The Contrarian: Finance, Accounting, and Business Research
Volume 1, Issue 2, 2022
pp. 54-60

The preference of Bitcoin and stocks in Indonesia

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Received 1 November 2022
Revised 10 November 2022
Accepted 20 December 2022
Published online 16 February 2023

DOI: 10.58784/cfabr.13

ABSTRACT

Bitcoin is an alternative and is currently in demand by investors. This condition triggers investors' preferences to invest in stocks or cryptocurrencies. This study examines the causality between Bitcoin and the market index in Indonesia in terms of determining the preferences of investors. On this objective, the sample is taken from 1 January 2022 to 31 October 2022. The findings of this study imply that investors' preferences tend to be caused by stock price movements. But, the result of estimation also finds that the preference of investors tends to be influenced by the movement of Bitcoin.

Keywords: IHSG; Bitcoin; cryptocurrencies; investment
JEL Classification: F37; G11; G15

1. Introduction

Cryptocurrencies are a new investment instrument and are increasingly trending among the world community. Along with the development of the business world, cryptocurrencies, such as Bitcoin, are starting to enter the Indonesian market with various complexities. According to Samputra and Putra (2020), Bitcoin has a small positive effect on transactions of capital (in the short and long terms) in Indonesia. Samputra and Putra (2020) emphasize that although the Blockchain system can be the foundation for the financial industry revolution, Bitcoin has the potential to weaken the resilience of the economy by reducing balance of payments.

The survey by Munadiati et al. (2022) finds that investors (especially millennial youth) tend to prefer cryptocurrencies by implementing risk management as it has the possibility for high profit. In addition, Perayunda and Mahyuni (2022) also suggest that risk tolerance can be used as a basis for considering investment decisions for millennial youth investors, considering that cryptocurrencies tend to have high risks. Risk management is considered an important factor because Stevanus and Rahadi (2020) also emphasize that risk and security are the reasons investors make investment decisions. The purpose of this study is to find out the preferences of investors by examining causality between Bitcoin and the market index (or IHSG).

2. Literature review

In Indonesia, investors' interest in cryptocurrencies is increasing along with the benefits offered. According to Farida and Khasanah (2021), Bitcoin is one of the investments that investors tend to be most interested in. Supporting the study of Huda and Hambali (2020) and Jufridar et al. (2021), Rejeb et al. (2021) confirm that apart from providing various benefits such

as low transaction costs, cryptocurrencies also have several obstacles including high volatility. The observation of Setiawan (2020) in the period January 1, 2018, to December 31 2019 shows that the risk returns of cryptocurrencies vary quite a bit in relation to the volatility of these assets. Moreover, Purnomo et al. (2022) find that throughout 2021 or during the COVID-19 pandemic, the cryptocurrencies such as Bitcoin experienced a significant decline.

Some studies provide evidence about the relationship between the IHSG and cryptocurrencies as an impact on investors' investment preference. Sihombing et al. (2020) find that movements in the value of cryptocurrencies had a significant positive impact on banking stock prices in the period 2016 to 2018. In addition, the study of Andrean (2019) find that the movements of the IHSG do not have an impact on the movement of Bitcoin in the short term but it had a small effect in the long term. The finding by Warsito (2020) also implies that investors' preference for Bitcoin and Ethereum will not have an impact on the IHSG so that the relationship between the two assets is not significant, especially in the period January 1, 2017 to December 31, 2019. Fahrani and Bachtiar (2022) also confirm that the movement of returns from Bitcoin has no significant effect on the market return of IHSG from 2016 to 2020. The other side, Siauwijaya and Sanjung (2022) find that the returns of Bitcoin are insignificantly affected by market returns (or IHSG) during January 1, 2016, to December 31, 2020.

The study of Wicaksono and Arfianto (2022) find that the positive response of the IHSG to changes in returns of Bitcoin in the period 8 December 2016 to 8 December 2021 causes stocks could not to be used as a safe haven for Bitcoin. Reversely, Anggita and Robiyanto (2022) find that Bitcoin is negatively correlated with LQ45 stocks during 2020, so it is suggested it can be used as hedging to improve the portfolio performance. Consistently, Widarto et al. (2022) also confirm the same result in ASEAN-5 during July 2013 until August 2021. Even though Bitcoin is the most profitable investment, Gunawan and Anggono (2021) do not recommend it as a safe haven investment considering its volatility. Zuhriyah et al. (2022) confirm that Bitcoin tends to be more volatile before and during the COVID-19 pandemic compared to IHSG. Based on previous evidence the hypothesis of this study is noted as follows.

Ha: IHSG correlates with Bitcoin

3. Research method

This study uses the daily closing price of the Jakarta Composite Index (IHSG) in IDR and Bitcoin (BTC) in USD as the sample. The observation period of the sample is from 1 January 2022 to 31 October 2022. In objective to test the hypothesis, several steps are used, first is testing actual data stationary. On this procedure, the Augmented Dickey-Fuller (ADF) test is implemented to detect unit root problem with basic formula as follows.

$$\Delta y_t = \alpha + Y y_{t-1} + V_t \quad (1)$$

In case the data is not stationary then this study applies the differencing with formula as follows.

$$\Delta y_t = \alpha + Y y_{t-1} + \sum_{s=1}^{m} a_s \Delta y_{t-s} + V_t \quad (2)$$

Second, this study performs causality on actual data with Granger causality test with formula as follows.

$$y_t = c + \gamma_1 y_{t-1} + \gamma_2 y_{t-2} + \cdots + \gamma_p y_{t-p} + \beta_1 x_{t-1} + \beta_2 x_{t-2} + \cdots + \beta_p x_{t-p} + \varepsilon_t \quad (3)$$

Third, the autoregressive integrated moving average (ARIMA) is used to estimate data for the next 150 days. Fourth, this study repeats the first to third procedures for estimated data.

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4. Result and discussion

Figure 1 describes the trend of IHSG and BTC from 1 January 2022 to 31 October 2022. The IHSG movement tends to fluctuate, while BTC shows downward trend. Based on this pattern, it indicates that BTC tends to be divested by investors compared to stock investment in the Indonesian capital market. This pattern also indicates that the preferences of investors in Indonesia for stock investment tend to be relatively stable.

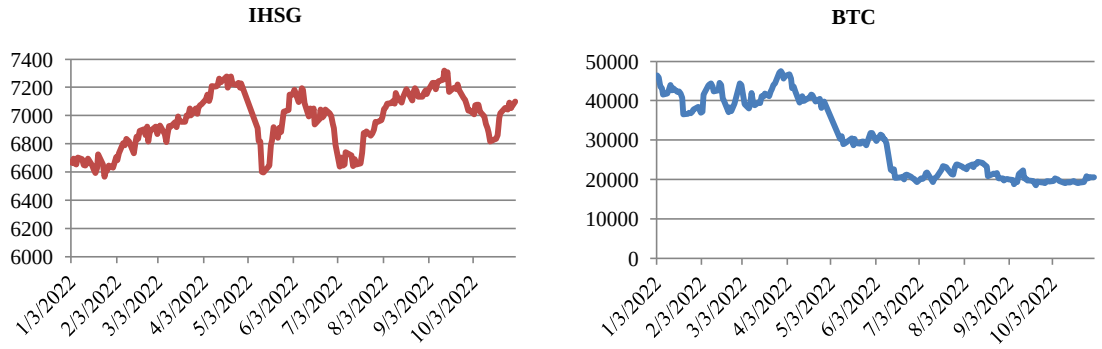

Figure 1. The trend of IHSG and BTC

To confirm the IHSG and BTC trends, the market price movements for these two assets are presented in the form of a histogram. Figure 2 describes the histogram with the normal curve of IHSG and BTC. Based on the histogram, this study finds that the skewness of the IHSG is -0.28 and BTC is 0.30. These results imply that IHSG tends to be dominated by relatively high market prices while BTC by relatively low market prices. Confirming the histogram peak, this study finds that the kurtosis of IHSG is -1.00 and BTC is -1.61. However, even though the peaks of the two assets are platykurtic but the IHSG shows a higher peak than BTC.

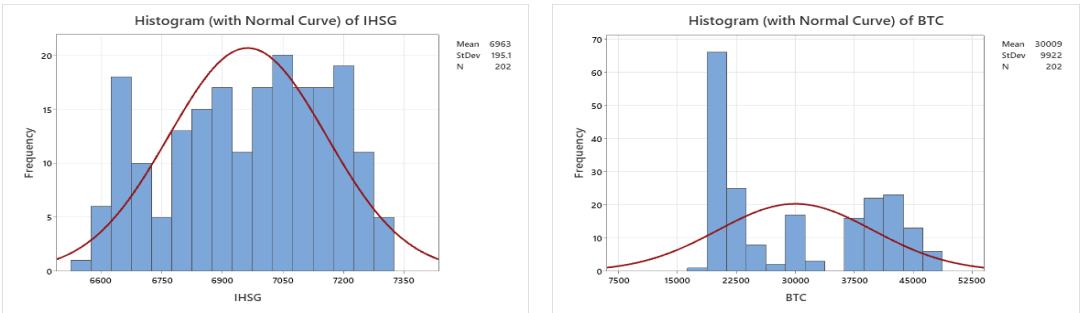

Figure 2. The histogram of IHSG and BTC

Furthermore, Table 1 presents the results of the Pearson correlation in terms of examining the relationship between IHSG and BTC. The result shows that IHSG and BTC have a negative and significant relationship which means the two assets have opposite directions and this study accepts Ha. These results tend to

indicate that investors' preference for stock investment is still quite positive although the investment in Bitcoin possibly offers good opportunity.

Table 1. Correlation test

	IHSG	BTC
IHSG	1	-0.249***
BTC	-0.249***	1

*, **, *** are significant at the 0.1, 0.05, and 0.01

The further step, the stationary of actual data is examined with the ADF test. Table 2 presents the ADF test according to Schwarz Info Criterion for actual data of IHSG and BTC. The ADF test (without differencing) shows that the actual data of IHSG and BTC have unit root problems but they are stationary at the first level of differencing. On this assumption, this study can proceed to the Granger causality test.

Table 2. ADF test

	t-Statistic	Significance
Without difference		
IHSG	-2.347262	0.1583
BTC	-1.482018	0.5409
1st level difference		
IHSG	-14.75152	0.0000
BTC	-13.92975	0.0000

Table 3 presents the results of the Granger causality test at lag 1 for the IHSG relationship with BTC. The test results show that the F value (3.34311) of the IHSG compared to BTC is significant at the level of 10%. Supporting the results of the correlation test, this finding indicates that the preferences of investors are still positive towards investing in stocks relative to Bitcoin. Consistent with Huda and Hambali (2020), Setiawan (2020), Jufridar et al. (2021), and Rejeb et al. (2021), the findings of this study indicate that the preference of investors for stocks is due to the high volatility of Bitcoin.

Table 3. Causality test

	F-Statistic	Significance
IHSG does not Granger Cause BTC	3.34311	0.0690
BTC does not Granger Cause IHSG	0.03348	0.8550

This study continues the analysis by conducting ARIMA to get estimated data for the next 150 days in term to examine the causality between IHSG and BTC. In order to obtain a good ARIMA model, the first differencing is performed on the time series data of the IHSG and BTC. Figure 3 describes the autocorrelation and partial autocorrelation of IHSG and BTC with results that all of the data is stationary.

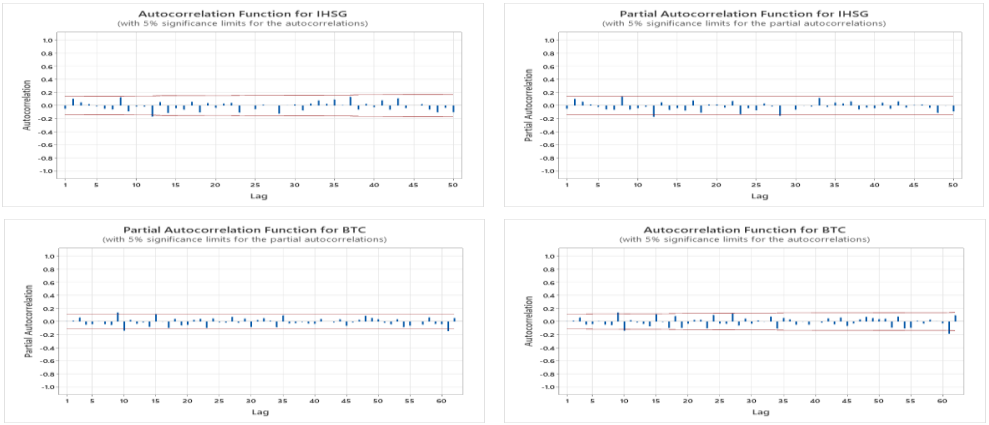

Figure 3. The autocorrelation and partial autocorrelation of IHSG and BTC

After passing the selection of the model, it is determined that IHSG applies the ARIMA model (2, 1, 2) and BTC applies ARIMA (3, 1, 2). Table 4 shows that all independent variables are significant except AR 3 of BTC however all values of Ljung-Box Chi-Square are insignificant at 0.1, 0.05, and 0.01. Based on the selected ARIMA model, this study estimates the data for the next 150 days.

Table 4. ARIMA model of IHSG and BTC

	IHSG	BTC
AR 1	0.8995***	-0.7542***
AR 2	-0.8793***	-0.8553***
AR 3		0.0859
MA 1	0.9306***	-0.7709***
MA 2	-0.9751***	-0.9259***
Constant	2.24	-227
Ljung-Box Chi-Square:		
Lag 12	10.44	11.01
Lag 24	22.34	21.30
Lag 36	31.18	37.61
Lag 48	45.24	46.67

*, **, *** are significant at the 0.1, 0.05, and 0.01

This study uses estimated data from ARIMA to confirm the correlation test previously performed on actual data. Consistently, Table 5 shows that the relationship between IHSG and BTC is perfectly negative and significant. The results of the correlation test still indicate that investors have a relative preference for investing in stocks and Bitcoin.

Table 5. Correlation test on estimate data

	IHSG	BTC
IHSG	1	-1.000***
BTC	-1.000***	1

*, **, *** are significant at the 0.1, 0.05, and 0.01

This study detects for unit root problem in the estimation data from ARIMA. Table 6 shows that the estimation data has no problems with the unit root, especially at the first level difference, so that it can be continued with Granger causality tests.

Table 6. ADF test on estimate data

	t-Statistic	Significance
Without difference		
IHSG	0.103876	0.9650
BTC	0.124918	0.9666
1st level difference		
IHSG	-21.23064	0.0000
BTC	-9.314381	0.0000

Table 7 presents the results of the Granger causality test at the first lag which is inconsistent with the previous test. The Granger causality test confirms that the negative correlation between IHSG and BTC is significantly affected by BTC. The results predict that investors' preference for stock or Bitcoin investment will tend to be influenced by the movement of Bitcoin itself. In general, investors' preferences tend to be influenced by expectations or speculations that may occur in an investment instrument in the future.

Table 7. Causality test on estimate data

	F-Statistic	Significance
IHSG does not Granger Cause BTC	2.56694	0.1113
BTC does not Granger Cause IHSG	74.6943	9.E-15

5. Conclusion

Investor preferences start with investment opportunities that can be combined with other investments. Stocks and Bitcoin are investments that offer many options but also come with their own set of risks. Bitcoin is one of the cryptocurrencies that has been in great demand by investors. The findings from this study show that stocks and Bitcoin are significantly inversely related. Based on actual and estimated data, this relationship tends to be caused by uncertain return on investment. In addition, the opportunistic nature of investors in expecting optimal returns tends to be the cause of preference for investing.

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