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BITCOIN IN 2024
ISSUES, RISKS AND POLICY IMPLICATIONS

Policy Report
July 2024

Tan Teck Boon

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Executive Summary

Bitcoin has been extremely volatile since the beginning of 2024. As the world's most famous cryptocurrency turns 15, it is important to look beyond the wax and wane in prices and focus on the underlying factors driving it. Bitcoin may be digital, but what happens to it has policy implications for the real world. Specifically, bitcoin ownership is broadening, thanks to three important catalysts – a less hawkish US Federal Reserve, the April 2024 halving event and the launch of spot bitcoin exchange-traded funds. However, as more people and institutions gain exposure to the cryptocurrency, the risks also increase significantly. For policymakers, seeing what these risks are not gets them to think about the world's largest cryptocurrency but also prepares them to deal with what may come next.

Introduction

The intuition for this policy report came from a class on technology and public policy that the author taught. Every year, he would ask his students if they thought bitcoin was junk. Every time, one camp of students would embrace the cryptocurrency wholeheartedly while another would dismiss it outright. The absence of a middle ground points to how polarising the world's largest cryptocurrency can be. Even though bitcoin has been around for more than a decade, there certainly is still no agreement as to whether it is "rat poison" or "digital gold".[1] It also suggests that there are major gaps in our understanding of the world's biggest cryptocurrency. This policy report is an attempt to shed more light on the cryptic financial instrument and close some of those knowledge gaps.

Specifically, this policy report looks into the reasons behind the recent spike in bitcoin volatility to explain how one should think about the cryptocurrency in 2024. One of the best performing financial assets in 2023, bitcoin had surged nearly 300% to reach $45,000 by last December. It went on a tear again in early 2024, surging another 60% to hit a new all-time high of about $73,000 in March. But shortly after that, prices fell back again (see Figure 1 below). However, if one were to focus solely on price movements, one would have completely missed the big picture.

Beyond the ups and downs in bitcoin prices, there are a set of underlying factors that have real implications for regulators, investors and even the common person on the street. Knowing what these reasons are is essential if one wishes to have a deeper understanding of the world's best-known cryptocurrency. A more profound appreciation of the most important factors at play also prepares one for what lies ahead amid all the volatility.

1 Caitlin Ostroff, "Charlie Munger Had No Love for Crypto", *The Wall Street Journal*, 29 November 2023, https://www.wsj.com/livecoverage/stock-market-today-dow-jones-11-29-2023/card/charlie-munger-had-no-love-for-crypto-OXQtll8Tm1XMD30ge2p1; Merryn Somerset Webb and Sagarika Jaisinghani, "Cathie Wood Says Bitcoin Is 'Digital Gold' as Deflation Hedge", *Bloomberg*, 3 November 2023, https://www.bloomberg.com/news/articles/2023-11-03/cathie-wood-says-bitcoin-btc-is-digital-gold-as-deflation-hedge?embedded-checkout=true

Figure 1. Historical Bitcoin Prices

Chart courtesy of StockCharts.com, https://schrts.co/qUjkTfEM

Written for policymakers and regulators, this report seeks to keep them up to date with the latest developments in the bitcoin space. Owing to several important developments that took place just earlier this year, including the launch of spot bitcoin exchange-traded products and the “halving” of bitcoin, this report is timely as well since some policymakers and regulators may still not be fully up to speed on what is going on and the broader implications of those key events.

Also prepared with lay readers in mind, this report is written in an accessible manner to boost their understanding of the most valuable cryptocurrency available today. Interest in bitcoin has risen steadily since it was first created in 2009.[2] But owing to its cryptic nature, bitcoin can be difficult to fathom at times, especially for the common person on the street. As the saying goes, knowledge is power so more lay people having a sound idea of what bitcoin is can only be a good thing.

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2 Anshu Siripurapu and Noah Berman “The Crypto Question: Bitcoin, Digital Dollars, and the Future of Money”, Council on Foreign Relations, 17 January 2024, https://www.cfr.org/backgrounder/crypto-question-bitcoin-digital-dollars-and-future-money#:~:text=Since%20the%20creation%20of%20bitcoin,have%20begun%20to%20catch%20up.

Bitcoin Explained

This section gives a basic explanation of bitcoin for readers unfamiliar with the cryptocurrency. More advanced readers may skip ahead to the next section.

A cryptocurrency is basically digitalised money that exists outside the normal banking system and is decentralised by design. Today, the best-known example of a cryptocurrency is bitcoin. Governments and central banks also, no doubt, issue digital money alongside physical money. However, central bank digital currencies or CBDCs are not considered cryptocurrencies since they operate within traditional banking channels and are not decoupled from mainstream finance like bitcoin (supposedly) is.

Created in 2009 by a mysterious figure named Satoshi Nakamoto, bitcoin is the electronic reward for validating transactions made with the cryptocurrency. Strictly digital, it is given to people who lend their computing power – called “miners” – to verify the accuracy of bitcoin transfers between users. In this decentralised network, anyone can offer their computing power and the fastest miner gets the reward. Only a fixed number of bitcoins is issued every 10 minutes (for each block of verified transactions) and that figure is halved every four years so that the last fractional bitcoin will be mined only in the year 2140.[3]

To this day, we know practically nothing about Nakamoto except that he published a paper in 2008 that outlined bitcoin’s workings.[4] He appeared out of nowhere, communicated with others only through email and never met with even those he was closest to. Even now, we do not even know whether he is a person. For all we know, Nakamoto might well be an organisation or a group of highly intelligent people since the ideas behind bitcoin cut across multiple disciplines, including computer science, economics, history and cryptography. Because of this complexity, there is a belief that Nakamoto must be an organisation or a group of people as it is quite rare for one person to know all these specialised fields so intimately.

Adding to the mystery, Nakamoto vanished into thin air and was never heard from again after the cryptocurrency went online in January 2009.

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3 Stephen Katte, “The last Bitcoin: What Will Happen Once All BTC are Mined?”, *Cointelegraph*, 21 July 2023, https://cointelegraph.com/news/the-last-bitcoin-btc-mine.

4 Satoshi Nakamoto, “Bitcoin: A Peer-to-Peer Electronic Cash System”, Bitcon.org, https://bitcoin.org/bitcoin.pdf (accessed 29 March 2024).

There is also no evidence that Nakamoto ever spent any of his bitcoins even though he is believed to own close to one million of them. At today's value, Nakamoto's stake would make him one of the richest persons in the world.[5]

Bitcoin has two key functions: first, as a medium of exchange and, second, as a store of value. Like money, it can be used to settle transactions quickly. Using the public ledger technology called blockchain, bitcoin transactions are completed in 10 minutes, making them not just fast but also highly secure. Moreover, just like money, it stores value. At the time of writing, bitcoin is trading around $66,000, meaning that all the bitcoins out there collectively now hold close to $1.3 trillion in value. Need smaller denominations? Not a problem because one bitcoin can be sub-divided into 100 million smaller "satoshi(s)".

For bitcoin fans, the cryptocurrency is like gold – albeit, digital. That thinking may not be just hopium. Like gold, bitcoin is scarce – if not scarcer – because only a maximum of 21 million bitcoins will ever be created. So far, close to 20 million have been minted, but the actual number in circulation is definitely lower since some of them have been destroyed or lost by accident.[6] It is also not possible to debase it by minting more than 21 million bitcoin as its supply is hardwired into its protocol. But there are also major differences. For one, bitcoin is digital while gold is physical. Gold has industrial applications; bitcoin has none to speak of.

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[5] Michael Adams, "Who Is Satoshi Nakamoto?", *Forbes*, 18 March 2023, https://www.forbes.com/advisor/investing/cryptocurrency/who-is-satoshi-nakamoto/.

[6] "Bitcoin Supply for March 27, 2024", *YCharts*, https://ycharts.com/indicators/bitcoin_supply (accessed 29 March 2024).

A Bitcoin Revival

A major factor driving up bitcoin prices this year is the introduction of spot bitcoin exchange-traded funds (ETFs). Traded on a regular stock exchange, these financial products are designed to track the performance of a basket of stocks, currencies or commodities. Basically, ETFs let investors gain price exposure to various securities without owning them outright. A spot bitcoin ETF, following from that, makes it possible for traditional investors to get access to the cryptocurrency through a stock exchange. When they purchase a spot bitcoin ETF, the issuer will buy the equivalent amount of bitcoin from a crypto exchange so that the ETF is fully backed by the cryptocurrency. Before spot bitcoin ETFs were introduced, bitcoin investors would mainly have to go through crypto exchanges. The word “spot” simply refers to the current price of the underlying asset.

After a bit of drama in which the Twitter (now X) account of the US Securities and Exchange Commission (SEC) was hacked, 11 spot bitcoin ETFs were given the green light to start trading on 10 January 2024 (see Table 1 below). What these ETFs did was that they opened the door for big global investors like pension, endowment and even sovereign wealth funds to gain price exposure to the cryptocurrency. With more than $60 trillion under management, these conservative investors are generally barred from adding bitcoin to their portfolios but they can now have price exposure through these ETF products.[7] Even if they put just 1% of their portfolios into bitcoin, they will add over $600 billion to a $1.4 trillion market. Although such a move has yet to materialise, the anticipation of large-scale institutional buying was enough to drive bitcoin prices higher.

The surge in bitcoin demand can also be attributed to a recurring event called “halving”. As noted previously, a reward in the form of freshly-minted bitcoins is given to miners who are fastest in verifying a block of bitcoin transactions. To ensure that blockchain rewards can last until 2140, the number of bitcoins issued for every 10-minute block is cut in half every four years. In 2009, when bitcoin was first launched, the reward was 50 bitcoins. Before April 2024, that number was 6.25. After that, the number was cut again to 3.125.

The immediate effect of a “halving event” is a sharp reduction in the supply of bitcoins. After the reduction in April 2024, fewer bitcoins than ever are being awarded to miners. Assuming that demand for the cryptocurrency does not fall, the smaller supply can only mean higher prices. In addition,

[7] Author’s calculation using data from multiple sources.

the fact that markets are forward-looking was enough to drive bitcoin prices higher before the April 2024 halving event actually took place. Such a trend seems to have been the case historically too as bitcoin prices had edged higher in the run-up to the last three (and only) halving events in 2012, 2016 and 2020. But, whether prices will continue rising after the 2024 halving event remains to be seen.

Table 1: List of Approved Spot Bitcoin ETFs

Ticker Symbol	Name	Fee (%)
GBTC	Grayscale Bitcoin Trust	1.50
IBIT	BlackRock's iShares Bitcoin Trust	0.25
ARKB	ARK 21Shares Bitcoin ETF	0.21
BITB	Bitwise Bitcoin ETF	0.20
BTCO	Invesco Galaxy Bitcoin ETF	0.25
BTCW	WisdomTree Bitcoin Fund	0.25
HODL	VanEck Bitcoin Trust	0.20
EZBC	Franklin Bitcoin ETF	0.19
FBTC	Fidelity Wise Origin Bitcoin Trust	0.25
BRRR	Valkyrie Bitcoin Fund	0.25
DEFI	Hashdex Bitcoin ETF	0.90

Sources: Yahoo! Finance and NerdWallet

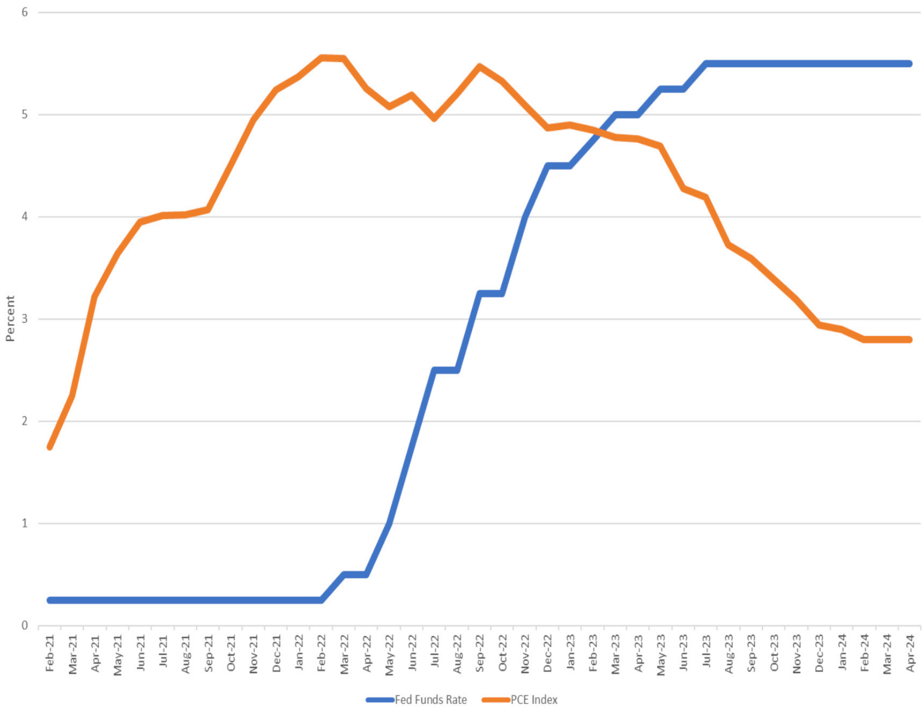
Appetite for bitcoin also increased owing to expectations of lower interest rates. When inflation spiked after the COVID-19 pandemic, the Federal Reserve – in its role as the US central bank – responded by sharply raising interest rates to fight price increases. Between March 2022 and July 2023, it raised the rate that banks in the United States charge one another for overnight lending 11 times, from 0.25% to 5.5%.[8] The speed and magnitude of the Fed's interest rate hikes sent asset prices crashing as interest rates and asset prices tend to share an inverse relationship. Bitcoin, like many other financial assets, also dropped precipitously.

But now that inflation has subsided, the Federal Reserve may need to cut interest rates again so that monetary policy does not become overly restrictive. It needs to reduce borrowing cost because the real interest rate is

[8] Sarah Foster, "Fed's Interest Rate History: The Federal Funds Rate from 1981 to the Present", *Bankrate*, 20 March 2024, https://www.bankrate.com/banking/federal-reserve/history-of-federal-funds-rate/#:~:text=Key%20takeaways,low%20as%200%2D0.25%20percent.

now higher as inflation has declined (see Figure 2 below). If the US central bank fails to cut interest rates soon enough, it risks tipping the US economy into a deep recession (in an election year). For some market watchers, the question is not whether the Federal Reserve will lower interest rates, but when and by how much. For investors, this expectation is music to their ears since quantitative easing tends to boost asset prices.

Figure 2: US Inflation vs. Borrowing Cost



Source: Statista, https://tradingeconomics.com/united-states/core-pce-price-index-annual-change; https://tradingeconomics.com/united-states/interest-rate

Given that financial markets are forward-looking, the prospect of lower interest rates is often enough to send asset prices higher. The evidence suggests that bitcoin has benefited from a less hawkish Federal Reserve. After reaching a low of about $15,000 in late 2022, it started climbing again as inflation subsided. Then, when it became clear after July 2023 that the US central bank had stopped tightening, appetite for risk returned and bitcoin prices started to spike again.[9]

[9] See, for example, Tan Teck Boon, "Making Sense of Bitcoin's Extreme Volatility", *Global-is-Asian*, Lee Kuan Yew School of Public Policy, 24 May 2021, https://lkyspp.nus.edu.sg/gia/article/making-sense-of-bitcoin-s-extreme-volatility.

Policy Implications

As bitcoin prices surge, it is important to take note of the policy repercussions. Obviously, there are benefits (and beneficiaries), but there are risks too. This section delves deeper into what they are.

There is no doubt that spot bitcoin ETFs have broadened ownership of the cryptocurrency – albeit indirectly. For example, IBIT – the largest spot bitcoin ETF – has seen inflows of more than $12 billion so far.[10] In all, about $58 billion has flowed into spot bitcoin ETFs so far. Before these financial products came along, bitcoin investing was mostly confined to a niche group of market participants. Investing in bitcoin is quite different from investing in companies. Owning bitcoin is also something that old-school investors may not be used to. In fact, some traditional investors simply shunned the cryptocurrency after being put off by the nagging headaches that came with bitcoin ownership. But thanks to these ETFs, they can now invest in bitcoin without having to deal with troublesome issues like storing and securing their cryptocurrency.

Large institutional investors – barred from holding cryptocurrency in their portfolios – can now dip their toes into bitcoin since the SEC's approval effectively qualifies these exchange-traded products for inclusion in their portfolios. Indeed, there are signs that government pension, state retirement and even sovereign wealth funds around the world are keen to do so.[11] After all, because bitcoin operates outside of normal channels, the cryptocurrency held by one government cannot be frozen or seized by another when they clash. The chances are also pretty slim that a rogue state can hack into the bitcoin network to steal from it, thanks to its highly secure "proof-of-work" feature. This consensus-based mechanism prevents the bitcoin blockchain from being changed or tampered with. To put it another way, one country's bitcoin stake is quite safe from another country. That said, a major drawback of this feature is that it also allows countries to use the cryptocurrency to circumvent international sanctions. Finding effective ways to close this loophole is vitally important as geopolitical tensions escalate across the world.[12]

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[10] Shaurya Malwa, "BlackRock's Bitcoin ETF Added a Record 12.6K BTC in Tuesday's Carnage", *CoinDesk,* 6 March 2024, https://www.coindesk.com/markets/2024/03/06/blackrocks-bitcoin-etf-added-a-record-126k-btc-in-tuesdays-carnage/.

[11] See, for example, Nik Hoffman, "Arizona State Senate Considering Adding Bitcoin ETFs to Retirement Portfolios", *Nasdaq*, 6 March 2024, https://www.nasdaq.com/articles/arizona-state-senate-considering-adding-bitcoin-etfs-to-retirement-portfolios.

[12] Discussion with Dr Alan Chong, RSIS Senior Fellow, 13 May 2023.

As bitcoin ownership broadens, one must not forget too that the cryptocurrency has no intrinsic value – at least in the conventional sense. For example, a piece of farmland has intrinsic value because it can generate cash flow in the form of crops. Bitcoin produces no such thing. In fact, it is valuable only because someone else is willing to pay a higher price for it. In other words, what bitcoin has is imputed value, i.e., its value is whatever people think it is.

The problem with having only imputed value is that it makes bitcoin an extremely volatile and speculative financial instrument. Down the road, it can just as well be worth tens of thousands more or it can go to zero. As ownership broadens, policymakers need to keep an eye on it because if bitcoin prices collapse, then many more investors will be hurt this time. More importantly, such a collapse can spill over to other financial markets and even to the real economy, especially if the speculative bubble is inflated enough.

Some crypto exchanges may have a more difficult time ahead too. Large crypto exchanges like Coinbase and Gemini, no doubt, have benefited so far (see Table 2 below). The bitcoins backing the spot ETFs are held in their custody and, as custodians, they keep and manage the bitcoins purchased by the ETF issuers. In other words, the custodian buys, stores and manages the issuers' bitcoin assets. Besides storing and keeping a record of who owns how much, they must also make sure that they do not get hacked and lose the cryptocurrencies in their custody.

Currently, there are only a handful of qualified bitcoin custodians and even if more bitcoin investors make the switch to ETFs, their growing custody business will sustain them.[13] But it is another story for some smaller crypto exchanges. Lacking in scale and deep pockets, they can forget about getting a piece of the custodian business. Meanwhile, these trading platforms can expect lower trading volumes if more investors switch to spot bitcoin ETFs. Although they do not trade round-the-clock (at least not yet), spot bitcoin ETFs do offer greater transparency, low transaction costs and a highly liquid market, according to the author's research.

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[13] Harrison Miller, "Most Bitcoin ETFs Keep All Their Eggs in One Basket. Is That Risky?", *Investor's Business Daily*, 22 March 2023, www.investors.com/news/bitcoin-etfs-keep-almost-all-their-eggs-in-one-basket-is-that-a-bad-thing/.

Table 2: Largest Crypto Exchanges in the World

Rank (by volume)	Name	Headquarters	ETF Custodian
1	Binance	Malta	No
2	Bybit	UAE	No
3	OKX	Seychelles	No
4	Coinbase	US	Yes
5	HTX	Seychelles	No
6	Gate.io	Cayman Islands	No
7	Bitget	Seychelles	No
8	Kraken	US	No
9	Crypto.com	Singapore	No
10	KuCoin	Seychelles	No
48	Gemini	US	Yes

Source: Compiled by author using data from various sources.

If more investors choose to invest in spot bitcoin ETFs over owning bitcoin outright, some crypto exchanges – especially the smaller ones – may come under pressure, not least because bitcoin often makes up the bulk of their trading volumes and liquidity is critical to them. In fact, if spot bitcoin ETFs take more business away from crypto exchanges, regulators may have to monitor these trading platforms even more closely. And since it would take time to put in place new regulations and related measures, it is never too early to jump-start the process even though spot bitcoin ETFs have just been launched.

Conclusions

After a period of relative calm, volatility has returned to bitcoin again in 2024. Boosted by a more dovish Federal Reserve, the launch of spot bitcoin ETFs and the halving event in late April 2024, bitcoin spiked to a new record high early this year. Whether it goes on to make many new highs is anyone's guess. Fifteen years after it was first launched, bitcoin continues to mystify, captivate and baffle us. To this day, we have no clue who created it, how to value it and, most importantly, what its future holds. Even so, there are policy implications and, in this case, they may not be trivial (see Table 3).

Table 3: Ripple Effects and Mitigating Measures

	Systematic	Non-systematic
Risk	Contagion effect from a bitcoin bubble burst	Crypto exchanges cannot compete with spot ETFs and trading volume falls.
Cause	Massive decline in bitcoin prices.	Investors prefer spot ETFs over buying bitcoin outright.
Recommen-dation	1. Increase surveillance & oversight of the financial sector. 2. Conduct routine stress tests for the banking system.	1. Ask for regular proof of asset or reserve from crypto exchanges to establish that they are well capitalised. 2. Require timely independent audits to ensure that crypto exchanges meet high professional standards.

The 2008 global financial crisis has taught us that troubled markets can impact the real economy and even hurt the common person on the street with no stake in them. It should be noted that the SEC's decision to approve spot bitcoin ETFs does not change the fact that the cryptocurrency remains a highly volatile and risky asset. Given how bitcoin has waxed and waned in the past, another downturn is almost inevitable. So as bitcoin ownership broadens, it has become more important than ever for policymakers to plan for a sharp price decline (that spreads to other markets). If the impact is minimal, then we can all breathe a sigh of relief; but if not, then at least they are ready.

As more investors flock to spot bitcoin ETFs, the fate of some crypto exchanges also becomes less certain. The bigger ones – acting as custodians – have another source of revenue. For the smaller crypto exchanges though, the increased competition from spot bitcoin ETFs may ultimately affect their bottom lines. Since these crypto trading platforms are also custodians of customer assets, including funds and cryptocurrencies, it is imperative that regulators keep a close eye on them from this point forward. Like it or not, more oversight by regulators is necessary to protect investors as well as maintain confidence in the financial system.

As bitcoin turns 15, policymakers need to take note of what is happening in that space too, not least because what goes on there has implications for the real economy. A good government is not just one that solves problem; it also thinks about what issues will emerge and takes active measures to resolve them before they bubble to the surface. There are many kinds of government in this world, but it is obvious that only one type is well liked by both investors and the common person on the street.

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