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(Research/ Review) Article

Crypto Fundamental Analysis: Comparison of Cryptos with the Largest Market Capitalizations

Kareena Hilwa [1], Sri Astuty [2], Diah Retno Dwi Hastuti[3], Muhammad Syafri[4] and Regina[5]

[1] Faculty of Economics & Business, Universitas Negeri Makassar, Indonesia; e-mail : kareenahilwaar-as@gmail.com
[2] Faculty of Economics & Business, Universitas Negeri Makassar, Indonesia; e-mail : sri.astuty@unm.ac.id
[3] Faculty of Economics & Business, Universitas Negeri Makassar, Indonesia; e-mail : diah.retno@unm.ac.id
[4] Faculty of Economics & Business, Universitas Negeri Makassar, Indonesia; e-mail : syafri.rewa008@gmail.com
[5] Faculty of Economics & Business, Universitas Negeri Makassar, Indonesia; e-mail : regina@unm.ac.id
* Corresponding Author : Kareena Hilwa

Abstract: Cryptocurrency has become a rapidly developing digital asset class that attracts widespread investor interest due to its decentralized, anonymous, and highly volatile nature. Such volatility creates uncertainty in market movements, making it important to understand the factors that drive fluctuations in returns. This research aims to examine how fundamental indicators namely price, trading volume, and market capitalization affect return volatility, as well as to determine which cryptocurrency demonstrates the highest market efficiency based on risk assessment. The study uses panel data covering the five largest cryptocurrencies by market capitalization (Bitcoin, Ethereum, Tether, USD Coin, and Binance Coin) over the period 2019-2023. The analytical methods applied include panel data regression to identify the determinants of volatility and Value at Risk (VaR) to measure asset risk and efficiency. The findings show that price and trading volume positively and significantly increase return volatility, whereas market capitalization exerts a negative and significant effect, indicating its stabilizing role. Based on VaR analysis, Binance Coin (BNB) emerges as the asset with the highest market efficiency. The study concludes that fundamental indicators play a crucial role in shaping volatility and that BNB offers relatively better risk performance compared to its peers.

Keywords: Crypto; Digital Investment; Fundamental Analysis; Market Capitalization; Return Volatility.

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1. Introduction

Since its emergence on the digital currency market, cryptocurrencies have experienced rapid growth. Cryptocurrencies' anonymous nature often leads to comparisons with cash. However, unlike cash, cryptocurrencies are purely digital. These digital currencies have the potential to compete with other online payment methods such as credit or debit cards and PayPal. Cryptocurrencies are likely to have a long-term impact on currencies and payment systems, but their use is limited and in their early stages, requiring further testing of their feasibility and potential to become a disruptive technology (Gandal & Halaburda, 2014).

Cryptocurrency market platforms and blockchain technology are popular and in high demand. Many investors and financial professionals are attracted to cryptocurrencies as assets due to their high profitability. Significant price swings and volatility have resulted in drastic changes to traditional investment theory. On the other hand, there is a significant risk of a financial bubble emerging in these assets. However, the value and price of cryptocurrencies are not solely dependent on financial speculation. Financial professionals and researchers hold differing views regarding the nature and significance of Bitcoin and other virtual assets.

Through regulations, government officials have imposed restrictions on the use of cryptocurrencies as a means of transaction. As a result, virtual financial assets have attracted significant interest from investors, while also spurring theoretical studies on the impact of fundamental economic indicators on cryptocurrency prices and market volatility (Kuzheliev et al., 2021).

The number of merchants accepting cryptocurrencies continues to grow, although they remain a very small minority. To achieve widespread use, cryptocurrencies must first gain widespread consumer acceptance The public agrees that cryptocurrencies can serve as a medium of exchange, smart contracts, hedging tools, transform business transactions, and eliminate financial intermediaries. However, the public rejects accepting cryptocurrencies as a substitute for fiat money, which would end the banking system (Vetrichelvi & Priya S, 2024).

A 2023 survey by the Center of Economic and Law Studies (Celios) by the Ministry of Trade General Frida Adiati stated that cryptocurrency investment ranked third among Indonesians in terms of monetary investment. In the previous year, crypto also outnumbered stock investors, with 2.2 million accounts outnumbering stock investor accounts. Crypto is predicted to play a major role in the transformation of the digital economy industry (Yunianto, 2023).

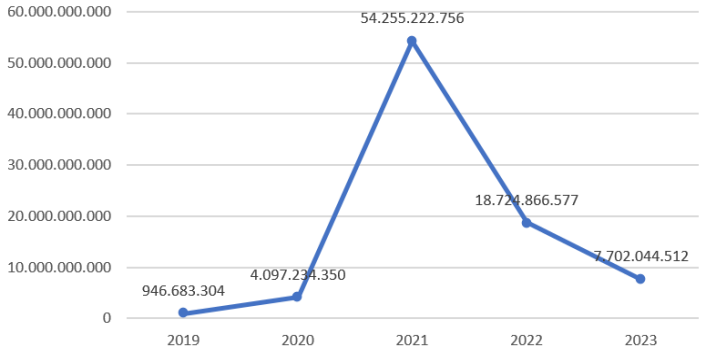

Figure 1 Number of Crypto Transactions

Source: Bappebti 2019-2023

The figure shows that the number of crypto transactions increased significantly after crypto asset investments began receiving permits from Bappebti in 2020. The total number of crypto transactions provides an indication of investor interest in crypto commodities. The largest increase occurred between 2020 and 2021, with a value increase of $50,157,988,406. Crypto's increasing popularity is linked to the opportunities it offers to expand economic freedom for people worldwide. These opportunities stem from three key characteristics of cryptocurrencies: accessibility, low transaction costs and speed, and its ability to combat weak national currencies and corruption (ResearchFDI, 2022).

The following year, there was a gradual decline for two consecutive years. This decline was due to the continued challenges and risks amidst the promise of decentralization and financial autonomy, such as volatility in the cryptocurrency market, regulatory uncertainty, security vulnerabilities, and environmental concerns associated with the accumulation of crypto assets, which require careful consideration and proactive mitigation strategies. Furthermore, scalability and interoperability issues hamper the widespread adoption of blockchain technology, necessitating ongoing research and development efforts (Grasic & Vidnjevic, 2024).

The development of crypto has driven the growth of various types of cryptocurrencies with various purposes. In recent years, there has been a rapid growth in the number of cryptocurrencies, hashing algorithms, and consensus agreements within the network. However, Bitcoin and Ethereum have become the most well-known and valuable cryptocurrencies due to their high reputation for promoting trust mechanisms in peer-to-peer networks (Vujičić et al., 2018).

Deepak (2024) states that there are five types of cryptocurrencies with the largest market capitalizations: Bitcoin (BTC) at $458 billion, Ethereum (ETH) at $216 billion, Theter (USDT) at $66 billion, USD Coin (USDC) at $454 billion, and Binance Coin (BNB) at $52 billion. Of course, these five types offer varying levels of return volatility to investors. Return volatility refers to the risk involved in investing.

The emergence of various types of cryptocurrencies has created confusion for investors when choosing alternative types to invest in. This can be addressed through fundamental analysis and risk analysis, which can illustrate market efficiency. Fundamental analysis is the foundation of capital market operations. This analysis requires the assimilation and processing of large and diverse data sets, which often incurs significant costs (Cao & You, 2024).

Cryptocurrencies possess enormous potential to drive positive change in various areas of society. Developers and researchers are leveraging technological advantages like Blockchain to create new innovations. This demonstrates that even as the world continues to evolve, Cryptocurrencies' impact on society cannot be ignored, both from the perspective of investors and those who wish to contribute to its development (Soares et al., 2023).

This paper will explain the influence of fundamental indicators on the value and stability of Cryptocurrencies' return volatility. It will also compare the five types of Cryptocurrencies with the largest market capitalizations, which boast high levels of market efficiency and, therefore, the ability to generate substantial returns for investors.

2. Literature Review

Research on price behavior, volatility, and fundamental factors in crypto assets continues to grow as the use and adoption of digital assets increases. Several previous studies have shown that fundamental variables such as trading volume and market capitalization play a significant role in explaining crypto asset price dynamics. Hendreo *et al.* (2023)found that trading volume has a positive and significant effect on Cardano's price, while market capitalization has a negative effect. This finding confirms that high market activity drives price increases, but large market capitalization can buffer price fluctuations.

In another study, Susilawati & Putra (2023) showed different results, where asset price, market capitalization, and transaction volume had no significant effect on crypto returns. This difference indicates that the influence of fundamental variables on crypto market performance can vary depending on the period, market conditions, and characteristics of the asset studied.

From a volatility perspective, Hu *et al.* (2019) asserted that crypto assets have very high volatility due to weak regulation and difficulties in assessing intrinsic value. This study used the ARMA–GARCH model and proved effective in predicting crypto price dynamics. Similarly, Pessa *et al.* (2023) showed that most crypto assets follow a power-law distribution, indicating a higher potential for extreme price movements compared to traditional assets. They also found that age and market capitalization significantly influence volatility levels, with older and larger-cap cryptocurrencies tending to have lower volatility.

Research on investor interest and behavior also contributes to understanding crypto market dynamics. Malik *et al.* (2023)found that investment knowledge, subjective norms, and perceived risk positively influence crypto investment interest. These findings suggest that psychological and social factors play a role in encouraging investors to enter the crypto market.

Regarding price prediction, a study by Rizkilloh & Widiyanesti (2022) using an LSTM model confirmed that deep learning methods have good performance in predicting daily crypto prices, particularly for assets with lower volatility such as DOGE and ADA. Overall, previous research indicates that crypto asset volatility is influenced by various factors, ranging from fundamental market indicators, asset age, liquidity levels, and investor sentiment. Previous literature has generally focused on particular dimensions of cryptocurrency markets, with many studies examining only one or two major assets or emphasizing price movements as the primary variable of interest.

This study aims to fill this gap by integrating fundamental analysis covering price, trading volume, and market capitalization with risk measurement using Value at Risk (VaR) for the five largest-cap crypto assets. This comprehensive approach enables an evaluation of how fundamental indicators influence return volatility while simultaneously assessing market efficiency across different cryptocurrencies. Consequently, this research provides a broader academic contribution by linking fundamental market characteristics with investment risk in the context of large-cap digital assetss.

3. Methodology

This study is quantitative, utilizing panel data, a combination of time series and cross-sectional data. The data used is secondary data, including crypto prices, crypto trading volume, crypto market capitalization, crypto return volatility, and the number of crypto transactions in Indonesia over the past five years (2019-2023). The data population in this study is 10,736 cryptocurrencies sourced from the Investing.com website, and the research sample consists of five cryptocurrencies: Bitcoin, Ethereum, Theter, USD Coin, and Binance Coin.

The data analysis technique used to understand the relationships between variables is panel data analysis, beginning with descriptive statistics and then exploring three panel data regression models using Eviews 12. The data analysis technique used to calculate market efficiency through risk analysis is Value at Risk (VaR) using Excel.

The following is the panel data regression equation applied in this study is:

$$\boldsymbol{RV_{it} = \beta_0 + \beta_1 P_{it} + \beta_2 TV_{it} + \beta_3 MC_{it} + \varepsilon_{it}}$$

Description:

RV	= Return Volatility
P	= Crypto Price
TV	= Crypto Trading Volume
MC	= Crypto Market Capitalization
ε	= error term
β_0	= intercept
$\beta_{1,2,3,..}$	= slope
i	= Number of Observations
t	= Time Period

4. Results and Discussion

Before the analysis process is carried out, the best model is determined through a series of tests, namely the Chow test, the Hausman test, and the Lagrange Multiplier test, to identify whether the Common Effect, Fixed Effect, or Random Effect model best fits the data characteristics. The selected model is then used as a basis for interpreting the influence of the independent variables on the dependent variable empirically.

Table 1 Model Selection Test Results

Test Name	Hypothesis	Value	Results
Chow Test	H0: If the prob value. > 0.05 (Common Effect) H1: If the prob value. < 0.05 (Fixed Effect)	0.0000	FEM
Hausman Test	H0: If the prob value. > 0.05 (Random Effect) H1: If the prob value. < 0.05 (Fixed Effect)	0.0000	FEM

Source: Eviews12 Data Processing Results, 2025

Based on Table 1, it was found that the best model was the Fixed Effect Model. Therefore, to conduct regression analysis, the Fixed Effect Model can be used.

Table 2 Least Square Dummy Variable Results

Variable	Expected Sign	Coefficient	Std. Error	t-Statistic	Prob.
C	+	0.431296	0.048268	8.935505	0.0000
P	+	0.001630*	0.000940	1.734322	0.0839
TV	+	1.22×10^{-6}***	3.09×10^{-7}	3.960958	0.0001
MC	-	-4.83×10^{-7}**	1.63×10^{-7}	-2.956160	0.0034
D_BTC	-	-0.185142**	0.083848	-2.208063	0.0280
D_USDT	-	-0.328534***	0.047097	-6.975639	0.0000
D_USDC	-	-0.380059***	0.045115	-8.424207	0.0000
D_BNB	-	-0.183373***	0.054104	-3.389250	0.0008

R-Squared	0.458919
Adjusted R-Squared	0.445948
F-statistic	35.38002
Prob(F-statistic)	0.000000

Source: Eviews12 Data Processing Results, 2025

Crypto Fundamental Analysis of Bitcoin, Ethereum, Theter, USD Coin, and Binance Coin from 2019 to 2023 using panel data regression analysis using a Fixed Effect Model with a Least Square Dummy Variable (LSDV) approach. Based on the estimation results of the Least Square Dummy Variable (LSDV) approach, the best estimate was found when Ethereum was the control variable or its value was 0. Based on the test results, the estimated results for each Fixed Effect Model parameter were as follows:

$$RV_{it} = 0.431296 + 0.001630\,P_{it} + 1.22\text{x}10^{-6}TV_{it} - 4.83 \times 10^{-7}MC_{it} - 0.185142D_{BTC} - 0.328534D_{USDT} - 0.380059D_{USDC} - 0.183373D_{BNB} + \varepsilon_{it}$$

The F-test is used to evaluate whether all independent variables in the regression model jointly influence the dependent variable. A model is deemed fit when the calculated F-statistic exceeds the critical F-table value and its probability is statistically significant. Based on the results, the F-statistic of 35.38002 with a probability value of 0.0000, which is below the 5% significance level, indicates that the null hypothesis is rejected. Thus, it can be concluded that Price, Trading Volume, and Market Capitalization collectively exert a significant simultaneous effect on return volatility.

The partial significance test (t-Test) is used to determine whether each independent variable has a significant effect or not on the dependent variable individually.

a. The t-statistic value for the predicted price using return volatility is 1.734322. Meanwhile, the probability value is 0.0839 < 0.1, so statistically, it can be concluded that price has a positive and significant influence on return volatility.
b. The t-statistic value for trading volume estimated through return volatility reached 3.960958. Since the probability value is 0.0001 < 0.01, it can be statistically concluded that trading volume has a positive and significant effect on return volatility.
c. The t-statistic value for market capitalization estimated based on return volatility is 2.960958. With a probability value of 0.0034 < 0.01, it can be statistically concluded that market capitalization has a negative and significant effect on return volatility.

The Least Square Dummy Variable (LSDV) approach is then used to estimate and control for the fixed effects of each sample so that the estimation results reflect the pure influence of the independent variable on the dependent variable by eliminating the influence of unobserved individual characteristics that remain constant over time. The interpretation of the Least Square Dummy Variable (LSDV) approach is as follows:

a. The BTC dummy variable has a t-statistic of -0.185142 and a probability value (p-value) of 0.0280. Since the p-value is <0.05, it can be concluded that the BTC dummy variable has a significant effect on the RV variable at the 5% significance level. This means that the presence of BTC as a category in the model statistically impacts the RV variable.
b. The USDT dummy variable has a t-statistic of -0.328534 with a p-value of 0.0000. Since the p-value is <0.01, it can be concluded that the USDT dummy variable has a significant effect on the RV variable at the 10% significance level. This indicates that USDT as a category has a very significant effect on the RV variable.
c. The USDC dummy variable shows a t-statistic of -0.380059 and a p-value of 0.0000. With a p-value less than 0.01, it can be concluded that the USDC dummy variable has a significant effect on the RV variable at the 10% significance level, indicating a very strong influence of USDC on RV in the model.
   The BNB dummy variable has a t-statistic of -0.183373 and a p-value of 0.0008. Since the p-value is <0.01, it is concluded that the BNB dummy variable has a significant effect on

the RV variable at the 10% significance level. This means that the presence of BNB in the model also statistically contributes to changes in the RV variable.

In general, the coefficient of determination test is used to determine the magnitude of the relationship between several variables, thus providing a clear picture of the research. The coefficient of determination can be seen from the Adjusted R Squared value. If the Adjusted R Square value is known to be 0.445948, it can be concluded that the independent variable's contribution to the dependent variable simultaneously (concurrently) is 44.5948%.

5. Discussion

The Effect of Price on Return Volatility

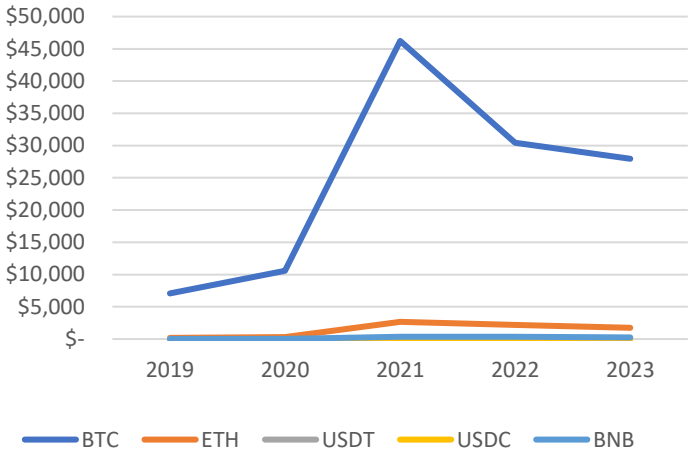

Figure 1 Average Crypto Price
Source: Coingecko.com

Figure 1 shows significant fluctuations, particularly in non-stablecoin assets. Bitcoin experienced a sharp price increase from around $7,072 in 2019 to $46,227 in 2021, its peak during that period, before declining again to $27,961 in 2023. Ethereum also showed a similar trend, soaring from $178 in 2019 to $2,664 in 2021, then declining to $1,760 in 2023. Tether (USDT) and USD Coin (USDC), as stablecoins, maintained stable prices around USD 1 throughout the period, in keeping with their function as assets pegged to the US dollar. Binance Coin (BNB) recorded a remarkable price growth, from USD 20 in 2019–2020 to $351 in 2021, before weakening slightly to $267 in 2023. In general, the 2021 price surge reflects a period of strong price increases, while the decline in 2022–2023 reflects the impact of strong price decreases, regulatory pressure, and changes in investor sentiment.

Crypto price spikes are influenced by fundamental factors such as supply and demand, mining activity, transaction fees, block size, and consensus mechanisms. Price declines due to a lack of public understanding of blockchain technology and the technical aspects of crypto also impact prices (Wardhana, 2024). Research by Wibawa & Suherman (2025) states that the exchange rate and gold price also influence Bitcoin's short-term returns.

The varying price fluctuations of the five types of cryptocurrencies result in varying return volatility. The higher the price fluctuation, the higher the investor's profit, and vice versa. This aligns with the theory of market efficiency, which states that asset prices reflect all available information. In the crypto space, it is explained that if prices experience large and rapid changes, return volatility increases. It can be concluded that frequent price fluctuations caused by investors' reactions to information will create more volatile returns.

The Influence of Trading Volume on Return Volatility

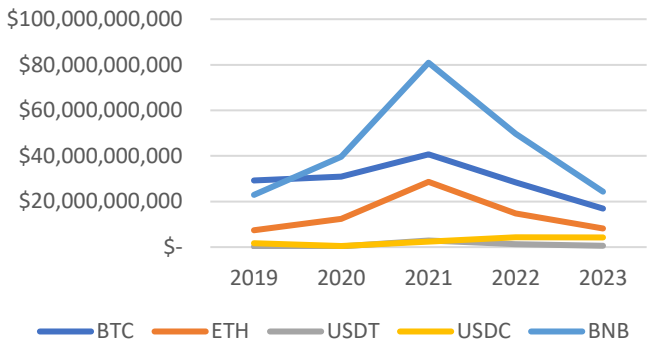

Figure 2 Average Crypto Trading Volume

Source: Coingecko.com

Figure 2 shows that almost all crypto assets experienced a peak in activity in 2021, then declined in 2022-2023. Bitcoin, the largest cryptocurrency, saw its value increase from around $29.25 billion in 2019 to $40.70 billion in 2021, before dropping sharply to $16.89 billion in 2023. Ethereum followed a similar pattern, increasing from $7.39 billion in 2019 to $28.63 billion in 2021, then declining to $8.15 billion in 2023. Tether (USDT), which serves as the primary stablecoin, experienced a significant surge in 2021 with a volume of $2.89 billion from just $318 million in 2020, but declined to $535 million in 2023. USD Coin (USDC) showed a different trend, declining in 2020, then steadily increasing to $4.16 billion in 2023, making it a stable alternative for traders. Meanwhile, Binance Coin (BNB) recorded the most drastic growth in trading volume, from $22.91 billion in 2019 to $80.90 billion in 2021, before declining to $24.38 billion in 2023.

Increases in trading volume, or crypto activity, are generally influenced by increased investor interest and participation, particularly during periods of high price volatility. Volume spikes also occur when prices reach certain peaks, as many market participants engage in buying and selling transactions in response to changes (Riska, 2025).

The analysis results align with the Mixture of Distributions Hypothesis (MDH) theory introduced by Clark (1973). This theory explains that trading volume reflects the speed of information entering the market. The more information market participants process, the higher the trading volume and resulting return volatility. Trading volume and return volatility in crypto markets are significantly correlated. Increased trading volume often reflects greater investor interest and participation, which can lead to greater price fluctuations. Conversely, high volatility can attract more trading, creating a cycle in which these two factors influence each other and form complex market dynamics (Juwita et al., 2023).

The Influence of Market Capitalization on Return Volatility

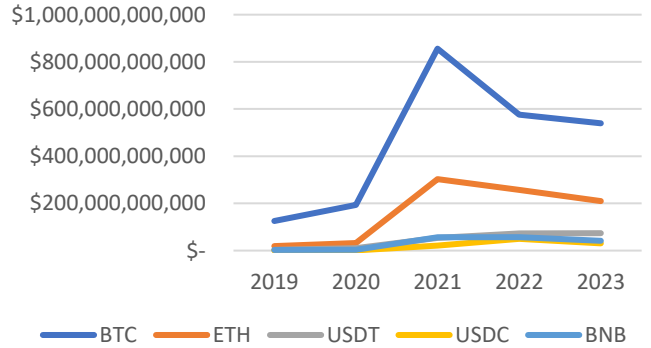

Figure 3 Average Crypto Market Capitalization

Source: Coingecko.com

Figure 3 illustrates that, in line with price and trading volume trends, Bitcoin dominated throughout the period, rising from approximately $125.43 billion in 2019 to a peak of $855.96 billion in 2021, before declining to $538.96 billion in 2023. Ethereum also experienced a significant surge, from $19.01 billion in 2019 to $302.83 billion in 2021, before declining to $210.02 billion in 2023. Tether (USDT), a stablecoin, showed steady growth annually, rising from $2.93 billion in 2019 to approximately $73.79 billion in 2023, reflecting the increasing adoption of stablecoins for trading and volatility hedging. USD Coin (USDC) grew even faster, from just $357 million in 2019 to $49.78 billion in 2022, before declining to $31.31 billion in 2023. Binance Coin (BNB) recorded a sharp increase from $2.81 billion in 2019 to $56.04 billion in 2021, remaining relatively stable in 2022, and then declining to $41.05 billion in 2023.

According to Satoshi Nakamoto (2017) on (Aziz, 2022) stated that user growth directly impacts the value of a coin. This mechanism creates a positive feedback loop, whereby an increase in user numbers drives value increases, which in turn attracts new users to participate. As the number of investors participating in crypto asset trading increases, Bitcoin's market capitalization also shows an upward trend. Therefore, it can be concluded that the increase in market capitalization is due to price spikes and high liquidity.

This theory suggests that the larger the market capitalization of a Crypto asset, the lower the likelihood of extreme return volatility, as the large market size is able to dampen the effects of individual transactions and make prices more stable (Phillip et al., 2018).

Risk Analysis to Assess The Level of Market Efficiency Using the Value at Risk (VaR) Test

Table 3 Value at Risk Test Results

	Bitcoin (BNB)	Ethereum (ETH)	Theter (USDT)	USD Coin (USDC)	Binance Coin (BNB)
January 2019 data	**$3794**	**$138**	**$1,00**	**$0.99**	**$6**
January 2024 data forecast	**$40.940**	**$2.258**	**$0.99**	**$0.99**	**$258**
Capital Gain Januari 2019-Januari 2024	**979%**	**1.539%**	**-1%**	**0.00%**	**4.143%**
Investment value per 10 coins	**$37.943**	**$1.381,4**	**$10**	**$9,9**	**$60.8**
VaR one month	**$18.547**	**$883**	**$0,17**	**$0,17**	**$77**

Source: Microsoft Excel Data Processing Results, 2025

Based on price prediction analysis for January 2024, Bitcoin (BTC) is expected to continue dominating the crypto market with a peak price of $40,940. Ethereum (ETH) is next in second place with a price of $2,258, and Binance Coin (BNB) is in third place with a price of $258. Meanwhile, Theter (USDT) and USD Coin (USDC), both stablecoins, are expected to remain stable at around $0.99.

In terms of capital gains from January 2019 to January 2024, Binance Coin demonstrated the most impressive performance, with a 4,143% increase in value, indicating very high investment growth potential. Ethereum follows in second place with a 1,539% increase, while Bitcoin is in third place with a capital gain of 979%. Unlike stablecoins, USD Coin experienced no change in value (0%), and Theter experienced a -1% decrease in investment value, reflecting its failure to maintain its value despite its stablecoin status.

In terms of investment value, if you purchase 10 coins, Bitcoin remains the asset with the highest capital requirement, at $37,943, followed by Ethereum at $1,381.4, and Binance Coin at $60.8. Theter and USD Coin rank the lowest, with investment values of $10 and $9.9, re-

spectively, reflecting their characteristics as stablecoins, or crypto assets whose value is close to the US dollar.

Based on risk, using the Value at Risk (VaR) method for one month with a 99% confidence level, Bitcoin also showed the highest potential maximum loss, at $18,547. Ethereum came in second with a potential loss of $883, followed by Binance Coin at $77. Meanwhile, Theter and USD Coin recorded the lowest risk, with a potential loss of only $0.17, reflecting the stability of stablecoins' values in the face of market volatility.

Based on the results of a risk analysis using the Value at Risk (VaR) approach on five types of crypto assets over a one-month period with a 99% confidence level, Bitcoin (BTC) was found to have the highest potential for loss. BTC's VaR of $18,547 indicates that in 100 cases, only one case of that magnitude would result in a loss for every 10 BTC purchased. Ethereum (ETH) carries a lower risk than BTC, with a VaR of $883 for the same number of coins and the same period. Meanwhile, stablecoins such as Theter (USDT) and USD Coin (USDC) exhibit very low risk, with VaRs of $0.17 each, indicating price stability and low volatility. On the other hand, Binance Coin (BNB) has a VaR of $77, indicating a moderate level of risk among the crypto assets analyzed. Overall, these results illustrate that investment risk in crypto assets varies significantly depending on the type of coin used, with BTC carrying the greatest risk and stablecoins the least.

Fundamental analysis results show that although Bitcoin has a very large market capitalization, this does not necessarily guarantee a higher level of investment security. The research shows that Bitcoin actually records high maximum losses. It concludes that a large market capitalization only reflects the total value of assets in circulation, but does not fully mitigate extreme price fluctuations. With high liquidity and high speculative participation, Bitcoin's price movements remain vulnerable to market volatility, thus making the potential maximum losses for investors relatively greater.

Regarding risk and investment performance analysis, it can be concluded that the safest crypto assets to invest in are stablecoins, specifically USD Coin (USDC) and Theter (USDT). This is demonstrated by their very low Value at Risk (VaR) values, reflecting virtually no volatility and minimal risk of loss. The consistent price stability of stablecoins, which remain around $1, makes them relatively safer compared to other crypto assets with high price fluctuations. However, this stability also means that stablecoins do not offer significant capital gain potential, making them suitable only for use as a medium of transaction and hedging.

Next is Binance Coin (BNB), which recorded a 4,143% increase in value between 2019 and 2024. BNB can be categorized as a manageable risk asset because it has a relatively low VaR compared to Bitcoin and Ethereum, providing a better balance between risk and potential return. Therefore, for investors who prioritize security and capital protection, stablecoins are the most appropriate choice. For investors who still seek growth opportunities with more manageable risk, BNB can be a more strategic alternative. With its impressive growth performance and lower risk compared to other large-cap cryptocurrencies, BNB can be seen as a better investment for investors seeking a balance between security and potential return.

6. Conclusions

There is a positive and significant influence of price and trading volume on cryptocurrency return volatility, while market capitalization has a negative and significant effect. These findings support the hypothesis that fundamental factors play a significant role in determining the risk level of crypto assets. Price increases and trading activity reflect the increasing flow of information and market sentiment, which drives volatility, while high market capitalization helps dampen price volatility, thus tending to reduce volatility.

The implications of this research suggest that crypto market stability can be improved through increased information transparency, adequate liquidity, and strengthening market structures that reduce reliance on speculative activity. Furthermore, the risk analysis results indicate that Binance Coin (BNB) has a better level of market efficiency than the other four cryptocurrencies, as it is able to provide high capital gains with relatively lower risk. This suggests that investors can consider BNB as an investment alternative that balances risk and return.

This research also contributes to the understanding of how fundamental indicators influence crypto market volatility and how risk analysis, such as Value at Risk (VaR), can be used to assess the efficiency of digital assets. However, this study has limitations because it does not include external factors such as global sentiment, international regulations, and global macroeconomic dynamics that could potentially influence crypto market movements.

Therefore, future research is recommended to incorporate these external variables and use more complex volatility models, such as ARCH or GARCH, to obtain a more in-depth analysis of the risk dynamics and stability of the cryptocurrency market.

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Data Availability Statement: The secondary data in this study were obtained from CoinGecko (https://www.coingecko.com/id), one of the world's most widely referenced price-tracking platforms for crypto assets. CoinGecko provides real-time market data, price quotations, financial tools, news updates, and analytical information sourced from more than 250 global exchanges across 44 international editions.

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