



Empirical Case Among Explanatory Asset, Financial Asset Dan Macro-Economic on Return Bitcoin

Muhammad Rizky Nasution^(✉), Isfenti Sadalia, and Nisrul Irawati

Universitas Sumatera Utara, Medan, Indonesia
muhammad.rizkynst7@gmail.com

Abstract. The S&P 500 Index, NIKKEI 225, World Oil Prices, Gold Prices, Bitcoin Supply, Bitcoin Miners Revenue, and Bitcoin Returns are some of the research variables used in this study. The websites <https://Blockchain.com>, <https://finance.yahoo.com>, and other sites that promote research served as the study's data sources. In order to generate a target population of 1,096 (3 years x 365) daily report data for the data sample in this study, a documentation study on the publication of daily cryptocurrency transaction reports was done, yielding time series data from January 1, 2020 to December 31, 2022. Time series data analysis using Engel Granger's Error Correction Model is the method employed (ECM). The computer application Econometric Views (Eviews) is the analysis tool employed. The findings of this study show that Bitcoin Supply significantly and negatively affects bitcoin returns. Returns on bitcoin are positively and significantly impacted by Bitcoin Miners' Revenue. Returns on bitcoin are positively and significantly impacted by S&P 500. Returns on bitcoin are negatively and negligibly impacted by Nikkei 225. Returns on bitcoin have a favorable and large impact from global oil prices. Returns on bitcoin are positively and negligibly impacted by the gold price.

Keywords: Bitcoin Supply · Bitcoin Miners Revenue · S&P 500 Index · Nikkei 225 Index

1 Introduction

The presence of cryptocurrencies has gained worldwide acceptance since their introduction in 2009. Because of its distinctive features, which include traits of both conventional financial assets and speculative assets, it has received a great deal of attention from regulators, the general public, and investors [1]. Bitcoin is one of the cryptocurrencies' digital currencies. While being designed as an alternate form of payment, Bitcoin is also used as a financial asset [2]. A person using the alias Satoshi Nakamoto created Bitcoin in 2008 and made it known to the world in 2009 [3].

The highly volatile returns of bitcoin and most other cryptocurrencies attract speculators who hope to sell the digital assets, which they have bought now, at a higher price later. Figure 1 illustrates the development of bitcoin (BTC) returns from 2009–2022.

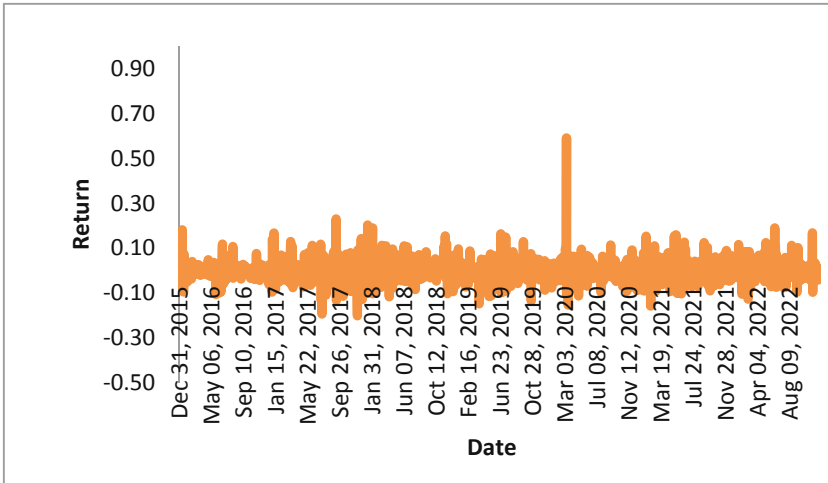


Fig. 1. Bitcoin Return Fluctuation

Explanatory Asset factor variables used in research to reflect the influence of the bitcoin market itself are Bitcoin Supply and Bitcoin Miners Revenue on bitcoin returns [4]. Furthermore, the financial asset factor variable, this study uses the price of the US stock market index S&P 500 index and NIKKEI 225 Index as a reference in this study. The index is based because the United States stock market is considered a representative measure of the performance of equity markets around the world [5].

Macro-economic variables are believed to largely have an impact on the cryptocurrency market. Therefore, the author includes world oil prices, and gold prices in the research model because they have the characteristics of both rare and expensive assets and can be used as an alternative safe investment instrument (safe heaven) when the bitcoin market is falling [2].

Return bitcoin is the rate of profit obtained by investors on the investment made. It can be concluded that return is the result obtained from investment [6]. Bitcoin supply is the number or amount of Bitcoin circulating in the market, units in BTC. Bitcoin supply data in this study is the number or amount of Bitcoin circulating in the market, units in BTC, Ciaian [7] and Kristoufek [1]. The fee per transaction is the payment given to the "miner" to run the Bitcoin system, in USD. Bitcoin mining is an individual activity to obtain bitcoin by running a bitcoin miner application on a computer device (hardware or cloud mining) connected to the blockchain network to run the bitcoin algorithm so that it can get a reward in the form of bitcoin from the system [8]. One of the indices that serves as a leading indication of changes in the US stock market is the S&P 500. It consists of 500 equities produced by 500 significant issuers. In the meanwhile, Jogiyanto [9] uses the S&P 500 Index variable as a stand-in for global macroeconomic factors to explain the changes in Index prices. The NIKKEI 225 is one of the indices that is a leading indicator of the movement of the United States stock market. It contains 225 stocks issued by 225 major issuers [10]. The world oil price used is the commodity price of West Texas Intermediate (WTI) crude oil or better known as light sweet oil. The limited

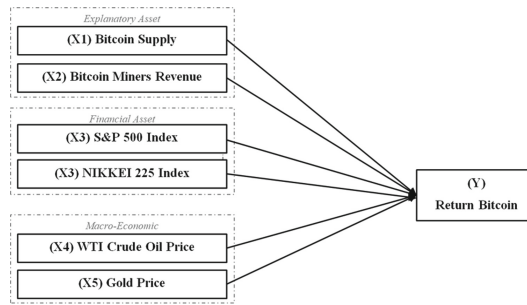


Fig. 2. Conceptual Framework.

amount of gold makes its price always increase in the long run. Similarly, bitcoin has a limited supply.

2 Research Methods

This research uses a quantitative approach. So that this research will be able to describe how the relationship between Explanatory assets, financial assets and macro-economics on bitcoin returns. Using online media, including the websites <https://finance.yahoo.com/> and <https://blockchain.com/>, this research was carried out in Indonesia. The type of data used in this study is time series data, which was collected from January 2020 to December 2022 through the release of daily cryptocurrency transaction reports, resulting in a target population of 1,096 (3 years \times 365) daily report data for the sample data.

The data analysis used is time series data analysis with Engel Granger's Error Correction Model (ECM). The analysis tool used is the Econometric Views (Eviews) computer program (Fig. 2).

3 Result and Discussion

See Tables 1 and 2.

Table 1. Stationarity Test Result

Variabel	Stationer Test on Level		Stationer Test on First Different	
	Probability	Stationerity	Probability	Stationerity
<i>Return Bitcoin</i>	0.0000	Stationer	0.0000	Stationer
<i>Bitcoin Supply</i>	0.0045	Stationer	0.0000	Stationer
<i>Miners Revenue Bitcoin</i>	0.3061	Non Stationer	0.0000	Stationer
Indeks S&P 500	0.4121	Non Stationer	0.0000	Stationer
NIKKEI 225	0.4991	Non Stationer	0.0000	Stationer
World Oil Price	0.1811	Non Stationer	0.0000	Stationer
Gold Price	0.0089	Stationer	0.0000	Stationer

Table 2. Error Correction Model Result

Variable	Coefficient	t-Statistic	Prob.
D(SUPPLY)	-9.45E-05	-7.790531	0.0000
D(MINER_REV)	3.65E-09	9.125176	0.0000
D(SNP)	0.000215	9.938295	0.0000
D(NIKKEI)	-5.88E-07	-0.135828	0.8920
D(WTI)	0.010729	2.182786	0.0293
D(GOLD)	5.97E-05	1.067429	0.2860
RESID01_ECT(-1)	-1.120557	-38.40947	0.0000
C	-0.000237	-0.228461	0.8193
R-squared	0.618444		
F-statistic	251.6941		
Prob(F-statistic)	0.000000		
Durbin-Watson stat	2.085958		

4 Conclusion

According to the findings of this study, Bitcoin Supply significantly and negatively affects Bitcoin Return at the 5% level of significance. The results of this study are in line with the results of studies undertaken by Bakas [4] and Dubey [10] which suggest that trading volume has a favorable and significant effect on bitcoin returns. According to the findings of this study, Bitcoin Returns are positively and significantly impacted by Bitcoin Miners Revenue at a significance level of 5%. The findings of this study are consistent with those of research by Wulandari [11], which found that mining revenue significantly increases bitcoin returns. This, however, conflicts with Bakas [4] and Glaser

et al. [12] finding that there is a large inverse link between bitcoin returns and miner revenue.

The S&P 500 Index has a favorable and substantial impact on Bitcoin Return at the = 5% significance level, according to the findings of this study. The findings of this study concur with those of Bakas' earlier research [4]. The S&P 500 Index and bitcoin returns have a significant inverse relationship, according to Bakas [4], Sobetov [13], and Kjaerland [14]. Yet, this goes against the claims made in Poyser [15] and Rahayu et al. [16] that the S&P 500 Index has a negative and large impact on bitcoin returns.

The NIKKEI 225 Index has a negative and insignificant effect on Bitcoin Return at the = 5% significance level, according to the findings of this study. The findings of this study are consistent with those of research Dubey [10], however they go against the findings of Kjaerland [14], which claim that the NIKKEI 225 Index has little bearing on the return of bitcoin. The Global Oil Price has a favorable and considerable impact on Bitcoin Returns, according to the findings of this study. While Kjaerland [14] discovered a significant inverse link between bitcoin returns and world oil prices.

According to the findings of this study, at a significance level of 5%, the Gold Price has a positive but small impact on Bitcoin Return. This, however, goes against research Dubey [10] that claims gold prices have a detrimental impact on bitcoin returns.

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