

Analysis of Factors Affecting Cryptocurrency

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Abstract

As a new type of digital assets, cryptocurrencies exhibit pronounced price volatility and heightened risk exposure, exceeding that typically associated with traditional financial instruments. Numerous factors have influence on cryptocurrency price dynamics. Drawing on literature available up to date, this study consolidates and synthesizes the prevailing evidence on the transmission mechanisms underlying cryptocurrency price fluctuations. Based on macro and micro level data, we undertake a systematic empirical analysis on supply and demand determinants. The findings underscore that cryptocurrency valuations are jointly shaped by macroeconomic variables, including miners' production costs, revenue streams, regulatory and policy announcements, as well as speculative market behavior reflected in institutional capital flows and sentiment signals extracted from social media platforms.

Keywords

Cryptocurrency, Supply and Demand Determinants, Regulations

1. Introduction

Since its inception, cryptocurrency has attracted widespread attention beyond the domain of computer science and financial technology, engaging scholars from political science, economics, and sociology. Central questions—such as who creates cryptocurrency, who controls access, how governance structures are established, and the extent to which regulation should be implemented—have generated extensive scholarly debate. Within this framework, the U.S. dollar has long maintained its dominant position as the world's reserve currency, while the euro, Japanese yen, and British pound have acted as secondary competitors. However, limited competition among reserve currencies has resulted in structural imbalances in rights and obligations, exacerbating tensions between major powers and emerging markets, particularly those facing political fragility and structural conflicts.

The international monetary order is neither a perfectly hierarchical system nor an entirely fragmented one; rather, it represents a highly unstable and evolving structure (Baur et al., 2018).

Recent analyses indicate that the renewed rise in trade protectionism imposes significant economic costs, including upward pressure on consumer prices and constraints on investment and growth (IATA, 2025; S&P Global, 2024; Dallas Fed, 2025). Moreover, inflationary dynamics are often associated with increased risks of capital flight, further complicating governments' macroeconomic policy trade-offs (World Bank, 2024; Cuddington, 1986). In many developing economies, sovereign currency functions remain underdeveloped. Against the backdrop of geopolitical uncertainty and rising external debt burdens, weak sovereign creditworthiness has hindered the ability of national currencies to maintain value stability and anchor market expectations, ultimately constraining sustainable economic growth. According to Cohen, the recent intensification of capital mobility has placed governments under growing constraint: trade barriers and protectionist policies, while intended to shield domestic industries, tend to generate substantial efficiency losses and raise input and consumer-price inflation. At the same time, in environments of policy uncertainty or weak institutional credibility, capital flight emerges as a serious risk, further undermining macroeconomic stability and constraining governments' ability to control inflation and maintain monetary credibility (Cohen, 2004). Moreover, the spillover effects of currency internationalization by major economies have introduced additional challenges. Globalization has sharply increased demand for international currencies, creating a vacuum in which cryptocurrencies have emerged as alternative assets. Since their inception fifteen years ago, cryptocurrencies have experienced pronounced price volatility alongside rapid market expansion. The empirical work by Kristoufek (2015), Urquhart (2016), Dyhrberg (2016), and Bouri et al. (2019) provides strong support for the idea that cryptocurrencies—particularly Bitcoin—are behaving increasingly like alternative assets in the global monetary system. Kristoufek's wavelet coherence analysis shows that price drivers are not only speculative and technical but also respond to shocks in institutional or international markets, and that Bitcoin's price demonstrates both short- and long-term volatility across different frequencies. Urquhart adds that the Bitcoin market exhibits significant information inefficiency over most periods, implying that market participants are very sensitive to exogenous shocks, policy changes, or shifts in global investor sentiment. Dyhrberg's GARCH models further reveal that Bitcoin shares hedging properties similar to gold and the U.S. dollar, especially in periods of negative market shocks, which supports the asset's utility outside of just speculative trading. Finally, Bouri et al. find that while Bitcoin's role as a safe haven is inconsistent, its role as a diversifier in mixed portfolios is clear—indicating that investors perceive its value precisely because traditional currencies or assets sometimes fail to deliver stability or yield in the face of globalization, capital mobility, and inflationary pressure (Kristoufek, 2015; Bouri et al., 2019; Urquhart, 2016; Dyhrberg, 2016).

It can be seen from **Figure 1**, By the end of 2024, the total market capitalization of cryptocurrencies had reached USD 1.15 trillion. According to CoinGecko data, there are now 14,690 traceable cryptocurrencies, including Bitcoin and Ethereum deployed on public blockchains, as well as various privately issued digital assets managed on proprietary blockchains and supported by commercial services such as digital wallets and cryptocurrency exchanges. As of 2024, there were more than 1,500 companies in the United States that were active in the cryptocurrency industry, and US companies held substantial market shares globally. Notable firms such as Coinbase and Ripple have become industry leaders, with Coinbase ranking as the largest U.S. cryptocurrency exchange by trading volume and operating across more than 100 countries. In Europe alone, the number of blockchain and digital currency users has surpassed fifty million, with annual transaction volumes exceeding USD 1 trillion.

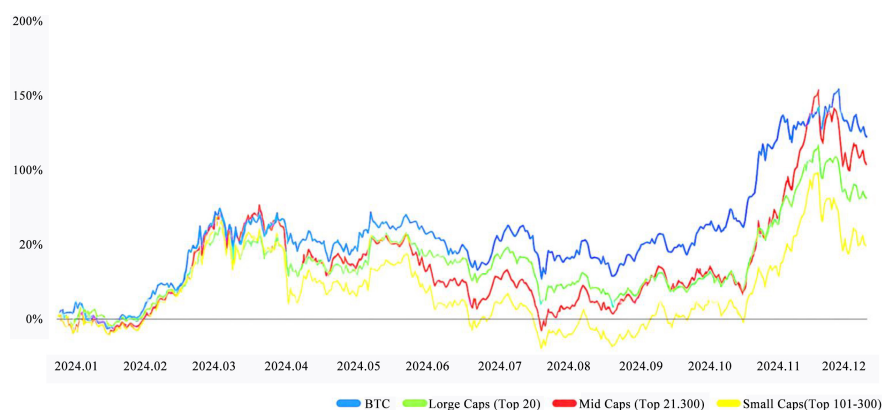


Figure 1. Trends in cryptocurrency development.

2. Literature Review

In the early stages of cryptocurrency development, scholars primarily regarded cryptocurrencies as investment assets; however, as the technology advanced, their monetary attributes gradually came to the fore. Divergent research conclusions may also be attributable to varying characteristics of cryptocurrencies, such as public attention and a range of macroeconomic factors. At present, given that cryptocurrencies lack consumer credit applications comparable to those of fiat currencies in everyday economic activities, their transactions rely predominantly on investor confidence, thereby positioning them primarily as investment instruments. **Baur et al. (2018)** provide evidence that Bitcoin, despite its theoretical design as a decentralized currency, has in practice been predominantly used as a speculative investment instrument, with limited adoption as a medium of exchange. **Kwon (2021)** shows that cryptocurrency prices are heavily driven by macroeconomic factors—including global liquidity conditions, monetary policy shocks, and investor sentiment—implying that their valuation largely depends on speculative demand rather than transactional utility. Taken together, these findings suggest that while technological advancements have gradually introduced monetary attributes

to cryptocurrencies, their real-world functionality remains primarily as investment assets contingent on market confidence rather than as substitutes for fiat money in everyday economic activities (Kwon, 2021; Baur et al., 2018).

Florian Glaser et al. (2014) examine user motivations and demonstrate that participants predominantly regard cryptocurrencies as investment (convertible) assets rather than as media of exchange, reflecting the speculative and store-of-value characteristics that have thus far overshadowed their transactional functions. This finding aligns with a broader literature emphasizing that, despite the initial vision of Bitcoin as a decentralized payment system, its real-world adoption has largely been driven by investment incentives, price speculation, and portfolio diversification motives (Baur et al., 2018; Kwon, 2021). Building upon this, Swan (2015) conceptualizes blockchain technology within a three-layer functional framework: currency/payment (Blockchain 1.0), transaction/contract software (2.0), and broader application/record-keeping layers (3.0), which map closely onto the traditional economic functions of money—medium of exchange, unit of account, and store of value—while extending beyond them into programmable and institutional dimensions enabled by distributed ledger technology.

With the maturation of cryptocurrencies, the determinants of their price fluctuations and the underlying mechanisms through which prices are formed remain pressing issues warranting further investigation. Kristoufek, employing the VEC model, analyzed the dynamic interplay between public attention and cryptocurrency prices, emphasizing their reciprocal interdependence. According to Kristoufek, these variables exhibit positive mutual dependence: rising cryptocurrency prices attract more miners, yet the increasing number of miners, in turn, leads to heightened mining difficulty (Kristoufek, 2015). Bouri et al. (2019) explore the role of cryptocurrencies in global financial markets, highlighting their dual function as both speculative assets and potential hedging instruments. Their study reveals that while Bitcoin occasionally exhibits safe-haven properties during periods of market turbulence, its price dynamics remain largely driven by speculative demand and investors' risk appetite, thereby reinforcing the argument that cryptocurrency valuations are highly sensitive to market sentiment and global uncertainty (Bouri et al., 2019).

3. Analysis of Factors Affecting the Development of Cryptocurrencies

3.1. Total Supply Limit

The study of the total supply control (Supply Cap) of cryptocurrencies focuses on the design of the monetary policy of different cryptocurrencies, shaping the rarity and longterm investment value of cryptocurrencies. Consider Bitcoin - its total supply is limited to 21 million by Satoshi Nakamoto as part of the protocol and it can not be changed. It is this design that gives Bitcoin its scarcity, and makes it a form of "digital gold". As Baur, Hong, and Lee (2018) point out, "Bitcoin is scarce by design, i.e., its scarcity is determined by an automatic, deterministic rule ful-

filled by competitive mining similar to commodity money (e.g. gold)” and “The supply of Bitcoins is perfectly predictable and will continue to increase in decreasing steps until 2040 and remain at the 2040 level ad infinitum.” These properties differentiate Bitcoin from fiat currencies and enhance its appeal as a long-term store value/investment asset (Baur et al., 2018). It can be seen from Figure 2, as of May 2025, more than 19,700,000 Bitcoin has been mined.

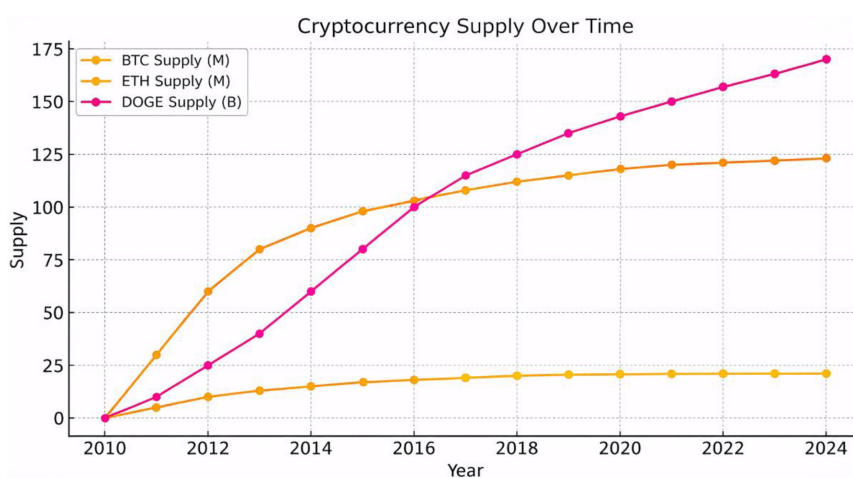


Figure 2. Changes in the supply of major cryptocurrencies.

3.2. Global Liquidity

Certainly, liquidity is the most important factor for cryptocurrency’s direction, and the tightness and looseness of liquidity play a key role in the ups and downs of cryptocurrency prices. “Since the ‘07–’08 global financial crisis, central banks around the world have broken fundamental concepts of how the financial markets work,” a world in which the illusion of liquidity has served as the core price setter for assets. Hence, the shifts in global liquidity are paramount to the gyrations in cryptocurrency markets. Global Liquidity has several definitions, or methods of measurement. Bitcoin Magazine Pro also provides a way to gauge global M2: it combines M2 data from eight leading economies: the US, China, the Eurozone, the UK, Japan, Canada, Russia, and Australia. The indicator is very appropriate for describing world liquidity because it shows the aggregate level of fund available for spending, investment and borrowing worldwide. Another way to look at it is as a combined metric for global credit creation and central bank money printing. Global M2 is priced in dollars Lyn Alden wrote about this in her piece on M2 as a global indicator: As the global reserve currency, the US dollar is the world’s dominant unit of account in trade, contracts, and debt, so its strength or weakness is crucial to the world. When the dollar is strong, countries shoulder more debt; when the dollar is weak, debt becomes lighter. As shown in Figure 3, dollar-denominated global M2 When one currency is chosen (dollar), the year-over-year rate of change of global M2 (denominated in dollars) shows not just the level of the dollar index, but also the level of credit creation; as such, it serves as a measure

of global liquidity conditions. [Kristoufek \(2015\)](#) highlights the strong interaction between global financial variables and Bitcoin prices, showing that liquidity shocks and price movements exhibit bidirectional spillovers over multiple time horizons. [Bouri et al. \(2019\)](#) further investigate the role of Bitcoin as a hedge or safe-haven asset, noting that its behavior is highly sensitive to global risk sentiment and liquidity fluctuations, particularly during periods of market turbulence. Complementarily, [Kwon \(2021\)](#) uses high-frequency data to demonstrate that global liquidity, monetary policy shocks, and investor sentiment are among the primary determinants of cryptocurrency returns, reinforcing the view that cryptocurrencies, despite their decentralized design, remain deeply interconnected with global macro-financial conditions ([Kristoufek, 2015](#); [Bouri et al., 2019](#); [Kwon, 2021](#)).

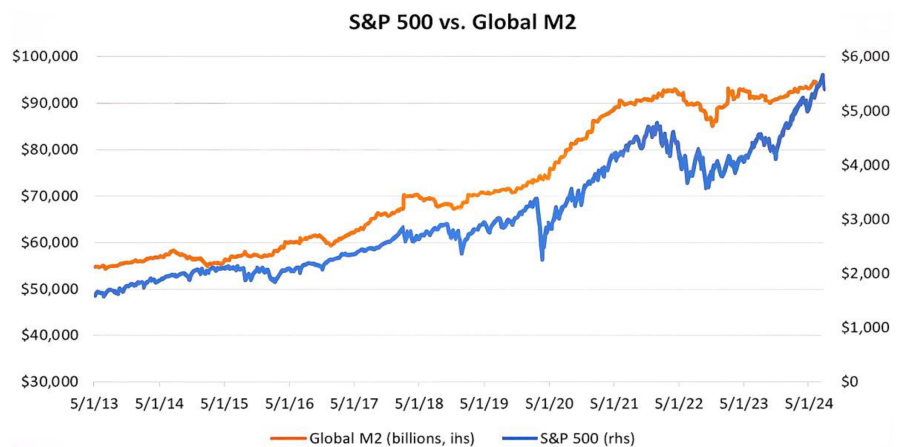


Figure 3. Bitcoin price VS. global M2.

It can be seen in [Figure 4](#), bitcoin tends to do well when there is more global liquidity and less well when the opposite is the case. This has caused some to refer to Bitcoin as a “liquidity barometer”. The following chart shows how Bitcoin behaves in relation to the changes in world liquidity, where Bitcoin is more sensitive to changes in world liquidity. When the liquidity is high, the Bitcoin price is high; when the liquidity is low, the Bitcoin price is low.

Bitcoin has passed through three significant bull and bear market cycles in line with two rate hiking cycles by the Federal Reserve. As shown in [Figure 5](#), the first and 2015-2017 bull market went along with the Federal Reserve’s raising its interest rates. However, the subsequent two Bitcoin cycles unfolded almost entirely within Fed rate-cutting phases. This suggests that monetary policy in the United States alone provides only a partial explanation for Bitcoin’s price dynamics during this period. A more comprehensive perspective incorporates monetary policy developments across the United States, China, Japan, and the European Union (EU). Between 2015 and 2016, China, Japan and the European Union each cut rates, with the European Union falling to ultra-low rates, and Japan down to zero. Before 2019, Bitcoin’s most significant fundraising was in the Asia-Pacific and European market, while after 2019 transformed into North America. This transi-

tion helps explain why the Fed's rate path exhibited limited correlation with Bitcoin's performance from 2015-2017 but became increasingly aligned after 2019, as North American institutional capital began to dominate the crypto ecosystem. Bouri et al. (2019) document that Bitcoin's hedging and safe-haven properties are highly sensitive to changes in global liquidity and risk sentiment, while Kristoufek (2015) reveals bidirectional spillover effects between macroeconomic variables and Bitcoin prices across different time horizons. Baur et al. (2018) further emphasize Bitcoin's dual role as both a speculative asset and a potential store of value, suggesting that institutional investors' growing presence amplifies its responsiveness to monetary policy signals and global liquidity shocks. Together, these findings imply that Bitcoin has evolved from a largely decoupled digital asset into a financial instrument increasingly integrated with global capital flows, monetary conditions, and investor risk preferences (Kristoufek, 2015; Bouri et al., 2019; Baur et al., 2018).

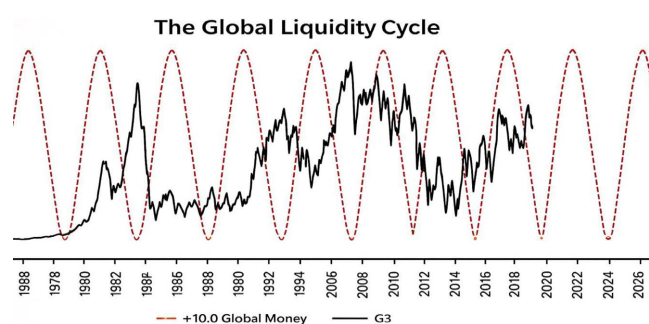


Figure 4. Global liquidity cycle.

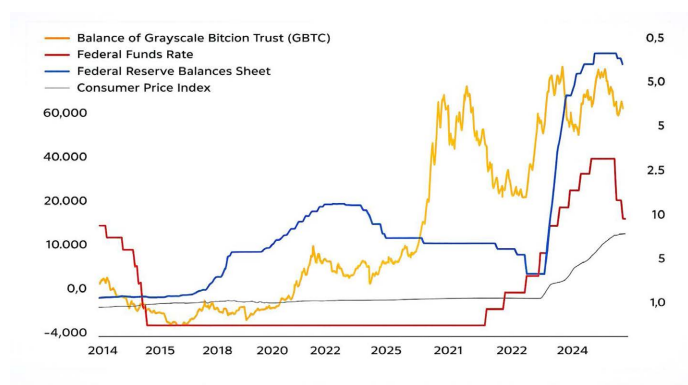


Figure 5. Comparison of Bitcoin and Global interest rate changes.

Furthermore, the correlation between Bitcoin market cycles and national economic cycles can be examined by comparing global interest rates and M2 growth. As illustrated in Figure 6, the period after 2019 marks a notable shift in Bitcoin's geographical dominance from Asia and Europe toward North America. This raises the question of whether Bitcoin's first bull market coincided with the Federal Reserve's sustained interest rate hikes. During this period, China, Japan, and the European Union were simultaneously undergoing interest rate reductions.

The second Bitcoin cycle exhibited a stronger linkage with U.S. monetary policy: the cycle bottomed when the Federal Reserve ended its rate-hiking phase and concluded when signals of a new tightening cycle emerged. The third cycle reached its trough at the peak of the Federal Reserve's interest rate levels and remains ongoing. Notably, the Federal Reserve's accommodative monetary policy in 2020 was a key driver of Bitcoin's sharp rally. The expansionary policy created abundant global liquidity, incentivizing investors to seek high-yield assets, which in turn fueled Bitcoin's price surge. However, the subsequent transition toward monetary tightening, characterized by a series of frequent rate hikes, raised funding costs and suppressed investment sentiment. This shift led to a significant decline in Bitcoin prices, with approximately two-thirds of the impact transmitted through the channel of restrictive monetary policy. [Kristoufek \(2015\)](#) finds two-way spillovers between Bitcoin prices and global liquidity indicators, showing that monetary policy shifts and risk sentiment affect Bitcoin cycles across multiple time horizons. [Bouri et al. \(2019\)](#) reveal that Bitcoin's hedging and safe-haven properties depend on global liquidity conditions—loose policies often fuel price surges, while tightening suppresses demand. [Kwon \(2021\)](#) adds that high-frequency data confirm Bitcoin reacts quickly to monetary policy expectations and risk sentiment, linking crypto markets to global capital flows. Finally, [Baur et al. \(2018\)](#) highlight Bitcoin's dual role as both a speculative asset and a potential store of value, with institutional capital after 2019 strengthening its correlation with U.S. monetary policy ([Kristoufek, 2015](#); [Bouri et al., 2019](#); [Kwon, 2021](#); [Baur et al., 2018](#)).

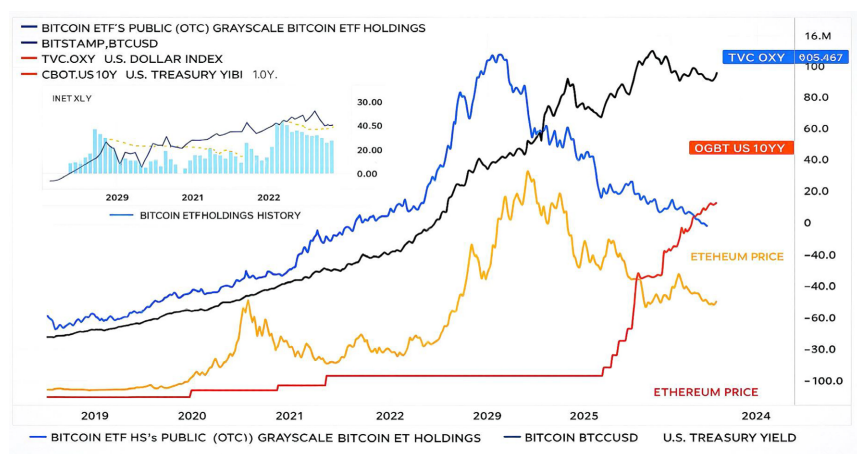


Figure 6. Comparison of Bitcoin and Global M2 trends.

The increase of Bitcoin is much in line with M2. The different cycles between bull and bear of Bitcoin are consistent with the rising and falling of M2 month-on-month growth rates in the big four global economies or areas. The price lows in Bitcoin tend to coincide with the lows in M2 growth and its price highs also coincide with short-term peaks in M2 growth. Empirical studies show that Bitcoin's bull and bear cycles tend to coincide with the rising and falling phases of M2 growth rates across the world's major economies ([Kristoufek, 2015](#); [Bouri et](#)

al., 2019). Specifically, Bitcoin price lows often align with troughs in M2 growth, while price highs frequently correspond to short-term peaks in liquidity expansion. Kristoufek (2015) identifies bidirectional spillover effects between Bitcoin prices and macroeconomic variables, emphasizing that global monetary conditions exert significant influence on cryptocurrency valuation. Similarly, Bouri et al. (2019) find that Bitcoin's hedging and safe-haven properties are highly sensitive to liquidity shocks and monetary tightening, particularly in periods of elevated risk aversion (Kristoufek, 2015; Bouri et al., 2019).

Under the current round of tightening and interest rate hike, the monthly growth rate of M2 in four major countries and regions continue to decrease. In the long run, the general level of M2 continues to increase, and Bitcoin price is closely related to M2.

3.3. Mining Costs

The price of the cryptocurrencies and their price is affected and determined by the mining costs. Cryptocurrency miners provide the computing power for the system that accounts for and verifies transactions for a reward. Even if mining were to stop being profitable, supply of cryptocurrencies would slow down, bolstering their price. Kristoufek (2015) emphasizes that cryptocurrency miners provide the computing power necessary for transaction verification and network security, and their participation directly determines the marginal cost of production for digital currencies. As mining difficulty and energy requirements rise, the cost of producing each additional unit increases, creating a cost-based price floor for cryptocurrencies. Bouri et al. (2019) further argue that even if mining becomes less profitable, supply would contract as miners exit the market, tightening issuance schedules and thereby supporting prices over the long run. Empirical evidence shows that mining costs have exhibited a persistent upward trend, driven by technological competition, electricity prices, and hash rate escalation, all of which integrate production costs into the valuation models of Bitcoin and other cryptocurrencies (Kristoufek, 2015; Bouri et al., 2019). As illustrated in the accompanying Figure 7, mining costs have exhibited a persistent upward trend, further shaping the economic fundamentals of the cryptocurrency market.

Since 2017, when China outlawed the trading of cryptocurrencies, the country—once home to the world's most powerful Bitcoin-mining network, facilitated by low, government-subsidized electricity costs—has continued to intensify regulatory measures. China continued to tighten in 2022, and it began using five grades of electricity pricing for mining, which appears to have accelerated an exodus. At present, the U.S. is the world's biggest digital currency mining center. Pandemic-induced, quantitative-easing-driven, Ukraine conflict-spiked high inflation has sparked a steep rise in electricity prices across the U.S. over the past four years and directly boosted Bitcoin mining costs. As of 2024, It can be seen in Figure 8 that the Bitcoin mining power consumption in US has surpassed that of the whole state of Utah and represents 2.3% of national electricity

usage in 2023. Bitcoin’s halving comes roughly every four years and mainly affects mining costs. The quantity of Bitcoin mined is halved and costs the electricity at the same price. If the price of Bitcoin doesn’t increase, miners have less incentive to mine and the combination of the increased time and lower revenues could just put some of the miners out of business or running their mining equipment at a loss. [Kristoufek \(2015\)](#) shows that Bitcoin mining follows a cost–production framework, where rising electricity costs and halving events increase the marginal cost of mining. If Bitcoin prices fail to rise accordingly, miners face lower profit margins, leading some to exit the market. Similarly, [Bouri et al. \(2019\)](#) find that persistent energy price inflation combined with stagnant Bitcoin returns leads to profit compression in the mining sector. Only highly efficient miners survive, while others shut down or operate at a loss. This mechanism links energy costs, mining incentives, and Bitcoin price cycles, showing that energy prices act as a fundamental driver of cryptocurrency market dynamics ([Kristoufek, 2015](#); [Bouri et al., 2019](#)).

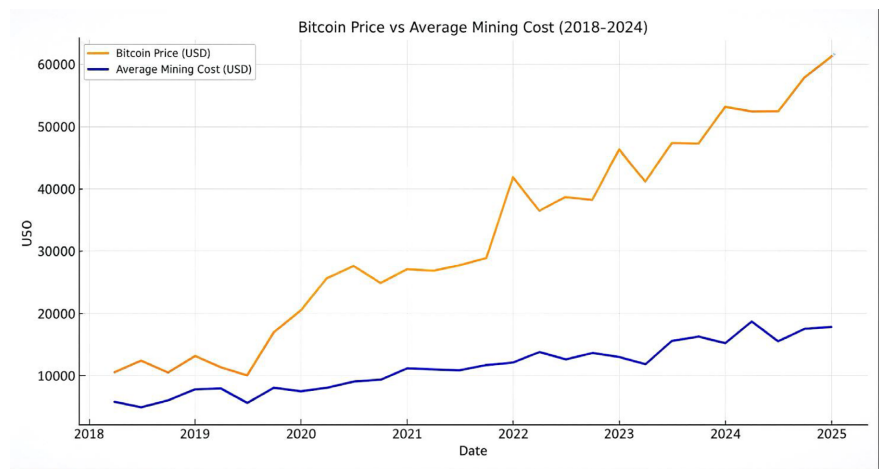


Figure 7. Comparison of Bitcoin prices and average mining costs.

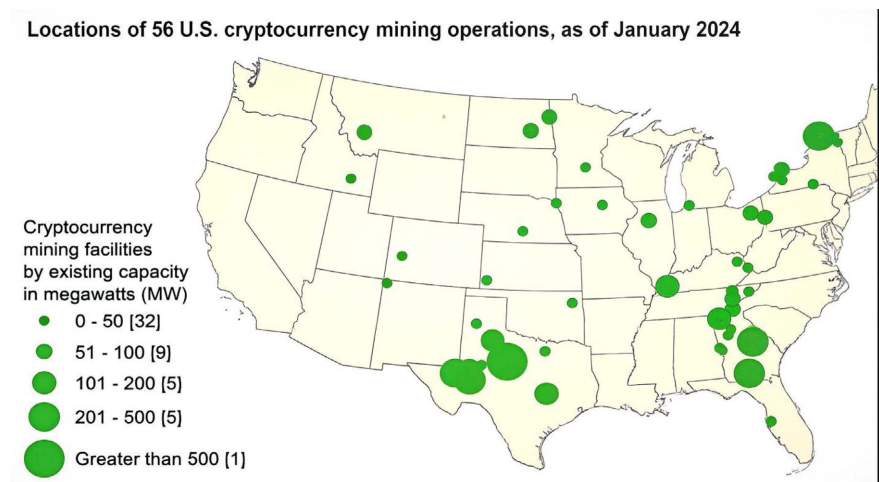


Figure 8. Bitcoin mining electricity distribution.

3.4. Bitcoin Reward Halving

As the block rewards of Bitcoin are halved roughly every four years, the mining industry has greatly influenced the price of BTC. As shown in **Figure 9**, the Bitcoin mining reward is halved every blocks. The reward has been halved twice since the inception of the game, each time dropping from 50 Bitcoin to 12.5 Bitcoin. During the 2018 cycle, declining Bitcoin prices forced some miners to exit the market, leading to the closure of several mining pools. This episode highlighted the sensitivity of the mining sector to fluctuations in Bitcoin's price. However, by early 2019, the hash rate began to stabilize, suggesting both a strengthening market and the resilience of the mining network. The most recent halving in April 2024 reduced the reward further to 3.125 BTC per block, intensifying the scarcity effect and amplifying potential supply shocks. Historically, each halving event has been associated with subsequent upward pressure on Bitcoin's price, underscoring the structural linkage between mining incentives, network security, and market valuation.

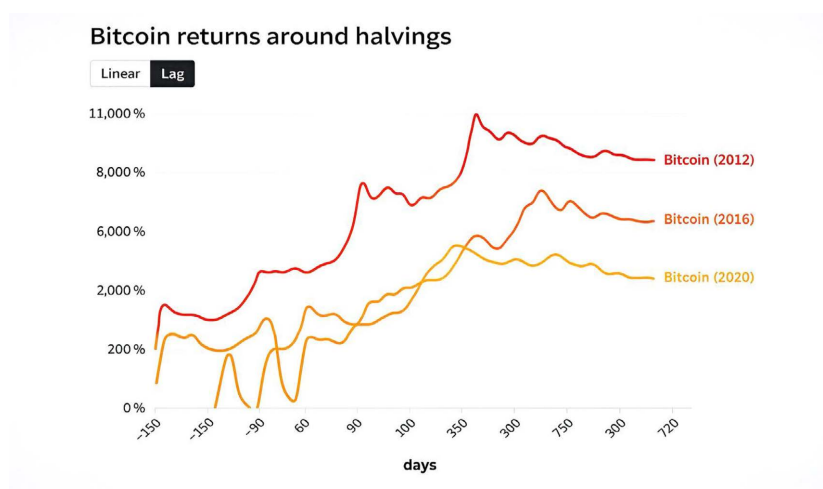


Figure 9. Bitcoin halving returns.

Bitcoin's halving is, in the eyes of market participants, a time to brace for a bull market as it curbs the amount of new Bitcoins supplied. The halving reduces the reward for miners who "create" new Bitcoins by verifying transactions and making new blocks, making new Bitcoins on the market less frequent. This mechanism introduces a built-in scarcity comparable to that of precious metals such as gold, whose finite nature underpins their long-term value. Unlike technologies that undergo successive iterations and improvements, Bitcoin operates as a standardized protocol; no "improved" version supersedes the existing system. Consequently, the incentive structure centers not on technological competition but rather on securing and maintaining the network under a fixed issuance schedule. Moreover, this engineered scarcity diminishes the pressure on miners to liquidate their holdings to cover capital and operational expenses, as the total supply of new Bitcoins declines.

In theory, as the potential supply of new bitcoins for sale goes down, you start getting the scarcity effect, which has historically set up for price increases as supply constricts and demand holds the line or grows. “At the moment, miners are selling around 900 BTC each day. This number is projected to half after the halving, to roughly 450 bitcoins, adding even more scarcity to Bitcoin and sending prices higher.

3.5. Hedging Demand Impact

In fact, more and more the world’s criminals are relying on cryptocurrencies to launder money and to carry out transactions. The more these demands exist, the more demand there is for BTC. As shown in **Figure 10**, empirical studies have estimated that a substantial proportion—potentially up to half—of all Bitcoin transactions may be linked to illegal purposes. International anti-money laundering organizations have further reported that billions of dollars in illicit funds are laundered annually through cryptocurrencies. These findings underscore the complex relationship between Bitcoin’s market demand and its role in facilitating unregulated financial flows, raising important concerns for policymakers and regulatory authorities.

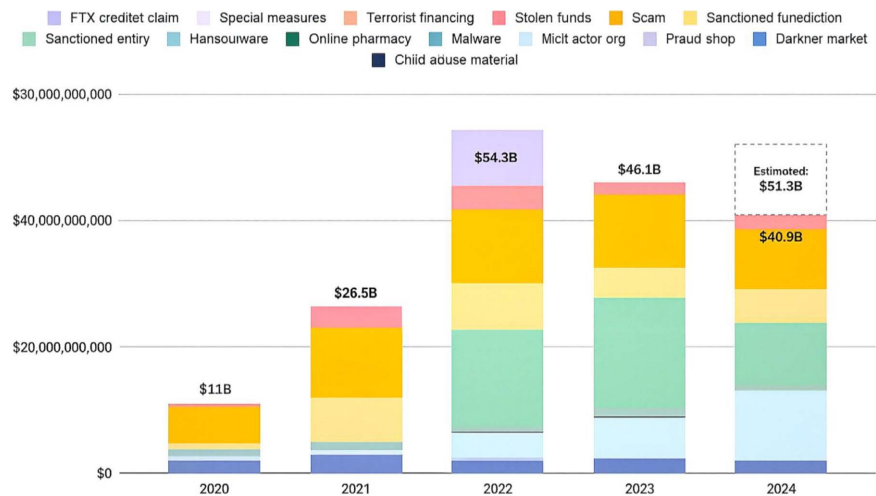


Figure 10. Scale of Bitcoin money laundering.

3.6. Payment Demand

The global cryptocurrency market size is valued at USD 91.13 billion in 2021 and is expected to reach USD 1,902.50 billion by 2028 during the forecast period 2021-2028. The cryptocurrency scene has expanded on higher demand for decentralized finance (DeFi), institutional investments and regulatory progress that have come, among others, on the back of the embrace of blockchain. Users are being drawn by increased transparency, security and faster transactions. Furthermore, the increasing acceptance of virtual products and services and their collaboration with payments platforms are contributing to the expansion of the worldwide market. These are major drivers in market development that are due to expansion of

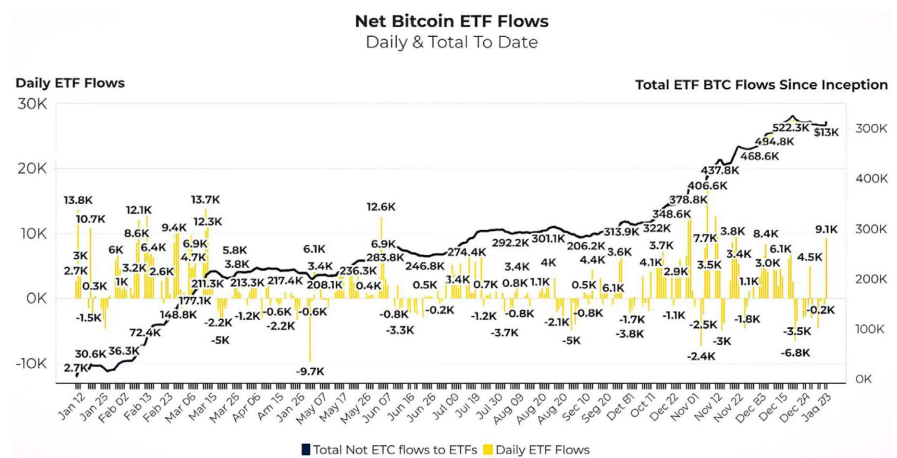
distributed ledgers and a rise in digital venture investment. Rising preference of digital currencies such as Bitcoin and Litecoin across the globe is anticipated to support growth over the forecast period. Additionally, we have seen a rise in use of digital currencies via block chain so as to allow the secure and uncontrolled transactions. Blockchain technology enables transactions that are faster, decentralized, transparent, secure, and reliable. Leveraging these advantages, businesses are increasingly willing to invest in or collaborate with firms involved in digital currencies and emerging financial technologies to provide high-quality services to users.

Bitcoin is one of the most heavily used. Bitcoin remains one of the most widely utilized digital currencies and, according to a 2017 report by Deutsche Bank AG, is expected to maintain its leading role in the future. Similarly, Ethereum (Ether), which is also built on blockchain technology, functions as a digital financial unit, an investment asset, and a platform for executing smart contracts and decentralized applications. Another noteworthy innovation is Ripple, a blockchain-based system designed primarily for bond verification and cross-border payment settlements. The Ripple network establishes a framework of creditor relationships and account balances accessible to all participants. Its technical architecture enables transaction speeds approximately four times faster than Bitcoin, positioning it as a potential dominant cryptocurrency in the coming years. Dogecoin, Monroe, Dash and other cryptocurrencies have also inspired market expansion. The trend of e-commerce and retail businesses adopting cryptocurrencies are increasingly rising. In September 2019, the German division of Chain Burger King began accepting Bitcoin as payment for online deliveries and orders. The size of the North America cryptocurrency market was valued at USD 273 million in 2020 and is expected to expand at a compound annual growth rate (CAGR) of 10.0% from 2021 to 2028. In the region, for most people, bitcoin is a means of payment and not trading bitcoin for fiat. With electronic money the government, although it has not legislated on the matter, many developed countries now are concentrating on use digital funds. Market growth has been fueled by consumers and retailers adopting digital cash. Also, the widespread use of BTC mining and the monopolization of the majority of the major participants in the North American market. During the COVID-19 outbreak, Japan has opened the door for new digital currency exchanges. Some countries in Europe and MEA are also showing how to adopt Crypto. The Central Bank of the UAE said it will join forces with Saudi Arabian Monetary Authority (SAMA) to develop a digital currency which would be accepted in cross-border transactions between the two countries and allow banks of both countries to issue it for settlement. [Baur et al. \(2018\)](#) emphasize that the growing adoption of digital currencies stems from both private sector innovation and gradual government engagement. The authors note that the network effects created by large-scale adoption, particularly in North America where major mining participants dominate, have strengthened market liquidity and institutional involvement, thereby increasing the legitimacy of digital assets in global fi-

nancial systems. Baur et al. (2018) highlight the diverging regulatory approaches across regions. For instance, during the COVID-19 pandemic, Japan opened its market to new digital currency exchanges, while several European and Middle Eastern countries-initiated pilot projects to integrate cryptocurrencies into formal payment infrastructures (Baur et al., 2018).

3.7. ETFs and Institutional Funds

ETFs acceptance is landmark for crypto evolution. The launch of Bitcoin spot ETFs not only offers investors more convenient channels for investment, but also promotes the further integration of Bitcoin with the traditional financial system, signaling a significant step for cryptocurrency assets to become mainstream.



cryptocurrencies including Ethereum and Solana. As of May 31, 2025, U.S. Bitcoin spot ETFs had 1,205,626 Bitcoin, which represents an estimated 5.74% of the total Bitcoin supply (21 million). Among these vehicles, the biggest stash of bitcoin is in BlackRock's iShares Bitcoin Trust (IBIT) which has 660,814 Bitcoin followed by Fidelity's Wise Origin Bitcoin Trust (FBTC) and Grayscale's Grayscale Bitcoin Trust (GBTC) at 198,159 and 186,622 Bitcoin respectively.

3.8. Regulation

The rapid expansion of the cryptocurrency sector has drawn increasing attention from global regulators, though the regulatory landscape remains highly fragmented across jurisdictions. Some countries, such as Iraq and Egypt, have adopted stringent prohibitions, banning the issuance, ownership, and use of cryptocurrencies, including related transactions and payments. By contrast, others, such as El Salvador, have embraced cryptocurrencies as part of their formal financial systems.

As of 2024, among 126 surveyed nations, 67% are classified as Bitcoin-friendly, 19% maintain a neutral stance or have issued no official position, and 8% impose outright bans. Cryptocurrency prices are heavily influenced by regulators weigh in. There are still many countries however that do not consider cryptocurrencies legal and they have even restricted its use and trading. For example, when news broke of China's Bitcoin ban, the price of Bitcoin fell around \$500 on all exchanges. They then surged back to \$5,000. Similarly, the price of Bitcoin skyrocketed after Japan declared Bitcoin to be an officially recognised legal payment system within just 24 hours. Before then, Japan represented a mere 1% of Bitcoin trades. After the decision of allowing cryptocurrencies transactions, that percentage increased to 6% and was even up to 55% of the global cryptocurrency transactions within days. In EU nations, regulation has largely been cautious, with countries recognizing that blockchain technology can help fuel financial innovation, but implementing tight rules on a number of activities, including trading in virtual currencies such as Bitcoin and ICOs. The U.S. Securities and Exchange Commission (SEC) has been scrutinizing Bitcoin since the early days and closely monitored its development. Under former chairman Jay Clayton, Bitcoin was primarily classified as a payment mechanism and store of value rather than as a security, leading to relatively light-touch regulation. However, under current chairman Gary Gensler, regulatory scrutiny has intensified significantly.

US regulators in January 2024 signed off a number of spot Bitcoin ETFs that represented an important step towards the global financial establishment granting legitimacy to crypto. These ETFs traded as much as \$4.6 billion on their first day of trading, showing strong participation from institutions and investors. There was a short-term boost to the price of Bitcoin after the SEC announcement. As of 2024, US-based publicly traded firms hold about 364,000 Bitcoin, worth \$22.6 billion, or about 1.73% of the circulating supply, while private companies hold approximately 359,000 Bitcoin, worth \$22.4 billion. Furthermore, government agen-

cies of some type have Bitcoin on their balance sheet with a total of around 529,000 and a value of \$33 billion, representing 2.52% of the total supply. Roughly one of every six of the thousands of U.S. funds hold Bitcoin positions. These developments are proof that the composition of Bitcoin owners is starting to take on a more varied look, the compliance process is pushing it away from exclusively retail trading and into institutional investments. Donald Trump is a firm defender of cryptocurrencies and will work to build America into the global “crypto capital of the world.” He has framed digital assets as strategic tools to preserve U.S. financial hegemony amid rising competition from China and the BRICS bloc. Trump’s policy agenda reportedly includes an executive order to establish a “strategic Bitcoin reserve,” placing 200,000 government-owned Bitcoins within the foreign exchange stabilization fund and designating them as “quasi-sovereign assets.” Markets have interpreted these developments as signals of growing U.S. commitment to integrating cryptocurrencies into national financial strategy. Following Trump’s electoral victory, Bitcoin’s price rose sharply, climbing from a closing level of \$68,000 in 2024 to an opening level of \$100,000 in 2025—representing an annual gain exceeding 140%.

3.9. Specific Event Shocks

These one-off events are the market equivalent of bombs being dropped on the market that cause sentiment to change overnight or result in dusts settling after large liquidation events have occurred. These can include large bankruptcies, hacks of trading platforms, some regulatory announcements or fraudster Ponzi schemes. The reaction of the cryptocurrency market to the FTX incident was more acute and sensitive than that of the traditional financial market, the effects of which were showed as positive risk premium shocks (a substantial increase in the risk requirement of investors for the cryptocurrency asset) and negative adoption shock (a significant reduction in the confidence of investors of the cryptocurrency asset), while the price fluctuation in the traditional financial market was relatively calm. As shown in **Figure 12**, an analysis of historical cases in which the 12-month rolling correlation between Bitcoin and global liquidity fell below zero shows that in response to important market events, Bitcoin prices typically disengage from the liquidity trajectory. The chart also shows how the relationship has broken down during these “episodes” [Picture 2 extradownloads.hindawi.com](#) The correlation between Bitcoin and liquidity during periods of mass liquidation The picture below helps us to visualize the Bitcoin liquidity connection.

Specific events such as the fall of Mt. Gox, outbreak of COVID-19, the fall of the Plus Token Ponzi scheme, the crypto credit crushing due to the collapse of Terra/Luna and the bankruptcy of multiple crypto lenders have also all played a role in inducing panic and sell-off pressure in crypto markets. A particularly severe shock occurred in November 2022 with the collapse of the FTX exchange, which sent tremors through the entire digital asset ecosystem. This event precipitated a sharp decline in Bitcoin prices and eroded market confidence, high-

lighting the sector's vulnerability to systemic failures. Similarly, the COVID-19 pandemic in early 2020 (January-May) created unprecedented uncertainty across global financial markets, both developed and emerging. During the initial phase of the crisis, Bitcoin suffered significant losses amid widespread panic selling and heightened risk aversion, including a steep decline during the March 2020 stock market crash. However, as central banks around the world launched unprecedented liquidity injections to stabilize financial systems, Bitcoin rapidly recovered, underscoring its high sensitivity to changes in global liquidity conditions.

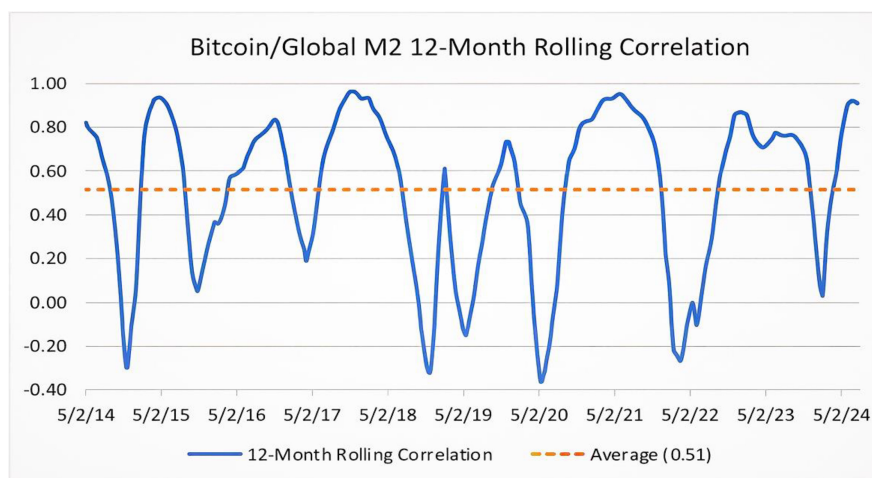


Figure 12. Bitcoin price and event shocks. (Kristoufek, 2015; Bouri et al., 2019)

Figure 12 shows that the correlation between Bitcoin prices and global M2 growth is time-varying and event-driven. Kristoufek (2015) finds that this link strengthens during monetary easing but weakens under policy tightening or risk events. Bouri et al. (2019) add that shocks in monetary policy or risk sentiment amplify Bitcoin's volatility, causing it to act as a risk-on asset in expansionary periods and a quasi-hedge during market stress. Thus, the changing correlation reflects both monetary cycles and Bitcoin's shifting role in the global financial system.

Looking forward, the frequency of such “black swan” events in the cryptocurrency sector may diminish over time as the ecosystem matures, market infrastructure develops, and regulatory frameworks become more transparent and robust.

4. Conclusion

Ultimately, the fluctuations in cryptocurrency valuation are driven by a complex interplay of technological, economic, and institutional factors. At its foundation, the technology-based intrinsic attributes of cryptocurrencies—such as decentralization, security, and scarcity—constitute the fundamental source of value. The scarcity premium, derived from the system's issuance constraints (e.g., fixed total supply, halving events), further reinforces this value proposition, although beyond

this structural limitation, no additional intrinsic value can be created. Moreover, the price of Bitcoin is highly subjected to macroeconomic factors (e.g., inflation expectations, global liquidity), market and narrative sentiments (speculative fever, coverage in the news, influence of social media) and institutional valuations (ETF, allocations of investors, focus of regulators). New technologies (such as Lightning Network, smart contract applications, and NFTs) could also open up new applications for BTC, and thus contribute to longer-term demand for BTC.

5. Future Research

The movements of Bitcoin prices arise from a highly complex interplay of multiple determinants, with the relative influence of each factor continuously evolving over time. Investors need to be ready to have an informed view of the market and keep a close watch on macroeconomic status, policy, technology development to better judgment Bitcoin market movement. With the advancement of financial technology and the progressive maturation of global regulatory frameworks, the Bitcoin market may ultimately evolve toward greater resilience and stability, even within inherently volatile environments.

It is still unclear what the future holds for cryptocurrency. Bitcoin should not be regarded merely as “digital gold” or a “technology stock,” but rather as a multifaceted asset whose value is shaped by a complex interplay of internal and external factors. On the one hand, continuous advancements in blockchain technology facilitate the emergence of new digital assets, ensuring that the cryptocurrency ecosystem retains significant growth potential. On the other hand, persistent regulatory uncertainties and market volatility pose considerable risks. As sovereign states and mainstream financial institutions increase their involvement, Bitcoin is likely to remain a closely monitored global economic experiment characterized by both opportunities and challenges.

From a research perspective, this study identifies the primary price-determining factors for major cryptocurrencies, proposes a classification framework based on macroeconomic and microeconomic indicators, and analyzes the dynamic interactions among these factors. Nevertheless, certain limitations remain. Specifically, the dynamic mechanisms underlying each parameter’s influence require more in-depth investigation, and greater emphasis should be placed on quantitative modeling of relevant indicators. These findings will serve as a foundation for the future development of empirical models and predictive systems for cryptocurrency markets.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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