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# Hedging strategies using Bitcoin futures. This research will Examine how institutional investors use Bitcoin futures to hedge against price volatility in the cryptocurrency market

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**Abstract**

Cryptocurrency markets are renowned for their extreme price volatility, which poses significant risks to investors. This research explores the use of Bitcoin futures as a hedging instrument by institutional investors to mitigate such risks. The study examines the effectiveness of Bitcoin futures in reducing portfolio volatility while maintaining exposure to the cryptocurrency market. By analyzing trading patterns, risk management strategies, and the underlying mechanics of Bitcoin futures contracts, the research highlights how institutional players navigate the complexities of cryptocurrency price fluctuations.Furthermore, the study investigates the challenges associated with using Bitcoin futures, including liquidity constraints, regulatory considerations, and market inefficiencies. Insights from this research contribute to a better understanding of risk mitigation techniques in emerging financial markets and offer practical implications for investment managers seeking to optimize their portfolios. Ultimately, this research provides a comprehensive evaluation of Bitcoin futures as a viable tool for hedging against the unpredictable nature of cryptocurrency markets, bridging the gap between traditional finance principles and digital asset management.

**Key Words:**

Hedging, Futures, Short selling, Bullish, Bearish, strike price, Options, Arbitrage, Call Price, Put Price, Protective Put, Covered Call, Coller, Straddle.

## 1.0 Introduction

Financial hedging is the action of managing price risk by using a financial derivative (like a future or an option) to offset the price movement of a related physical transaction.Hedging is a financial risk management that minimizes adverse price volatility across diverse asset classes. The distinct types of hedging are options, currency, equity, and futures. This paper focuses on using futures.

Bitcoin's price fluctuates because it is influenced by supply and demand, investor and user sentiments, government regulations, and media hype.

Bitcoin is volatile, but less so than many popular mega-cap stocks.

Bitcoin is currently less volatile than 33 S&P 500 stocks, and as recently as late 2023, there were 92 S&P 500 stocks more volatile than bitcoin. The following is an indication that Bitcoin is becoming less volatile. Bitcoin’s volatility has declined and is expected to continue doing so. Investors have historically been well compensated for bitcoin’s volatility. Zack stated that “One of the rare volatility occurrences occurred in early 2024, potentially setting the stage for bitcoin’s price to rise if the past cycles are any indication of future cycles. (Zack Wainwright, 2024)

The importance of hedging cannot be overstated. The primary objective of hedging is toefficaciously neutralize or diminish the prospective financial detriments emanating from market fluctuations, thereby engendering a more stable economic milieu for corporations, financial institutions, and individual investors alike.(Marcin Majka, 2024)

## 2.0 Bitcoin Futures - An Overview

Bitcoin futures offer investors a unique way to speculate in the crypto market and hedge their crypto holdings. It can also be defined as a form of Bitcoin derivative trading that involves speculating on the future price of Bitcoins. It is a bet placed via a binding contract between the buyer and seller, obliging either party to buy or sell Bitcoin to the other at a specific future date and at a predetermined price. The contract is a binding legal agreement that requires the parties to execute the trade upon expiry of the contract, regardless of whether the price has risen or fallen (Awofadeju, M. O et al, 2024).

There are three main types of Bitcoin futures contracts:

**2.1 Standard Futures Contracts:** These can also be referred to as the traditional futures contracts as they have all the features of the conventional futures contracts used to trade different trading instruments.A standard futures contract stipulates such factors as the BTC price and expiry date. This kind of BTC derivative was first floated on the CME on 10th December 2017 and is settled in cash (USD).

**2.2 Perpetual Contracts:** Perpetual contracts mirror all the attributes of the standard bitcoin futures contract except for the expiry date. As the name suggests, the contracts are perpetual – that they do not have an expiry date. Instead, they are looped into an endless cycle of funding that occurs after every eight hours.

Looking at how a perpetual contract works from a standard contract's point of view; you may consider the eight hours to be the expiry date – during which time the contract is settled. But instead of closing/ending the futures agreement as is the case with standard futures contracts, it is automatically renewed for another eight hours. This cycle continues until you terminate the contract.

The perpetual Bitcoin futures contracts were first introduced by the BitMex exchange, which also set the eight-hour loop that has now become an industry standard. Like the standard contracts, Perpetual bitcoin futures are settled in cash (USD).

**2.3 Futures With Physical Delivery:** Bitcoin futures with physical delivery works like any other standard futures contracts – safe for the mode of settlement. They have a predetermined price and expiry date, but unlike the standard and perpetual contracts that are settled with cash (USD), these involve the transfer of actual bitcoins from buyers to sellers and vice versa – hence the term 'physical delivery.'

This form of Bitcoin futures trading was first introduced by BAKKT – a trading platform that is a subsidiary of the Intercontinental Exchange (ICE).

**3.0 Historical Context and Development of Bitcoin Futures Markets**

Bitcoin was introduced in 2008 by an anonymous entity known as Satoshi Nakamoto. The first block, called the Genesis Block, was mined on January 3, 2009. Initially, cryptographers and tech enthusiasts primarily used

Bitcoin. The early adoption phase saw Bitcoin being traded on informal platforms and forums.(Analytics Insight, 2024).

The first Bitcoin exchange, Bitcoin Market, was launched in 2010, followed by Mt. Gox in 2011. These exchanges provided a more structured platform for trading Bitcoin, leading to increased interest and investment.(Raaz Raaz, 2023). These exchanges provided a more structured platform for trading Bitcoin, leading to increased interest and investment.The Chicago Board Options Exchange (CBOE) and the Chicago Mercantile Exchange (CME) introduced Bitcoin futures contracts in December 2017. This marked a significant milestone as it provided institutional investors with a regulated way to invest in Bitcoin without holding the actual cryptocurrency.

The introduction of Bitcoin futures led to increased market participation and liquidity. However, the market also faced challenges such as regulatory scrutiny, market manipulation, and high volatility. Despite these challenges, Bitcoin futures continued to grow in popularity.Bitcoin futures have become an integral part of the cryptocurrency market, with several exchanges offering these contracts. Institutional investors have increasingly used Bitcoin futures to hedge against price volatility and diversify their portfolios. The market has also seen the introduction of new products, such as Bitcoin options and futures on other cryptocurrencies.(Analytics Insight, 2024).

**4.0 Why Institutional Investors Use Bitcoin Futures**

Institutional investors use Bitcoin futures to hedge against the inherent price volatility of Bitcoin. By taking a position in Bitcoin futures, they can lock in prices for future transactions, reducing the risk of adverse price movements. This strategy is particularly useful in highly volatile markets, where sudden price swings can significantly impact portfolio values.

Bitcoin futures offer institutional investors a way to diversify their portfolios. By including Bitcoin futures, investors can gain exposure to the cryptocurrency market without directly holding the underlying asset. This diversification helps spread risk across different asset classes, potentially improving overall portfolio performance. (Franklin Templeton, 2024).

Regulatory compliance and security have also enhanced the use of Bitcoin in the portfolio of investors. Bitcoin futures are traded on regulated exchanges, such as the Chicago Board Options Exchange (CBOE) and the Chicago Mercantile Exchange (CME). This regulatory oversight provides institutional investors with a secure and compliant way to invest in Bitcoin. Additionally, the use of futures contracts ensures that transactions are standardized and transparent, reducing the risk of fraud and manipulation.(CFA Institute, 2024).

## 5.0 Common Hedging Strategies Using Bitcoin Futures

### 5.1 Short Selling

Short selling is a trading strategy where an investor enters into a short position on a security, betting that its price will decline. Essentially, the investor sells the security at the current market price, with the intention of buying it back later at a lower price to make a profit. If the price falls, the investor can repurchase the security at the lower price and pocket the difference. If the price rises, the investor faces potential losses.Short selling is a valuable tool for institutional investors to hedge against price declines, speculate on market movements, and exploit arbitrage opportunities. However, it also carries significant risks, including the potential for unlimited losses if the asset price rises unexpectedly.

The process for short selling starts with the entering into a short futures contract, agreeing to sell Bitcoin at a specified future price. This is done through a regulated exchange.The investor then sells the futures contract at the current market price, anticipating a price decline. Then later, the investor buys back the futures contract at the market price, ideally at a lower price than it was sold.The short position is closed when the investor repurchases the futures contract and any profits or losses are realized.

#### 5.1.1 The scenarios and benefitsbelowexplain it better:

**Scenario 1: Hedging Against Price Decline**

An institutional investor expects the price of Bitcoin to decline due to upcoming regulatory news. To hedge against this risk, the investor enters into a short position on Bitcoin futures, selling contracts at the current price of $60,000 per contract. After the regulatory news is released, the price of Bitcoin futures falls to $45,000 per contract. The investor repurchases the futures at the lower price, realizes a profit of $15,000 per contract. The

benefit here is the investor protect against potential losses in their Bitcoin holdings by profiting from the decline in futures prices.

**Scenario 2: Speculating Price Decline**

A hedge fund manager believes that the cryptocurrency market is overvalued and anticipates a market correction. The manager enters into a short position on Bitcoin futures, selling contracts at $70,000 per contract. As predicted, the market experiences a correction, and the price of Bitcoin futures drops to $60,000 per contract. The manager repurchases the futures at a lower price, realizing a profit of $10,000 per contract. The benefit here is that short selling allows the hedge fund manager to capitalize on anticipated price declines, generating profits from market corrections.

**Scenario 3: Arbitrage Opportunities**

An investor identifies a pricing inefficiency between the spot price of Bitcoin and Bitcoin futures. By entering into a short position on Bitcoin futures and simultaneously buying Bitcoin on the spot market, the investor can lock in risk-free profits from the price disparity. Over time, as the prices converge, the investor closes both positions, realizing a profit from the arbitrage opportunity. The benefit here is short selling can be used to exploit arbitrage opportunities, enabling investors to profit from temporary pricing inefficiencies in the market.

**5.2 Hedging with Contracts for Difference (CFDs)**

Contracts for Difference (CFDs) are financial derivatives that allow traders to speculate on the price movements of various financial instruments without owning the underlying assets. Essentially, a CFD is an agreement between an investor and a broker to exchange the difference in the value of a financial product between the time the contract opens and closes.

Regarding CFDs, the investor does not own the underlying asset (e.g., stocks, commodities, or indices). The investor profits from the difference between the opening and closing prices of the asset. CFDs are traded on margin, meaning investors can control larger positions with a smaller amount of capital. This makes leverage so high and warning at the website of IG states that it is highly risky and 72% of individual investors lose their

money. CFDs can be used to trade long (buy) or short (sell) positions, providing flexibility in market strategies.(Dara Ika, 2024).

**Differences between CFDs and Futures.**

| **Feature** | **CFDs** | **Futures** |
|---|---|---|
| Ownership | No ownership of the underlying asset | No ownership of the underlying asset |
| Expiration Date | No fixed expiration date | Fixed expiration date |
| Trading Venue | Over-the-counter (OTC) | Centralized exchanges |
| Leverage | High leverage | High leverage |
| Cost | Generally Higher spreads | Lower spreads but higher margin requirements |
| Flexibility | High flexibility, can trade anytime | Less flexible, bound by contract terms |
| Market Access | Access to multiple markets | Access to specific markets |

***Table 1***

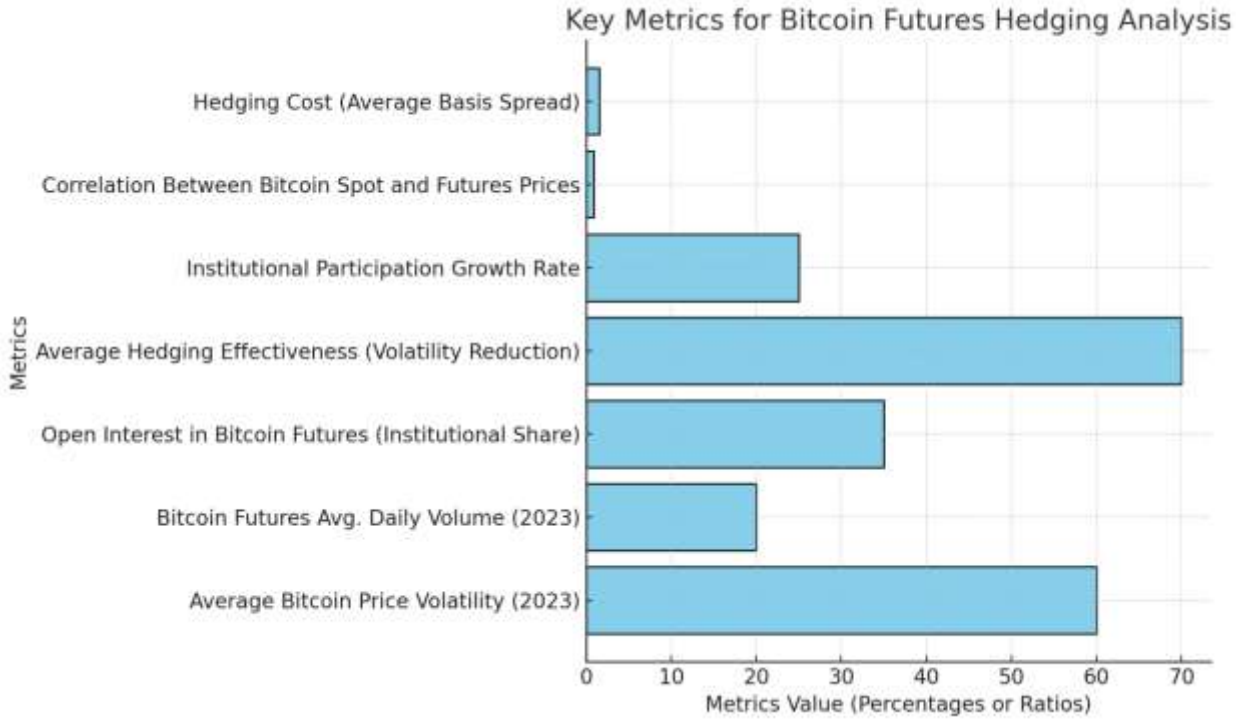
It is worth noting that CFDs offer more flexibility as they don't have fixed expiration dates, allowing investors to hold positions for as long as they want. It also typically requires lower capital to enter a position compared to futures and it allows investors to profit from both rising and falling markets by going long or short.

On regulation, CFDs are less regulated compared to futures, which are traded on centralized exchanges. When it comes to risk,both CFDs and futures involve high leverage, which can amplify both profits and losses. (IG International, 2024)

Table 2: Bitcoin Futures Hedging Analysis

| **Metric** | **Data Point/Value** | **Source/Reference** |
|---|---|---|
| Average Bitcoin Price Volatility (2023) | 60% (annualized) | CryptoCompare, CoinDesk |
| Bitcoin Futures Average Daily Volume (2023) | $20 billion | CME Group, Binance Research |
| Open Interest in Bitcoin Futures | 35% of total open interest (CME, | CME Group Reports |

| | | |
|---|---|---|
| (Institutional Share) | 2023) | |
| Average Hedging Effectiveness (Volatility Reduction) | 70% (institutional portfolios) | Journal of Financial Markets |
| Commonly Used Hedge Ratios | 0.6–0.8 | Academic Studies on Hedging |
| Regulatory Constraints Impact | 20% reduction in futures usage by U.S. investors | SEC Filings |
| Bitcoin Futures Expiry Volume (Q3 2023) | $15 billion | CME Bitcoin Futures Data |
| Institutional Participation Growth Rate | 25% CAGR (2020–2023) | CryptoCompare Analysis |
| Correlation Between Bitcoin Spot and Futures Prices | 0.85 (strong positive correlation) | Binance Research, CoinDesk |
| Hedging Cost (Average Basis Spread) | 1.5% of the notional value | Market Research Reports |




Bar chart illustrating the key metrics for Bitcoin futures hedging analysis.

### 5.3 Hedging with Options

#### 5.3.1 Types of Options (Call and Put)

A "call option" gives the buyer the right to purchase an underlying asset at a predetermined price (strike price) before the option expires, while a "put option" gives the buyer the right to sell the underlying asset at the strike

price before the expiration date; essentially, a call option is used when you expect the price to rise, and a put option is used when you expect the price to fall.

**Call Options**

A call option gives the holder the right, but not the obligation, to buy an underlying asset (such as Bitcoin) at a specified price (the strike price) within a specified period.Investors buy call options when they expect the price of the underlying asset to rise. Conversely, they may sell (write) call options if they believe the price will fall or remain stable.Buyersare bullish (expect price to go up) and have the right to buy the underlying asset at the strike price.

**Put Options**

A put option gives the holder the right, but not the obligation, to sell an underlying asset at a specified price within a specified period.Investors buy “put options” when they expect the price of the underlying asset to fall. They may also sell (write) put options if they believe the price will rise or remain stable.Buyer is bearish (expects price to go down) and has the right to sell the underlying asset at the strike price.

**5.3.2 Strategies for Using Options in Hedging**

**Protective Put**

This strategy involves buying a put option for an underlying asset that the investor already owns. It serves as insurance against a decline in the asset's price.

An institutional investor holds Bitcoin and is concerned about potential price drops. They buy “Put Options” with a strike price close to the current market price. If Bitcoin's price falls, the value of the put options increases, offsetting the losses from the decline in the Bitcoin price.

**Covered Call**:

In this strategy, an investor owns the underlying asset and sells (writes) call options on the same asset. This generates income from the option premiums but limits potential gains if the asset's price rises above the strike price.

An investor holds Bitcoin and sells call options with a strike price above the current market price. If Bitcoin's price remains below the strike price, the investor retains the premium from the call options. If the price rises above the strike price, the investor sells the Bitcoin at the strike price, potentially sacrificing some upside gains but generating income from the premiums.

**Collar**:

This strategy involves holding the underlying asset, buying a "put option" to limit downside risk, and selling a "call option" to offset the cost of the put. It creates a range within which the investor is protected from significant losses.

An investor holds Bitcoin and buys Put Options with a strike price below the current market price while simultaneously selling call options with a strike price above the current market price. The premiums from selling the call options offset the cost of buying the put options, creating a range within which the investor is protected from major price movements.

**Straddle**

This strategy involves buying both a "call option" and a "put option" with the same strike price and expiration date. It is used when an investor expects significant price movement but is uncertain about the direction.

An investor buys both call and Put Options for Bitcoin with a strike price equal to the current market price. If Bitcoin's price moves significantly in either direction, the gains from one option will offset the losses from the other, providing a hedge against volatility.

These strategies allow investors to use options to hedge against price volatility, generate income, and manage risk in their portfolios. Each strategy has its benefits and trade-offs, depending on the investor's outlook and risk tolerance.

## 6.0 Case Studies - Institutional Investors and Bitcoin Futures

### 6.1 Examples of Institutional Investors Using Bitcoin Futures

#### 6.1.1 Fidelity Investments

Fidelity Investments, formerly known as Fidelity Management & Research (FMR), is an American multinational financial services corporation based in Boston, Massachusetts. Fidelity helps millions of individuals feel confident in their most important financial goals, manage employee benefit programs that help more than 28,200 businesses support their employees' total well-being, and support more than 16,200 wealth management firms and institutions with innovative investment and technology solutions to grow their businesses.

Fidelity has been exploring Bitcoin as an alternative investment within a multi-asset class portfolio. They have considered small hypothetical allocations to Bitcoin to potentially enhance portfolio performance. The outcome has been great. Fidelity's research suggests that a 2-5% allocation to Bitcoin could positively impact retirement spending, while limiting potential losses if Bitcoin loses its value. (Jurrien Timmer, Emil Iantchev&Mike Rusinak, 2024).

#### 6.1.2 Morgan Stanley

Morgan Stanley is a global financial services firm that helps clients manage, raise, and distribute capital. Morgan Stanley offers a range of services, including investment banking, wealth management, investment management, sales and trading, research, and sustainable investing.Morgan Stanley collaborates with clients of all sizes, from individuals and families to governments and institutions.

Morgan Stanley has recognized cryptocurrency as a potential investable asset class. They have been educating their clients on the benefits and risks of including Bitcoin in diversified portfolios. The firm has seen growing interest from institutional investors, especially as regulatory frameworks and market liquidity improve. (Morgan Stanley - Global Investment Committee, 2021)

### 6.1.3 Franklin Templeton

Franklin Templeton is an investment firm that has broadened its capabilities by attracting leading public and private market investment managers. They preserve the investment independence of each manager and underpin it with large-scale expertise in distribution, marketing, operations, and risk management practices. Their strong corporate balance sheet provides us with financial stability to support these investment capabilities across market cycles, which allows each manager to stay true to their process, philosophy, and style.

Franklin Templeton has been analyzing Bitcoin as a digital commodity and a proxy to capture the beta of the emerging protocol economy. Their research indicates that now might be an opportune time to invest in Bitcoin, given its potential to serve as a digital store of value. (Franklin Templeton, 2024)

## 6.2 Analysis of Strategies and Outcomes of these institutions

### 6.2.1 Fidelity Investments

Fidelity's approach of small allocations to Bitcoin aims to balance potential gains with risk management. Their research-based framework helps investors understand Bitcoin's unique features and risk/return characteristics. The suggested allocation ranges could enhance retirement spending while limiting losses, making it a cautious yet optimistic strategy.

### 6.2.2 Morgan Stanley:

Morgan Stanley's strategy focuses on educating investors about the benefits and risks of cryptocurrency. By providing a firming regulatory framework and deepening liquidity, they aim to make Bitcoin a viable asset class. The growing interest from institutional investors indicates a positive reception to their educational efforts and the evolving market conditions.

### 6.2.3 Franklin Templeton

Franklin Templeton's analysis treats Bitcoin as a digital commodity, emphasizing its potential as a store of value. Their research highlights the importance of timing and market conditions for investment decisions. Their

findings suggest that current market conditions may be favorable for Bitcoin investments, aligning with their view of Bitcoin as a long-term investment.

## 7.0 Challenges and Risks

### 7.1 Market Volatility and Liquidity Issues

Bitcoin and the broader cryptocurrency market are known for their extreme price volatility. This volatility can create significant challenges for institutional investors looking to hedge their positions using Bitcoin futures. Rapid and unpredictable price swings can lead to substantial gains or losses, making it difficult to manage risk effectively. Additionally, liquidity issues can arise, especially during periods of high market stress. Low liquidity can result in wide bid-ask spreads, making it costly to enter or exit positions.

### 7.2 Regulatory and Compliance Risks

The regulatory environment for cryptocurrencies and Bitcoin futures is constantly evolving. Different countries have varying regulatory frameworks, and new regulations can be introduced at any time, impacting the market dynamics. Institutional investors must navigate a complex landscape of compliance requirements, which can include reporting obligations, taxation, and adherence to anti-money laundering (AML) and know-your-customer (KYC) regulations. Failure to comply with these regulations can result in legal repercussions and financial penalties.

### 7.3 Counterparty Risks

Counterparty risk refers to the possibility that the other party, in a futures contract, may default on their obligations. In the context of Bitcoin futures, this risk is typically mitigated by the use of regulated exchanges that function as intermediaries between buyers and sellers. However, counterparty risk still exists, particularly in over-the-counter (OTC) markets where trades are not subject to the same level of regulatory oversight. Institutional investors must carefully assess the creditworthiness of their counterparties to minimize this risk.

## 8.0 Conclusion

### 8.1 Summary of Key Points

- Bitcoin futures provide institutional investors with a valuable tool for hedging against price volatility, diversifying portfolios, and achieving regulatory compliance.
- Hedging strategies such as short selling, using CFDs, and leveraging options can be effectively employed to manage risk.
- Institutional investors facechallenges and risks, including market volatility, liquidity issues, regulatory and compliance risks, and counterparty risks.

## 9.0 Future Outlook for Bitcoin Futures and Institutional Investment

The future of Bitcoin futures and institutional investment in cryptocurrencies looks promising. As the market continues to mature, we can expect improved liquidity, more sophisticated financial products, and clearer regulatory frameworks. Institutional interest in Bitcoin and other cryptocurrencies is likely to grow, driven by the potential for high returns and the desire for diversification. Innovations in risk management and hedging strategies will further enhance the ability of institutional investors to navigate the complexities of the cryptocurrency market. Overall, Bitcoin futures will play an increasingly significant role in the portfolios of institutional investors, contributing to the ongoing evolution of the financial landscape.

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