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To what extent is the cryptocurrency market volatile and what impacts does this have on investors and investor behaviour?

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Abstract

The cryptocurrency market has seen great development and increasing popularity in the last few years. However, cryptocurrencies such as Bitcoin are commonly in the news with regard to their volatility. The volatility of any asset can have an impact on investor behaviour. In light of the aforementioned, this research paper particularly explores the extent of volatility in the cryptocurrency market by analysing the influence of factors such as supply and demand, technological developments, macroeconomic factors and government intervention on the price of these digital currencies. The latter half of the paper also aims to explore how the fluctuations impact investor behaviour and how these behaviours can further trigger fluctuations in the market.

Key Words: Cryptocurrency, Bitcoin, Ethereum, Volatility, Investor Behaviour

Introduction

*Is cryptocurrency the key to obtaining financial freedom, or is it merely a speculative bubble destined to burst?*As the world is on the search to settle the future of money, the rise of digital currencies has sparked intense debate and fascination. Originally started with Bitcoin, a form of cryptocurrency, it has been the home of many failed

and successful projects (Britannica, 2024). Bitcoin being the most successful one. Bitcoin is based on public key Cryptography in which the users have a public key which is on display for everyone to see and a private key only known by them to access their wallet. Digital currencies use Cryptography, and this is why people deem them so safe as it is unreadable to anyone without a password (Worldcoin, 2023).

In the modern world, cryptocurrencies are based on a decentralised blockchain. A blockchain is a distributed database shared among a computer network's nodes. They are the key to maintaining a secure and decentralised record of transactions. The price or value of any cryptocurrency is determined by a wide range of factors including its demand and supply. If there is low supply, but high demand the price goes up and vice versa (Hayes, 2023). Most of the cryptocurrencies have a fixed total supply to avoid devaluation through inflation. For example, there will only ever be 21 million Bitcoins in the world (Legge, 2024).

Cryptocurrency price fluctuations or volatility is what makes it so risky yet unique. Being a market that is still very new and yet to find its purpose makes it this way. Countless factors like utility, scarcity, and assumed value, among others, have a significant impact on the price variations of these digital coins. Taking the aforementioned into consideration, this research paper aims to answer the following question: ***To what extent is the cryptocurrency market volatile and what impacts does this have on investors and investor behaviour?***

This paper aims to thoroughly analyse the varying factors beyond just demand and supply that impact the value of cryptocurrencies and then further evaluate the impact of this on investor behaviour

Overview of Cryptocurrency

Cryptocurrency is a digital payment system that does not rely on banks to verify transactions instead it serves as a peer-to-peer system that allows anyone, anywhere to send and receive payments (Kaspersky, 2022). Cryptocurrency payments are not physical currencies that are carried and exchanged in the real world - they reside in digital assets in online repositories that describe specific transactions and are stored in digital wallets. Cryptocurrencies get their name from the encryption they use to verify transactions. This means that advanced coding involves storing and transferring cryptocurrency data between wallets and public records. The purpose of encryption is to ensure security. One of the main features of Cryptocurrency is its decentralised structure. Unlike traditional currencies that are controlled by governments and financial institutions, Cryptocurrency operates in a decentralised manner. This means that it is not controlled by a single source but by a network of users working together to identify changes and secure the system. Cryptocurrency decision-making mechanism provides greater

transparency, security and ease of access, making it a more popular choice for individuals and businesses around the world (Javaid et al., 2022).

The first cryptocurrency was Bitcoin, which was created in 2009 and is still the best known today. Interest in cryptocurrencies is often related to profit-making trading, and analysts sometimes manipulate prices (Kaspersky, 2022). Before the creation of Bitcoin, there were quite a few examples of online digital currencies, but none succeeded in attracting much interest or establishing themselves in financial markets. Two examples of such currencies are B-Money and Bit Gold (Kriptomat, 2021). In January 2009, Bitcoin was created by a pseudonymous developer - Satoshi Nakamoto. Bitcoin began its journey as the housing bubble burst. In 2008, Satoshi Nakamoto published the famous whitepaper, “Bitcoin: A Peer-to-Peer Electronic Cash System,” which laid out the plan for peer-to-peer internet-based currency (Worldcoin, 2023).

In today's time, there are many other cryptocurrencies other than Bitcoin named Altcoins. "Altcoin" is a combination of the words "alternative" and "coin". The term generally includes all cryptocurrencies and tokens other than Bitcoin. Altcoins belong specifically to the blockchain for which they were created. Many are forks from Bitcoin and Ethereum, which are splits of the blockchain that are incompatible with the original chain. These separations often occur for more than one reason. For instance, often, a group of developers disagrees with the others and leaves to make their own money. Many altcoins are used to accomplish certain things on blockchains, such as Ethereum, which is used to pay transaction fees on Ethereum. Some developers have created and re-emerged Bitcoin forks with the aim of competing with Bitcoin as a payment method, such as Bitcoin Cash. Other developers are using forks or building from scratch to create a blockchain and token attractive to an industry or group, much like Ripple is trying to tap into business banking with faster payments (Investopedia, 2024).

There are three primary ways of obtaining Bitcoin and other cryptocurrencies. You can buy them on an exchange like Coinbase, receive them as payment for goods or services, or virtually “mine” them. Mining is the process that Bitcoin and many other cryptocurrencies use to create new coins and identify new transactions. It involves a large, distributed worldwide network of computers that authenticates and secures the blockchain, a virtual database that records cryptocurrency transactions. In exchange for supporting the work, computers on the network will be rewarded with new money. It's a virtuous cycle: miners control and maintain the blockchain, the blockchain rewards tokens, and tokens give miners incentives to control the blockchain. The use of mining is an essential part of the cryptocurrency ecosystem and contributes heavily to the supply and demand of any coin (Coinbase, 2023).

Causes of Cryptocurrency Volatility

Cryptocurrency volatility is a defining factor by which an investor makes their decision whether to invest in a coin or not. It is the degree to which rapid fluctuations or unpredictable changes occur over a particular period of time. Generally, the higher the volatility, the riskier it is to invest in it. There are many factors which lead to these rapid changes in prices - the most prevalent and important being the demand and supply of a particular coin. The supply and demand dynamics of cryptocurrencies are similar to traditional markets, but they operate in a digital ecosystem. The supply is usually defined in advance by the cryptocurrency system and the number of coins mined is limited. For example, as mentioned in the introduction, Bitcoin's limit is 21 million coins. Currently, there are 19.5 million in circulation, it is expected that the last bitcoin will be mined around the year 2140 (Crypto.com, 2024). Some cryptocurrencies have a mechanism to "burn" existing tokens to prevent the supply from growing too large and funding slowing down. Burning tokens means sending them to an immutable address on the blockchain. With each newly mined piece of the blockchain, the amount of Bitcoin increases by a fixed amount. Ethereum offers a fixed reward for each block mined but also rewards the inclusion of "uncle blocks" in new blocks, which help the blockchain run better. Therefore, the increase in supply does not stop. The supply of some cryptocurrencies is determined entirely by the project team; the project team can choose to give more tokens to the public or burn the tokens to control the money. The wider adoption of cryptocurrencies as an investment would increase demand while effectively limiting supply. For example, when a trading company began buying and holding Bitcoin in early 2021, its price skyrocketed as demand was surpassed by the creation of new coins, decreasing the total supply of Bitcoin (Levy, 2021).

Furthermore, technological developments in cryptocurrency or the blockchain can also stabilise or destabilise the prices. Advancements and upgrades most commonly lead to the enhanced security, scalability and utility of cryptocurrencies and make them more attractive to investors. On the other hand, security breaches, network congestion issues and any software vulnerabilities can lead to panic selling and a drop in prices (WhiteBIT, 2023). A real-life example of a technological development impacting the value of a cryptocurrency was seen in 2022 when Ethereum had a significant transformation from a Proof of Work (PoW) to a Proof of Stake (PoS) consensus mechanism which was better suited for its needs. Labelled Ethereum 2.0, the upgrade was accomplished by merging with Beacon Chain, a PoS-based blockchain. The advantages of this transition entailed Ethereum becoming more energy-efficient and environmentally friendly which was likely to have attracted many environmentally-conscious investors and institutions. PoS also enabled the network to drive profits for its users. Overall, Ethereum's transition to PoS has been a huge success as it brought about many increases in efficiency and security. The aforementioned transition is also a big reason for Ethereum becoming so inclusive that anyone

with access to a computer can become a user (Bake Blog, 2023).

As highlighted in an article written by Patel (2023), macroeconomic factors significantly influence cryptocurrency prices, with inflation playing a key role. The finite supply of cryptocurrencies like Bitcoin, combined with the belief that they can act as a hedge against fiat currency devaluation, often drives increased investment during periods of rising inflation. Additionally, during times of economic uncertainty, cryptocurrencies are perceived as safe-haven assets similar to gold, attracting investors seeking to protect their wealth. Conversely, in times of economic prosperity, cryptocurrencies tend to behave more like risk assets, reflecting investor appetite for high returns. Other macroeconomic factors, such as interest rate changes, government regulations, and geopolitical events, also contribute to cryptocurrency price fluctuations by affecting investor sentiment and market dynamics.

Speaking more closely about the impact of government intervention on cryptocurrency fluctuation, due to this entire ecosystem becoming so easily accessible and available to millions of people, governments have often tried to intervene and scrutinise the regulatory landscape of cryptocurrency prices. Cryptocurrency is decentralised and anonymous with any transaction. Therefore, governments in many countries begin to worry about the development of cryptocurrency. The main reason that the government worries is that cryptocurrency has the potential to dismantle the central banking system, and the central bank has the responsibility to control the entire economy of the country. In 2021, the Chinese government and central bank, for instance, announced that all cryptocurrency transactions or facilitation were illegal. As per reports, Bitcoin mining was cracked down upon following a meeting of the State Council Financial Stability and Development Committee in May, and this resulted in a massive shutdown of cryptocurrency mining farms in the country. The rumours of the end of mining in the country caused prices to drop previously—but following the release of the committee meeting in May, Bitcoin's price dropped through August 2021 to around $29,700 as miners scrambled to relocate (Reiff, 2024). Another big reason that governments worry and presumably set strict restrictions against cryptocurrency is that cryptocurrency is increasingly being used for criminal activity and illicit finance. Anonymous with Bitcoin transactions are mostly preferred by criminals. A study from 2019 reported that nearly $76 billion of illegal activities per year are involved with Bitcoin (Foley, Karlsen and Putniņš, 2018).

Consequences of Cryptocurrency Volatility

Crypto fluctuates because it is influenced by myriad factors including supply and demand, government intervention, technology advancements and macroeconomic factors. This can have a varied impact on investor behaviour and broader market dynamics. Interestingly, the manner in which investors behave towards the

fluctuations can trigger even further fluctuations. This is explored below.

Psychological variables significantly influence investor sentiment in the cryptocurrency market. Greed, fear, and hope are examples of emotions that can influence investor choices and increase market volatility. The impact of these emotions is even greater when individuals exhibit herd mentality - investors' tendency to follow and mimic the actions of a larger group despite their own analysis. When cryptocurrency prices rise, in the market, for instance, then more investors jump in, fearing they will miss out on potential gains - exhibiting the phenomena of FOMO aka fear of missing out. This collective buying can drive prices even higher in a short period. Conversely, when prices drop, panic selling can ensue, with investors rushing to sell their holdings to minimise losses, exacerbating the price decline. Another factor that influences the fluctuations and investor responses to the fluctuations in the cryptocurrency market is the lethal combination of FUD (fear, uncertainty, and doubt. FUD can be triggered by various factors, including negative news, regulatory announcements, or significant market downturns. When FUD spreads, it can cause investors to make irrational decisions, such as selling off assets prematurely. This behaviour can lead to significant price drops and increased market volatility as uncertainty and fear override rational decision-making (Grip Invest, 2024).

At the end of the day, cryptocurrency trading is risky and volatile and can put investors at high risk of financial loss. According to Johnson et al. (2023), many financial losses are associated with negative mental health conditions such as depression and anxiety. Additionally, market volatility can lead to increased stress, regardless of the general price level. Cryptocurrency trading may raise public health concerns and warrant investigation. Even after facing initial losses, traders often continue trading due to urges to make back the losses. Due to these negative side effects of the sudden price fluctuations, some smart investors and traders have employed various useful strategies to cope with the high volatility rate. These strategies include entering and exiting a trade quickly to keep up with the volatile market. Some also state to understand their own risk tolerance as an investor to keep calm during trades. Instead of trying to time the market and buy at the perfect moment or lump sum investing, they invest a fixed amount of money regularly over time, this approach allows them to buy more coins when prices are low and fewer ones when the prices are high (James, 2024).

Conclusion

In the ongoing search to determine the future of currency, digital currencies, led by Bitcoin, have sparked intense debate and interest. Cryptocurrencies are important to today's financial arena, operating on decentralised blockchains that serve as secure and decentralised transaction ledgers. However, with their value being determined by a plethora of factors including supply and demand dynamics, macroeconomic factors including

government regulation and intervention and technological developments, these currencies are prone to great levels of volatility. This research paper aimed to thoroughly analyse the extent to which the cryptocurrency market is volatile the further explore the impacts of this on investor behaviour.

As with most markets, supply and demand dynamics play a significant role in determining the value and price of cryptocurrencies. Measures such as the mining limitations for cryptocurrencies like Bitcoin and the burning of oversupplied cryptocurrencies are in place to manage supply, yet careful monitoring is essential to prevent massive price changes due to oversupply or excessive demand. Technological advancements that enhance the security, accessibility, and stability of cryptocurrencies can drive their value higher, while security breaches or weaknesses in the network can lower their value. Additionally, macroeconomic factors such as inflation and economic uncertainty can cause fluctuations in cryptocurrency values. Government intervention, driven by concerns over monetary sovereignty, illegal activity, and macroeconomic stability, also significantly influences the market.

Overall, the cryptocurrency market is volatile to a great extent. This volatility has profound implications for the future of finance, influencing investor behaviour and potentially fueling further market fluctuations, creating a vicious cycle. A solid understanding of market dynamics and risk tolerance is crucial for investors to make well-informed decisions as they navigate this unstable environment.

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