 'educational products' (the material was plagiarised) and received tokens to mine the cryptocurrency. In order to earn more 'tokens', customers needed to recruit others to join OneCoin. These new members, in turn, were required to recruit others. OneCoin ran into trouble with financial regulators in various countries around the world who had warned people against investing in cryptocurrencies and that it was probably a Ponzi scheme. Its offices were raided and closed down; its founder and CEO, Dr Ruja Ignatova was arrested in Germany in November 2017 together with other senior management who were arrested in various parts of the world.

#### *The regulation of ICOs*

There has also been no international consistency in the regulation of ICOs. China and South Korea have banned ICOs, referring to them as 'illegal fundraising' whilst Canadian regulators have accepted them as part of its policy of supporting innovative fintech projects. The European Securities and Markets Authority ('ESMA') has also denounced ICOs, warning consumers that they are 'very risky and highly speculative investments'.

In the US and various other countries, regulators have said coins and tokens should be categorized as securities, like stocks and bonds. If a coin is categorized as a security, it has to follow all relevant securities law, such as registering with the authorities and ensuring that people buying the coins are properly accredited and vetted. However, no coin offerings have followed these rules, instead ensuring that investors do not get an ownership stake in the start-ups. (If a coin provides an ownership stake, the company is required to comply with all securities law.) The SEC has also warned investors that many deals in the cryptocurrencies market could be violating securities laws<sup>xxix</sup> and has launched a website containing a fake coin offering as an illustration of what to avoid.<sup>xxx</sup> The agency has filed civil charges in four cases involving ICOs.

Two recent cases illustrate the approaches likely to be taken in the US. In January 2018, the SEC obtained a court order to prevent the US bank AriseBank attempting to use an ICO to raise \$1bn for its "AriseCoin" cryptocurrency. It stated that the bank had 'falsely stated that it purchased an FDIC-insured bank' and had "allegedly omitted to disclose the criminal background of key

executives’.<sup>xxxii</sup> The Tezos blockchain has recently become the subject of a number of class actions relating to its \$232m ICO, the plaintiffs alleging that the ICO was an unregistered, non-exempt offer representing a sale of securities in violation of the federal securities laws.<sup>xxxii</sup>

In the UK, the FCA has expressed uncertainty of whether an ICO falls within its regulatory boundaries, stating that firms will be considered on a case-by-case basis, depending on how they are structured under the Financial Services and Markets Act 2000 (FSMA). FSMA states that no firm may carry on a regulated activity in the UK unless it is authorised by the FCA or is exempted. To carry on regulated activities, the firm must be performing specified activities relating to specified investments, as defined in the FSMA (Regulated Activities) Order 2001 (‘RAO’).

### **The theft of cryptocurrency**

Cryptocurrencies are not immune to the threat of hacking. Bitcoin has been subject to over 40 thefts, some exceeding \$1m. Two of the largest are described below, other recent cases are listed in Table 4.

The theft of coins worth £380m from Coincheck, one of Japan’s largest exchanges reported in January 2018 was the world’s largest cryptocurrency theft. About 523m of the exchange’s NEM coins were sent to another account and not recovered. The exchange suspended deposits and withdrawals for all cryptocurrencies except Bitcoins. The stolen assets were reported to have been kept in a ‘hot wallet’, a digital storage option connected to the internet, as opposed to a ‘cold wallet’, where assets are kept offline.<sup>xxxiii</sup>

Mt Gox, based in Japan and the largest bitcoin exchange in the world handling over 70% of all bitcoin transactions worldwide, was the victim of two hacks. The first, in 2011, was probably the result of a compromised computer belonging to an auditor of the company. The hackers used the auditor’s access to the exchange to artificially alter the bitcoins to one percent of their nominal value and transfer 2,000 bitcoins from customer accounts on the exchange, which were then sold. Also, 650 bitcoins were purchased from the exchange at an artificially low price by Mt. Gox customers, none of which were ever returned.

The second, in 2014, forced the exchange to suspend all trading and close down its website. It was found that hackers had raided the exchange and stolen 744,408 bitcoins belonging to its customers (6% of all bitcoin in existence at the time and valued at \$400m) together with 100,000 bitcoins belonging to the

company. \$27m was also missing from the company's bank accounts. The exchange was declared insolvent and a few days later Mt. Gox filed for bankruptcy protection in Japan and the US. It later transpired that from as early as September 2011 it had been operating while technically insolvent.

The thefts are remarkable in terms of their number, size and irony, given the cryptographic efforts by exchanges to ensure their security. The thefts of stocks and shares from a conventional stock exchange or from a financial institution holding shares for clients is unknown.

Table 4  
Large thefts of cryptocurrency since 2010 and those in 2018.

| Announcement Date             | Exchange                   | Amount lost | Details  |
|-------------------------------|----------------------------|-------------|--|
| August 2010                   | BTC                        | \$12.9m     | 184 bn Bitcoins                                  |
| August 2011,<br>February 2014 | Mt Gox                     | \$460m      | See text   |
| September 2012                | Bitfloor, Atlanta, USA.    | \$250,000   | 24,000 Bitcoins                                  |
| December 2014                 | BitPay, Luxemburg          | \$1.8m      | 3,000 Bitcoins                                   |
| January 2015                  | Bitstamp                   | \$5.1m      | Bitcoin  |
| June 2016                     | DAO                        | \$50m       | Ether  |
| July 2016                     | Steemit.com                | \$85,000    | Steem and Steem Dollars                          |
| August 2016                   | Bitfinex                   | \$72m       | 120,000 bitcoins                                 |
| July 2017                     | Veritaseum                 | \$8m        | Veritaseum                                       |
| July 2017                     | Parity                     | \$32m       | Ether  |
| August 2017                   | Enigma, USA                | \$500,000   | Ether  |
| November 2017                 | Tether                     | \$30.9m     | Tether   |
| December 2017                 | NiceHash, Slovenia         | \$63        | Bitcoins   |
| January 2018                  | Coincheck, Tokyo, Japan    | \$380       | See text   |
| February 2018                 | Bitgrail, Italy            | \$195m      | Nano tokens                                      |
| June 2018                     | Coinrail                   | \$40m       | Dent and tron                                    |
| June 2018                     | Bithumb                    | \$30m       | tokens   |
| July 2018                     | Bancor, Isreal/Switzerland | \$23m       | Ether, Pundi X's NPXS token and in Bancor's BNT. |



Other forms of malicious behaviour include what is known as ‘ransomware’, where victims are forced to pay to have their systems liberated from malware, and ‘cryptojacking’. This involves the hacking of a system and using it to mine cryptocurrencies. Money is not stolen from victims; unwanted software is simply being unknowingly run on their computers. Given the amount of computing effort that mining involves, this may be costly for the victim and over recent years these attacks have become common.

### **Final remarks**

The size, frequency and nature of manipulation, scams and fraud in the market makes them appear endemic. Undoubtedly, they have arisen from the lack of regulation, accountability and desire for privacy by founders, owners and developers.

Whilst this is understandable given its infancy and rapid developments within the industry, until it recognises the harm being caused by regulatory arbitrage and accepts the need for regulation and improved accountability, the perception of a market that is to be distrusted will continue. (The reader may be reminded of Akerlof’s market for lemons (1970) in which the poor quality of some of the goods in a particular market forces down consumers’ expectations and prices to such an extent as to cause them to expect all goods to be inferior and undermine the market). To some extent, this is similar to the state of e-business in the 1990s in the UK when the confidence of both business and consumers to do e-business was minimal and the Internet likened to a jungle. This did not last. Nowadays, we freely transact in this way because recognise that whilst scams and frauds remain, we have a better understanding of the risks involved and businesses recognise the need for security and honesty.

The other aspect giving rise to current problems in the cryptocurrency industry is the volatility of the market, making it attractive to speculators. More stability and confidence in the market would help to reduce these perceptions and re-establish it as a safe, efficient and alternative means of banking.

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## ENDNOTES

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<sup>i</sup> There is confusion over their terminology. Virtual currencies are a type of digital currency but not all virtual currencies are digital, Cryptocurrencies are separate, because of their use of cryptography. Other types of digital currency also exist, but in practice cryptocurrencies dominate the market. See Wagner (2014) for a discussion and diagrammatic explanation of these distinctions.

<sup>ii</sup> Provided by, for example, Plus 500 and CMC markets.

<sup>iii</sup> <https://www.coinmarkets.net/all/views/all/>

<sup>iv</sup> It is not known whether Nakamoto is a person or a pseudonym. Rumours range from Satoshi being a Japanese developer through to a cryptography and computer science expert living in the USA or Europe, or even a pseudonym for a group of individuals.

<sup>v</sup> The process of converting plain text into a secure 'encrypted' language using algorithms that are hard to break.

<sup>vi</sup> There have been many instances in which cryptocurrency has been used for money laundering. For example, see the Mueller indictment relating to various Russian hacking operatives and their use of bitcoin ([netyksho\\_et\\_al\\_indictment.pdf](https://www.justice.gov/file/1080281) available at <https://www.justice.gov/file/1080281>). A recent case is that of Theresa Lynn Tetley, known as 'Bitcoin Maven' admitted to running an unlicensed Bitcoin-for-cash exchange business and laundering Bitcoin purchased from the proceeds of drug trafficking, was sentenced in July 2018 to one year and one day in prison and fined \$20,000. ([www.bitmoneynews.com/bitcoin-news/bitcoin-maven-theresa-lynn-tetley-sentenced-to-12-months-jail-for-money-laundering/](http://www.bitmoneynews.com/bitcoin-news/bitcoin-maven-theresa-lynn-tetley-sentenced-to-12-months-jail-for-money-laundering/)). For more generic empirical evidence, see Foley et al (2018) calculate that approximately one-quarter of bitcoin users are involved in illegal activity.

<sup>vii</sup> This may be defined as where the price movement on one day is not correlated with the price movement the following day, i.e. they are independent, where the price change in the first day may not be used to forecast the change during the second day.

<sup>viii</sup> Increased customer demand is caused by a reduction in price. Similarly, increased supply by suppliers is caused by an increase in price.

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<sup>ix</sup> It was first used on 5 December 1996 by Alan Greenspan, chairman of the US Federal Reserve Board to describe the behaviour of investors in the US and the mood behind the rise in stock market prices between 1994 and 1999. It became his most famous quotation.

<sup>x</sup> The South Sea Bubble was a Ponzi scheme involving misleading information involving the British government, share price manipulation and fraud (Barnes, 2009 p.71-3).

<sup>xi</sup> Two measures of volume are reported in Table 2. The usual measure is the monetary value (column XX). As this overstates volume when the price of bitcoin is high, the number of coins is also calculated (the monetary value divided by the average price that day).

<sup>xii</sup> See <https://www.financemagnates.com/cryptocurrency/regulation/fca-eyes-outright-ban-on-cryptocurrency-cfds-report-says/> For the warning see <https://www.fca.org.uk/news/news-stories/consumer-warning-about-risks-investing-cryptocurrency-cfds>.

<sup>xiii</sup> Individual complaints need to be referred to The Financial Ombudsman Service and consumers also have access to the Financial Services Compensation Scheme (FSCS) although this protection does not compensate customers for any losses from trading.

<sup>xiv</sup> A good example of this scam is New Tycoon Plus which promises investors massive gains on small investments in cryptocurrency mining equipment. However, the returns are unsustainable and there is no indication where the money actually goes. See <https://marksrealreviews.com/new-tycoon-plus>.

<sup>xv</sup> Deborah Meaden from the BBC's Dragons' Den and Martin Lewis, the founder of MoneySavingExpert.com have featured on fraudulent cryptocurrency investment websites falsely claiming to be endorsed by them. (<https://www.actionfraud.police.uk/news/well-known-names-being-used-in-cryptocurrency-scams-apr18>)

<sup>xvi</sup> Pump and dump is a type of insider dealing in the UK. Whilst the former has often been successfully prosecuted, the latter have been rarer, the most notable instance being the City Slickers case (Barnes, 2009b).

<sup>xvii</sup> It should not necessarily be thought that pump-and-dump schemes are not technically unlawful as in the UK anyway, they could fall within the general offence of fraud under the Fraud Act 2006, Section 2.

<sup>xviii</sup> Slippage is a term referring to the difference between the price of an asset at a given moment and the price actually paid. The difference occurs because the market can change in the time that it takes to request, process and execute an order.

<sup>xix</sup> <https://www.bloomberg.com/news/articles/2018-05-24/bitcoin-manipulation-is-said-to-be-focus-of-u-s-criminal-probe>.

<sup>xx</sup> It transpires that the company is a "clone" firm and not authorised by the FCA and the subject of an FCA warning. See <https://www.fca.org.uk/news/warnings/blackrock-crypto-asset-management-limited-clone>.

<sup>xxi</sup> See Kauflin (2018) regarding the Forbes billionaires list for 2018 and Lanz (2018) who states that of the 40 billionaires under the age of 40, five have businesses directly linked to the world of crypto money.

<sup>xxii</sup> These tokens represent future access to a company's product or service may be sold by the start-up for the service it is developing; they are not designed as investments.

<sup>xxiii</sup> Past and current IPOs are listed on <https://www.coinstaker.com/ico-list/>.

<sup>xxiv</sup> Available at <https://www.coinspeaker.com/2017/12/01/europe-accounts-nearly-half-funds-raised-via-icos-atomicos-report-finds/>.

<sup>xxv</sup> Entitled 'Buyer Beware: Hundreds of Bitcoin Wannabes Show Hallmarks of Fraud' and written by Shane Shifflett and Coulter Jones May 17, 2018 available at <https://www.wsj.com/articles/buyer-beware-hundreds-of-bitcoin>.

<sup>xxvi</sup> A 'white paper' is the industry's term for a document that details mission statements, team biographies and the technical specifics of a project – the nearest the issuer would get to a prospectus.

<sup>xxvii</sup> Available at <https://medium.com/satis-group/ico-quality-development-trading-e4fef28df04f>.

<sup>xxviii</sup> Available at <https://www.ey.com/Publication/vwLUAssets/ey-research-initial-coin-offerings-icos/%24File/ey-research-initial-coin-offerings-icos.pdf>.

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<sup>xxix</sup> As a general rule ICO tokens may be securities and, if so, must be registered with the SEC or qualify for an exemption in order to be offered or sold within the United States. Violations expose issuers not just to the risk of SEC enforcement, but also the possibility of liability under Section 12(a)(1) of the Securities Act, a private right of action that provides recessionary damages on a strict liability basis for those that purchase their tokens directly from the issuer of an unregistered public offering.

<sup>xxx</sup> Available at <https://www.howeycoins.com/index.html>.

<sup>xxxi</sup> Available at <https://www.reuters.com/article/us-usa-cryptocurrency-arisebank/u-s-halts-arisebanks-initial-coin-offering-alleges-fraud-idUSKBN1FJ222>.

<sup>xxxii</sup> Available at: <https://www.blockchainandthelaw.com/2017/11/third-class-action-for-tezos-ico>.

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