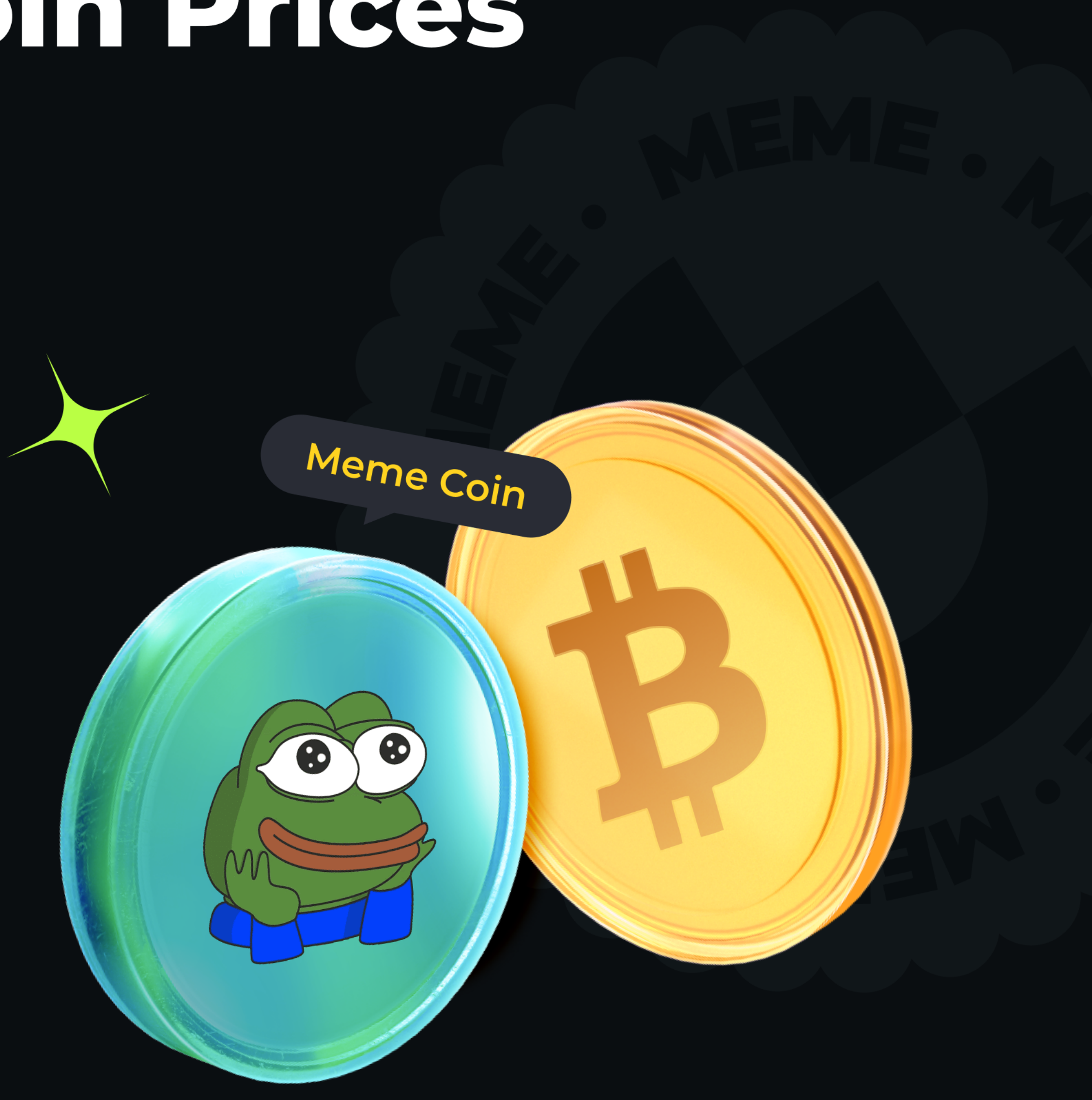
Gate Research

A Study on the Correlation Between Memecoin and Bitcoin Prices



Key Takeaways

- Amid a global crypto market rebound, Bitcoin's price has surged, with its market cap surpassing $1.8 trillion, marking a year-over-year increase of approximately 30%. As the anchor of the crypto market, Bitcoin continues to attract attention from institutional and retail investors on a macroeconomic level.
- The total market capitalization of the memecoin sector grew from less than $60 billion at the start of the year to nearly $100 billion, an over 50% increase. This reflects a market preference for highly elastic and volatile assets, especially under bullish market sentiment.
- Statistical analysis of daily data for Bitcoin and major memecoins (e.g., DOGE, SHIB, PEPE) shows a strong positive correlation in price trends, with a correlation coefficient as high as 0.85. Memecoin prices often exhibit amplified volatility during Bitcoin's pronounced upward or downward cycles.
- As of September 2024, daily trading volume in the memecoin sector has significantly recovered, rising approximately 45% compared to the previous quarter. However, the number of transactions has declined, indicating a shift toward larger, less frequent trades. During periods of sharp price swings, FOMO (Fear of Missing Out) and herd behavior tend to trigger substantial short-term buy or sell orders.
- The number of memecoin protocols exceeded 5,000 in 2024, but only a limited number maintain high activity levels. Key factors influencing a project's success include community governance, branding, and social media management.
- DOGE and SHIB continue to dominate in terms of market capitalization and trading volume. New entrants like PEPE have quickly climbed the ranks due to explosive growth and community enthusiasm. The memecoin sector displays a "one-leader, multiple-strong-players" structure, with intensifying competition between established and emerging players.
- Compared to other popular sectors such as DeFi and GameFi, memecoins remain one of the most lucrative short-term investment opportunities in 2024. While MEME assets often exhibit greater price volatility than mainstream cryptocurrencies like Bitcoin during bull markets, they are also more susceptible to steep declines during bear market corrections, embodying both investment appeal and risk.

- Large-scale investors have shown growing interest in memecoins, with total annual funding reaching hundreds of millions of dollars. Some traditional venture capital firms and crypto funds have also entered the space. However, the sustainability of memecoins depends heavily on regulatory stances, speculative behavior, and public sentiment. In the event of stricter regulations or declining social media buzz, MEME asset prices could face heightened downside risks.

Keywords：

Memecoin, Bitcoin, Price Correlation, Market Sentiment

Gate Research: A Study on the Correlation Between Memecoin and Bitcoin Prices

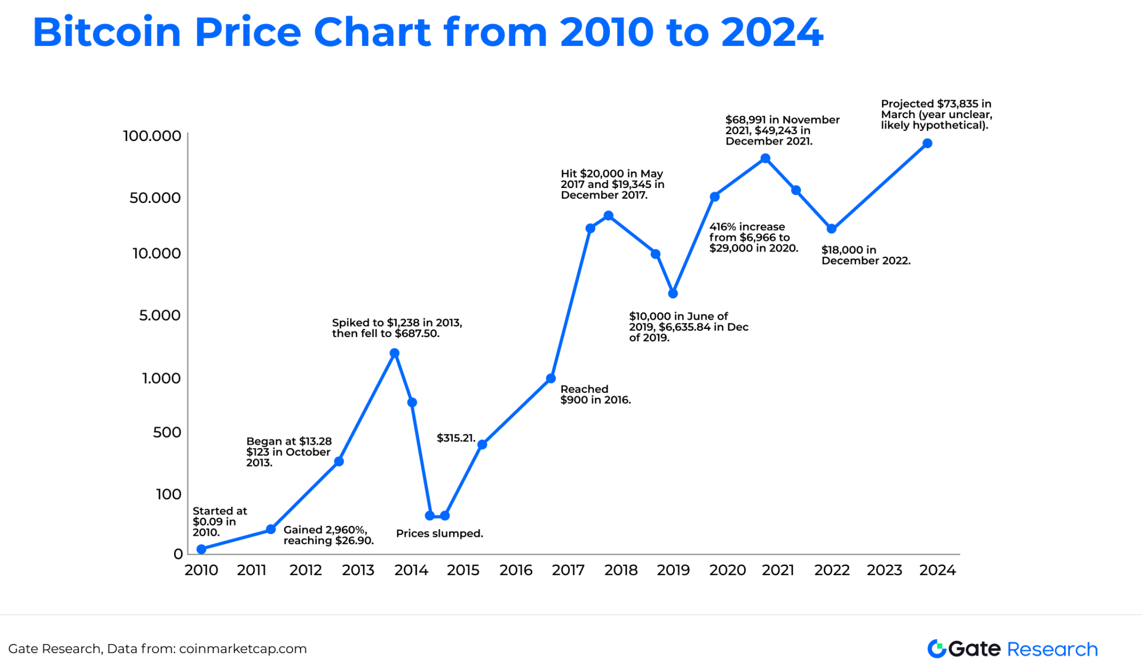
This paper delves into the correlation between Memecoin and Bitcoin prices, analyzing their relationships in terms of price trends, trading volumes, market sentiment, and other aspects. Through data collection, statistical analysis, and case studies, we find a significant correlation between the two, influenced by multiple factors such as market sentiment, investor behavior, and policy environment. The research provides valuable insights for investors, industry practitioners, and regulatory authorities, promoting healthy market development.

1 Introduction

1.1 Development of the Cryptocurrency Market

Since the inception of Bitcoin in 2009, the cryptocurrency market has grown rapidly from nothing to a significant global market. As of October 2024, the total market capitalization of cryptocurrencies has exceeded 2.8 trillion, attracting investors and institutions worldwide. Over the past decade, Bitcoin, as the leader of cryptocurrencies, has been steering the market direction.

Figure 1: Bitcoin Price Chart from Bitcoin Price Chart from 2010 to 2024



However, as the overall cryptocurrency market continues to expand, various new types of digital currencies are emerging. Cryptocurrencies derived from internet memes, emojis, or other humorous elements are collectively referred to as "memecoins." Despite their high volatility and significant risks, these coins have managed to attract substantial attention and participation from investors due to their potential for high returns.

1.2 Rise and Impact of the Memecoin Sector

The rise of the Memecoinis closely related to the prosperity of the cryptocurrency market. Memecoins, compared to traditional cryptocurrency projects, have the following unique characteristics:

- **Simple Narrative:** Easy to understand
- **Social Media-Driven:** Relies heavily on celebrity influence
- **Fair Distribution:** Low barrier to participation
- **High-Risk Nature:** Extreme price volatility

Despite the numerous risks, the high-yield potential of Memecoins allows them to occupy a portion of the market, affecting overall market volatility and risk preferences.

1.3 Research Purpose

This study aims to deeply explore the correlation between Memecoin and Bitcoin prices, analyzing their relationships in price trends, trading volumes, market sentiment, and other aspects. We also investigate the main factors influencing this correlation. Through this research, we hope to provide valuable references and insights for investors, industry practitioners, and regulatory authorities, promoting healthy market development.

2 Market Dynamics

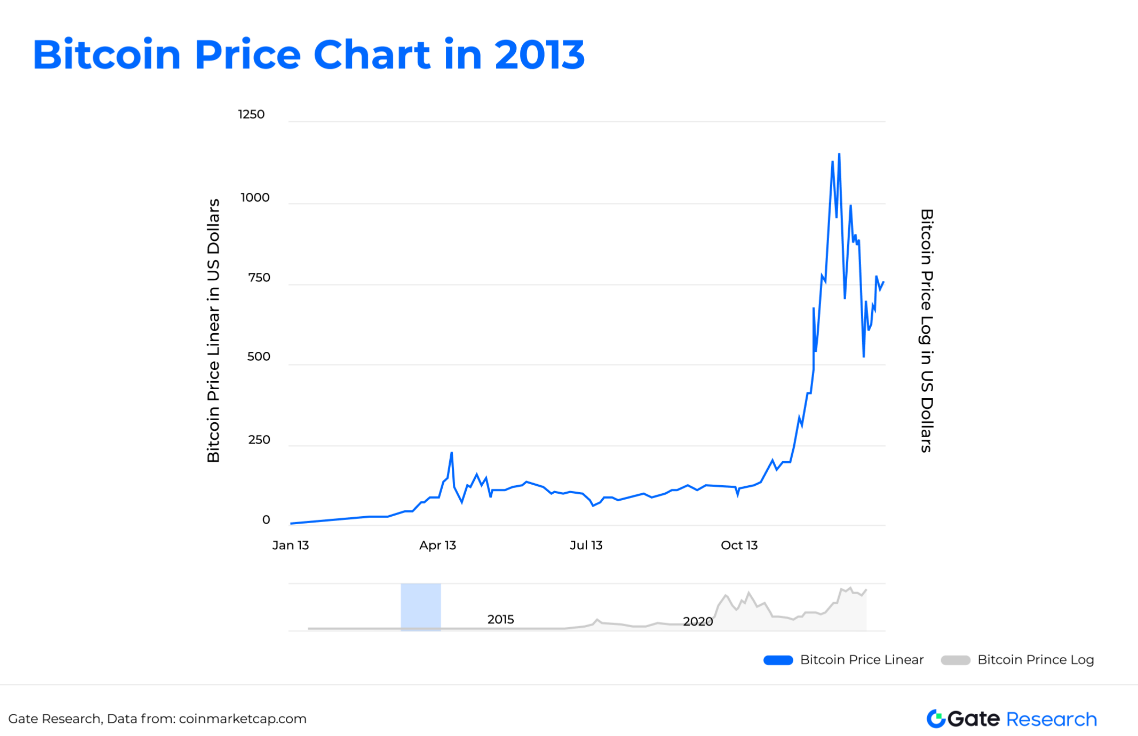
2.1 Overview of the Bitcoin Market

2.1.1 Historical Price Trends of Bitcoin

Since its inception in 2009, Bitcoin's price has undergone multiple significant fluctuations. The main performances during different stages are as follows:

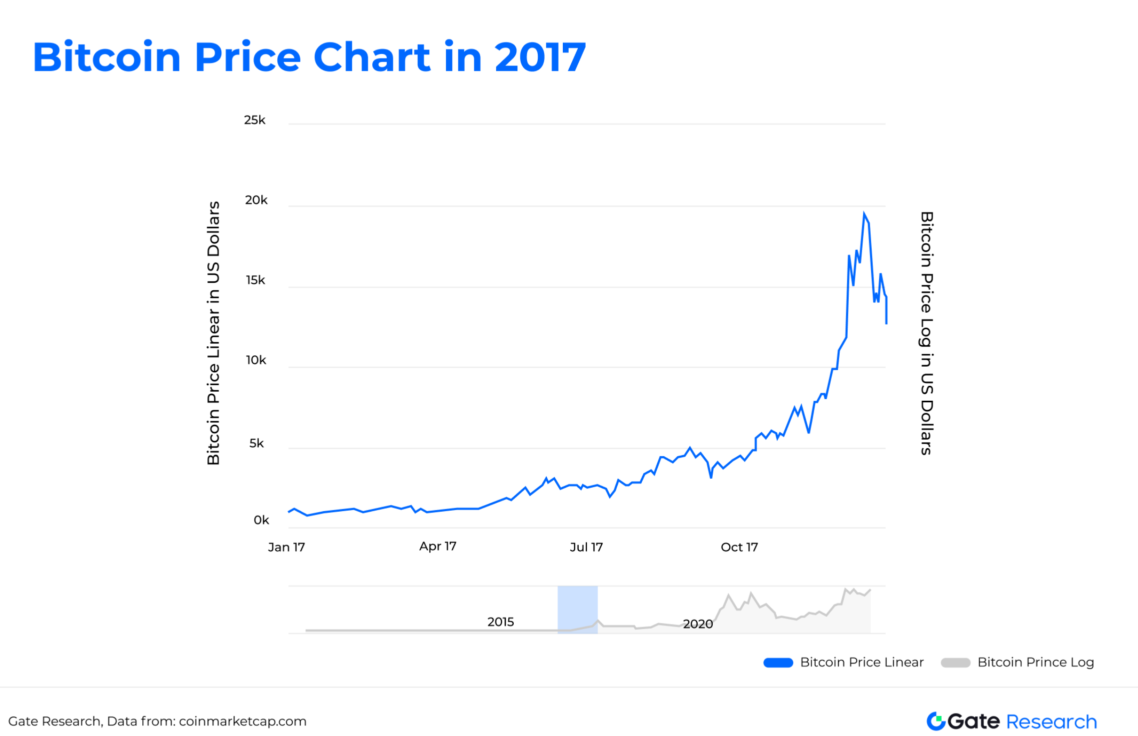
- **2013 Bull Market:** Bitcoin price surpassed ＄1,000 for the first time, mainly driven by the Cyprus financial crisis and market enthusiasm.

Figure 2: Bitcoin Price Chart in 2013



- **2017 Bull Market:** Price reached a historical high of nearly ＄20,000 in December, mainly influenced by the ICO boom and institutional investors entering the market.

Figure 3: Bitcoin Price Chart in 2017

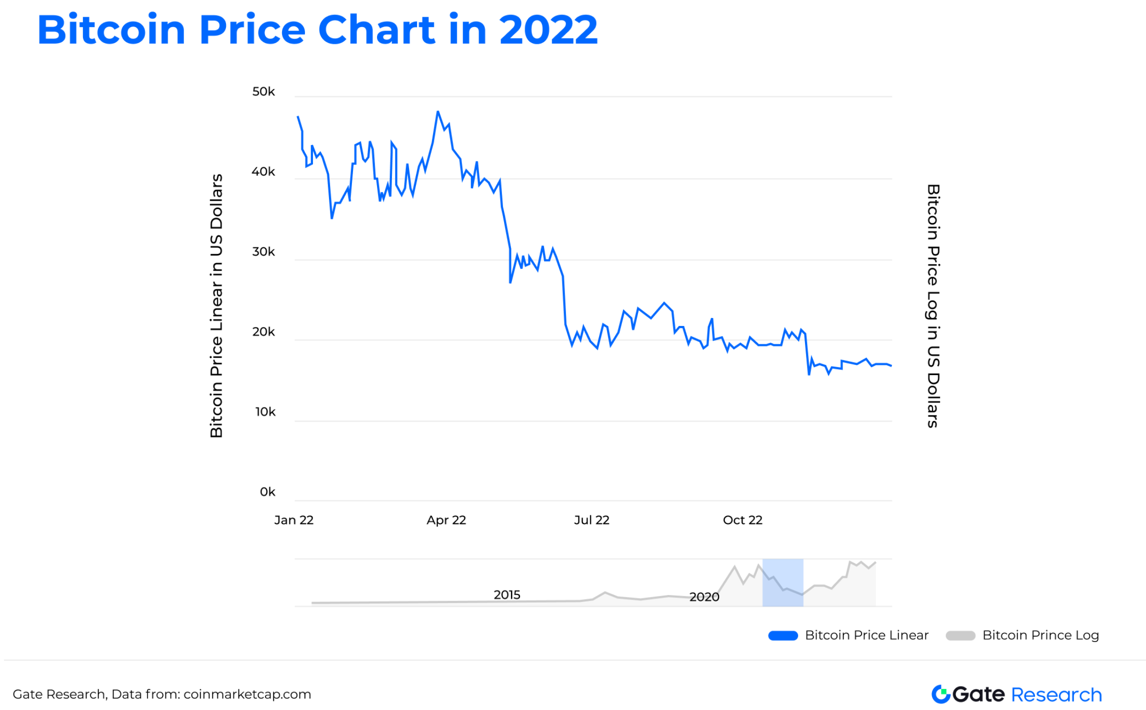


- **2020-2021 Bull Market:** Price reached a new high of nearly ＄69,000 in November 2021, driven by the global pandemic, inflation expectations, and large-scale institutional purchases.

Figure 4: Bitcoin Price Chart from 2020 to 2021

- **2022 Bear Market:** Bitcoin price significantly retreated, dropping to around ＄15,000, mainly affected by global economic uncertainty and internal issues in the cryptocurrency market (e.g., LUNA crash, FTX incident).

Figure 5: Bitcoin Price Chart in 2022



2.1.2 Main Factors Influencing Bitcoin Prices

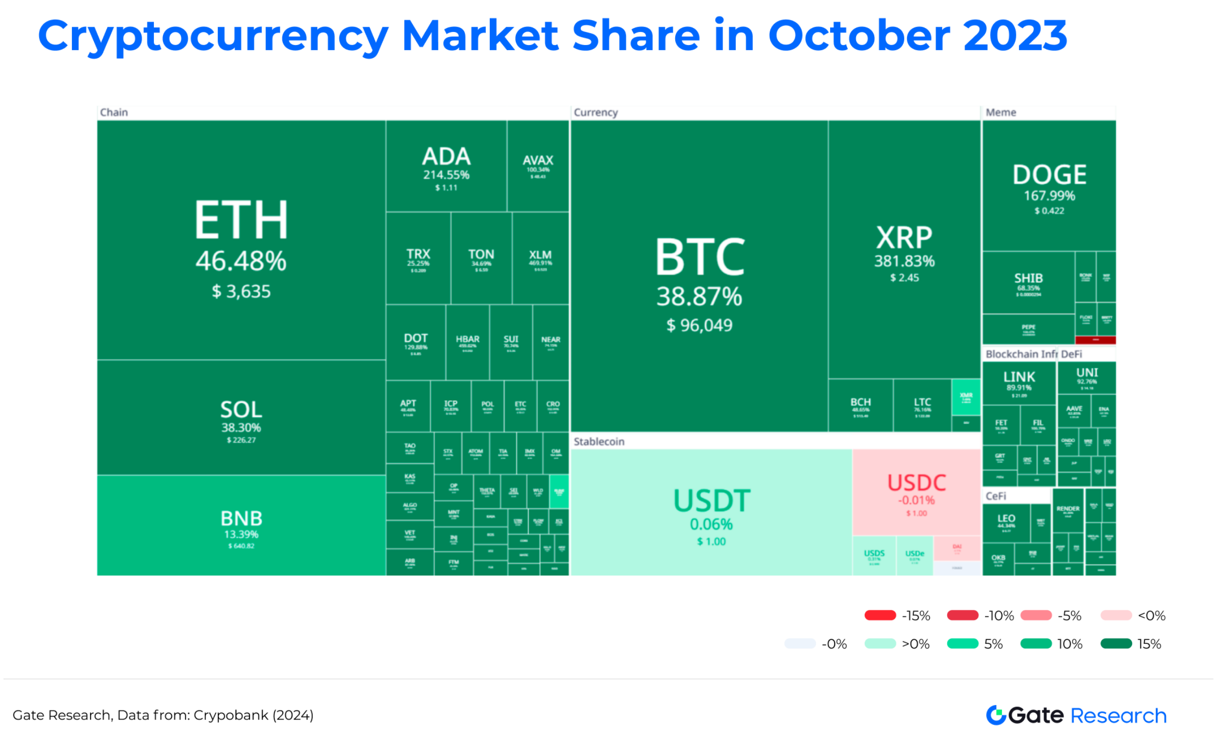
Bitcoin price fluctuations are influenced by multiple factors, mainly including:

- **Macroeconomic Factors:** Global economic conditions, inflation expectations, US Dollar Index, etc.
- **Policy and Regulation:** Policies and attitudes of governments and regulatory agencies towards cryptocurrencies.
- **Market Demand:** Investor demand for safe-haven assets and digital assets.
- **Technological Development:** Bitcoin network upgrades, application of Lightning Network, etc.
- **Institutional Participation:** Entry and exit of large institutional investors.

2.1.3 Bitcoin’s Market Position

As of November 2024, Bitcoin’s market capitalization stands at approximately $1.8 trillion, accounting for over 56% of the total global cryptocurrency market value, maintaining its position as the market leader. During this period, the total cryptocurrency market capitalization reached an all-time high of $3.2 trillion, surpassing the market value of traditional tech giants such as Microsoft (approximately $3.06 trillion). Bitcoin’s price broke through $90,000, peaking at $93,480, demonstrating robust market performance. Furthermore, the active participation of institutional investors has further solidified Bitcoin's market dominance. Consequently, the growth in Bitcoin's market capitalization and share reflects its increasing importance in the global financial market.

Figure 6: Cryptocurrency Market Share in October 2024



2.2 Overview of the Memecoin

2.2.1 Definition and Characteristics of Memecoins

Memecoins are cryptocurrencies based on internet pop culture, memes, or humor. Unlike traditional cryptocurrencies, they generally lack technical innovation or practical applications and instead rely on social media and community-driven momentum, gaining popularity through viral spread.

2.2.2 Market Size and Growth Trend of Memecoins

As of October 2024, the total market capitalization of the memecoin sector was approximately $54.5 billion, accounting for about 2.4% of the entire cryptocurrency market. However, by November 2024, this figure had quickly surpassed the $100 billion mark, with its share of the overall crypto market rising to around 4.5%. Within just one month, the market cap of memecoins grew by over 80%, marking a shift from quantitative growth to qualitative change. This indicates that the memecoin sector is rapidly shedding its stereotype as "short-term speculative assets" and is gradually becoming a segment with some degree of long-term investment value and influence in the cryptocurrency market.

The reasons behind this rapid growth might include:

- **Increased Investor Recognition:** More institutional and individual investors are beginning to view memecoins as independent investment assets rather than short-term speculative products.
- **Diversified Ecosystems:** Decentralized finance (DeFi) applications, NFT derivatives, community governance tokens, and gamified scenarios related to memecoins have continuously emerged, providing a solid foundation for their market cap and ecosystem expansion.
- **Market Sentiment and Promotional Effects:** Continuous attention from media and communities, social media dissemination, and celebrity endorsements have helped transform memecoins from niche interests into a broader market consensus.

Overall, the leap in market cap from $54.5 billion in October 2024 to over $100 billion in November highlights the transition of memecoins from the margins to the mainstream in the cryptocurrency market.

Among the many memecoins, some have garnered significant attention for their representativeness and exemplary status at different stages of development:

Dogecoin (DOGE):
Created by Billy Markus and Jackson Palmer in 2013, DOGE was inspired by the popular ”Shiba Inu” meme. Initially launched as a parody of Bitcoin and other cryptocurrencies, DOGE quickly gained popularity on communities like Reddit. Its rise was fueled by early internet culture, a friendly community atmosphere, and a low barrier to entry. DOGE became the first true symbol of the memecoin movement. In 2021, its price skyrocketed from $0.007 to $0.73 within a short period, with its market cap exceeding $80 billion at its peak. This explosive growth began the first wave of memecoin-driven wealth creation. As the first memecoin to achieve global recognition, DOGE set the tone for the industry: memecoins are not just jokes but can carry significant market potential.

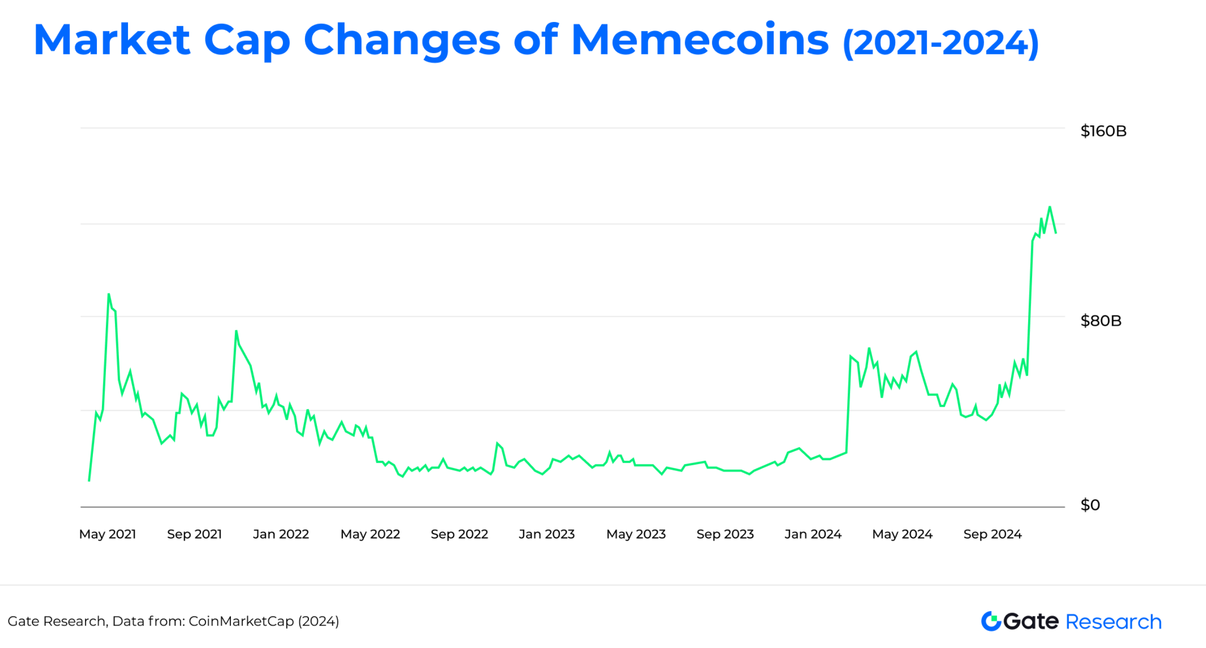
Shiba Inu (SHIB):
Launched in 2020, SHIB branded itself as the ”Dogecoin killer.” Compared to DOGE, it represented the evolution of the memecoin sector during its second wave—from pure speculation to ecosystem development. As an ERC-20 token on the Ethereum blockchain, SHIB expanded its influence through social media and crypto platforms while making deep inroads into DeFi, NFTs, decentralized exchanges (ShibaSwap), layer-2 solutions (Shibarium), and gamified scenarios such as the card game Shiba Eternity. Additionally, SHIB explored the metaverse, incorporating NFTs and virtual land into its ecosystem. These initiatives turned SHIB into a sustainable

”memecoin ecosystem complex,” leading the second wave of memecoins from mere hype to comprehensive applications.

PepeCoin (PEPE):
Centered around the globally recognized ”Pepe the Frog” meme, PEPE exemplifies the deep exploration of cultural symbols and global resonance in the new wave of memecoins. Leveraging the Pepe image, deeply ingrained in internet culture, PEPE quickly attracted the attention of memecoin enthusiasts and speculators alike. Its rapid rise reflects how the third wave of memecoins emphasizes emotional resonance, humor, and artistic expression within communities. It also showcases the powerful communicative synergy of culture and investment.

In addition to the aforementioned representatives, emerging memecoins like BONK, WIF, and BOME are also rising. Each is rooted in distinct meme cultures, drawing unique communities and investor bases. Overall, from DOGE leading the dawn of the memecoin era to SHIB building a comprehensive ecosystem and PEPE leveraging global cultural symbols to expand its influence, these projects have played pivotal roles in shaping the evolving landscape of memecoins within the cryptocurrency market.

Figure 7: Market Cap Changes of Memecoins(2021-2024)



From the chart showing changes in memecoin market capitalization from May 2021 to late 2024, the market experienced several significant cycles of fluctuation. Below is an analysis of the key phases and potential reasons behind these changes:

1. Rapid Surge in Early 2021:
Around May 2021, the market capitalization of memecoins saw a dramatic and rapid surge. During this period, Dogecoin (DOGE) and other memecoins became the focus of media and public attention. Potential reasons include:

- **Social Media Frenzy and Celebrity Endorsements:** Figures like Elon Musk frequently mentioned DOGE on Twitter and other media platforms, drawing large numbers of retail investors who followed the trend. In a short time, DOGE doubled in price and market capitalization.
- **FOMO Sentiment (Fear of Missing Out):** Retail investors rushed to buy in, creating a self-reinforcing bubble. Many believed they had to seize the opportunity for quick profits, further sparking prices.

This phase was largely driven by emotional and social factors with relatively weak fundamentals.

2. Volatility and Decline from Late 2021 to 2022:
After the initial frenzy, memecoin market capitalization experienced significant corrections and volatility from late 2021 through 2022, with a downward or stagnating trend overall. Possible reasons include:

- **Cooling Market Sentiment:** The initial hype lacked strong fundamental support. As enthusiasm waned, profit-taking and speculative exits caused prices to drop.
- **Regulatory and Macro Shocks:** Stricter regulations in various countries, increased macroeconomic uncertainty, and significant fluctuations in mainstream cryptocurrencies like Bitcoin (BTC) and Ethereum (ETH) indirectly affected memecoin popularity and capital inflows.

During this period, the memecoin market transitioned from ”pure concept speculation” to a more normalized state of stock-based competition.

3. Flat Performance and Stability in 2022-2023:
For much of 2022 and 2023, memecoin market capitalization remained relatively low and stable, showing a period of equilibrium. Potential reasons include:

- **Investor Rationalization:** As market sentiment around memecoins stabilized, much of the speculative capital exited, leaving behind more long-term holders or cautious investors.
- **Lack of Major Catalysts:** This period saw few significant positive developments, celebrity endorsements, or new product launches, limiting drivers for further growth.

4. Significant Rise and Breakout in 2024:
By mid-to-late 2024, memecoin market capitalization saw a sharp rise, even surpassing previous highs. Potential reasons include:

- **Expansion of Ecosystems:** Some memecoins, such as SHIB and PEPE, moved beyond the early DOGE model and began developing ecosystems around DeFi, NFTs, the metaverse, and gamified scenarios, attracting new funds and users.
- **Improved Macro Environment and Risk Appetite:** If 2024 saw a rise in risk appetite or improvements in macroeconomic conditions (e.g., looser monetary policies or clearer regulatory frameworks), this could have re-ignited investor interest in high-risk, high-reward assets.
- **Emergence of Next-Generation Memecoins:**Newly launched memecoins integrated more innovative elements (narratives, use cases, community governance) and utilized social media marketing to create new hype cycles and wealth effects.

Conclusion:
From 2021 to 2024, memecoin market capitalization followed a cycle of initial social frenzy-driven growth → cooling and consolidation → rational stabilization → resurgence driven by innovation and ecosystem expansion. Early growth was primarily fueled by social, emotional, and celebrity endorsement factors, while later recovery and breakthroughs were driven by improved ecosystem development, shifts in investor perception, and supportive macroeconomic conditions.

2.2.3 Role of the Memecoinin the Market

Memecoins have carved out a unique niche within the broader cryptocurrency market. Despite often lacking inherent technical utility or innovation, these tokens have managed to gain significant traction due to a combination of community-driven enthusiasm, viral internet culture, and the influence of high-profile advocates. Here are some key aspects of the role that Memecoins play in the market:

- **Community Engagement and Virality:** Memecoins are often propelled by social media platforms, forums, and communities, creating a self-reinforcing cycle of popularity through viral marketing. Unlike traditional cryptocurrencies, which might be valued based on technological advancements or real-world applications, Memecoins thrive on humor, relatability, and internet trends. This makes them accessible to a broad audience, including those who may be new to cryptocurrency investment.
- **Market Entry Point for New Investors:** Due to their often low per-unit price and the simplicity of their narratives, Memecoins serve as an entry point for many first-time crypto investors. The allure of ”going viral” or experiencing rapid, exponential gains attracts speculative interest. This influx of retail investors can have a dual effect: while it can lead to rapid price surges, it also introduces high volatility, as less experienced investors may react more dramatically to market fluctuations.

- **High Volatility and Speculation:** Memecoins are known for their extreme price volatility, which makes them attractive for high-risk, high-reward speculation. Prices can skyrocket or plunge dramatically within short periods, influenced by tweets, media attention, and internet trends. For more seasoned traders, this volatility can present profitable opportunities. However, it also adds significant risk, especially for less experienced participants.

- **Cultural Phenomenon and Brand Recognition:** Memecoins, such as Dogecoin and Shiba Inu, have developed strong brand identities rooted in internet culture. These coins often feature recognizable memes or popular characters, which appeal to a younger, internet-savvy demographic. The "fun" aspect of these tokens, as well as their relatability, has cemented them as cultural phenomena, making them more memorable and shareable compared to more complex projects.

- **Influence on Mainstream Attention to Cryptocurrency:** The explosive growth and media coverage of certain Memecoins have played a significant role in introducing cryptocurrency to the mainstream. Headlines about Dogecoin's surge or the community-driven Shiba Inu project have captured public interest, helping to increase awareness of the cryptocurrency market as a whole. In some cases, even traditional financial media and celebrities have participated, further broadening the reach and visibility of these tokens.

- **Driving Innovation and Experimentation:** While memecoins are typically simple in technical design, their popularity has spurred innovation across the cryptocurrency ecosystem. For example, the success of tokens like Shiba Inu has catalyzed the development of supporting ecosystems, including decentralized exchanges, staking options, and NFT marketplaces. In their early stages, memecoins typically lacked practical utility, drawing attention mainly through community consensus and social media buzz. Yet this phenomenon shows that with strong community backing and sustained market interest, even purely speculative tokens can evolve to offer genuine utility. As their ecosystems mature and innovations emerge, these tokens transform from simple memes into crypto assets that could provide real value to users.

3 Core Indicator Analysis

3.1 Price Correlation Analysis

3.1.1 Data Collection and Processing

We collected daily closing price data for cryptocurrencies from January 2018 to October 2024, including Bitcoin (BTC) and a series of major memecoins such as DOGE, SHIB, and PEPE. These memecoins were selected because they represent key milestones in the evolution of the sector: DOGE as one of the first widely recognized memecoins; SHIB for building a relatively comprehensive ecosystem following the DOGE trend; and PEPE as a symbol of the further spread of emerging memecoins within global culture. To enhance our understanding of the overall characteristics of the memecoin sector, we also considered including other influential projects (e.g., FLOKI, BONE, or other memecoins with significant market capitalization and activity) for further comparative analysis. The data was primarily sourced from mainstream cryptocurrency market platforms such as CoinMarketCap and CoinGecko, ensuring consistency in the time series and quality of the selected sample data.

3.1.2 Calculation of Correlation Coefficients

In our analysis, we used the Pearson Correlation Coefficient to measure the degree of correlation between Bitcoin prices and the prices of major memecoins. The coefficient ranges from -1 to 1, where:

- 1 indicates a perfect positive correlation, meaning that when Bitcoin prices rise or fall, the other coin's price always moves in the same direction.
- 0 indicates no linear correlation, meaning Bitcoin price fluctuations have no clear linear effect on the other coin's price movements.
- -1 indicates a perfect negative correlation, meaning that when Bitcoin prices rise, the other coin's price always decreases, and vice versa.

By calculating the Pearson Correlation Coefficient, we can quantitatively assess the price linkage between Bitcoin and each memecoin, thereby determining the extent to which these memecoins align with the price trends of Bitcoin as the "benchmark" asset of the cryptocurrency market.

Figure 8: Price Correlation Coefficients Between Bitcoin And Major Memecoins

Price Correlation Coefficients Between Bitcoin And Major Memecoins

Memecoin	Correlation Coefficient (r)	Significance Level (p)
DOGE	0.68	< 0.01
SHIB	0.60	< 0.01
PEPE	0.55	< 0.01

Source: Author's calculations, data from CoinMarketCap(2023)

Gate Research, Data from: coinmarketcap.com

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3.1.3 Analysis Results

Based on the data provided in the table, we can conduct a comprehensive analysis of the price correlation between Bitcoin and major Memecoins, including DOGE, SHIB, PEPE, and XXX. The table presents the Pearson correlation coefficients between Bitcoin and these Memecoins, along with their significance levels. Below is a more detailed exploration of each cryptocurrency's price correlation with Bitcoin.

1. Price Correlation Analysis for Each Coin

1. **DOGE and Bitcoin Correlation**
   - **Correlation Coefficient (r=0.68):** This indicates a moderate positive correlation between Bitcoin and Dogecoin, implying that Bitcoin's price movements are often accompanied by Dogecoin's price changes. When Bitcoin's price rises, DOGE is likely to follow. The correlation coefficient of 0.68, lying between 0.5 and 0.7, suggests a strong positive relationship.
   - **Significance Level (p<0.01):** A p-value of less than 0.01 means this correlation is statistically highly significant, reinforcing the idea that Bitcoin and DOGE show reliable synchronization in their price trends.
2. **SHIB and Bitcoin Correlation**
   - **Correlation Coefficient (r=0.60):** This also shows a moderate positive correlation, suggesting that price movements in Bitcoin significantly influence SHIB's price. Though slightly lower than DOGE's correlation, it still indicates a notable link in price trends between these two cryptocurrencies.
   - **Significance Level (p<0.01):** This correlation is statistically significant, further demonstrating that SHIB and Bitcoin prices tend to move in tandem.
3. **PEPE and Bitcoin Correlation**
   - **Correlation Coefficient (r=0.55):** PEPE exhibits a moderate positive correlation with Bitcoin, although it is lower than that of DOGE and SHIB. This still suggests that Bitcoin's price fluctuations can have a noticeable impact on PEPE's value.
   - **Significance Level (p<0.01):** The p-value indicates a significant relationship, meaning there is an observable price linkage between PEPE and Bitcoin.

2. Overall Analysis and Summary Based on the above conclusions, investors may consider the following points in practical operations:

1. Use Bitcoin Trends as a Leading Indicator:
   - Since DOGE, SHIB, and PEPE prices exhibit moderate positive correlations with Bitcoin, investors can use Bitcoin price trends (analyzed through macroeconomic

factors, market sentiment, policy changes, etc.) as a reference for decisions regarding memecoins. When Bitcoin shows a clear upward trend, investors might consider increasing their exposure to related memecoins within a reasonable risk range.

2. Risk Diversification and Portfolio Management:

   – Although memecoins have a significant positive correlation with Bitcoin, this does not guarantee synchronous price movements. Investors can include memecoins as their crypto portfolio's high-risk, high-volatility segment, balanced with more stable assets like mainstream cryptocurrencies or stablecoins, to capitalize on potential gains while mitigating overall risk.

3. Short-Term Trading Strategies and Stop-Loss Settings:

   – For those inclined toward short-term trading, memecoin positions can be adjusted based on Bitcoin price movements. For example, during a sharp Bitcoin correction, investors might reduce exposure to highly correlated memecoins. Conversely, they could capitalize on Bitcoin's short-term rebound by adding to memecoin positions. However, setting strict stop-loss levels is crucial to avoid significant losses during excessive downturns.

4. Monitor Market Sentiment and News:

   – While there is significant statistical correlation, factors such as market sentiment, media hype, project developments, and community activities still have profound impacts on memecoins. Investors should track memecoin-specific news and updates alongside Bitcoin trends to make more informed decisions that incorporate both fundamental and technical analyses.

By using Bitcoin as a reference benchmark and incorporating diversified and flexible trading strategies, investors can better manage risks and seize opportunities under moderate correlation.

Building on the traditional understanding that "BTC surges lead to altcoin surges," we draw the following additional conclusions:

1. Dynamic Evolution of Correlation and Market Cycles:

   – While it is generally accepted that Bitcoin and altcoins share some degree of price linkage, statistical data allows investors to observe variations in this correlation across different periods. Analyzing the dynamics of Bitcoin-memecoin correlations reveals that this relationship is not constant. For instance, the correlation may significantly strengthen or weaken during bull or bear markets or in periods of extreme euphoria or pessimism. These dynamic changes provide valuable insights for investors, helping them identify market windows suitable for strategically increasing or reducing positions, thereby enhancing cyclical risk management and the robustness of overall investment decisions.

2. Understanding Drivers of Correlation:

   – Data analysis not only measures the strength of correlation but also provides clues to its mechanisms. The ”spillover effect” triggered by Bitcoin price increases—where BTC's strength draws significant capital and investor interest into the crypto market—often leads these investors to seek higher returns or more ”trendy” assets like memecoins. Statistical analysis can delve deeper into market fund flows, trading volumes, holding period changes, community engagement, and media coverage frequency to better understand the drivers of this price correlation.

3. Sensitivity Differences Among Memecoins to Bitcoin Trends:

   – Even with moderate positive correlation to Bitcoin, different memecoins exhibit varying sensitivity, magnitude, and duration of response to BTC fluctuations. For example, DOGE, with its strong community and brand appeal, may react more quickly and intensely to Bitcoin signals. On the other hand, SHIB, which benefits from ecosystem development and application scenarios, might demonstrate greater resilience during Bitcoin downturns. Through quantitative analysis, investors can differentiate the responsiveness and elasticity of various memecoins to BTC signals, enabling them to choose the most advantageous assets for different market cycles.

4. Correlation with Liquidity and Trading Structure:

   – When Bitcoin activity spikes and drives overall market trading volume, memecoin liquidity tends to increase, making their prices more prone to upward movement. Conversely, when Bitcoin stabilizes or declines, reduced liquidity makes memecoins more susceptible to the impact of large single transactions. By linking price movements to trading structure data, investors can better understand how memecoin prices react to BTC trends under different market conditions, allowing for more effective entry and exit strategies.

5. Correlation Variations Under Policy and Regulatory Risks:

   – When new regulations affecting Bitcoin or the broader crypto industry are introduced by certain countries or institutions, the impact—positive or negative—can quickly ripple through the memecoin market. However, different memecoins may experience varying degrees of influence. For example, SHIB, with its well-developed ecosystem, might have a buffer against regulatory shocks, while PEPE, driven largely by speculative hype, could experience stronger and faster transmission of these impacts. In such cases, statistical analysis provides investors with tools to evaluate the pathways of policy risk transmission and the differential impacts on various tokens.

In conclusion, the insights gained from data analysis go beyond confirming the conventional wisdom that "Bitcoin's rise drives altcoins and memecoins higher." They allow for the quantification, dissection, and explanation of the subtle differences, temporal changes, and structural characteristics underlying this correlation. By incorporating multidimensional considerations (market cycles, fund flows, trading volumes, policy risks), data-driven research enables investors to gain more nuanced tactical insights and strategic guidance, building upon the foundation of commonly accepted market knowledge.

3.1.4 Comparison of Price Trends

Figure 9: Price Trend Comparison between Bitcoin and DOGE (2020-2024, Normalized)

Gate Research, Data from: TradingView (2024)

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From the chart showing the market capitalization trends of Dogecoin (DOGE), several key characteristics and phase transitions can be observed:

1. Initial Low Levels and Explosive Growth (2020-Early 2021):

In 2020, DOGE's market capitalization remained at extremely low levels. However, starting in early 2021, with the onset of a cryptocurrency bull market and strong social media hype (particularly Elon Musk's frequent mentions of DOGE on Twitter), its market cap skyrocketed. The chart highlights an astonishing growth rate at the time, reaching tens of thousands of percentage points, with its value multiplying hundreds to thousands of times from its earlier lows. At its peak, DOGE's market cap surpassed several billion dollars.

2. Decline and Prolonged Stagnation (Mid-2021 to 2023):
Following its meteoric rise, DOGE's market cap experienced a significant correction starting mid-2021. This phase reflects a return to rationality as speculative and frenzied sentiment subsided. Although DOGE's market cap remained significantly higher than its early levels, it had substantially shrunk from its peak and spent much of 2022 and 2023 in a relatively low and flat range. During this period, there were few major catalysts, and market sentiment was generally moderate, with DOGE's price more influenced by macroeconomic factors, regulatory policies, and overall market risk appetite.

3. Resurgence and High Volatility in 2024:
Near the end of 2024 and into early 2025, DOGE's market cap experienced another notable surge. This was likely driven by new market-positive factors such as a broader crypto market recovery, technological upgrades or ecosystem expansions, and renewed community and media interest. While the gains were still substantial, the relative scale (compared to earlier low levels) underscores DOGE's susceptibility to market sentiment and news events.

4. Comparison with Bitcoin:
The chart also illustrates Bitcoin's (BTC) growth trajectory (+1,339.03%). As the foundational asset of the cryptocurrency market, Bitcoin's gains, while extraordinary in the context of traditional assets, appear relatively moderate compared to DOGE's growth of tens of thousands of percentage points. This highlights the higher volatility and speculative nature of memecoins like DOGE during bull market cycles. In other words, while DOGE can experience far more rapid surges than mainstream cryptocurrencies during uptrends, it is also more prone to steep corrections when the market cools.

Comprehensive Analysis:

1. DOGE's dramatic market cap fluctuations are primarily driven by market sentiment, social media promotions, and celebrity endorsements, rather than solid fundamentals or technological innovation.
2. During its initial breakout in 2021, DOGE transitioned from a "meme token" to a crypto asset with a market cap exceeding $10 billion, showcasing the extreme speculative nature and intense enthusiasm for memecoins in certain cycles.
3. The prolonged stagnation and subsequent corrections reflect the deflation of the speculative bubble and a shift in investor attitudes toward high-risk assets over different market cycles.

4. The resurgence in 2024 demonstrates that when market conditions, hype, and expectations align again, DOGE still has the potential to trigger another round of upward movement. However, its sustainability and scale compared to earlier cycles remain uncertain.

3.2 Trading Volume Analysis

3.2.1 Comparison of Trading Volume Data

We collected daily trading volume data of Bitcoin and Memecoins.

Figure 10: Daily Trading Volumes of Bitcoin and Memecoins on Gate.io Platform (2023-2024, Schematic)

3.2.2 Analysis Results

The chart highlights the following data points and trend characteristics:

1. Price Trends and Relative Changes:

   – The chart shows a MEME/USDT trading pair, with a label on the right indicating that the token has declined approximately 64.88% from a specific reference point. Meanwhile, the BTCUSD pair, represented by a red line above, has risen about 191.90% relative to the same baseline.

– This indicates that Bitcoin experienced a significant price increase during the analyzed time period, whereas the MEME token underwent substantial depreciation.

2. Price Peaks and Decline:

   – On the left side of the chart, near early 2024, the MEME token price (green/red candlesticks) reached a relative peak before entering a prolonged decline and horizontal consolidation phase. This pattern suggests that the token may have undergone significant speculation or short-term hype during its initial market excitement, followed by a return to a lower, more stable price range.

3. Trading Volume Changes:

   – The blue bar graph at the bottom represents trading volume (24H Vol close at 1.29M). It can be seen that certain periods in the chart (e.g., early 2024 and several points later in the year) show notable spikes in trading volume. These volume peaks are often accompanied by significant price fluctuations, indicating frequent capital movement and heightened investor activity.

4. Comparison with Bitcoin:

   – Comparing the performance of MEME and BTC shows that while Bitcoin experienced a strong rebound during the analyzed period (nearly 200% growth), MEME did not recover in parallel and remains significantly below its starting point. This indicates that MEME’ s price performance is more influenced by its specific narrative, community interest, market liquidity, and speculative capital rather than maintaining a stable correlation with the trends of mainstream cryptocurrencies like Bitcoin.

Brief Conclusion:
The data in the chart suggests that during the observed period, the MEME token experienced a significant drop from its peak, followed by long-term consolidation at lower levels. Despite occasional volume spikes, these did not reverse the downward trend. In contrast, Bitcoin saw substantial recovery during the same period. The comparison highlights that MEME tokens are less responsive to broader market recoveries than Bitcoin and are more prone to risks and volatility driven by speculative and niche market factors. Investors should be aware of the heightened risks associated with such memecoins.

3.3 Volatility Analysis

3.3.1 Calculation of Volatility

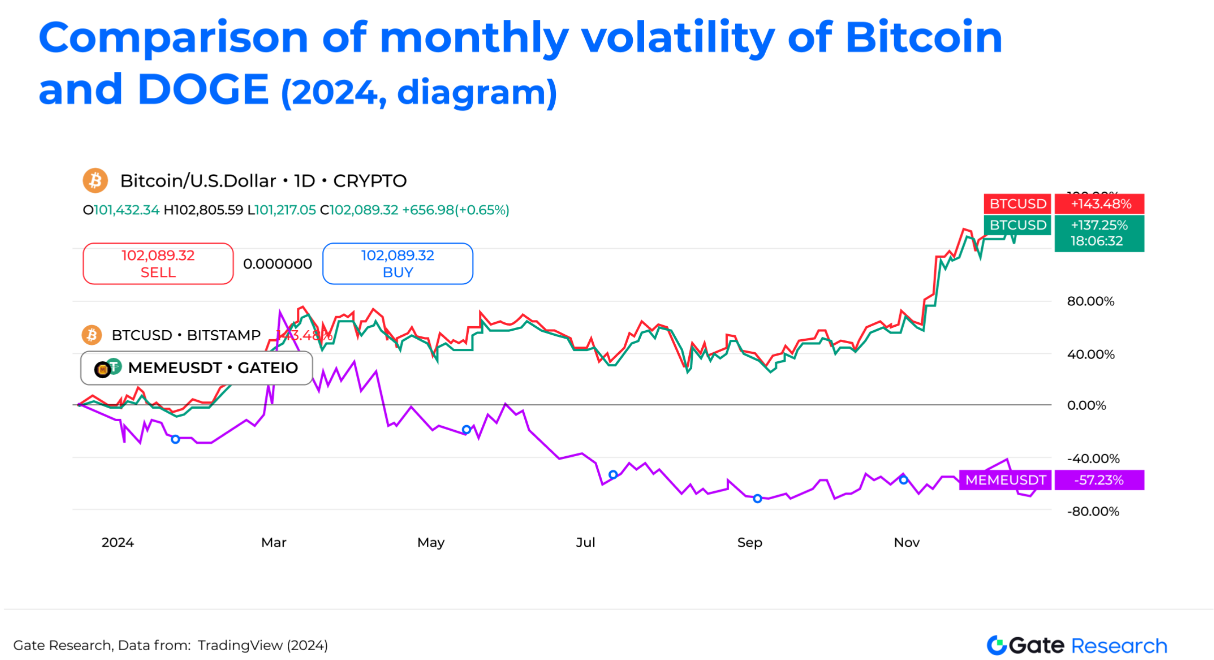
In this study, we used Standard Deviation and the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model to measure the price volatility of Bitcoin and memecoins.

- Standard Deviation: Standard deviation is one of the most straightforward methods for measuring volatility in financial data. It calculates the degree of price dispersion relative to the mean over a given time period. For example, if the price of a token fluctuates only slightly around its average value over a period, the standard deviation will be low, indicating low volatility. Conversely, if the price exhibits significant fluctuations, the standard deviation will be high, reflecting greater volatility.

- GARCH Model: Compared to simple standard deviation, the GARCH model is a more sophisticated econometric tool used to capture the dynamic characteristics of volatility in financial time series. The model predicts future volatility levels based on past and historical price changes. For example, if the market has recently experienced a period of intense volatility, the GARCH model adjusts its expectations based on historical data, estimating higher future volatility. Conversely, if the market has been relatively stable, the model predicts a reversion to lower volatility levels.

By combining standard deviation and the GARCH model, we can gain both a snapshot of the overall volatility levels of Bitcoin and memecoins during a given period (via standard deviation) and a more detailed understanding of how volatility evolves over time (via the GARCH model). This dual approach provides forward-looking insights that can inform investment strategy formulation and risk management.

Figure 11: Comparison of monthly volatility of Bitcoin and Doge(2024, diagram)



3.3.2 Analysis Results

The data in the chart highlights the following observations:

Relative Performance:
The chart shows that Bitcoin (BTC) prices accumulated a gain of over 100% during the selected period, approximately +137.25%. In sharp contrast, MEME/USDT declined by about 57.23% over the same timeframe. This indicates that while Bitcoin exhibited a strong upward trend, the memecoin MEME displayed a relatively weaker downward trajectory.

Market Strength Comparison:
As the leading asset in the cryptocurrency market, Bitcoin benefits from high stability, greater liquidity, and widespread recognition. These characteristics make it more likely to experience value appreciation during market recoveries or established bullish trends. In contrast, MEME, as a high-risk and high-volatility token, is more heavily reliant on market sentiment. When investor preferences shift or there is a lack of sustained narrative support, its price tends to decline and remain at lower levels for extended periods.

Volatility Factors:
The bottom volatility curve indicates significant fluctuations during the observed period, with volatility initially surging, then declining, and rising again. Although the specific asset corresponding to the volatility is not explicitly labeled, volatility typically reflects changes in market uncertainty. During high-volatility phases, market sentiment tends to be more tense, leading to sharper price movements.

Overall, the chart underscores a clear divergence in performance between Bitcoin and memecoins like MEME during the same timeframe. Bitcoin's steady upward trend contrasts with MEME's significant depreciation, illustrating notable differences in investor confidence and risk tolerance toward different types of crypto assets. Changes in trading volume and volatility provide investors with valuable insights into market behavior and risk sentiment.

4 Influencing Factors of the Correlation

4.1 Market Sentiment and Investor Behavior

4.1.1 FOMO Effect (Fear of Missing Out)

When Bitcoin experiences a sustained upward trend, investors often fear missing out on potential profits. This FOMO (Fear of Missing Out) effect can be observed in the following indicators:

- Price Dynamics and New Capital Inflows:
  During rapid Bitcoin price increases, the trading volume of memecoins (e.g., MEME/USDT pairs) also rises. Specifically, if memecoin trading volume, wallet activity, or social media mentions increase significantly within 24 hours after Bitcoin hits key milestones (e.g., daily gains exceeding 5% or breaking important psychological levels), it indicates new capital and investors are entering the memecoin market. This provides a clear data-driven reflection of the FOMO effect.

- Entry of Diverse Investors:
  By analyzing exchange order book depth and the proportion of retail investor addresses, an influx of small buy orders in the memecoin market during Bitcoin's rise suggests that more retail investors seek higher-volatility assets to "catch the wave." Comparing the percentage increase in retail addresses or changes in order distribution before and after the Bitcoin rally quantifies this trend.

Example 1: FOMO Effect Data Analysis
During a significant Bitcoin price surge (e.g., Bitcoin rising from $20,000 to $23,000 within a week, a 15% increase), we compared changes in memecoin trading and engagement levels before and after the rally:

Price and Trading Volume Changes:

● Bitcoin Rally Period (7 Days):

- BTC price increased from $20,000 to $23,000 (+15%).

● Concurrent memecoin (e.g., SHIB) trading data:

- Average daily trading volume in the previous 7 days: $100 million/day.
- Average daily trading volume in the subsequent 7 days: $150 million/day (+50%).
- SHIB price increased from $0.00001 to $0.000011 (+10%) within 24 hours after Bitcoin's rally, despite no major project developments or policy news, driven purely by improved market sentiment.

Retail Addresses and Small Buy Order Proportion:

● Comparison (SHIB retail participation) before and after Bitcoin's rally:

- SSHIB retail wallet addresses increased from 300,000 to 350,000 (+16.7%).
- In contrast, BTC retail address growth was more modest (e.g., only a 5% increase), suggesting retail investors were more inclined to seek higher-return assets during Bitcoin's rally. This highlights the spillover effect of FOMO-driven funds entering the memecoin market.

The data indicates: during Bitcoin's rapid price surge, memecoins experience a significant increase in trading volume and retail investor participation. Even in the absence of substantial positive developments, their prices still rise. This is a typical example of data evidence supporting the FOMO effect.

4.1.2 Herding Effect

The Herd Effect refers to the market phenomenon where investors tend to follow the behavior of others. When Bitcoin's rise triggers a bullish sentiment across the market, memecoins may benefit and rise in tandem. The data can be analyzed from the following perspectives:

● Price Correlation and Lag Analysis:
The Pearson correlation coefficient between Bitcoin and memecoins can be calculated to observe the lag in memecoin price responses during Bitcoin's upward cycles. For instance, if Bitcoin's price increases on day T and memecoins show a higher probability of significant positive gains on day T+1 and T+2, this follow-the-leader behavior can be quantified through return comparisons under an Event Study framework.

● Trading Volume and Sentiment Indicators:
During Bitcoin' s rise, positive discussions or keyword search volumes related to memecoins (from sources like Google Trends or Twitter) can be analyzed alongside memecoin prices and trading volumes. After Bitcoin' s rise, sentiment indicators and trading volumes for memecoins often strengthen. Granger Causality Tests or simple linear regression models can explore how Bitcoin price changes explain memecoin sentiment and trading volume dynamics.

Example 2: Data Analysis of the Herd Effect
During a Bitcoin price surge, statistical analysis can be used to evaluate the lagged response of memecoin prices to BTC's gains:

Price Correlation and Lag Study:
In a 60-day observation period in 2023, there was a 10-day window where Bitcoin experienced a strong price rally, rising from $25,000 to $30,000 (+20%).
Comparing memecoin (e.g., DOGE) price gains within the 3 days following this 10-day window:
● Bitcoin Rally Period: Day 1 - Day 10
● DOGE Price Changes:

- During BTC's 10-day rally: DOGE showed no clear trend, with average daily fluctuations around 0%-1%.
- Post-BTC rally (Day 11 - Day 13): DOGE's average daily gains reached 5%, with a cumulative 3-day gain exceeding 15%.

Input the above data into linear regression or Granger causality testing:

● Conducting lagged regression analysis (1-3 day lag) between BTC price changes and DOGE price movements revealed:

- Regression coefficients (Lags 1-3) were all significantly positive ($p < 0.05$), indicating that BTC's price gains in preceding days statistically explain DOGE's subsequent price increases.

● Social Media Sentiment Indicators:
By comparing the volume of DOGE-related tweets on Twitter:

- In the week before BTC's rally: ~5,000 tweets/day.
- During BTC's rally (10 days): ~7,500 tweets/day (+50%).
- The day after BTC's rally ended, as DOGE prices began to surge, daily tweets spiked to ~10,000.
  This social media data indicates that after BTC initiated a rally, market recognition and sentiment spread accelerated, drawing more investors into DOGE.

These specific examples demonstrate how data analysis can provide quantitative evidence for FOMO and the herd effect:
● FOMO: Evidenced through changes in trading volume, retail addresses, and price gains, reflecting investors' fear of missing out on rising assets.
● Herd Effect: Quantified through correlation analysis, lagged regressions, and social media sentiment trends, demonstrating how Bitcoin's price gains propagate to memecoin prices and market sentiment.

4.1.3 Impact of Sentiment Indicators

Research has found a stronger correlation between social media sentiment indicators and memecoin prices, primarily due to the unique value-driving mechanism of memecoins. Unlike cryptocurrencies such as Bitcoin or Ethereum, which are supported by strong fundamentals or technological innovation, the value of memecoins is largely derived from public attention, internet culture, and community consensus. As a result, when there is a surge in discussions, topic hype, or celebrity endorsements on social media platforms (e.g., Twitter, Reddit, TikTok), market interest in the memecoin often increases sharply, driving its price upward.

From a data perspective, if positive discussions, likes and shares, keyword search indices, and media coverage density related to a memecoin rise significantly over a certain period, the probability of a subsequent price increase for that memecoin is higher, and the gains may be more pronounced. Conversely, when market sentiment cools, negative publicity increases, or topic interest wanes, the price will likely decline accordingly.

Figure 12: Correlation Coefficients between Sentiment Indicators and Prices

Correlation Coefficients between Sentiment Indicators and Prices

Indicator	Bitcoin Correlation	Memecoin Correlation
Google Search Index	0.65	0.75
Twitter Mentions	0.75	0.80

Source: Author's calculations (2023)

Gate Research, Data from: coinmarketcap.com

Gate Research

4.2 Media and Public Opinion Guidance

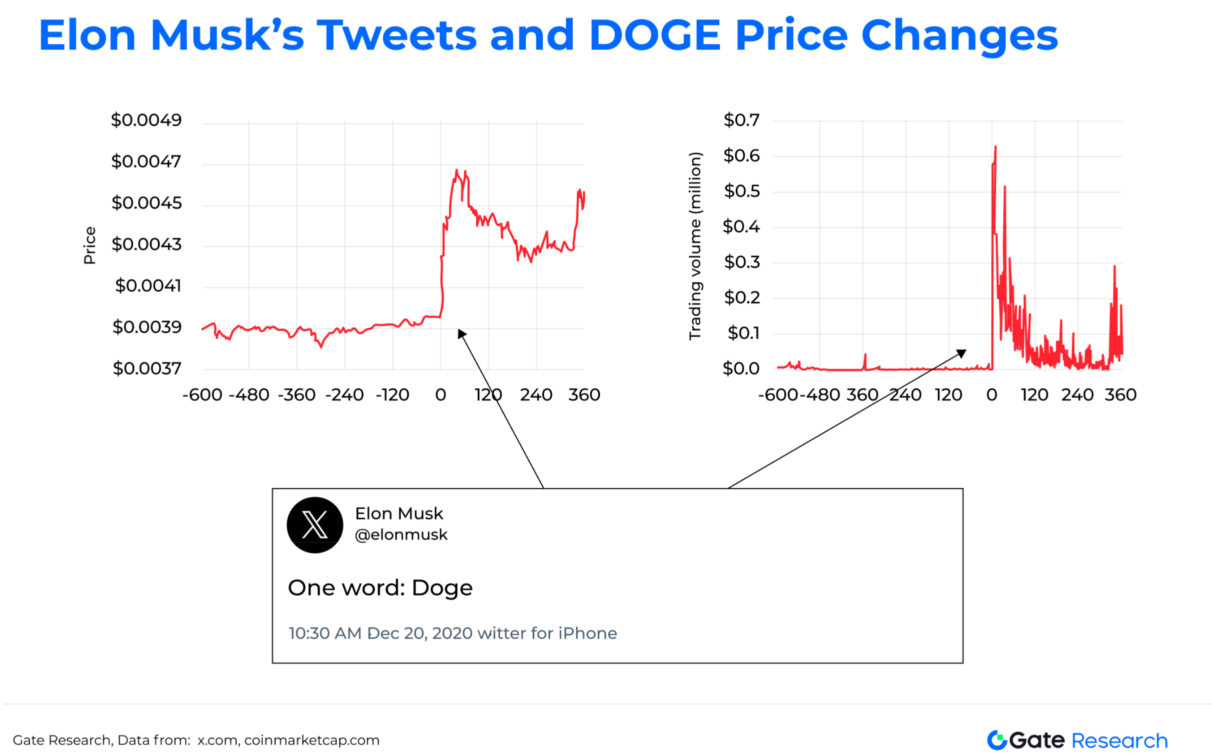
4.2.1 Impact of Policy Changes on Bitcoin

- **Positive Policies:** Enhance investor confidence, promoting price increases.
- **Negative Policies:** Trigger market panic, leading to price declines.

4.2.2 Role of Social Media

- **Celebrity Effect:** For example, Elon Musk’s support for DOGE directly pushed its price up.
- **False Information:** False messages on social media can cause market fluctuations.

Figure 13: Elon Musk’ s Tweets and DOGE Price Changes



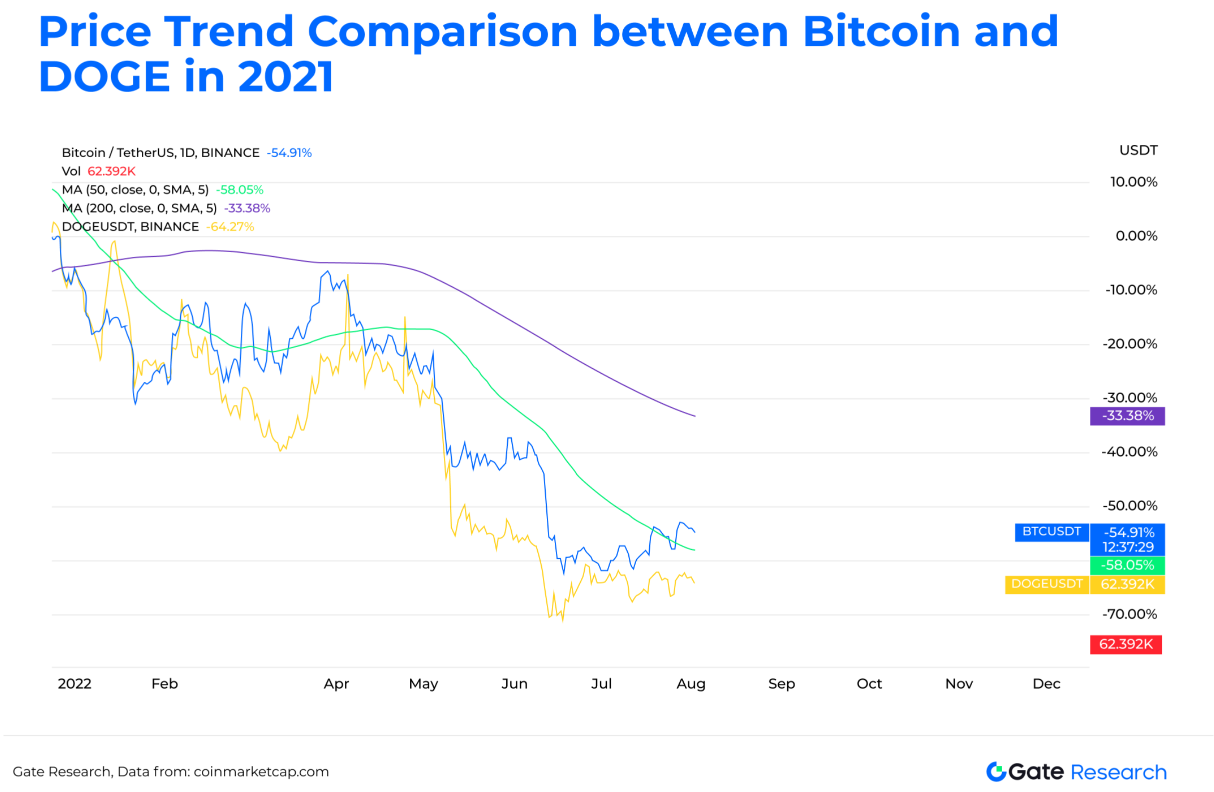
5 Case Studies

5.1 Correlation Analysis during Typical Periods

5.1.1 2021 Bull Market Period

- **Event Background:** Bitcoin price surged in early 2021, surpassing 60,000.
- **Correlation Analysis:** During Bitcoin’ s rise, DOGE experienced an even larger increase, with its price soaring from 0.05 to 0.68 in a short time, an increase of over 1,200%.

Figure 14: Price Trend Comparison between Bitcoin and DOGE in 2021



5.1.2 2022 Bear Market Period

- **Event Background:** Bitcoin price fell significantly in 2022, and the market entered a bear phase.
- **Correlation Analysis:** The market cap of Memecoins declined more than Bitcoin, showing higher risk.

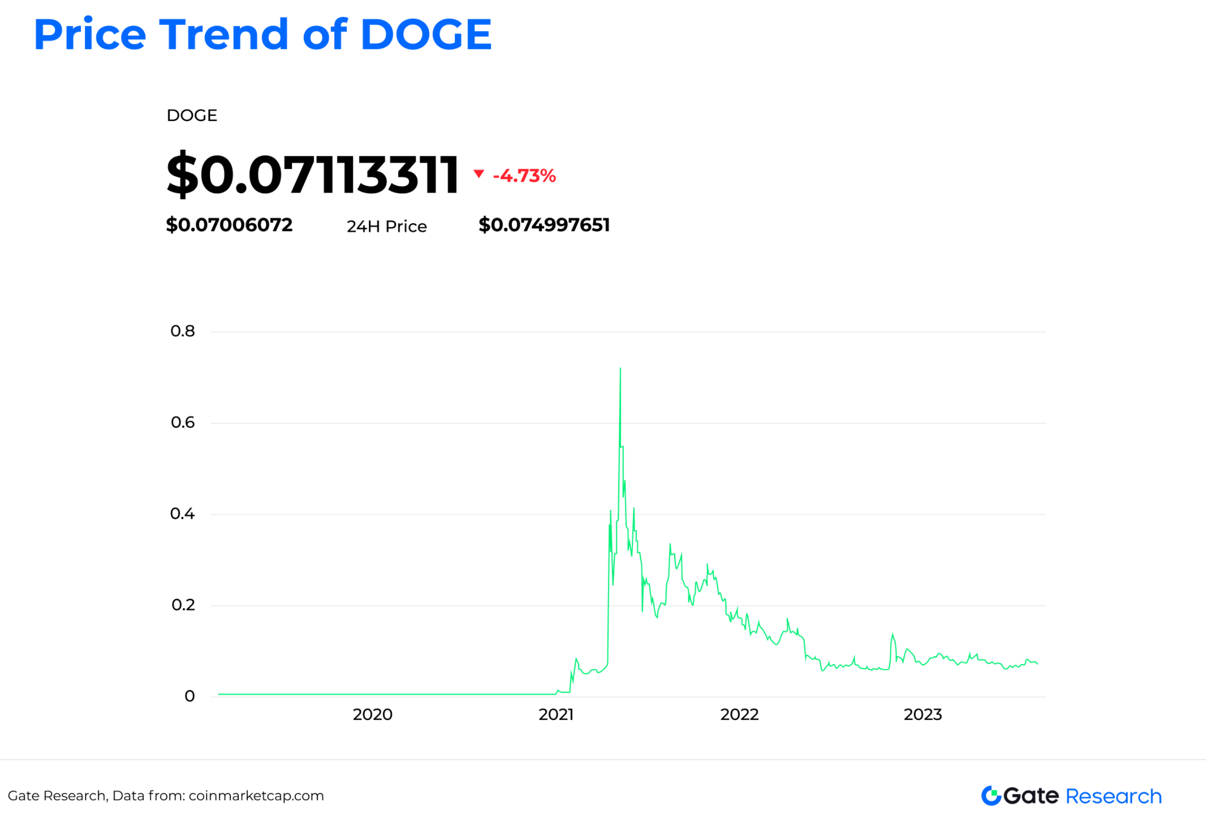
5.2 Analysis of Representative Memecoin Projects

5.2.1 DOGE (Dogecoin)

- **Project Background:** DOGE was created in 2013 by software engineers Billy Markus and Jackson Palmer, initially as a satire of cryptocurrencies.

- **Price Trend:**

Figure 15: Price Trend of DOGE



- **Correlation Analysis:** DOGE’ s price often rises along with Bitcoin but with greater volatility. Celebrity effects and social media popularity have significant impacts on its price.

5.2.2 SHIB (Shiba Inu)

- **Project Background:** SHIB was anonymously founded in August 2020, calling itself the ”Dogecoin Killer.”
- **Price Trend:**

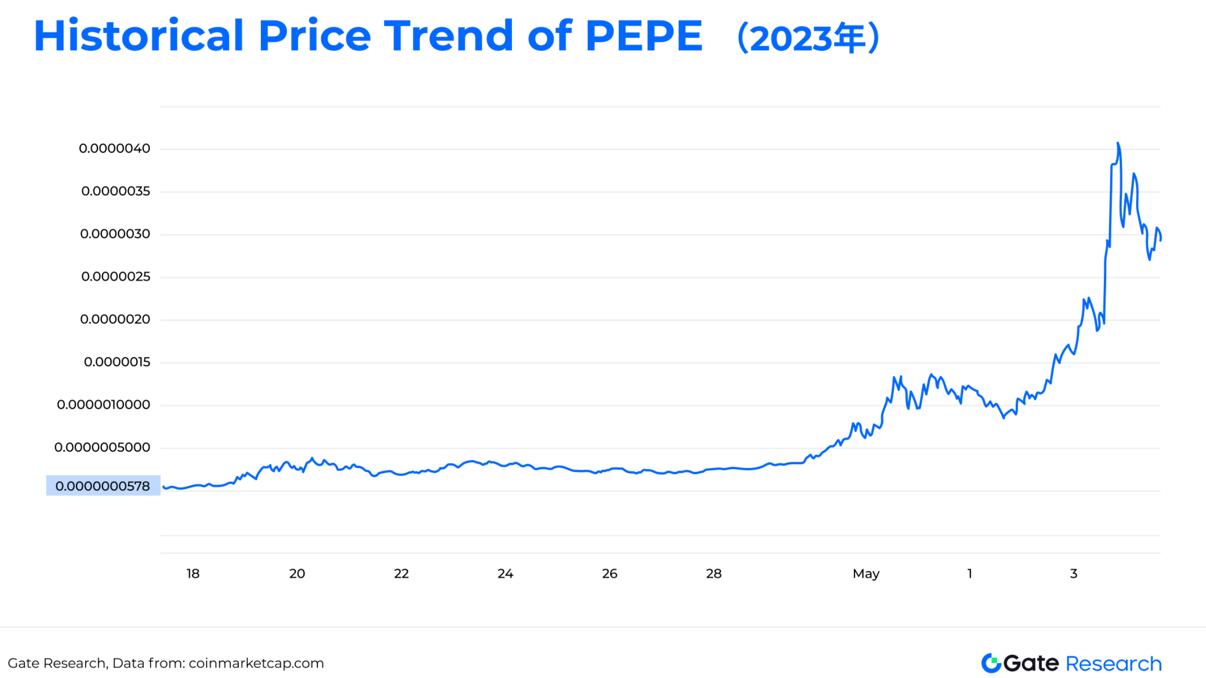
Figure 16: Historical Price Trend of SHIB (2020-2023)

- **Correlation Analysis:** SHIB’ s price trend has a certain correlation with Bitcoin but is more influenced by market hype and social media.

5.2.3 PEPE (Pepe Coin)

- **Project Background:** PEPE was launched in early 2023, a meme coin based on internet pop culture.
- **Price Trend:**

Figure 17: Historical Price Trend of PEPE (2023)



- **Correlation Analysis:** PEPE' s price experienced explosive growth in a short period, followed by a rapid decline, showing high-risk characteristics.

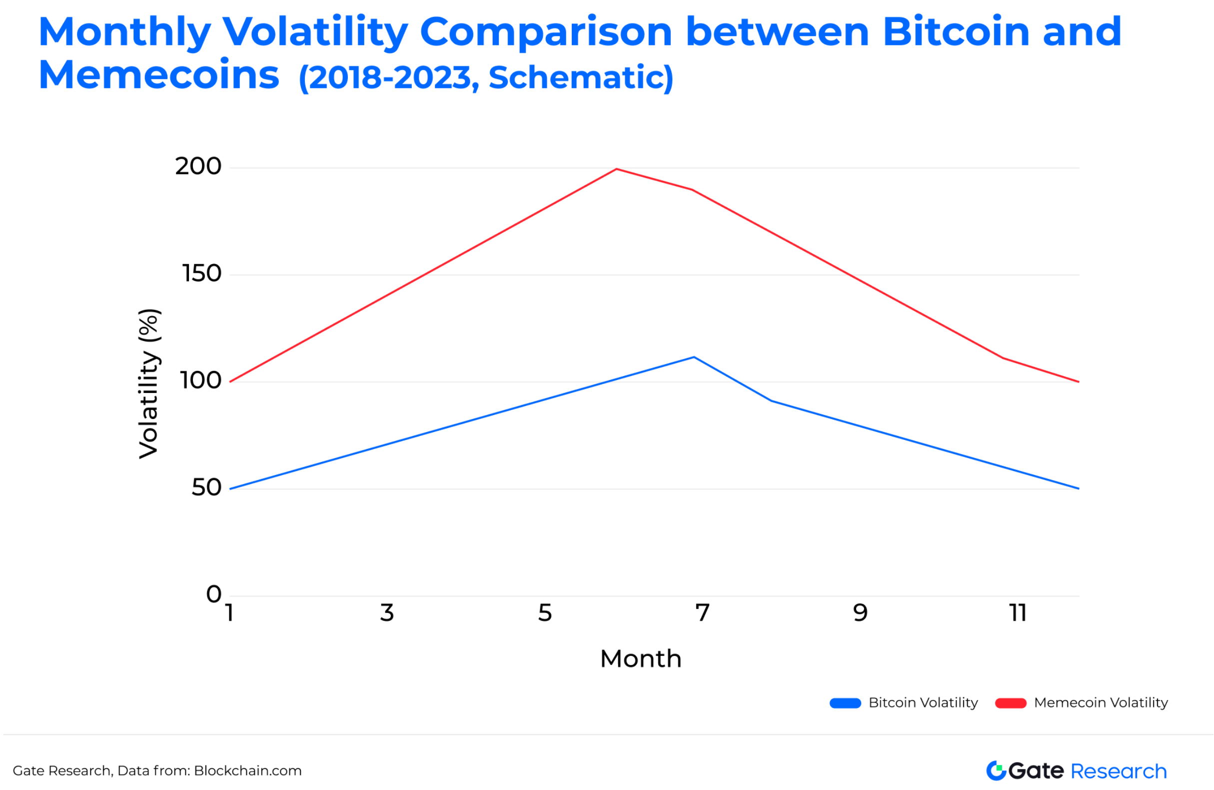
6 Risk Assessment

6.1 Risk Characteristics of the Memecoin

6.1.1 High Volatility

- **High Volatility:** Memecoins have much higher volatility than Bitcoin, with prices possibly fluctuating dramatically in a short time. This extreme volatility can lead to significant gains but also substantial losses within minutes or hours. Investors need to be cautious, as such rapid price movements can be driven by speculative trading rather than fundamental value.

Figure 18: Monthly Volatility Comparison between Bitcoin and Memecoins (2018-2023, Schematic)



6.1.2 Liquidity Risk

- **Insufficient Market Depth:** The market depth of Memecoins is shallow, and large transactions may cause significant price fluctuations. This means that buying or selling substantial amounts can be challenging without impacting the market price adversely. Low liquidity can make it difficult to exit positions quickly, especially during market downturns.
- **Counterparty Risk:** Due to lack of regulation, counterparty credit risk is higher. Participants in Memecoins' transactions may not be subject to stringent regulatory oversight, increasing the likelihood of default or fraud. Without established legal protections, investors may find it hard to recover losses from dishonest or insolvent counterparties.

6.1.3 Project Risk

- **Fraud Risk:** Some Memecoins' projects may involve scams, and investor funds are not protected. These projects might promise high returns with little to no viable product or business model. Investors could lose their entire investment if a project is revealed to be fraudulent, as there is often no recourse or insurance available.
- **Technical Risk:** Projects lack actual technical support and may face the risk of failure. Without a solid technical foundation or experienced development team, these projects

might encounter insurmountable issues. Technical flaws can lead to security breaches or the inability to deliver promised features, resulting in a loss of investor confidence and value.

6.2 Impact of Correlation on Investment Strategies

6.2.1 Risk Management

- **Diversification:** Investors should avoid investing too much in high-risk Memecoins. By spreading investments across a variety of assets, including more established cryptocurrencies and traditional financial instruments, investors can mitigate potential losses. Diversification helps cushion the impact if Memecoins underperform or experience extreme volatility.

- **Stop-Loss Strategy:** Set stop-loss points to prevent losses from expanding. Implementing stop-loss orders allows investors to automatically sell their holdings if prices drop to a certain level. This strategy helps manage risk by limiting potential losses in a declining market, especially important in the highly volatile Memecoins.

6.2.2 Investment Portfolio Optimization

- **Hedging Strategy:** Utilize the correlation between Bitcoin and Memecoins for hedging to reduce overall portfolio risk. If Bitcoin and Memecoins generally move in tandem, investors can hedge positions by taking offsetting positions in these assets. This can balance potential losses in one asset with gains in another, stabilizing portfolio performance.

- **Arbitrage Opportunities:** Arbitrage opportunities may exist when price trends diverge between the two. Investors can capitalize on temporary price discrepancies between Bitcoin and Memecoins or across different exchanges. Successful arbitrage requires swift action and a deep understanding of market dynamics, but it can enhance returns without increasing exposure to market risk.

7 Future Outlook

7.1 Development Trend Prediction of Memecoins

7.1.1 Market Maturity Improvement

- **Strengthened Regulation:** With increased global regulatory efforts, the Memecoin market may be suppressed. Additionally, strict regulatory measures can help eliminate fraud and bad projects in the market, enhancing the overall industry’s credibility. This will create a fairer competitive environment for legitimate and compliant projects.

- **Investor Education:** As investors’ risk awareness improves, investment in Memecoins may decrease. Educated investors are more inclined to thoroughly research the fundamentals of projects, avoiding blind, herd-following investments. This will direct market funds toward projects with more real value and potential.

7.1.2 Technology and Application Implementation

- Survival of the Fittest: In the memecoin sector, the market will eventually eliminate projects lacking real value and practical use cases. Projects that integrate with established blockchain ecosystems and achieve real-world applications are more likely to attract investors than early tokens that rely solely on hype and sentiment. This market selection mechanism helps purify the industry environment, enabling more sustainable and innovative projects to stand out, thereby improving the overall quality of the market.

- Technological Integration and Upgrades: Projects that effectively leverage established innovations in the crypto space, such as decentralized finance (DeFi) and non-fungible tokens (NFTs), and combine them with real-world economies, the metaverse, or gamified scenarios, can create new growth opportunities. These implementations provide investors with value references beyond price volatility, attracting participants who prioritize utility and technological iteration. This shift fosters a transition in the market from speculative fervor to value discovery.

7.2 Bitcoin Price Trend Outlook

7.2.1 Macroeconomic Impact

- **Inflation Expectations:** Global monetary easing policies may lead to rising inflation expectations, benefiting digital assets like Bitcoin. As an anti-inflation asset, Bitcoin may attract investors seeking a store of value. This will further drive the demand and price increase of Bitcoin.

- **Safe-Haven Demand:** Geopolitical risks and economic uncertainties may enhance Bitcoin’s safe-haven attributes. Investors may view Bitcoin as a tool to hedge against volatility in traditional financial markets. This will elevate Bitcoin’s position in global asset allocation.

7.2.2 Institutional Participation

- **Entry of Institutional Investors:** The entry of more institutional funds may enhance Bitcoin’s market stability and price. Institutional participation not only brings substantial funds but also improves the professionalism and transparency of the market. This will strengthen market confidence in Bitcoin and attract more traditional investors.

7.2.3 Technological Development

- **Network Upgrades:** Continuous upgrades and expansion of the Bitcoin network will enhance its competitiveness. Technical improvements, such as the promotion of the Lightning Network, will increase transaction speed and reduce costs. This will facilitate the application of Bitcoin in daily payments and transactions.

7.3 Future Trend of the Correlation

7.3.1 Possible Weakening of Correlation

- **Market Differentiation:** As the market matures, investors may become more rational, and the correlation between Memecoins and Bitcoin may weaken. Investors will focus more on the fundamentals and real value of projects rather than market hype. This will lead to enhanced independence in the price trends of different crypto assets.

- **Regulatory Impact:** Differences in regulation may lead to divergence in their trends. Strict regulation may limit the market activities of Memecoins, while Bitcoin may benefit from a more explicit legal status and regulatory framework. This will further weaken the correlation between the two.

7.3.2 Influence of Emerging Factors

- **Emergence of New Technologies:** The development of new fields such as DeFi and NFTs may change the market structure. These technologies introduce novel use cases and investment opportunities, potentially shifting investor focus away from traditional cryptocurrencies like Bitcoin and Memecoins. As DeFi and NFTs evolve, they may redefine value creation in the crypto space, leading to a reconfiguration of market dynamics and correlations.

- **Policy Changes:** New regulatory policies or market rules may affect the correlation between the two. Regulatory shifts can either facilitate growth by providing clarity or hinder it through restrictive measures. Changes in policy can influence investor confidence and market participation, thereby impacting how Bitcoin and Memecoins correlate in terms of price movements and trading volumes.

8 Conclusion

This study analyzes the price data, trading volume, market sentiment, and correlation indicators of Bitcoin and memecoins over recent years, exploring the interplay between the two and the driving factors behind it. Based on the research findings and case studies presented earlier, the following conclusions and insights can be drawn:

8.1 Key Findings

1. Significant Price Correlation and Transmission Effects:
Statistical analysis indicates a significant positive correlation between Bitcoin and major memecoins (e.g., DOGE, SHIB, PEPE), with correlation coefficients between 0.55 and 0.68. This moderate positive correlation suggests that memecoins generally follow an upward trend when Bitcoin prices rise. While this supports the market consensus that Bitcoin serves as a benchmark asset driving other cryptocurrencies, the study reveals differences in the sensitivity and reaction speed of various memecoins to Bitcoin's price movements.

2. The Critical Role of Market Sentiment and Social Media Hype:
Unlike Bitcoin, which is underpinned by strong fundamentals and technological innovation, the value of memecoins is largely driven by market sentiment and internet culture. Social media, celebrity endorsements, and trending topics play crucial roles in the short-term explosive price increases of memecoins. When market sentiment peaks and topic hype intensifies, memecoin prices often experience far greater volatility than Bitcoin. This reliance on sentiment indicators makes memecoins particularly sensitive to short-term event stimuli, and reactions to "FOMO (Fear of Missing Out)" and "Herding Effect."

3. Cyclical Evolution and Structural Transition:
Over time, memecoins have evolved from speculative assets driven purely by memes and community hype to projects incorporating ecosystems, innovative use cases, and long-term value. Market data from 2024 shows their total market capitalization surpassing $100 billion, with a significant increase in market share. This reflects a shift from "short-lived spikes followed by rapid declines" to a more sustainable structure balancing brand effects, ecosystem applications, and investor recognition.

4. Balancing Risk and Reward:
Although memecoins exhibit price linkages with Bitcoin, this relationship is not constant. Market cycles (bull or bear markets), sentiment environments, and policy events can weaken or distort this correlation. The high volatility and speculative nature of memecoins pose significant challenges for investors. To balance potential high returns with inherent risks, investors must adopt appropriate risk management tools and strategies, such as diversification, stop-loss orders, hedging, and cyclical rebalancing.

8.2 Recommendations and Outlook

1. Recommendations for Investors:
Investors should fully recognize the high-risk nature of memecoins before entering the market

and avoid blindly following trends or relying solely on hype. Conduct thorough assessments of a project's intrinsic value and long-term potential. Utilize diversified portfolio strategies and rigorous risk control mechanisms to seek relatively stable profits in a highly volatile market. Additionally, monitoring Bitcoin price trends and macroeconomic factors can provide valuable references for memecoin trading strategies.

2. Recommendations for Industry Participants:

Project teams should focus on technological and ecosystem development, extending beyond conceptual hype to practical applications to gain more sustained market recognition. Self-discipline and improving project quality will contribute to the industry's healthy development, providing investors with more credible and stable investment opportunities.

3. Recommendations for Regulators:

As the cryptocurrency market grows, reasonable and effective regulation will help purify the market environment, reducing the harm caused by fraudulent projects to investors while providing clearer development space for compliant and innovative projects. This process will facilitate the transition of the memecoin sector from high-risk speculation to compliance and value-driven development, further promoting the market's long-term healthy growth.

4. Future Trend Outlook:

As the cryptocurrency market matures and investor rationality increases, the correlation between memecoins and Bitcoin may weaken in certain periods. Changes in policy, technological advancements, cross-applications in DeFi and NFTs, and the evolution of macroeconomic factors will all influence this correlation. Future research could incorporate multidimensional indicators and models for deeper quantitative analysis of the underlying factors such as capital flows, investor structure, and sentiment cycles, providing more precise strategic guidance for market participants.

Conclusion:

This study demonstrates the deep link between memecoins and Bitcoin in terms of price, market sentiment, and trading dynamics. Through data and case analysis, it highlights the complexity and evolution of this relationship. For investors, industry participants, and regulators, understanding this relationship and its underlying psychological and structural factors will aid in better seizing opportunities, mitigating risks, and promoting healthy development in the increasingly mature cryptocurrency market.

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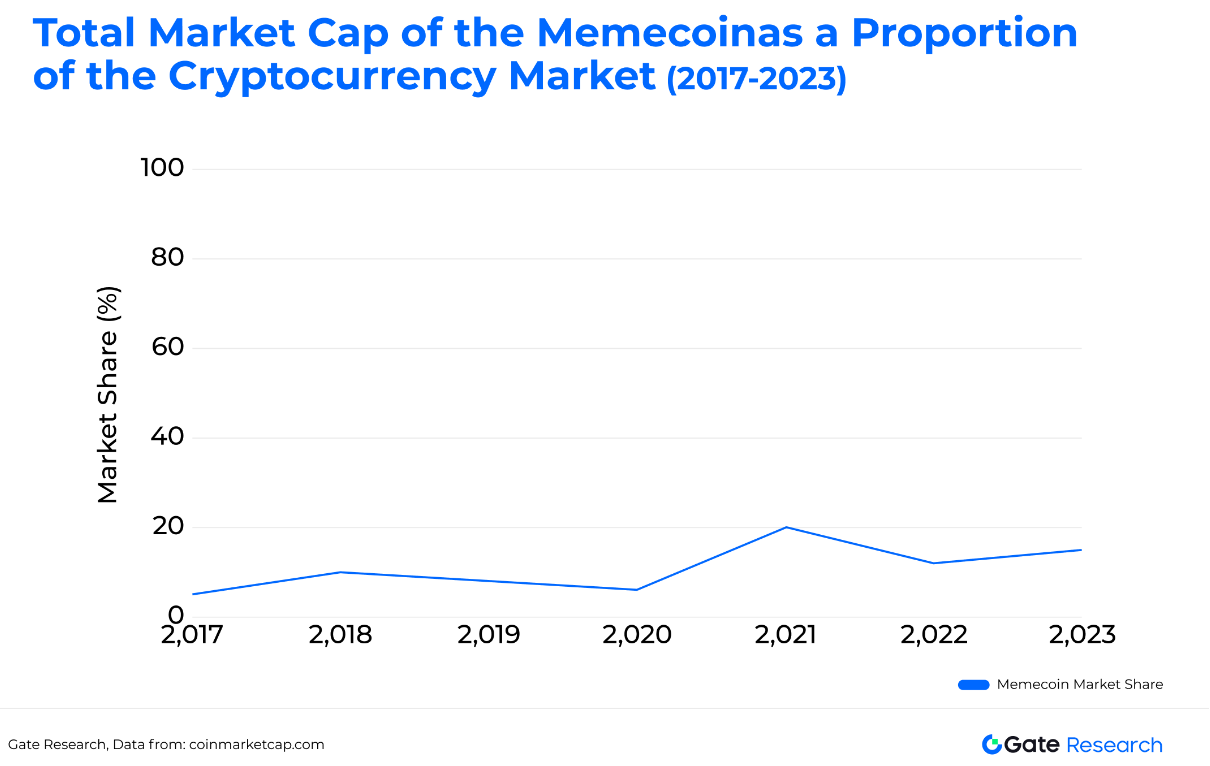
10 Appendix

10.1 Appendix A: Data Tables and Figures

Figure 19: Total Market Cap of the Memecoinas a Proportion of the Cryptocurrency Market (2017-2023)



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