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Bitcoin, a speculative virtual currency yet not an alternative to fiat currency

By Henri-Louis Vedie

Summary

Bitcoin raises a number of questions, as it doubled in price over the first three months of 2021, only to lose practically half is value in a matter of days in April 2021. This Policy Brief sheds some light on Bitcoin's origins, starting in 2009, making it a child of the 2008 financial crisis. The brief also details Bitcoin's reliance on cryptography, blockchain and mining to safeguard the world's first digital currency. Bitcoin's price explosion in late 2020, peaking over $62,000 on April 13, 2021, only to drop back to $36,000 in less than a month, driven by a master speculator in Tesla, both consolidates and condemns it. It consolidates it as a new particularly speculative virtual currency, not necessarily the status its's creators had in mind. It also condemns it never to become exactly that for which its authors imagined and created it, i.e. an alternative to fiat currency.

Building on its' 2020 momentum, Bitcoin doubled in price in Q1 of 2021, tagging a high over $60,000 and raising a number of questions. All the more so as the upswing quickly faded substantially, with May 21, 2021 prices near start of the year levels.

This study investigates the origins of the explosive "Bitcoin mania", and examines both extreme volatility and market trend durability and implications for Bitcoin price outlook.

To do this, we start off reviewing Bitcoin's history, highlighting how it differs from other currencies and analyzing market trends (in US Dollars) since 2009 (I). We then examine the milestones leading-up to the record high of 2021 and the ensuing sudden reversal, highlighting accelerated and expanded demand in the face of inelastic supply, moving at a much slower pace and capped at 21 million Bitcoins, regardless of demand (II).

I. Bitcoin, a tale starting in 2009, did not always enjoy the state of grace it has been in since late 2020

A. A child of the 2008 financial crisis

Cypherpunks began raising concers over Internet privacy implications as early as the 1990s. Cryptography, a mathematical discipline that renders a message unreadable without a decryption key, became the principal mechanism for privacy protection. In the decades that followed, Cypherpunk technology steadily improved, becoming fully operational. In October 2008, an anonymous figure going by the name of Nakamoto Satoshi (single person or entity of many?) announced he was creating a digital currency, free from any form of authority, and invited developers wishing to do so, to help in implementing the project.

2008-2009 brought about the financial crisis, and total disarray of the banking system. The idea of a new currency, independent of States and outside the discredited traditional banking system, therefore came at the right time. The new currency officially entered the public domain in early 2009. It was called Bitcoin.

B. Digital currency based on cryptography, blockchain and mining

The fathers of Bitcoin decided that to attract future users, they had to rely on a unfalsifiable and infallible computing protocol, failing which they would face the same criticism as the traditional system culminating in the 2008 crisis. This priority was all the more important as the planned system sought to free itself from all public authority and control. To do this, two technologies were favored:

- Data recording, storage and transmission technology: Blockchain; and
- Register integrity, authentication and validation of monetary transfer technology: Mining.

1. Blockchain: Secure, decentralized peer-to-peer transaction processing and storage system

This peer-to-peer system records all transactions between traders and enables traceability/ storage. Blockchain can therefore be characterized as an open computer register that processes and validates all transactions of network participants. Transactions are bundled and validated in blocks, hence the name Blockchain. One needs his/her own user-specific electronic wallet to access the Bitcoin system. Hence, each electronic wallet is associated to a dual public and private/secret cryptographic key to sign messages. Both keys are made of multiple alpha-numeric characters.

This system enables Bitcoin network members who wish to do so, to verify that the person seeking to trade actually owns the relevant assets, for each new transaction.

2. Mining: Authentication and verification algorithm for money transfers, expanding blockchain and producing new bitcoins

a. Authentication and verification of monetary transfers

The algorithm authenticates transactions and controls related monetary transfers, regularly ensuring blockchain integrity. While originally performed by a PC, this is no longer the case, as miners have replaced PCs. Miners are not people, nor institutions, but increasingly large and powerful servers dispersed around the globe. Mining is therefore the provision of computing power, now reaching unprecedented levels, driven by cutting-edge technology. And this, to solve incrementally sophisticated problems, due to encryption key complexity and ever-increasing transaction volume.

b. Controlled creation of new bitcoins

The algorithm is unique in that it both allows for the creation of bitcoins and limits their quantity.

- Bitcoin generation occurs as a practical outcome of financing the technology's operations, particularly its energy costs, in Bitcoins. One bitcoin was originally worth US$0.001, which at the time was the estimated cost of electricity to run the computers verifying transaction authenticity.

- The plan, from inception, is to halve compensation every four years, limiting production to 21 million bitcoins, not one more, by 2140. This is known as "halving". Since Bitcoin inception in 2009, there have been three halving events: in 2012, in 2016 and in 2020. The most recent one, on May 11, 2020, lowered mining bonuses to 6.25 bitcoins from 12.5 bitcoins. The next halving in 2024, will bring the premium down to 3.125 bitcoins, heading for zero remuneration by 2140 and, therefore, ending new Bitcoin creation. There are currently an estimated 18.3 million Bitcoins in circulation.

C. Volatile prices exploding in late 2020

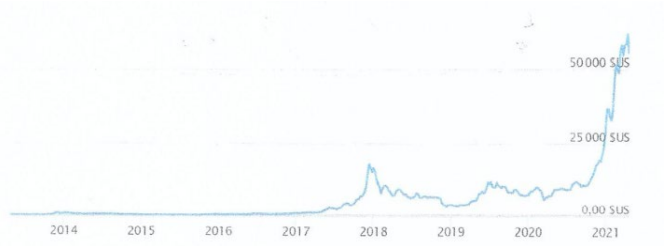
Bitcoin is a virtual currency with no actual backing, so it has no official price. Rather, its value is derived as an average of prices, typically denominated in USD, on a variety of crypto-currency trading exchanges. Two of these platforms stand out as particularly active and relevant for Bitcoin pricing: Coinbase and Binance.

- Coinbase was founded in 2012 and provides an online digital currency wallet and an exchange platform for a number of cryptocurrencies, including Bitcoin. Bitcoin can be bought and sold online on Coinbase via bank transfer. The company is based in San Francisco and successfully IPO'd in April 2021, with initial opening prices of $250 per share reaching over $380.

- Much newer, Binance was founded in 2017 by Chinese-Canadian Chanpeng Zhao and originally based in Hong Kong. It relocated headquarters outside China when, in late 2017, Chinese authorities decided to shut down all domestic crypto-currency exchange platforms. This prompted a move to Japan, and then to Malta. The platform not only enables crypto currencies storage and trading, but also fiat currency exchange against Dollars and Euros. Easy to use, fast and offering a lower fee structure than other platforms, including Coinbase, as a result of its original technology, Binance is quickly establishing itself as the leading global crypto-currency exchange in terms of daily traded volume.

In the absence of an official market, the price of crypto currencies, expressed in fiat currencies such as the US Dollar, the Chinese Yuan or the Euro, is an average of prices across many platforms. The estimate is therefore deemed reliable. Chart 1 below tracks Bitcoin prices from April 2014 to April 2021, based on CoinGecko data.

Figure 1: Bitcoin price (April 2014 - April 2021)



Source CoinGecko.

The chart clearly reveals four separate phases:

- One spanning 2014, 2015 and 2016 where Bitcoin prices resemble a flat encephalogram, without any discernible significant movement.

- Another, of one year in 2017, propelling Bitcoin to USD 20,000 in December 2017, and a slight pull-back in the final week of December 2017;

- A two and a half-year period (2018, 2019 and the first half of 2020) of heightened volatility: Sustained decline over 2018 with year-end prices approaching those of the early second half of 2017, slight recovery in early 2019 followed by relative stability until the first half of 2020;

- Nine months of epic performance by all measures, from Q3 2020 until April 2021:

On December 1, 2020, Bitcoin hit $19,950. On December 16, it crossed the $20,000 threshold for the first time, hit $30,000 on January 2nd, 2021, and $40,000 eight days later. Bitcoin hit an all-time-high of $58,961 on April 1, 2021!

Bitcoin's consolidated growth rate since end 2019 is of 723%, doubling in price over three months in 2021. Considering Bitcoin's very first quote was at $0.001, reaching $1 trillion in market capitalization in 2021 and effectively doubling over the first three months of this year, one can only take measure of how far it has come.

Yet, the chart also confirms constant price volatility: hovering around 400 dollars throughout 2014,

dropping to 155 dollars in early January 2015, reaching 887 dollars in late December 2016. The upturn continued in 2017, then accelerated: 1000 dollars, 3000 dollars, ending the year at 19,891 dollars. 2018 was a bad year for Bitcoin with price dropping to $3,215, then strongly rebounding beyond $10 000 in 2019. It dropped as low as $3,700 in 2020 to hit $19,950 in December. On January 2, 2021, it crossed the $30,000 mark, exceeding $60,000 in March. Bitcoin is certainly volatile, but also clearly on an upward trend in recent years, and undoubtedly highly speculative. We can easily argue that today's Bitcoin has little to do with that of 2009, which begs us to wonder as to the reasons underpinning such exceptional and unpredictable growth.

II. An extremely speculative financial asset and a state of grace of varying sources...

Bitcoin's state of grace stems from a variety of diverse origins, but these can be classified as follows: Bitcoin technology and operating protocols (A), the international monetary environment (B), and changes in institutional behavior (C).

A. A technology particularly conducive to speculation

Bitcoin is unique among crypto-currencies in that its supply is capped, regardless of demand, and its halving protocol is particularly attractive to speculators.

- The Bitcoin market is indeed peculiar in nature, with a limit on supply of 21 million Bitcoins. All the more so as supply is, as mentioned above, the outcome of mining, compensating miners for electricity consumption, financing of increasingly sophisticated servers, etc., with Bitcoins in proportion to Bitcoin denominated transactions. Current available supply stands at about 18.3 million Bitcoins. Supply is theoretical, as three million Bitcoins have been lost (not necessarily to everyone), bringing Bitcoins in circulation to 15 million. Supply is therefore restricted, especially since Bitcoin creation rates are halved every four years. Bitcoin creation is thus steadily declining, underpinning seller scarcity and proving the more scarce an asset becomes, and the less it is offered for sale. Hence, a surge in demand can only cause prices to explode. This is why already extended prices, doubled in three months, responding to sustained and expanded demand pressures, now comprising individuals, corporates and institutions.

  Yet, as said above, the boom in prices has not put an end to volatility, highlighting the huge asymmetry between virtually unlimited upside potential and a risk of loss capped at the initial investment. This asymmetry was particularly evident in Q1 of 2021, when Bitcoin yielded very substantial gains in a matter of days, with risk exposure remaining limited to stake amount.

- Halving, a protocol whereby mining compensation is halved every four years, slows down Bitcoin creation in the face of growing demand. This mechanically ties price to demand trends, the volatility of which is driven in part by speculation.

Since Bitcoin's inception, halvings in 2012, 2016 and 2020 confirm this logic. One Bitcoin mining operation yielded 50 Bitcoins in 2009. The first halving brought this down to 25 bitcoins, followed by a second halving in 2016, pricing remuneration at 12.5 bitcoins, and a third halving in 2020, bringing it to 6.25 bitcoins.

The impact of halving on Bitcoin prices indicates broadly analogous price behavior, as follows:

- Stagnation and sometimes drop in prices in the months leading up to it in 2012, 2016 and 2020. No significant movement around the "halving" itself, neither up nor down, instead, each period saw sudden price acceleration in the ensuing twelve months.

It is noteworthy, and complicates analysis, that halving Bitcoin prices only has significance if Bitcoin fiat prices remain stable. Which is not the case. When examining Bitcoin prices in Dollars over the last decade, even when halved over each period, Dollar returns are substantially above those of previous halvings. While miner income expressed in Bitcoin is indeed falling, this is not the case when expressed in fiat currency, that of interest to speculators. Bitcoin's roller-coaster price movements

clearly illustrate its speculative nature, paced by the halving protocol every four years.

B. An upturn in prices supported by favorable international monetary conditions: very low interest rates and abundant liquidity in search of yield

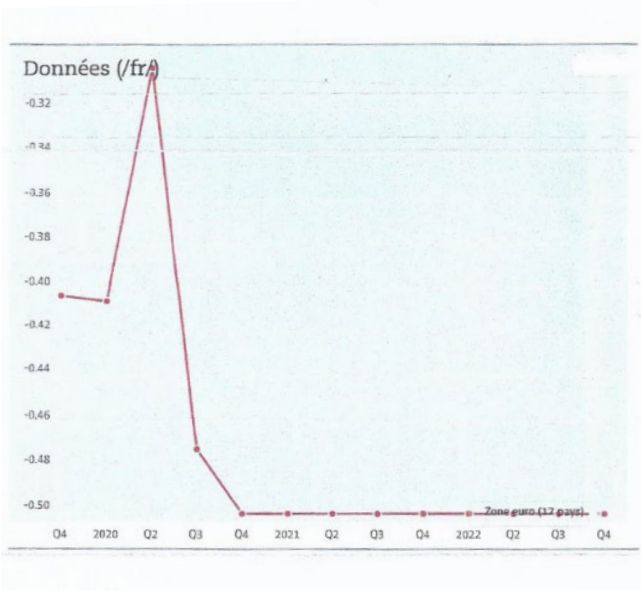
The recent confirmation of very low, at times negative, interbank interest rates and a falling US Dollar fueled bank interest in Bitcoin, a number of banks seeing it as a credible investment opportunity, with attractive prospects. And this at a time of abundant market liquidity in search of yield.

Interest rates have steadily declined since the 2008-2010 financial crisis, even going negative on inter-bank money markets. Short and medium term price behavior is the main issue facing Bitcoin today, a context that clearly favors speculation. Most experts expect the situation to persist for the years to come. Natixis Chief Economist, P. Artus, believes Central Bank expansionary monetary policies and excess savings will keep rates at current levels.

1. Very low and even negative short-term interest rates

Expansionary monetary policies in fact, lead Central Banks to periodically lower key interest rates to boost economies and, in the process, provide a salutary stimulus to the world's most indebted countries. This began in 1980 and culminated in the negative interest rates of January 2021. Even if Central Banks chose to reduce or end expansionary monetary policy over the months to come, this would barely impact rates in the medium and short term. Today's record savings surpluses are an effective counterweight, preventing significant rate hikes in the future. Figure 2, below, shows that, OECD (Organization for Economic Cooperation and Development) and 17 Euro-zone countries expect Euro-zone short-term interest rates to remain negative over the next two years, confirming our previous analysis.

Figure 2: Short-term interest rate trends in 17 eurozone countries between 2020 and 2022



Source OCDE

In the light of all this, it is hardly surprising that Bitcoin, based on its exponential valuation in Q1 2021, is considered an attractive short- and medium-term return asset. Tesla, for example, did not shy away from buying $1.5 Billion in Bitcoin last January, citing a strategy to diversify cash sources and boost returns.

2. Abundant liquidity in search of yield

Now, assuming Central Banks decide over the coming months to trim the sails of expansionary policy, or even to put an end to it, this would not significantly impact medium- and long-term interest rates. 2021 Surplus savings are an effective counterweight in the short and medium term, thereby preventing any significant rise in rates. Note that in this case, in addition to return, it enables Central Banks, if necessary, to settle in "Stable Coin", that is to say a crypto currency indexed to Euro or Dollar. The money is then no longer in a bank account but in a digital wallet. So, switching from Bitcoin to "Stable Coin" eliminates the need to go through fiat currency, thereby eliminating the need to fund capital gains. This can only be of interest to those liable to paying them.

C. Rising interest from institutional investors, trading platforms and industry, adding to volatility

1. A radical change in investment bank behavior and Central Bank language

- The most spectacular shift in investment bank behavior is undoubtedly that of US investment bank JP Morgan, calling Bitcoin a fraud in 2017. JP Morgan analysts now believe Bitcoin's capitalization could eventually double to reach that of gold, valued by them at $2,600 Billion. Also telling is the fact that Wall Street's oldest bank, BNY Mellon now includes Bitcoin in its investment offering.

- It is more of a change in tone and outlook for Central Banks, for whom payment systems are not a priority. The Deputy Governor of the People's Bank of China, a bank that had been extremely wary of Bitcoin, now talks of it as a possible alternative investment that could satisfy and fuel Chinese investor demand.

2. Increasingly accessible and efficient Bitcoin trading platforms

The cases of US payment platform Paypal and French Bitcoin exchange Paymium, both of which recently upgraded offering to support cryptocurrency and/or Bitcoin trading, are worth noting here. Tesla, for example, had no problem buying $1.5 billion in Bitcoin last January, citing a desire to diversify cash holdings and improve returns.

- French financial market authority AMF (Autorité des marchés financiers) recent PSAN status approval (service provider accreditation for digital assets) of Paymium recognizes the French platform's competence and integrity, along with its effective procedures against money laundering and financing of terrorist activity. The trading of Bitcoin on Paymium was since 2011, subject to registration of every transaction with the AMF, under penalty of accreditation suspension. PSAN status eliminates this obligation.

This reduces the administrative burden of operations, thus enabling those who are registered with the regulator to quickly access banking services. In case of unjustified refusal, even implicit, of access to customer account and deposit services, Paymium may refer to the French Prudential Control and Resolution Authority (Autorité de contrôle prudentiel de résolution /ACPR) to bypass such obstacles. PSAN label was granted a year earlier to Coinhouse, another French crypto-currency exchange platform. By accrediting another French Bitcoin exchange platform, the AMF bolsters its attractiveness, at a time when Brussels is drafting a European system for digital asset regulation. This system, once adopted, would allow French platforms, as soon as they obtain PSAN certification, to provide services in all member countries.

- Promised for 2020, Paypal just enabled US users to pay for purchases in Bitcoin and Ethereum, assuming conversion into US Dollars. Considering Paypal serves over 29 million online stores, the significance of this decision cannot be understated, supporting crypto-currencies in their quest to become legitimate payment currencies. Note that conversion is made at no additional cost, and that if the relevant merchant does not accept U.S. dollars, Paypal agrees to convert these into the seller's chosen currency. Applicable conversion rates have yet to be specified. PayPal says conversion rates are to be standard conversion rates, set and displayed by the US platform, enabling sellers to make an informed choice. With this move, Paypal enables crypto wallets to be used as a credit card through a Paypal account.

The boom is running out of steam with Tesla, emerging as a Bitcoin master speculator and timekeeper. Back in February, Tesla reported it had acquired US$1.5 Billion in Bitcoin, officially for long-term investment purposes. Elon Musk also announced Tesla would accept Bitcoin as a means of payment in the US, triggering a 20% price increase. Tesla's Q1 2021 results show that disposal of 10% of the Bitcoin stake acquired in February earned the company over $100 million in profit, exceeding its own business activity for the period. Reactions at the time could not have been more enthusiastic about crypto-currencies and Bitcoin in particular, propelling prices to record levels beyond $62,000 on April 13, 2021. To demonstrate his bullishness on the long-term prospects for the crypto currency, Elon Musk stated that all Bitcoin taken in by the company would not be converted into fiat currency.

A few weeks later, the same Musk hinted that Tesla might liquidate its entire Bitcoin position, sending prices sharply lower. On May 13, Tesla announced on twitter: that it had stopped accepting payments in Bitcoin for the purchase of its models. Free-fall. Prices dropped 7% in a few hours, reaching the lowest level since January at $43,500. On May 19, the price of Bitcoin dropped below $37,000. The truth be said, Elon Musk failed to convince, in justifying his decision on account of the energy-consuming nature of mining, now considered too polluting.

"We are concerned about rapidly increasing use of fossil fuels for Bitcoin mining and transactions, especially coal, which has the worst emissions of any fuel" Elon Musk /Twitter.

We may indeed wonder, as all this was known for a long time before Tesla bought $1.5 Billion in Bitcoin. Ensuing statements failed to silence the many investors and Bitcoin defenders that now see E. Musk as a genius manipulator, for some, and an evil genius for others. Two of these comments are particularly telling of such contradictions.

- The first has to do with the reversible character of the decision, recalling that Tesla will go back to Bitcoin "as soon as mining transitions to ... using solar power for Bitcoin mining, which sounds like a great idea."

- The second has to do with what Tesla intends to do with the Bitcoins it holds. If put on the market, this could only further weaken Bitcoin in particular and crypto currencies, in general. Elon Musk pledged not to sell any more. It is safe to assume he'll keep his word, until better days come, as Bitcoin is down 50% since January 2021.

What occurred with Tesla confirms the highly speculative nature of Bitcoin. However, despite the recent collapse, prices are higher today than at the start of the year, which was already a record high at the time. That is why we believe Bitcoin still has bright days ahead for those looking for short and medium term returns, and who are willing to accept the risk that comes with it.

A SPECULATIVE VIRTUAL CURRENCY: YES
AN ALTERNATIVE TO CENTRAL BANK MONEY: NO

The creators of Bitcoin no doubt had, from the start, the unconfessed goal of seeing it one day supplant fiat currency, thus evading the international monetary system and Central Bank supervision. The latest Tesla episode further weakens the already slim chances of this occurring. Former European Central Bank (ECB) President Jean Claude Trichet recently clearly and meaningfully pointed out, in a special "Politique Internationale" report on "banknotes and new currencies" (1) the reasons why he is totally hostile to Bitcoin and similar instruments, which he does not deem as currencies. Quoting Aristotle for whom money must fulfill three basic functions: an instrument of account, an instrument of exchange and an instrument of conservation of value. Trichet says while Bitcoin clearly fulfills the first two, it is totally incapable of fulfilling the third. On the contrary, its highly speculative nature not only eludes this logic, but instead employs its constant volatility to facilitate transactions outside the control of public authorities.

Facebook responded to such criticism by proposing the Libra project, whose originality with respect to Bitcoin is that it is designed to protect from volatility by providing a currency equivalent. As soon as the project was announced, Michel Aglieta highlighted the risks it posed to the international financial community, as it could not satisfy the universality expected of it, and he doubted the confidence economic actors would have in a project led by a private operator (2). The Libra project at Facebook became the Diem project in December 2020. Definitively putting an end to Libra, this project's ambitions have been scaled back, with a platform based on a single currency, the US Dollar, whose purpose is to make digital currency transactions more fluid.

We conclude by quoting Oystein Olsen, the head of "Norge Bank ", the Central Bank of Norway, the world's most cashless country by 2021, who could arguably think Bitcoin might provide an alternative:

"...The basic property and task for a Central Bank and central-bank currency is to provide stability in the value of money and in the system, and that is not done by Bitcoin."

Lastly, let us note China's reaction to the situation, immediately prohibiting Chinese banks from offering services related to virtual currencies, and not just Bitcoin.

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Author of sixteen books, of which the last few concerned Morocco and sovereign funds, hundreds of articles (of which some where translated in English, French, Arabic, Polish and Russian), Henri-Louis Vedie was also a consultant for the European Council and a member of the Economic, Social and Environmental board in Paris.

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