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Looking for the Best Asset Class: Cryptocurrency, Gold or Stocks?

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Abstract−Cryptocurrency is a fast-growing asset class that is the talk of the town around the world. In less than 15 years, the cryptocurrency market capitalization was recorded at more than 1 trillion dollars. This research was conducted with a comparative descriptive approach aimed at comparing the return, risk and performance of bitcoin, gold and BCA shares. The data used is the daily closing price of bitcoin, gold (xau-usd) and BCA shares from 2013-2022. In the observation period 8742 data were obtained. The sampling technique of this research is saturated sampling, the return variable is assessed by realized return, risk is assessed by standard deviation, and performance measurement by the Sharpe method. Researchers conducted normality and homogeneity tests and then used the Kruskall-Wallis test. The results showed that the return of bitcoin, gold and BCA shares did not have a significant difference but the risk and performance of bitcoin, gold and BCA shares had a significant difference. Interesting findings that were successfully obtained were the results of the Kruskall-Wallis ranking showing that the average return of BCA shares had the highest position compared to bitcoin and gold, but BCA shares had a risk rating in second place after bitcoin while gold was in third place. The best performance is achieved by bitcoin in the first rank, BCA shares in the second rank and gold in the last position.

Keywords: Bitcoin; Cryptocurrency; Gold; Investment; Stock

1. INTRODUCTION

Traditional investment activities are usually done by buying physical assets such as land, jewelry, houses, fishponds, rice fields, gardens and so on. Along with the spread of financial education and technology, today everyone can invest easily even with very affordable capital by investing in financial assets. Financial assets include stocks, gold (xau-usd), mutual funds and most recently cryptocurrencies (Hamdika et al., 2022).

Cryptocurrency is a digital currency that can be used as a means of payment. Despite being used as a means of payment, cryptocurrencies tend to be more explored as investment assets (Almeida & Gonçalves, 2022; Blau, 2017; Li et al., 2021). Cryptocurrency has become a popular asset class in the global financial market, the cryptocurrency market is experiencing rapid development that is spreading all over the world, including developed and developing countries (Białkowski, 2020; Fang et al., 2021). Its security is also very high as it uses cryptographic techniques by employing encryption protocols to identify and verify transactions. Cryptocurrencies are also transparent, publicly storing every detail of distributed transactions in a ledger, but the identity of the users involved remains anonymous (Yuneline, 2019). It is known that during the covid 19 pandemic and the Ukraine war, almost all financial assets experienced increased volatility, except Bitcoin (Taera et al., 2023). In Indonesia, cryptocurrency is not yet recognized as a legal currency, but is known as an investment alternative (Meiryani, 2023).

What investors need to do before making investment decisions is to understand the relationship between the level of risk and return in an investment asset. Risk and return in an investment will differ according to the type of investment asset (Liu & Tsyvinski, 2021). According to (Hartono, 2022), investment decisions must be made carefully, the two main factors that need to be considered in investment decisions are investment return and risk. In August 2023, the total market capitalization of cryptocurrency assets was recorded at more than 1 trillion dollars. Bitcoin is the cryptocurrency with the highest market capitalization, which is around 500 billion dollars. Based on investing.com data, the highest bitcoin monthly return in the 2013-2022 period occurred in November 2013 by more than 450% compared to the previous month (Figure 1) while the highest gold monthly return was recorded in July 2020 at 10.90% (Figure 2). Based on yahoofinance.com data, the highest monthly return on BCA shares was recorded in September 2014 with an increase of 16.74% from the previous month (Figure 3). With these facts, it can be concluded that bitcoin is superior and superior to gold and stocks in terms of returns generated.

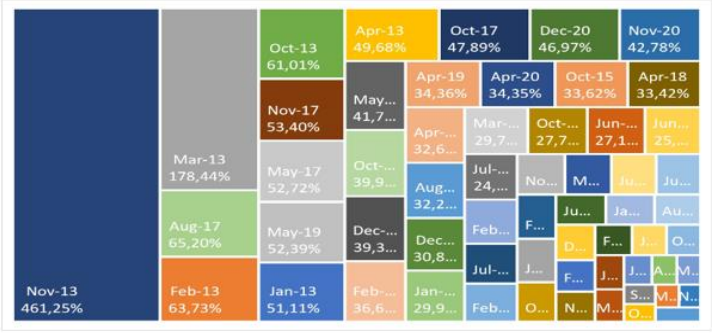

Figure 1. Best bitcoin monthly return 2013-2022

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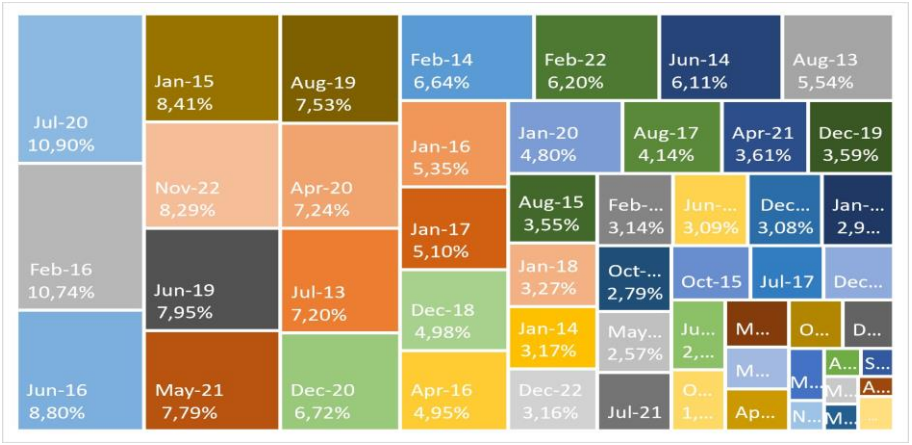

Figure 2. Best gold monthly return 2013-2022

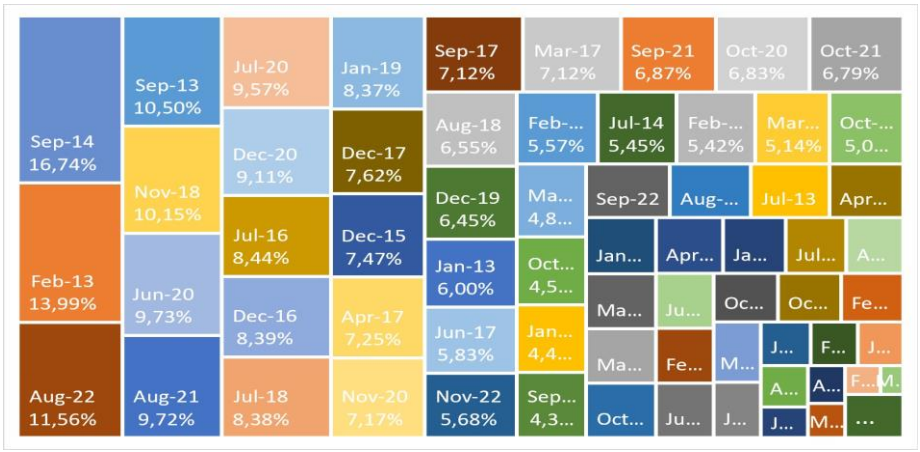

Figure 3. Best BCA shares monthly return 2013-2022

The emergence of cryptocurrency as an investment platform has brought investment opportunities in the hope of making high returns to investors without financial knowledge. Many investors want to become billionaires in the cryptocurrency market. Some have succeeded and some have made huge losses. Therefore, it is not surprising that the cryptocurrency market has received significant attention from everyone: the media, regulators, and individuals and institutional investors. It is also a current and important topic in academic research (Angerer et al., 2021; Li et al., 2021).

Some mass media in Indonesia are known to have reported criminal acts related to investment in cryptocurrency (Marjaya, 2019; Pahlevi, 2019). Increasing literacy to the wider community about the risks and potential of cryptocurrency investment can be an alternative to preventing criminal acts of investment fraud (Gideon, 2019). To date, studies on cryptocurrencies that discuss the returns, risks and performance of cryptocurrencies and comparisons with other assets are difficult to find and are still severely limited. Some research in Indonesia focuses on examining the law on cryptocurrency assets, such as research (Ausop & Aulia, 2018; Rinaldi & Huda, 2016; Siswantoro et al., 2020; Yohandi et al., 2017).

Some other researchers have conducted research on bitcoin, stocks and gold. According to (Budiartomo & Setiyono, 2023) bitcoin returns, stocks and gold have no significant difference. Research (Mahessara & Kartawinata, 2018) states that the most instruments in providing average profits per year are bitcoin in the first position, gold in the second position and stocks in the last position. The results of this study contradict research (Meiyura & Azib, 2020) which conducted research on bitcoin and gold, the results of his research state that there are differences in return and risk between bitcoin and gold. According to (Lumbantobing & Sadalia, 2021) there are significant differences between bitcoin, LQ45 stocks, and gold when measured by risk and Sharpe performance. In addition (Henriques & Sadorsky, 2018) stated that the portfolio with bitcoin has the highest performance compared to gold. Added by (Setiawan, 2020) most cryptocurrencies generate higher returns compared to stocks and foreign currencies.

The description above shows that relevant phenomena and research gaps regarding the return, risk and performance of cryptocurrencies, gold and stocks. Some of these studies only accommodate the comparison of cryptocurrencies, gold and certain stock indices such as those conducted (Lumbantobing & Sadalia, 2021) with the LQ45 index and (Setiawan, 2020) with the JII30 index and a relatively short observation period. The novelty provided in this study compared to previous studies is that it uses different objects, namely bitcoin, gold (xau-usd) and BCA shares, researchers also use a longer time period of ten years. BCA shares were chosen with the argument that BCA shares are stocks with the largest market capitalization in Indonesia, BCA shares have a market capitalization of more

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than 1000 trillion rupiah. BCA has also grown by more than 400% in the last ten years. BCA shares have high liquidity (classified as the LQ45 index) so it can be concluded that BCA shares have good performance and are in demand by market participants, with this argument BCA shares are worthy of research and comparison with bitcoin. This research was made with the aim of analyzing the return, risk and performance of bitcoin, gold (xau-usd) and BCA shares. It is hoped that this research can provide important information for investors to make their investment decisions.

2. RESEARCH METHODS

The theory that can be associated with investment decisions is Prospect Theory (Kahneman & Tversky, 1979). Prospect Theory can explain that investment choices tend to be assessed based on profits and losses, therefore investors will seek as much information as possible to determine their investment decisions. Investors understanding of the value of risk and the level of profit affects the success or failure of an investment. Added by (Yang et al., 2021) that financial literacy and tolerance for risk have a role in influencing investment intentions. Based on the above theory, investors must consider risk factors and investment returns rationally (Pertiwi et al., 2019). Investment decisions are a long and continuous process starting from determining investment objectives to periodic evaluations. The value of risk and profit levels as well as appropriate performance measurements need to be determined in investment decisions and evaluations (Andaresta & Purwanto, 2023).

Bitcoin, gold and stock returns are different things. Bitcoin is a digital asset that was born in 2009, has high volatility and is highly influenced by market participants while gold has lower volatility and has survived for thousands of years as a protective asset. In contrast to both, stocks are proof of ownership of a company that can be traded in the hope of getting capital gains and dividends as profits. Stock prices are not only influenced by market participants, but also by the condition of the company as reflected in its financial statements. With the above arguments, it can be assumed that bitcoin, gold and stock returns have differences. Research examining bitcoin and gold returns has been conducted by (Meiyura & Azib, 2020), with a sample of the purchase price of gold PT. Antam. Tbk and the price of bitcoin against the rupiah for the period July 2016 to June 2019, the results of this study indicate a difference in bitcoin and gold returns. The results of this study are supported by research (Adiyono et al., 2021) which shows a significant difference in bitcoin, stock and gold returns. Therefore the hypotheses proposed in this study are:
H1: There are significant differences between the returns of bitcoin, gold and BCA shares.

Risk is something that needs to be considered in investment decisions. Looking at the characteristics of bitcoin, gold and stocks discussed earlier, it can be assumed that the risks contained in bitcoin, gold and stocks have differences. This is because bitcoin and gold do not have regulations in terms of price volatility, bitcoin and gold can move freely without certain price limits, in contrast to stocks that have maximum price movement regulations. Research related to the risk of bitcoin, gold and stocks was conducted by (Lumbantobing & Sadalia, 2021) in the period April 2013 - October 2019 on bitcoin, the LQ45 stock index and gold, the results of this study indicate that there is a significant difference between the risk of bitcoin, the LQ45 stock index and gold. This research is supported by (Hamdika et al., 2022) which states that the risks of bitcoin, stocks and gold are different. Based on this, the hypothesis in this study is formulated as follows:
H2: There are significant differences between the risks of bitcoin, gold and BCA shares.

Bitcoin, gold and stocks as investment instruments should be expected to have differences in performance, this can be proven by looking at price movements through the return data of the three (Figure 1, Figure 2 and Figure 3), this is supported by the findings of (Taera et al., 2023) which state that bitcoin volatility is not affected by the covid-19 pandemic and the Ukraine war while other financial assets are affected. Research on the performance of bitcoin, gold and stocks was conducted by (Hamdika et al., 2022) in the 2017-2021 period with a sample of monthly closing price data from bitcoin, LQ45 stocks, and gold. The results of his research show that there are differences in the performance of bitcoin, LQ45 stocks and gold. The results of this study are also supported by (Andaresta & Purwanto, 2023) which states that there are significant differences in the performance of bitcoin, IDX 30 stocks, and antam gold. Based on this, the hypothesis in this study is formulated as follows:
H3: There are significant differences between the performance of bitcoin, gold and BCA shares.

In this research Cryptocurrency is represented by bitcoin, gold is represented by the xau-usd price and stocks are represented by BCA shares. The conceptual framework is presented and can be observed in Figure 4.

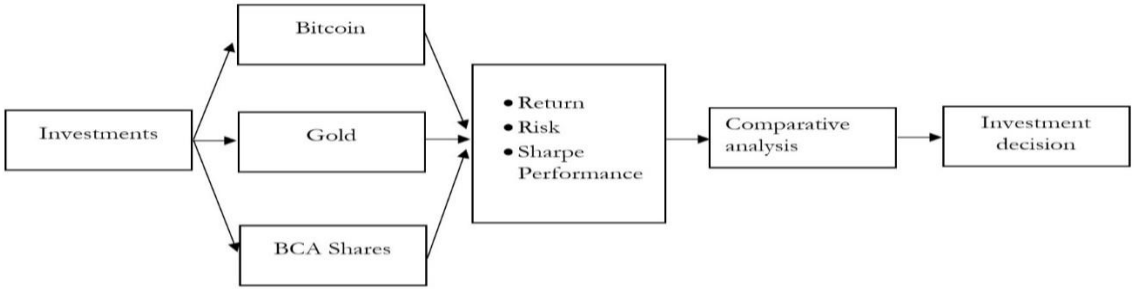

Figure 4. Conceptual Framework

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2.1 Research Methodology

This study uses a population of daily closing price data from bitcoin, xau-usd as gold data and BCA shares in the 2013-2022 period. This study took all daily closing price data from bitcoin, xau-usd and BCA shares in 2013-2022 or can be referred to as a saturated sampling technique. The amount of data collected is 8742 data. Data obtained from information provider websites or can be referred to as secondary data. Investing.com was chosen as a website that provides historical data on the daily closing prices of bitcoin and xau-usd, while historical BCA stock data is obtained from yahoofinance.com. The data obtained is in the form of numbers, which can also be called quantitative data. Descriptive and comparative are the analysis techniques used in this research.

To obtain the value of each variable, data processing is carried out using the Microsoft Excel program. The closing price of each instrument and BI 7 days reverse repo rate data as a risk-free asset return are the data prepared for processing. Data processing is carried out to obtain monthly return, risk and sharpe performance values for each instrument. The results of data processing obtained 120 data for each instrument so that the number of observations obtained was 360 data.

Furthermore, researchers conduct normality tests and homogeneity tests, if the assumptions of normality and homogeneity are met then proceed with one way ANOVA test as a hypothesis test. However, if the assumptions of normality or homogeneity are not met, the hypothesis test performed is the Kruskall-Wallis test. Tests were carried out using the SPSS 22 application. Variable descriptions are presented in Table 1 as follows:

Table 1. Variable Description

Variable	Description	Formula
Return	Monthly asset gain/loss rate	$R = \frac{P_t - P_{t-1}}{P_{t-1}}$
Risk	Monthly asset risk level	$\sigma_i = \sqrt{\sum_{j=1}^{n} (R_{ij} - E(R_i))^2 . P_j}$
Sharpe Performance	Monthly asset performance based on sharpe ratio	$Si = \frac{R_p - R_f}{SD_i}$

3. RESULTS AND DISCUSSION

This section will contain research data obtained over a period of 10 years or 120 months from January 2013 to December 2022. Table 2 explains that the value of missing cases shows 0 with these results it can be interpreted that all data is valid, available and can be used properly. Furthermore, the increase and decrease of return, risk and performance of all variables will be discussed using graphs.

Figure 5 shows that bitcoin returns are instruments that have the highest fluctuations compared to gold and stocks. The average monthly return of bitcoin is 11.59% during the data period January 2013 to December 2022. The highest bitcoin monthly return was achieved in November 2013 at 461.25%, while the largest loss or lowest return occurred in June 2022 at -37.29%. In gold assets, the average monthly return is 0.16%. The highest average monthly return on gold was achieved in July 2020 at 10.90%, while the lowest return occurred in June 2013 with a value of -11.01%. The average monthly return of BCA shares was recorded at 1.45%. The highest monthly return on BCA shares of 16.74% was achieved in September 2014, while the lowest return was -13.63% which occurred in September 2020.

Table 2. Descriptive Test Results

Variable	Name of Asset	Cases					
		Valid		Missing		Total	
		N	%	N	%	N	%
Return	Bitcoin	120	100	0	0	120	100
	Gold	120	100	0	0	120	100
	BCA Shares	120	100	0	0	120	100
Risk	Bitcoin	120	100	0	0	120	100
	Gold	120	100	0	0	120	100
	BCA Shares	120	100	0	0	120	100
Sharpe Performance	Bitcoin	120	100	0	0	120	100
	Gold	120	100	0	0	120	100
	BCA Shares	120	100	0	0	120	100

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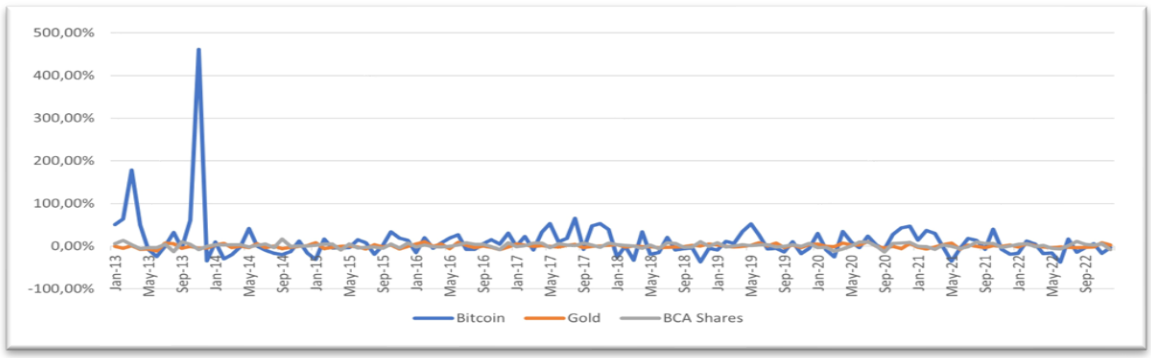

Figure 5. Monthly Returns Comparison of Bitcoin, Gold and BCA Shares

Figure 6 shows that bitcoin is an instrument that has the highest risk (standard deviation) compared to gold and stocks. The average monthly risk value of bitcoin is 0.0383 during the data period January 2013 to December 2022. The highest monthly risk on bitcoin occurred in April 2013 at 0.1416, while the lowest risk occurred in September 2016 at 0.0088. The average monthly risk value of gold is 0.0086. The highest monthly risk value of gold occurred in April 2013 of 0.0243, while the lowest risk value was 0.0041 in March 2013. BCA shares have an average monthly risk value of 0.0144. The highest monthly risk occurred in March 2020 of 0.0548, while the lowest risk of 0.0057 occurred in April 2016.

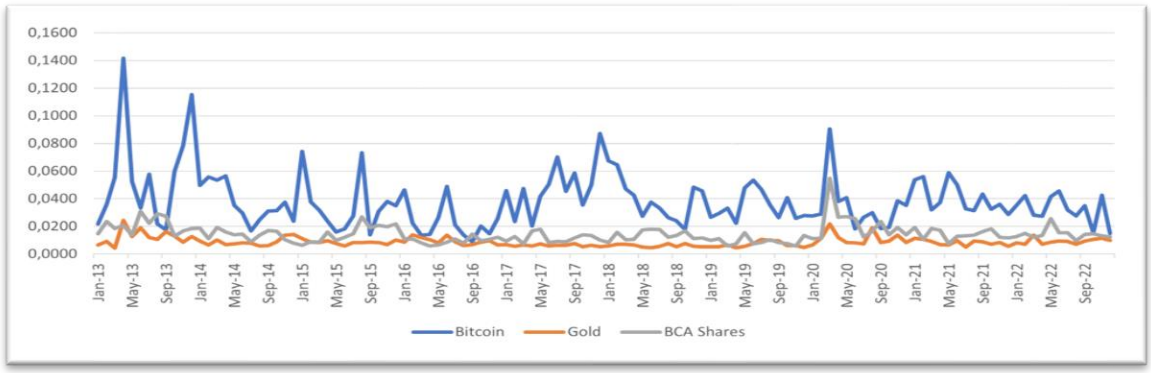

Figure 6. Monthly Risk Comparison of Bitcoin, Gold and BCA Shares

Figure 7 shows an overview of the monthly performance of bitcoin, gold and BCA shares based on the sharpe measure. The performance of bitcoin is proven to be higher than the other two assets, namely gold and BCA shares. This can be seen from the position of the line on the graph, BCA shares and gold have a line below bitcoin. The average monthly performance of bitcoin as indicated by the sharpe value was recorded at 0.9507 during the data period January 2013 to December 2022. The highest monthly performance of bitcoin was reached in November 2013 at 57.8562. The lowest monthly performance occurred in July 2014 which amounted to -10.2561. The average monthly performance of gold was recorded at -6.5805. The highest monthly performance of gold was reached in July 2020 at 9.5684, while the lowest performance of -22.5416 occurred in September 2014. The average monthly performance of BCA shares was recorded at -3.0532. The highest monthly performance of BCA shares was reached in August 2022 at 8.0608 while the lowest performance occurred in April 2016 at -15.0803.

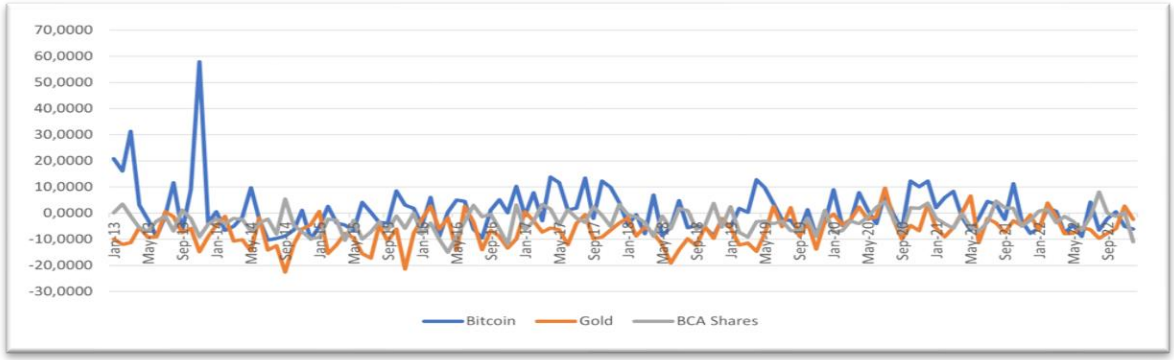

Figure 7. Monthly Performance Comparison of Bitcoin, Gold and BCA Shares with Sharpe Method

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Table 3. Normality Test Results

Variable	Name of Asset	Kolmogorov-smirnov		
		Statistic	df	Sig.
Return	Bitcoin	0.183	120	0.000
	Gold	0.083	120	0.042
	BCA Shares	0.052	120	0.200
Risk	Bitcoin	0.122	120	0.000
	Gold	0.139	120	0.000
	BCA Shares	0.117	120	0.000
Sharpe Performance	Bitcoin	0.110	120	0.001
	Gold	0.033	120	0.200
	BCA Shares	0.040	120	0.200

The results of normality testing with an error rate of 5 percent in Table 3, can explain that the bitcoin and gold return variables have abnormal data distribution, this is evidenced by the significance value of 0.000 and 0.042 or <0.05, respectively. BCA stock returns have normal data distribution, this is evidenced by a significance value of 0.200 or >0.05. The risk variable shows that bitcoin, gold and BCA stock instruments have abnormal data distribution, this is evidenced by their respective significance values of 0.000, 0.000 and 0.000 or <0.05. The results of testing the sharpe performance variables of each instrument show that bitcoin has abnormal data distribution because it has a significance value <0.05, namely 0.001, while gold and BCA shares have normal data distribution because they have a significance value >0.05, each of which is 0.200.

Based on Table 4, the homogeneity test above can be explained that in all variables – return, risk and sharpe performance obtained a significance value of 0.000 or <0.05. Thus it can be concluded that all variables – return, risk and performance have data that is not homogeneous or different variances. In accordance with the methods discussed earlier, if the assumptions of normality and homogeneity are not fully met, then hypothesis testing is carried out using non-parametric statistical tests, namely the Kruskall-Wallis test.

Table 4. Homogeneity Test Results

Variable	Levene Statistic	df1	df2	Sig.
Return	29.059	2	357	0.000
Risk	65.920	2	357	0.000
Sharpe Performance	14.346	2	357	0.000

Table 5 shows that in the return variable, the first rank was achieved by BCA shares, the second rank was achieved by bitcoin and gold in the last position with values of 188.42, 186.73 and 166.35 respectively. This shows that BCA shares provide the best average return compared to bitcoin and gold. In the risk variable, the first rank was achieved by bitcoin, the second rank was occupied by BCA shares and gold in the last position with respective values of 291.49, 167.78 and 82.23. Looking at the results above, it can be concluded that bitcoin has a higher risk than BCA shares and gold. Bitcoin has the first rank on the sharpe performance variable followed by BCA shares in second place and gold in the last position with the acquisition of values of 228.76, 187.86 and 124.88 respectively. These results show that bitcoin has the best performance compared to the other two assets.

Based on the data in Table 6, the return variable obtained a significance value above 0.05, which is 0.188. It can be concluded that H01 is accepted and Ha1 is rejected, meaning that there is no significant difference between the return of bitcoin, gold and BCA shares. The risk variable obtained a significance value below 0.05, which amounted to 0.000. Thus H02 is rejected and Ha2 is accepted, meaning that there is a significant difference between the risk of bitcoin, gold and BCA shares. The performance variable obtained a significance value below 0.05, which is 0.000. Thus H03 is rejected and Ha3 is accepted, meaning that there is a significant difference between the performance of bitcoin, gold and BCA shares using the Sharpe method.

Tabel 5. Kruskall-Wallis Ranking

Variable	Name of Asset	N	Mean Rank
Return	Bitcoin	120	186.73
	Gold	120	166.35
	BCA Shares	120	188.42
	Total	360	
Risk	Bitcoin	120	291.49
	Gold	120	82.23
	BCA Shares	120	167.78
	Total	360	
Sharpe Performance	Bitcoin	120	228.76
	Gold	120	124.88
	BCA Shares	120	187.86

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Variable	Name of Asset	N	Mean Rank
	Total	360	

Table 6. Kruskall-Wallis Test Results

	Return	Risk	Sharpe Performance
Chi-Square	3.344	245.308	60.678
Df	2	2	2
Asymp. Sig.	0.188	0.000	0.000

3.1 Discussion

This study shows that there is no difference between the returns provided by bitcoin, gold and BCA shares. The results of this study are in line with research conducted by (Budiartomo & Setiyono, 2023) with the population of the monthly closing price of bitcoin, the LQ45 stock index and gold in the data period January 2018 to December 2020. Judging from the average return ranking, BCA shares are in first place, then bitcoin is in second place and gold is in last place. The above results differ from research (Mahessara & Kartawinata, 2018) which states that the most instruments in providing average profits per year are bitcoin in the first position and gold in the second position and stocks in the last position. This difference occurs because the previous research period was only conducted for 3 years (2014-2017) and used different data.

The risk value owned by bitcoin, gold and BCA shares has a significant difference. The results of the study are supported by research conducted by (Budiartomo & Setiyono, 2023; Hamdika et al., 2022; Lumbantobing & Sadalia, 2021; Meiyura & Azib, 2020) which states that the risks of bitcoin, stocks and gold have significant differences. Judging from the ranking, the risk given by bitcoin is ranked first, then BCA shares are in second place and gold is in last place, this finding is supported by (Budiartomo & Setiyono, 2023). Bitcoin is an asset with high volatility. Figure 6 shows that bitcoin risk is far above BCA shares and gold. Based on the above findings, it can be concluded that bitcoin has the highest risk when compared to BCA shares and gold.

The performance of bitcoin, gold and BCA shares using the sharpe method has a significant difference. The results of this study are supported by research (Andaresta & Purwanto, 2023; Budiartomo & Setiyono, 2023; Hamdika et al., 2022) which states that the performance of bitcoin, stocks and gold has a difference. The cryptocurrency market has grown rapidly over the past ten years. Bitcoin has performed brilliantly as an investment, this can be observed by looking at its growth over the past ten years. Based on investing.com data, at the beginning of 2013 the price of 1 bitcoin was recorded at only around 20 USD, but at its highest position which occurred at the end of 2021 it was recorded that the price of 1 bitcoin was around 69,000 USD, this shows that bitcoin grew more than 300,000%. Comparison of bitcoin performance can be seen through Figure 7, it is quite clear that bitcoin has the best performance. This study proves that the performance rating measured by the highest sharpe value is achieved by bitcoin followed by BCA shares and gold in the last position, this result is supported by research (Henriques & Sadorsky, 2018; Mahessara & Kartawinata, 2018) which states that bitcoin has the best performance compared to other assets. However, before deciding to invest, prospective investors need to weigh the performance and risks contained therein, for novice investors who want to have a cryptocurrency portfolio, it is recommended to invest in cryptocurrencies that are ranked in the top 5 based on market capitalization and have been registered with BAPPEBTI to minimize risk (Ichsani & Mahendra, 2022).

4. CONCLUSION

Based on the results of research and discussion, it can be concluded that the return of bitcoin, gold and BCA shares has no difference while the risk and performance of bitcoin, gold and BCA shares have a difference, the results of this study are supported by research (Budiartomo & Setiyono, 2023). The interesting finding obtained is that BCA shares get the highest average return value followed by bitcoin in second position and gold in last while the highest risk and performance is obtained by bitcoin followed by BCA shares in second position and gold in last position. The results of this study can provide advice to investors that investing in BCA shares has a better average profit potential than bitcoin and gold, BCA shares also have a lower risk than bitcoin. This research can be used as a reference and increase literacy for investors, especially investors who want new knowledge and a better understanding of the return, risk and performance of cryptocurrencies, gold and stocks. The results of this study are expected to be a stimulus for further research on risk management and investment analysis, especially investment in different asset classes. The limitations of this study are in the use of data from 2013-2022 and the use of limited assets, namely bitcoin, gold (xau-usd) and BCA shares. For further research, it is recommended to add other types of assets such as Ethereum (ETH), Ripple (XRP), Cardano (ADA) for cryptocurrency assets with the criteria of having a top 10 market capitalization and other stocks such as BBRI, BMRI or others with the criteria of having high liquidity and having a top 10 market capitalization on the Indonesia Stock Exchange (IDX) to get more accurate results.

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