

CHAPTER II

THEORETICAL FOUNDATION AND LITERATURE REVIEW

A. Theoretical Framework

1. Understanding Bitcoin and Digital Currencies

a. Overview of Bitcoin and its Significance in the Financial Markets

Bitcoin, presented in 2008 by an mysterious individual or bunch known as Satoshi Nakamoto, speaks to a progressive concept within the domain of digital back. As the primary decentralized cryptocurrency, Bitcoin works on a peer-to-peer organize without the require for a central specialist, such as a bank or government. Its fundamental innovation, blockchain, guarantees straightforwardness and security through a conveyed record that records all exchanges over a organize of computers. This advancement has situated Bitcoin not as it were as a medium of trade but moreover as a critical budgetary resource (Nakamoto, 2008). Bitcoin's showcase importance is multifaceted. It offers an elective to conventional monetary standards, giving a support against swelling and budgetary flimsiness. Financial specialists see Bitcoin as "digital gold" due to its restricted supply of 21 million coins, which contrasts sharply with the inflationary nature of fiat currencies (Baur & Dimpfl, 2021). Bitcoin's ability to be transferred globally with minimal fees and without intermediaries has made it an attractive option for remittances and cross-border transactions, In the financial markets, Bitcoin's influence extends beyond its use as a currency. Its high volatility has made it a favorite among speculative traders, contributing to significant price swings and trading volumes. Institutional investors, including hedge funds and publicly traded companies, have also started to include Bitcoin in their portfolios as a diversification strategy. For instance, in 2021, Tesla Inc. invested \$1.5 billion in Bitcoin, signaling growing institutional acceptance and trust in the cryptocurrency (Kovach, 2021).

b. Historical Background and Evolution of Bitcoin

Bitcoin's travel started with the distribution of the whitepaper titled "Bitcoin: A Peer-to-Peer Electronic Cash Framework" by Nakamoto in 2008. The primary square, known as the beginning square, was mined on January 3, 2009. Within the early a long time, Bitcoin was fundamentally utilized by tech devotees and cryptography specialists. Its esteem was irrelevant, and it was frequently traded casually between clients, The primary critical exchange including Bitcoin happened in 2010 when a software engineer named Laszlo Hanyecz paid 10,000 BTC for two pizzas, an occasion presently celebrated yearly as Bitcoin Pizza Day. This exchange checked Bitcoin's rise as a real-world cash, though with considerable instability and vulnerability with respect to its future (Narayanan et al., 2016), Bitcoin gained mainstream attention during the early 2010s, particularly during the 2013 price surge when it crossed \$1,000 for the first time. This period also saw the rise of numerous Bitcoin exchanges and the infamous Mt. Gox incident, where the exchange was hacked, resulting in the loss of approximately 850,000 BTC. Despite this setback, Bitcoin continued to grow, driven by increasing media coverage and public interest (Cheah & Fry, 2015), The next major milestone came in 2017 when Bitcoin's price soared to nearly \$20,000. This surge was fueled by speculative trading and the initial coin offering (ICO) boom, where new cryptocurrencies were launched and funded through Bitcoin and Ethereum. However, this period also highlighted the regulatory challenges facing Bitcoin, as governments worldwide grappled with how to manage and integrate this new financial instrument into existing legal frameworks (Conlon et al., 2021), Bitcoin's evolution has also been marked by technological advancements. The implementation of the Segregated Witness (SegWit) protocol in 2017 and the development of the Lightning Network aimed to address scalability issues, allowing for faster and cheaper transactions. These innovations are crucial for Bitcoin's

ongoing adoption and usability as a currency and a financial asset (Baur & Dimpfl, 2021).

c. Comparison with Other Cryptocurrencies

While Bitcoin was the first cryptocurrency, it has since been joined by thousands of others, collectively known as altcoins. Ethereum, launched in 2015, is perhaps the most notable of these. Unlike Bitcoin, which is primarily a digital currency, Ethereum functions as a decentralized platform for smart contracts and decentralized applications (dApps). Its native currency, Ether (ETH), is used to power these applications and pay for transaction fees (Narayanan et al., 2016), Ripple (XRP) is another significant cryptocurrency, designed for fast and low-cost international payments. Unlike Bitcoin, Ripple does not rely on a blockchain but uses a consensus ledger and a unique distributed consensus mechanism. This has allowed Ripple to forge partnerships with numerous financial institutions, positioning itself as a solution for cross-border payments (Narayanan et al., 2016), Litecoin (LTC), created by Charlie Lee in 2011, is often referred to as the "silver to Bitcoin's gold." It offers faster transaction times and a different hashing algorithm (Scrypt), making it a popular alternative for smaller transactions (Cheah & Fry, 2015), Bitcoin Cash (BCH) emerged in 2017 as a result of a hard fork from Bitcoin, aiming to address scalability issues by increasing the block size limit. This has enabled Bitcoin Cash to process more transactions per second compared to Bitcoin, though it has also led to debates within the community about the best approach to scalability and decentralization (Narayanan et al., 2016), Despite the proliferation of altcoins, Bitcoin remains the most valuable and widely recognized cryptocurrency. It accounts for a significant portion of the total market capitalization of all cryptocurrencies and continues to set the benchmark for the industry. Bitcoin's first-mover advantage, robust security, and widespread recognition contribute to its dominance, even as newer

cryptocurrencies introduce innovative features and use cases (Baur & Dimpfl, 2021).

In conclusion, Bitcoin's significance in the financial markets is underscored by its unique characteristics as a decentralized, secure, and limited-supply asset. Its historical evolution from a niche digital currency to a mainstream financial instrument highlights its resilience and adaptability. While it faces competition from various altcoins, Bitcoin's foundational role and continued influence in the cryptocurrency space remain unparalleled.

2. Bitcoin as a Financial Asset

a. Bitcoin's Role as a Medium of Exchange and Store of Value

Bitcoin was initially conceptualized as a peer-to-peer electronic cash framework, pointed at encouraging exchanges without the require for middle people like banks (Nakamoto, 2008). Over time, Bitcoin has advanced from this introductory vision to play double parts: a medium of trade and a store of esteem.

As a medium of trade, Bitcoin empowers coordinate exchanges between clients without the require for a trusted third party. This feature is particularly valuable in regions with underdeveloped banking infrastructure or in scenarios where traditional financial systems are inefficient or unavailable. Bitcoin's decentralized nature means that it can be used globally, providing a borderless financial instrument that operates 24/7. Despite these advantages, Bitcoin's widespread adoption as a medium of exchange has been hindered by its high transaction fees during peak periods and significant price volatility, which can deter its use for everyday transactions (Narayanan et al., 2016).

In contrast, Bitcoin's role as a store of esteem. has gained considerable attention, often being compared to gold. Bitcoin's fixed supply of 21 million coins makes it immune to inflationary pressures that affect fiat currencies. This scarcity, combined with its decentralized and secure

nature, positions Bitcoin as a potential hedge against economic instability and currency devaluation (Baur & Dimpfl, 2021). Investors have increasingly viewed Bitcoin as a "digital gold," using it to diversify their portfolios and protect against macroeconomic uncertainties.

b. Volatility and Liquidity of Bitcoin Compared to Traditional Assets

One of the most distinguishing characteristics of Bitcoin is its instability, Bitcoin's cost can encounter critical variances inside brief periods, affected by a assortment of components counting showcase estimation, administrative news, macroeconomic patterns, and innovative advancements. For instance, Bitcoin's price surged from approximately \$10,000 in early 2020 to over \$60,000 by April 2021, driven by increased institutional interest and broader acceptance of cryptocurrencies. Conversely, it also saw sharp declines, such as the one in 2018, when prices fell by more than 80% from their peak (Conlon et al., 2021).

Compared to traditional assets like stocks, bonds, or gold, Bitcoin's volatility is markedly higher. This significant volatility can be ascribed to Bitcoin's comparatively smaller market size and its speculative characteristics. of cryptocurrency investments, and the lack of mature regulatory frameworks. Traditional assets tend to have more stable prices due to their established market structures, regulatory oversight, and broader investor base (Bouri et al., 2017).

Liquidity is another crucial aspect where Bitcoin differs from traditional assets. While Bitcoin markets operate continuously without closing, liquidity can vary significantly across different exchanges and times. High liquidity is generally observed during peak trading hours when major financial markets are open. However, during periods of market stress or sudden price fluctuations, liquidity can diminish rapidly, resulting in even greater price swings. Traditional assets typically benefit from higher and more stable liquidity due to established trading venues and market mechanisms (Cheah & Fry, 2015).

c. Bitcoin's Potential as a Hedge Against Inflation and Economic Instability

Bitcoin's fixed supply and decentralized nature have led many to view it as a potential safeguard against inflation and economic instability. Conventional fiat currencies face inflationary pressures because governments and central banks can increase the money supply, thereby diminishing the currency's value over time. In contrast, Bitcoin, with its limited supply of 21 million coins, is intended to be deflationary, potentially preserving its value better than fiat currencies during periods of high inflation (Bouri et al., 2017). Several studies have investigated Bitcoin's efficacy as an inflation hedge. For example, Baur and Dimpfl (2021) found that Bitcoin exhibited characteristics akin to those of gold, serving as a safe haven during economic turbulence. Similarly, Conlon et al. (2021) demonstrated that Bitcoin could act as a hedge against inflation in the short term, particularly when inflation expectations are volatile, however, Bitcoin's role as an inflation hedge is not without challenges. Its considerable volatility can undermine its reliability as a stable store of value. Additionally, the correlation between Bitcoin and traditional financial markets can fluctuate over time, at times aligning more closely with risk assets rather than with safe havens such as gold. This variability can impact Bitcoin's effectiveness as a hedge across different economic scenarios (Cheah & Fry, 2015). Despite these challenges, Bitcoin's unique attributes make it an attractive option for diversification. Its independence from traditional financial systems and its resilience against government control provide a form of financial sovereignty that is appealing to many investors. As such, Bitcoin can complement traditional assets in a diversified portfolio, offering potential protection against systemic risks and economic instability (Bouri et al., 2017).

In conclusion, Bitcoin's evolution as a financial asset highlights its multifaceted roles as a medium of exchange and a store of value. Its high volatility and liquidity dynamics distinguish it from traditional assets,

presenting both opportunities and challenges for investors. While Bitcoin's potential as a hedge against inflation and economic instability is promising, it is accompanied by significant risks. As the cryptocurrency market matures and regulatory frameworks develop, Bitcoin's role in the financial landscape is likely to become more defined, offering further insights into its long-term viability and utility.

3. U.S. Monetary Policy

a. Overview of U.S. Monetary Policy

U.S. monetary policy may be a vital angle of the country's financial administration, essentially pointed at accomplishing most extreme business, steady costs, and direct long-term interest rates. The central institution responsible for defining and actualizing financial arrangement within the Joined together States is the Government Save Framework, commonly alluded to as the Government Save or the Encouraged. Set up in 1913, the Government Save is composed of the Board of Governors in Washington, D.C., and twelve territorial Government Save Banks over major cities within the Joined together States. The Government Open Showcase Committee (FOMC), which incorporates individuals of the Board of Governors and territorial federal reserve Bank presidents, is the essential body dependable for setting national money related approach (Federal Reserve, 2023).

b. Mechanisms and Tools of U.S. Monetary Policy

The Federal Reserve utilizes a assortment of instruments to impact financial action and oversee the cash supply. Key apparatuses incorporate open showcase operations, the markdown rate, and save prerequisites.

1. Open Market Operations (OMO): Usually the foremost regularly utilized instrument of the Federal Reserve. Through OMOs, the Fed buys or sells U.S. Treasury securities within the open showcase to control the cash supply. When the Encouraged buys securities, it infuses liquidity into the economy, bringing down interest rates and empowering borrowing and

investing. On the other hand, offering securities pulls back liquidity, raising interest rates and checking expansion (Federal Reserve, 2023).

2. **Discount Rate:** The discount rate is the interest rate charged to commercial banks and other safe educate for short-term advances they get from the Government Save. Changes within the rebate rate can impact the loaning behavior of banks and the generally level of financial action. A lower markdown rate decreases the taken a toll of borrowing, stimulating economic movement, whereas a better rate makes borrowing more costly, abating down the economy (Mishkin, 2007).
3. **Reserve Necessities:** These are directions with respect to the least sum of saves a bank must hold against stores. By modifying save necessities, the Government Save can specifically impact the sum of cash that banks can loan. Bringing down save prerequisites increments the cash supply and advances loaning, though raising them has the inverse impact (Mishkin, 2007).
4. **Quantitative Easing (QE):** Quantitative easing is an unusual money related approach instrument utilized by the Government Save when conventional devices ended up incapable, especially when interest rates are close zero. Beneath QE, the Encouraged buys long-term securities, such as Treasury bonds and mortgage-backed securities, to add up the cash supply and lower long-term interest rates. This arrangement points to invigorate venture and investing amid periods of financial downturn (Bernanke, 2020).
5. **Forward Guidance:** Forward direction could be a communication instrument utilized by the Federal Reserve to impact desires around the long run way of financial approach. By signaling future policy intentions, the Fed can affect financial conditions and economic behavior even without immediate changes in policy (Clarida, Gali, & Gertler, 1999).

c . Historical Context of U.S. Monetary Policy Decisions and Their Impacts on Financial Markets

U.S. monetary policy has undergone significant evolution and adaptation in response to changing economic conditions over the decades. Historical context provides valuable insights into how these policies have shaped financial markets.

1. The Great Depression (1930s): The Federal Reserve's reaction to the Great Depression highlighted the significance of proactive financial approach. Amid the early 1930s, the Fed's disappointment to supply satisfactory liquidity to the keeping money framework exacerbated the financial downturn. The ensuing changes, counting the creation of the Government Store of the Federal Deposit Insurance Corporation (FDIC) and changes to the Fed's structure, aimed to prevent future financial crises (Bernanke, 2002).
2. Post-World War II Era: The post-war period saw the Fed focusing on stabilizing prices and promoting economic growth. The Bretton Woods system, which pegged the U.S. dollar to gold, constrained the Fed's ability to conduct independent monetary policy. The collapse of Bretton Woods in the early 1970s allowed the Fed more flexibility to address domestic economic challenges, such as inflation and unemployment (Mishkin, 2007).
3. The Volcker Era (Late 1970s - 1980s): Paul Volcker's tenure as Fed Chairman marked a decisive shift towards combating inflation. Faced with double-digit inflation rates, Volcker executed a tight financial policy, essentially raising interest rates to control inflationary weights. In spite of the fact that this approach driven to a retreat in the early 1980s, it successfully restored price stability and set the stage for economic growth in the subsequent decades (Taylor, 1993).
4. The Great Recession (2007-2009): The monetary emergency of 2007-2009 provoked phenomenal financial arrangement measures. The Government Save, beneath the administration of Ben Bernanke, sliced

interest rates to approach zero and propelled a few rounds of quantitative facilitating to stabilize money related markets and invigorate financial recuperation. These actions expanded the Fed's balance sheet significantly and played a crucial role in mitigating the economic downturn (Bernanke, 2020).

5. COVID-19 Pandemic: The COVID-19 widespread displayed unused challenges for U.S. monetary arrangement. In reaction to the sharp financial withdrawal, the Government Save rapidly cut interest rates to approach zero and actualized broad resource buy programs. Also, forward direction and crisis loaning offices were utilized to bolster monetary markets and guarantee the stream of credit to family units and businesses. These measures made a difference to stabilize markets and back financial recuperation amid the uncommon wellbeing emergency (Federal Reserve, 2023).

In conclusion, U.S. monetary policy, managed by the Federal Reserve, employs various tools and mechanisms to attain its objectives of most extreme business, steady costs, and direct long-term interest rates. Chronicled setting uncovers the advancing nature of money related approach in reaction to financial challenges, with noteworthy impacts on monetary markets. From combating the Extraordinary Misery to tending to the money related emergency and the COVID-19 widespread, the Federal Reserve's actions have been instrumental in shaping economic outcomes and influencing market dynamics.

4. Interest Rate Announcements and Financial Markets

- a. Theoretical Framework Explaining the Relationship Between Interest Rates and Asset Prices

Interest rates play a crucial role in determining the value of financial assets. According to traditional asset pricing theory, the worth of an asset reflects the present value of its anticipated future cash flows discounted at an appropriate rate. Interest rates directly impact this discount rate, thereby influencing asset valuations. Lower interest rates

reduce borrowing costs, promoting investment and expenditure, potentially driving asset prices higher. Conversely, higher interest rates elevate borrowing costs, restrain investment and spending, and typically lead to lower asset prices. One prominent model that illustrates this relationship is the Dividend Discount Model (DDM), which posits that a stock's price is the present value of its expected future dividends. In this model, an increase in interest rates raises the discount rate, thereby reducing the present value of future dividends and, consequently, the stock price (Sharpe, 1964). Regarding bonds, the Yield Curve holds significant importance. It represents the interest rates of bonds across various maturities and generally slopes upwards, indicating higher yields for longer-term bonds. When interest rates increase, bond prices decline because the fixed interest payments (coupons) become less appealing compared to newly issued bonds offering higher rates. This inverse relationship between bond prices and interest rates is fundamental in bond valuation (Macaulay, 1938).

b. Empirical Studies on the Impact of Interest Rate Changes on Traditional Financial Assets,

Observational research has broadly recorded the impacts of interest rate changes on conventional budgetary resources. Things that appear to be delicate to changes in interest rates are stock markets. For example, Fama and French (1989) found that anticipated returns on stocks are conversely related to changes in interest rates. Higher interest rates increment the rebate rate, driving to lower stock costs as future profits are marked down more intensely.

Bond markets exhibit a well-known sensitivity to interest rate changes. Macaulay (1938) demonstrated that bond prices and interest rates are inversely related, a principle that forms the basis of bond duration analysis. Bernanke and Kuttner (2005) further analyzed the stock market's response to monetary approach shocks, finding that startling increments in interest rates lead to critical decays in stock costs.

c. Specific Studies on the Impact of Interest Rate Changes on Cryptocurrencies, Particularly Bitcoin

While the relationship between interest rates and traditional financial assets is well-established, the impact of interest rate changes on cryptocurrencies, especially Bitcoin, is a relatively new area of research. Cryptocurrencies operate in a different market structure compared to traditional assets, with unique factors influencing their prices.

1. **Bitcoin as a Financial Asset:** Bitcoin is often viewed both as a speculative asset also a store of esteem, comparative to gold. This dual nature complicates its relationship with macroeconomic variables like interest rates. Baur et al. (2018) inspected whether Bitcoin acts more like a medium of trade or a theoretical resource, finding that Bitcoin's price movements are influenced by investor sentiment and market speculation.
2. **Interest Rate Sensitivity:** Research on Bitcoin's sensitivity to interest rates has produced mixed results. Liu and Tsyvinski (2018) found that Bitcoin prices are less sensitive to traditional macroeconomic variables, including interest rates, compared to stocks and bonds. They contend that Bitcoin's cost is essentially driven by advertise opinion and theoretical exchanging.
3. **Empirical Evidence:** Some studies suggest a linkage between Bitcoin prices and interest rates through the broader financial market conditions. For instance, Dyrberg (2016) used GARCH models to analyze Bitcoin's hedging capabilities, suggesting that Bitcoin can hedge against adverse macroeconomic conditions, similar to gold. This implies that in periods of low interest rates, which often correlate with economic uncertainty, Bitcoin might attract more investment as a safe haven asset.
4. **Bitcoin and Monetary Policy Announcements:** Corbet et al. (2020) explored the reaction of cryptocurrencies to monetary policy announcements. They found that Bitcoin exhibits a significant response to Federal Reserve announcements, with price volatility

increasing around these events. This suggests that while Bitcoin is often touted as being independent of traditional financial systems, it still reacts to significant macroeconomic policy changes.

5. Market Integration: The integration of cryptocurrency markets with traditional financial markets is another factor that influences their response to interest rate changes. Bouri et al. (2017) investigated the cross-market linkages and found evidence of spillover effects from traditional financial markets to Bitcoin. This means that interest rate changes impacting traditional assets could indirectly affect Bitcoin prices through market sentiment and liquidity channels.

In summary, the theoretical framework explaining the relationship between interest rates and asset prices underscores the importance of the discount rate in asset valuation. Empirical studies on traditional financial assets confirm the significant impact of interest rate changes on stocks and bonds. In contrast, the impact of interest rate changes on cryptocurrencies like Bitcoin is less clear-cut. While Bitcoin is influenced by broader financial market conditions and monetary policy announcements, its unique market dynamics and speculative nature result in a complex and evolving relationship with interest rates.

5. Consumer Price Index (CPI) and Financial Markets

- a. Explanation of the Consumer Price Index (CPI) and Its Importance as an Economic Indicator

The Consumer Price Index (CPI) is one of the foremost basic financial pointers utilized to degree inflation. The CPI tracks the changes within the cost level of a advertise bushel of buyer merchandise and administrations obtained by families. It is calculated by taking cost changes for each thing within the foreordained bushel of products and averaging them. Costs are collected periodically to maintain the accuracy of this measure.

The CPI is crucial for several reasons. First, it serves as a key indicator of inflation, helping policymakers, investors, and businesses understand the rate at which prices are rising in the economy. Inflation data, as measured by the CPI, influences monetary policy decisions, especially those related to interest rates. For example, central banks, such as the Federal Reserve in the United States, may increase interest rates to combat high inflation, thereby impacting borrowing costs and economic activity (U.S. Bureau of Labor Statistics).

Second, the CPI is used to adjust other economic indicators for inflation, giving a clearer portrait of financial patterns over time. It is additionally utilized to alter compensation, annuities, and social security installments to preserve obtaining control in the midst of rising costs.

b. The Relationship Between Inflation, CPI, and Asset Prices

The relationship between inflation, as measured by the CPI, and asset prices is multifaceted and depends on different components, counting the sort of resource and the by and large financial environment. Inflation affects the real returns on investments and influences investor behavior and asset allocation decisions.

Stocks: Generally, moderate inflation is associated with economic growth, which can lead to increase in corporate earnings and, consequently, and increase in stock prices. However, high inflation can erode profit margins due to increased costs of goods and services, leading to lower stock prices. Additionally, high inflation often prompts central banks to increase interest rates to control price levels, which can negatively affect stock valuations. According to Fama (1981), stock returns are inversely related to expected inflation because higher inflation leads to higher discount rates and lower future cash flows.

Bonds: Inflation diminishes the purchasing power of the fixed payments that bonds offer. As a result, when inflation expectations grow, bond yields typically rise to compensate for the decreased purchasing power,

causing bond prices to fall. The Fisher Effect, named after economist Irving Fisher, indicates that nominal interest rates are composed of the real interest rate plus expected inflation. Thus, as inflation escalates, nominal interest rates and bond yields go up, leading to a reduction in bond prices. (Mishkin, 2007).

Real Estate: Real estate is frequently seen as a strong safe guard against inflation since property values and rental incomes generally increase along with inflation. However, the impact of inflation on real estate can vary based on the property type, location, and overall economic conditions. Case and Shiller (2003) showed that housing prices could be significantly influenced by inflation expectations and economic fundamentals.

Commodities and Cryptocurrencies: Commodities, including gold and oil, are traditionally seen as hedges against inflation because their prices tend to rise when inflation increases. Similarly, some investors consider Bitcoin and other cryptocurrencies as potential fences against swelling due to their restricted supply and decentralized nature. However, the high volatility of cryptocurrencies can make them less predictable compared to traditional inflation hedges.

c. Empirical Studies on the Impact of CPI Fluctuations on Traditional Financial Assets and Bitcoin

Numerous empirical studies have explored the impact of CPI fluctuations on various financial assets, providing insights into how inflation influences market dynamics.

1. Stocks and Bonds: Bryan and Cecchetti (1993) found that core inflation, which avoids unstable nourishment and vitality costs, may be a more steady indicator of inflationary patterns and can significantly affect stock and bond returns. Their research suggests that investors closely monitor CPI data to gauge future monetary policy actions and adjust their portfolios accordingly.

2. **Gold and Commodities:** Baur and Lucey (2010) analyzed the relationship between gold costs and inflation, concluding that gold serves as a fence against expansion over the long term. They found that amid periods of tall swelling, gold costs tend to rise, preserving purchasing power. Similar patterns have been observed for other commodities, which are influenced by CPI as their prices often move in tandem with inflationary pressures.
3. Matkovskyy and Jalan (2020) used a quantile-on-quantile approach to investigate Bitcoin's response to inflation, finding that Bitcoin could potentially serve as a hedge during specific market conditions, particularly when traditional assets are underperforming due to high inflation. However, they also noted that Bitcoin's price movements are heavily influenced by speculative trading, which can obscure its relationship with inflation indicators like the CPI.
4. **Empirical Evidence from 2022:** The year 2022 witnessed significant inflationary pressures globally, driven by supply chain disruptions, geopolitical tensions, and economic recovery post-COVID-19. This period provided a unique context to study the impact of CPI on Bitcoin prices. Studies showed mixed results, with some indicating a positive correlation between rising CPI and Bitcoin prices, while others highlighted the overriding influence of market sentiment and speculative activities. Corbet et al. (2020) found that while Bitcoin showed potential as an inflation hedge, its price was more responsive to broader financial market conditions and investor behavior.

6. Combined Impact of Interest Rates and CPI on Asset Prices

- a. **Theoretical Insights into How Simultaneous Changes in Interest Rates and CPI Affect Financial Markets**

Understanding the combined impact of interest rates and the Consumer Price Index (CPI) on asset prices requires an integrated view of monetary policy and inflation dynamics. Theoretically, both interest

rates and CPI are crucial determinants of financial market performance, influencing investor behavior and market valuations through different yet interconnected mechanisms.

Interest Rates: Central banks, like the Federal Reserve, use interest rates as a primary tool to control economic activity and inflation. When the Federal Reserve raises interest rates, borrowing costs increase, reducing consumer spending and business investments. This cooling effect on the economy makes a difference to control expansion but can as well direct down monetary improvement. Then again, bringing down interest rates invigorates monetary development by making borrowing cheaper, possibly expanding inflation in case the economy overheats.

Consumer Price Index (CPI): CPI measures inflation by following changes within the costs of a wicker container of products and administrations over time. Rising CPI demonstrates expanding expansion, which can dissolve acquiring control and affect consumer and investor confidence. Persistent inflation often leads to higher interest rates as central banks endeavor to curb in cost increments. Then again, moo or negative CPI development (collapse) can lead to lower interest rates to invigorate financial movement.

Combined Impact: The interaction between interest rates and CPI is complex. Rising inflation (CPI) typically prompts central banks to expand interest rates to dodge the economy from overheating, while falling swelling can lead to lower interest rates to spur development. The combined impact on resource costs depends on showcase desires and the relative adjust of inflationary weights and money related arrangement activities. For example, if the CPI is rising but the central bank delays increasing interest rates, the inflationary environment might initially boost asset prices as economic activity remains high. However, once the central bank acts to increase rates, the higher borrowing costs can lead to a market correction. Alternatively, if both CPI and interest rates rise simultaneously, the negative impact of higher borrowing costs might

outweigh any initial gains from economic growth, leading to declining asset prices.

b. Empirical Evidence on the Joint Impact of Interest Rates and CPI on Traditional Assets

Stocks and Bonds: Empirical studies have extensively explored the combined effects of interest rates and CPI on stock and bond markets. Fama and Schwert (1977) found that both expected and unexpected inflation negatively impact stock returns, as rising CPI and subsequent interest rate hikes increase discount rates and reduce the present value of future cash flows. Conversely, bonds typically suffer during rising inflation periods due to the erosion of fixed interest payments' purchasing power. As Modigliani and Cohn (1979) highlighted, rising interest rates further depress bond prices as yields adjust upwards.

Real Estate: Real estate markets also respond to the combined effects of interest rates and CPI. Higher interest rates increase mortgage costs, potentially dampening property demand and prices. However, real estate is often viewed as a hedge against inflation, as property values and rental incomes typically rise with CPI. Gyourko and Linneman (1988) showed that while short-term interest rate hikes might depress real estate prices, long-term inflation trends tend to support property values.

Commodities: Commodities, including precious metals like gold, are traditionally seen as inflation hedges. Rising CPI typically boosts commodity prices as investors seek to preserve purchasing power. Be that as it may, the affect of interest rates can change. For occasion, higher interest rates increment the opportunity taken a toll of holding non-yielding resources like gold, possibly offsetting some inflationary gains. Bodie (1976) provided evidence that commodity prices tend to move in tandem with inflation, but the relationship can be influenced by monetary policy actions.

c. Studies Examining the Combined Impact of These Factors on Bitcoin and Other Cryptocurrencies

The burgeoning field of cryptocurrency research has started to investigate how traditional economic indicators like interest rates and CPI influence digital assets like Bitcoin. While cryptocurrencies operate in a unique market environment, the principles governing traditional asset reactions to economic indicators can still provide valuable insights.

1. **Bitcoin's Unique Position:** Unlike traditional assets, Bitcoin and other cryptocurrencies are decentralized and operate outside the traditional banking system. This unique positioning can lead to different reactions to economic indicators. For instance, Bitcoin is often viewed as a hedge against fiat currency devaluation and systemic financial risks. Dyhrberg (2016) suggested that Bitcoin exhibits hedging capabilities similar to gold, reacting positively to inflationary pressures.
2. **Empirical Findings:** Several empirical studies have started to shed light on the combined impact of interest rates and CPI on Bitcoin. Bouri et al. (2017) found that Bitcoin shows potential as a safe haven during periods of economic instability and high inflation, suggesting that rising CPI could positively influence Bitcoin prices. However, the study also noted that Bitcoin's extreme volatility could undermine its effectiveness as a stable inflation hedge.
3. **Corbet et al. (2019)** examined the response of Bitcoin prices to changes in U.S. interest rates and CPI, finding mixed results. While rising CPI initially appeared to boost Bitcoin prices, subsequent interest rate hikes tended to dampen this effect as higher borrowing costs reduced speculative investment in cryptocurrencies. The study highlighted that Bitcoin's cost developments are intensely impacted by showcase assumption and speculative exchanging, making it

difficult to predict its response to traditional economic indicators consistently.

4. **Comprehensive Analysis:** A more comprehensive analysis by Liu and Tsyvinski (2018) explored the broader implications of macroeconomic factors on cryptocurrency prices, including Bitcoin. Their research suggested that while Bitcoin does react to changes in interest rates and CPI, its price dynamics are more heavily driven by cryptocurrency-specific factors, such as technological developments, regulatory news, and market liquidity. This finding underscores the unique nature of Bitcoin compared to traditional assets and the importance of considering a wider range of factors when analyzing its price movements.

7. Gaps in Existing Literature

a. Identification of Gaps in Existing Research Related to the Impact of U.S. Monetary Policy on Bitcoin Prices

The growing body of literature on Bitcoin and its relationship with macroeconomic factors, including U.S. monetary policy, has provided valuable insights into the behavior of cryptocurrencies. However, significant gaps remain in our understanding, warranting further exploration.

1. **Complex Interactions Between Variables:** The relationship between Bitcoin prices, interest rates, and CPI is multifaceted, involving complex interactions between various macroeconomic and market-specific factors. Existing research often treats these variables in isolation, failing to capture the dynamic interplay between them. For example, studies might examine the impact of interest rate changes on Bitcoin prices without considering how simultaneous changes in CPI or other economic indicators might modulate this effect. There is a need for comprehensive models that integrate multiple macroeconomic variables to offer a comprehensive understanding of Bitcoin's price dynamics..

2. **Diverse Market Conditions and Events:** Bitcoin markets are affected by a wide run of variables, counting administrative changes, mechanical improvements, advertise opinion, and macroeconomic conditions. Existing studies often fail to account for the diversity of market conditions and events that can impact Bitcoin prices. For instance, while some research has explored the impact of U.S. monetary policy during stable economic periods, there is limited understanding of how Bitcoin responds to monetary policy during periods of economic crisis or heightened market volatility. This gap underscores the need for studies that examine Bitcoin's behavior across different market conditions and economic cycles.
3. **Regional Differences in Monetary Policy Impact:** While much of the current literature emphasizes the influence of U.S. monetary policy on Bitcoin prices, there is a lack of research exploring how monetary policies in other major economies, such as the European Union, Japan, or China, influence Bitcoin markets. Given Bitcoin's global nature, understanding regional differences in monetary policy impact is crucial for a comprehensive understanding of its price dynamics. Comparative studies that analyze the effects of monetary policies from multiple regions can provide valuable insights into Bitcoin's behavior in a global context.
4. **Micro-Level Analysis of Market Participants:** Most studies on Bitcoin and monetary policy focus on aggregate market data, neglecting the behavior of individual market participants. There is limited understanding of how different types of investors, such as retail traders, institutional investors, and algorithmic trading firms, respond to changes in interest rates and CPI. Micro-level analyses that examine the behavior of different market participants can provide deeper insights into the mechanisms driving Bitcoin's price movements and help identify potential market manipulation or herding behavior.

b. Justification for the Need for This Study Based on the Identified Gaps

The identified gaps in the existing literature highlight the need for a comprehensive study that addresses these limitations and provide a

deeper insight into the impact of U.S. monetary policy on Bitcoin prices. This study seeks to fill these gaps by delivering a thorough analysis of Bitcoin's price dynamics in response to interest rate changes and CPI fluctuations, taking into account various factors and conditions that influence these relationships.

1. **Integrated Macro-Economic Models:** This study will develop comprehensive models that integrate multiple macroeconomic variables, including interest rates, CPI. By considering the dynamic interactions between these variables, the research will offer a holistic view of Bitcoin's price dynamics and improve the accuracy of predictive models.
2. **Diverse Market Conditions:** To address the gap related to diverse market conditions, this study will analyze Bitcoin's response to U.S. monetary policy across different economic cycles and market environments. This approach will provide insights into how Bitcoin behaves during periods of stability, crisis, and heightened volatility, offering valuable information for investors and policymakers.

B. Previous Researchs

In previous research, a considerable amount of studies have explored aspects of the subject to be investigated. These prior studies serve as a crucial foundation underpinning this research, providing a comprehensive overview of the efforts made in previous research to delve into dimensions of the chosen research area. By examining the existing literature, this subsection traces the theoretical groundwork, empirical insights, and significant findings of past researchers, thereby establishing context and contributing to the intellectual discourse surrounding the existing research questions. The synthesis of previous research not only helps in identifying gaps and opportunities for further investigation but also guides the formulation of hypotheses and research objectives, ultimately facilitating a more informed and robust research effort. The following are some of the previous studies that are referenced in the current research:

1- Tijn van Outvorst (2022), "The Effect of Interest Rates on Traditional and Cryptocurrency Investments": This study examined variables including investment amounts in cryptocurrencies (Bitcoins) and traditional assets (AEX Stocks), interest rates (0%, 0.25%, 2%, 4%), participants' trust in the financial system, participants' self-assessed risk attitude, expected annual returns for investments, demographic information (age, gender), and real-life investment behavior in stocks/cryptocurrencies. Using regression models, descriptive statistics, robustness checks, and an experimental survey design, it was found that there was no significant effect of interest rate changes on investment behavior in both traditional and cryptocurrency assets. There was also no notable difference in the reaction of traditional and cryptocurrency investors to interest rate changes. Variables like self-assessed risk attitude, trust in the financial system, and demographic factors (age, gender) had significant effects on investment behavior, and the research contradicted some previous studies by failing to establish a negative correlation between interest rates and risky asset investments.

2- Thai Vu Hong Nguyen, Binh Thanh Nguyen, Kien Son Nguyen, and Huy Pham (2019), "Asymmetric Monetary Policy Effects on Cryptocurrency Markets": This research focused on cryptocurrency returns (specifically Bitcoin, Ethereum, Litecoin, Ripple), U.S. and Chinese Open Market Operations (OMO) rates, NASDAQ returns, the 10-year U.S. treasury rate, oil price growth rate, USD/EUR exchange rate growth rate, CNY/USD exchange rate growth rate, and cryptocurrency supply and demand growth rates. Using the Generalized Method of Moments (GMM) estimator and Fixed Effects estimator, it was found that cryptocurrency returns, especially Bitcoin, show significant positive responses to Chinese monetary policy tightening but not to U.S. monetary policies. Significant effects were also observed with changes in the U.S. OMO rate. The study suggested cryptocurrencies, particularly in China, might be influenced by capital flight from traditional stock markets during periods of monetary tightening, although there was no consistent evidence of cryptocurrencies responding to easing monetary policies.

3- Shaen Corbet, Charles Larkin, Brian Lucey, Andrew Meegan, and Larisa Yarovaya (2019), "Cryptocurrency Reaction to FOMC Announcements:

Evidence of Heterogeneity Based on Blockchain Stack Position": This study analyzed digital assets categories (currencies, protocols, decentralized applications (dApps)), asset classification (mineable vs. non-mineable digital assets), market reactions (volatility spillovers, market behavior following U.S. monetary policy announcements), and asset-specific characteristics (market capitalization, public awareness, underlying technology). Using GARCH-family methodologies (specifically EGARCH), Research revealed that digital assets based on currency exhibited notable individual impacts following U.S. monetary policy announcements. Conversely, digital assets rooted in applications or protocols largely avoided volatility transfers from policy shifts. Assets that are mineable proved more sensitive to monetary policy volatility transfers compared to those that are not. The cryptocurrency market was observed to be highly varied.; not all assets were comparable to Bitcoin in their response to monetary policy changes. Currency-based assets saw an increase in global systematic volatility spillovers following a monetary policy announcement, whereas protocols experienced a decrease. Decentralized applications (dApps) remained mostly unaffected.

4- Sören Karau (2023), "Monetary Policy and Cryptocurrencies": This research focused on Bitcoin prices (USD and EUR), high-frequency trading data, weekly Proxy VAR (Vector Autoregression), ECB and FOMC announcements, exchange rates, stock indices (e.g., S&P 500, EURO STOXX 50), blockchain transaction data, mining activity and hashrates, and international Bitcoin valuations. Using high-frequency data analysis, structural VAR analysis, and blockchain data analysis, it was found that ECB tightening generally lowers Bitcoin valuations, in line with Bitcoin being perceived as digital gold, while Fed tightening increases Bitcoin prices, indicating a unique response compared to other financial assets. The study supported the view of Bitcoin as a hedge against inflationary monetary policy, especially in response to ECB policies. Post-Fed tightening, there was an increased demand for Bitcoin in emerging markets, suggesting its role as international digital cash during global economic downturns. The paper highlighted the complexity of Bitcoin's response to monetary policy, influenced by factors such as global financial conditions, technological attributes, and

institutional particularities of cryptocurrencies. The research underscored the significance of cryptocurrencies in monetary policy considerations, their role in cross-border transactions, and their potential as both speculative investments and tools for capital flight.

5- Elias Atmader (2021), "Federal Funds Rate on Bitcoin Volatility": This study analyzed Bitcoin prices and federal funds rate changes over the period from April 1, 2014, to April 1, 2020. Using GARCH (1,1) and EGARCH (1,1) models, and Using a dummy variable method to examine Bitcoin volatility effects, researchers discovered that Bitcoin remains unaffected by announcements regarding changes in the federal funds rate. This finding supports the hypothesis that Bitcoin is insulated from fluctuations in the federal funds rate. The use of GARCH and EGARCH models revealed interesting dynamics in Bitcoin's response to monetary policy changes, suggesting that Bitcoin behaves independently of traditional monetary policy tools, reinforcing its characterization as a decentralized asset.

6- Shaen Corbet, Grace McHugh, and Andrew Meegan (2017), "The Influence of Central Bank Monetary Policy Announcements on Cryptocurrency Return Volatility": This study examined cryptocurrency return volatility, specifically Bitcoin returns, interest rate decisions, and quantitative easing (QE) announcements by the Federal Open Market Committee (US), the European Central Bank (EU), the Bank of England (UK), and the Bank of Japan. Using GARCH (1,1) and Ordinary Least Squares (OLS) methodologies, it was found Interest rate decisions made by the Federal Open Market Committee in the United States have a notable impact on Bitcoin volatility. Specifically, when interest rates increase, Bitcoin volatility tends to rise as well, while reductions result in decreased volatility. Announcements regarding QE by the US, EU, UK, and Japan have a substantial influence on Bitcoin return volatility, with increases in QE programs significantly escalating Bitcoin return volatility. Despite its decentralized nature, Bitcoin is sensitive to government policies, particularly monetary policies, exhibiting characteristics of both traditional fiat currencies and store-of-value assets like gold.

7- Ahmed H. Elsayed & Ricardo M. Sousa (2022), "International Monetary Policy and Cryptocurrency Markets: Dynamic and Spillover Effects": This study focused on international monetary policies of the Eurozone, Japan, UK, and US, and cryptocurrency returns (Bitcoin, Litecoin, Ripple). Using the Time-Varying Parameter Vector Auto-Regression (TVP-VAR) model, dynamic connectedness approach, and network analysis, it was found that there are significant interactions and spillovers between the monetary policies of the studied economies and cryptocurrency markets. Cryptocurrency returns and the influence of monetary policy were particularly pronounced during periods when shadow policy rates turned negative. Gross directional spillovers indicated that shadow policy rates had a greater impact on other variables than they received. Cryptocurrencies like Bitcoin and Litecoin showed strong interconnectedness, but overall spillovers across monetary policy and cryptocurrencies were muted. The research suggested only a slightly larger spillover during unconventional monetary policy periods compared to standard periods, but the composition of these spillovers changed over time.

8- Filip Lundqvist and Christian Olivefors (2022), "Central Banks' Effect on Bitcoin Returns": This study analyzed Bitcoin's returns and central bank statements from the ECB and FED, categorizing them into positive, negative, and neutral impacts. Using regression analysis and event study methodology, it was found that few instances where central bank statements had a statistically significant impact on Bitcoin's returns. The timing and content of the speeches might influence Bitcoin's returns, but the study could not definitively establish this link. The research highlighted Bitcoin's volatile nature and its complex relationship with the financial system, suggesting the need for further research in areas like monetary policy tools, energy prices, and regulatory impacts.

9- Shaen Corbet, Charles Larkin, Brian M. Lucey, Andrew Meegan, and Larisa Yarovaya (2020), "The Impact of Macroeconomic News on Bitcoin Returns": This research examined Bitcoin returns in response to macroeconomic news, Analyzing GDP, unemployment, Consumer Price Index (CPI), and durable goods through sentiment index construction from news stories following macroeconomic indicator announcements, the study revealed that positive news

regarding unemployment and durable goods correlated with decreased Bitcoin returns, whereas negative news correlated with increased returns. However, the study did not find a statistically significant relationship between Bitcoin returns and news concerning GDP and CPI, suggesting that the cryptocurrency market, particularly Bitcoin, is maturing and increasingly interacting with macroeconomic news, similar to traditional financial markets.

10- Syed Abul Basher and Perry Sadorsky (2022), "Forecasting Bitcoin Price Direction with Random Forests: How Important Are Interest Rates, Inflation, and Market Volatility?": This study focused on interest rates, inflation, market volatility, technical indicators, and macroeconomic factors. Using regression models, descriptive statistics, and robustness checks, it was found that Random forests demonstrate higher accuracy in predicting the direction of Bitcoin and gold prices compared to logit models. For a five-day forecast, prediction accuracies for bagging and random forests range between 75% and 80%, increasing to over 85% for forecasts spanning 10 to 20 days. Technical indicators emerged as the most crucial features for forecasting Bitcoin and gold price movements, implying potential market inefficiencies. Additionally, oil price volatility played a significant role in predicting Bitcoin and gold prices, highlighting Bitcoin's role as a substitute for gold in diversifying this type of volatility. Moreover, gold prices exhibited greater sensitivity to inflation compared to Bitcoin prices, suggesting that gold can serve as a hedge or diversification asset against inflation.

11- L.A. Smales (2022), "Cryptocurrency as an Alternative Inflation Hedge?": This study examined the returns of Bitcoin and other cryptocurrencies, changes in US inflation expectations, gold returns, cryptocurrency market uncertainty, economic policy uncertainty, financial markets uncertainty, credit conditions term structure, and Consumer Price Index (CPI). Using Ordinary Least Squares (OLS) regression model, Spearman rank-order coefficients, Bai and Perron method for identifying structural breaks, and standardized surprise measure for CPI announcements, it was found that cryptocurrency returns show a positive relationship with changes in US inflation expectations under specific conditions, such as short-term inflation expectations and when inflation or market-implied

inflation expectations are below 2%. Unlike gold, the identified relationship for cryptocurrencies was not significant during periods of high inflation or high inflation expectations. Cryptocurrency returns typically showed lower performance on days when monthly CPI announcements were made, and they responded negatively to CPI surprises. This suggests that cryptocurrencies may not serve effectively as a hedge against inflation. Gold, in contrast, demonstrated more consistent inflation hedging properties, maintaining a positive relationship with inflation expectations even when inflation rose above 3%. The study's conclusion was that cryptocurrencies currently do not provide investors with a viable alternative to gold for hedging against inflation.

12- Roman Matkovskyy and Akanksha Jalan (2020), "Bitcoin vs Inflation: Can Bitcoin Be a Macro Hedge? Evidence from a Quantile-on-Quantile Model": This study focused on Bitcoin market returns in the United States, Eurozone, United Kingdom, and Japan, as well as realized and unexpected inflation. Using quantile-on-quantile regression, it was found that the relationship between Bitcoin returns and inflation (both realized and unexpected) is asymmetric and depends on market states and levels of inflation. In bullish markets of the UK, Euro, and Japan, Bitcoin offers higher returns, facilitating hedging against inflation. In contrast, the US Bitcoin market showed weaker performance with rising inflation. The study revealed that Bitcoin's return-inflation relationship varies significantly based on the magnitude of inflation shocks and investor sentiment in Bitcoin markets. Bitcoin in GBP and JPY markets showed significant hedging capabilities against inflation, especially in bullish states, offering 'safe haven' characteristics. The US Bitcoin market, however, underperformed with higher levels of inflation. The study suggested Bitcoin can serve as a macro hedge against realized inflation in bullish Euro, GBP, and JPY markets, but not in the USD market.

In conclusion, the extensive exploration of prior research in this section highlights the depth and breadth of knowledge that underlies this study. Insights gained from these studies have clarified the diverse nature and outcomes of the research field, providing valuable perspectives, methodologies, and conceptual frameworks. With this foundational knowledge as a backdrop, the subsequent

chapters of this thesis aim to advance the discourse, build upon existing insights, and contribute new perspectives to research in the domain of the impact of U.S. monetary policy changes on Bitcoin price, specifically analyzing federal interest rate and CPI announcements in 2022.

C. Conceptual Framework

The Impact of U.S. Interest Rates on Bitcoin Price

The relationship between U.S. interest rates and Bitcoin price is a critical area of study. Interest rates, determined by the Federal Reserve, are a fundamental tool of monetary policy that influence economic activities. When the Federal Reserve raises interest rates, it generally leads to a stronger U.S. dollar and makes borrowing more expensive. This environment often results in a shift of investment from high-risk assets, such as Bitcoin, to more stable, income-generating investments like bonds. On the flip side, when interest rates are reduced, borrowing costs decrease, which stimulates investment in riskier assets like Bitcoin. This relationship supports Hypothesis 1, which posits that changes in U.S. interest rates negatively affect Bitcoin price. Study by Shaen Corbet, Grace McHugh, and Andrew Meegan (2017) suggest that there is often a negative correlation between Bitcoin prices and U.S. interest rates, indicating that rate hikes can lead to price drops in Bitcoin.

The Impact of U.S. Consumer Price Index (CPI) on Bitcoin Price

The Consumer Price Index (CPI) is a critical measure of inflation, indicating the average price change consumers pay for goods and services. Variations in the CPI can significantly impact investor sentiment and behavior. A rising CPI indicates increasing inflation, which can diminish the purchasing power of traditional fiat currencies. In such scenarios, Bitcoin, often viewed as a hedge against inflation, might attract more investment, potentially driving up its price. This relationship supports Hypothesis 2, which posits that there exists a positive correlation between monthly fluctuations in the CPI and Bitcoin price. However, the

relationship is complex, as highlighted by Sören Karau (2023), who found limited evidence of Bitcoin acting as a reliable inflation hedge. The impact of CPI changes on Bitcoin prices requires a nuanced analysis, considering factors such as market expectations and investor sentiment towards inflation.

The Combined Impact of U.S. Interest Rates and CPI on Bitcoin Price

The simultaneous changes in U.S. interest rates and CPI create a multifaceted influence on Bitcoin price. Both these macroeconomic variables interact in ways that can amplify or mitigate their individual effects on Bitcoin. For instance, a scenario where the Federal Reserve increases interest rates to address escalating inflation (as indicated by a high CPI) can lead to complex market reactions. Investors might simultaneously face the appeal of higher returns from interest-bearing assets and the need to hedge against inflation by investing in Bitcoin. This relationship supports Hypothesis 3, which posits that simultaneous changes in U.S. interest rates and the CPI significantly impact Bitcoin price. Research by Shaen Corbet, Charles Larkin, Brian M. Lucey, Andrew Meegan, and Larisa Yarovaya (2020), underscores the importance of considering both interest rates and CPI together to understand their combined impact on Bitcoin prices. The dynamic interplay between these variables and their collective influence on Bitcoin necessitates a comprehensive econometric analysis to unravel the underlying mechanisms.

D. Research Paradigm

Based on the aforementioned descriptions, the influence of each independent variable on the dependent variable can be illustrated in the paradigm model shown in Figure 2.2 below

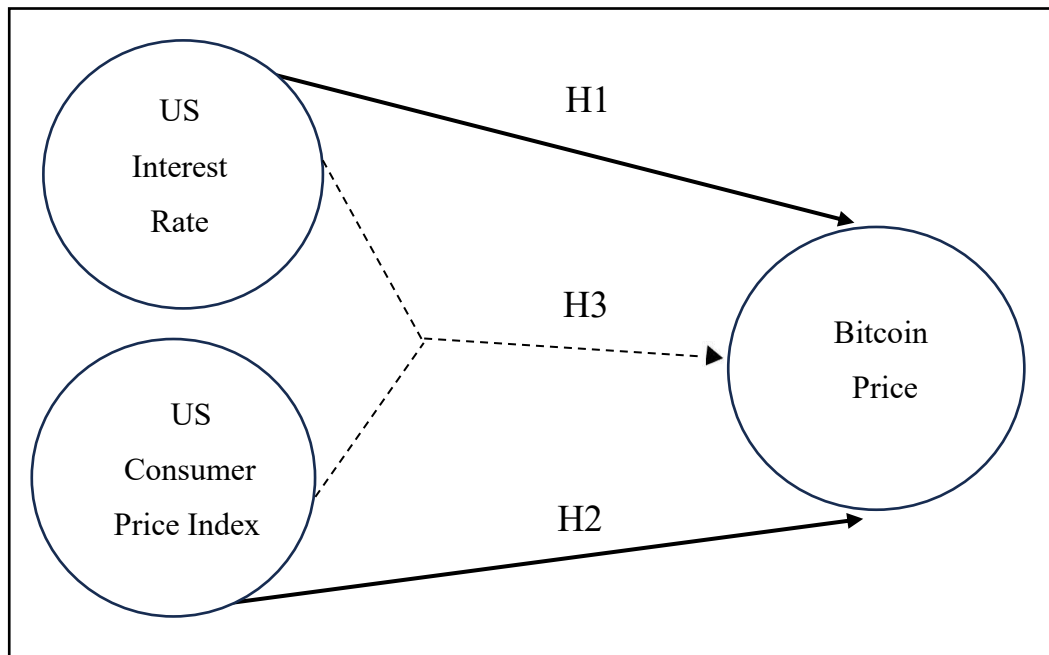


Figure 1. : research paradigm

Informations :

- H1 : The Impact Of Us Interest Rate On Bitcoin Price.
- H2 : The Impact Of Us Consumer Price Index (CPI) On Bitcoin Price.
- H3 : The Impact Of US interest rate, Consumer Price Index CPI Simultaneously On Bitcoin Price.

E. Hypotheses

A hypothesis is a statement whose truth has not yet been tested. Therefore, it needs to be supported by data and tested with the available data to either accept or reject the proposed hypothesis. Based on the problem formulation and the conceptual framework, the hypothesis of this research is:

H 1: Changes in U.S. interest rates negatively affect Bitcoin price.

H 2: There exists a positive correlation between monthly fluctuations in the Consumer Price Index (CPI) and Bitcoin price.

H 3: Simultaneous changes in U.S. interest rates and the Consumer Price Index (CPI) significantly impact Bitcoin price.