
Moderation of Foreign Exchange Rates on The Effect of Cryptocurrency and Money Supply on The Indonesia Composite Index (IHSG)

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Abstract:

This study aims to test whether cryptocurrency and money supply affect Indonesia Composite Index (IHSG) with exchange rates as a moderating variable. This research is quantitative research. The population of this study is return value of cryptocurrency, money supply, exchange rates, and Indonesia Composite Index every month during period 2020-2022. The number of samples obtained was 36 data, the data was obtained using saturation sampling technique. This research was conducted using SPSS 26 to test the data. The results of this study state that cryptocurrency have a positive effect on Indonesia Composite Index while money supply have no effect on Indonesia Composite Index. Exchange rates unable to moderate the relationship between cryptocurrency and Indonesia Composite Index but able to moderate the relationship between money supply and Indonesia Composite Index. Mutually, cryptocurrency and money supply jointly affect Indonesia Composite Index by 24,3%. However, this study also highlights the need for further research to look at other factors that can influence the IHSG and its impact on the IHSG.

Keywords: *Cryptocurrency, Money Supply, Foreign Exchange Rates*

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1. Introduction

Investment is an activity of spending time, representing a capital that was put on something else in order for the capital to increase in value on the future (Yuliiia & Lidiia, 2018). One of the objectives of investment is to accelerate economic growth. Economic growth is crucial because it involves improving the welfare of a country. The government always strives to increase economic growth, by drafting regulations that support economic growth, increasing export levels, and others. The number of investor growth in recent times continues to have rapid growth, for example, The size of the investor network on Crowdcube has grown exponentially from around 10,000 in early 2012 to 30,000 in early 2013, 50,000 in early

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2014, over 100,000 in early 2015, over 200,000 in early 2016, and over 400,000 by June 2017 (Estrin et al., 2018). an investor must have the skills to observe and consider economic indicators that will affect the direction of stock movements, if the capital market were dominated by gambling investors, price movements would be worse, the reason is that investors would not consider whether a company is in crisis or not, but would just wait for the stock price to rise and then sell (Gainau, 2020). Cryptocurrency according to Dabrowski & Janikowski (2018) is a type of contemporary form of private money, VCs are owned in digital form, in the sense that VCs do not have an original form and are only forms and collections of data that can only be used to transact in the digital world and the internet for now. Cryptocurrency is currently widely used as an investment medium with high returns, but investment in cryptocurrency has a very high risk because the influencing factors will be more and more due to the form of investment that has no real form. Sami & Abdallah (2020) found that Cryptocurrency has a negative influence on the value of stock returns in the Gulf country, these results are also supported by research conducted by Du et al. (2019). But in other research conducted by (Sami & Abdallah, 2021) it was found that Cryptocurrency has a positive impact on the stock market in the MENA region, these results are supported by research conducted by (Jimoh & Benjamin, 2020) and (Jeris et al., 2022).

Money Supply is the total amount of money circulating in society. The increase in the money supply circulating in a country proves that the country's economy is a developing country. If a country's economy is experiencing a good increase, the money supply that will circulate will also increase (Conrad, 2021). According to Sumaryoto et al. (2021) when commodity prices in the form of goods and services increase in a country, the smaller the value of money in that country will be. An increasing inflation rate can cause general economic disruption so that people's purchasing power will decrease, the value of the currency that has decreased can also cause a decrease in people's income. An increase in the amount of money in circulation will cause bank interest rates to decrease and vice versa when the amount of money in circulation decreases, bank interest rates increase. Because of this, investors prefer to invest their money instead of keeping it in the bank and vice versa. Based on research conducted by Alifiah (2014), it was found that there is no impact given by the money supply on the value of stocks, meaning that the growth in the value of money supply does not have any form of influence on the value of JCI. But in another study, Picha (2017) and (Karki, 2018) found that money supply or money supply has a positive and significant impact on the value of the stock index., that is contradicting with the research conducted by (Tursoy, 2016) and (AbdulRahman & Adamu, 2018) found that money supply has negative impact on the stock market.

Exchange rates and stock prices are two important macroeconomic variables that are closely related, exchange rate changes affect stock prices because an appreciation or devaluation of the currency reduces or increases the international competitiveness and cash flows of domestic companies, causing domestic stock prices to fall or increase. Similarly, changes in stock prices affect exchange rates because an appreciation of domestic stock prices triggers exchange rate adjustments to offset fluctuations in demand and supply of domestic and foreign assets in an internationally diversified portfolio (Reboredo et al., 2016). The effect of the appreciation value of currency also has an impact on the marketing of local products

that will be exported abroad, including in terms of price and product competition. The increase in the amount of appreciation in a country will affect the foreign exchange reserves of the country due to the higher amount of imports when faced with the amount of exports, this makes investors not interested in investing their funds into the capital market in the country (AbdulRahman & Adamu, 2018). AbdulRahman & Adamu (2018) and (Reboredo et al., 2016) states that foreign exchange rates have a positive impact on the value of stock returns, this is reinforced by research conducted by Antonio et al. (2021), where it was found that foreign exchange rates have a positive impact on the value of JII shares, while in other studies conducted by (Kirui et al., 2014) found that foreign exchange rates have a negative impact on the development of stock return values. In addition to the results of the above studies, there are also the results of research conducted by Ihsan et al. (2015) and (Suriani et al., 2015) on the ISSI which found that there was no effect on changes in foreign exchange rates on the value of Islamic stocks on the IDX.

Stocks/shares are defined as a proof or certificate of ownership of a natural or legal person in a company that issued the security. It can also be interpreted as an investor's participation as an investor in the company, giving the investor a claim on the income and profits of the company's assets (Harsono, 2013) in research (Antonio et al., 2021).(Sumaryoto et al., 2021) stated Since almost every sector of the country participates in the capital market, the stock market is also a way of assessing the state of companies in the country. According to Anoraga and Pakarti (2001) in research Antonio et al. (2021), the IHSG is an index that reflects the general price fluctuations of listed stocks and serves as a reference for the development of activity in the capital market. If the IHSG value has increased or increased, it can be concluded that the development of the Indonesian economy is in good condition, and vice versa, if the IHSG value has decreased, it can be interpreted that the Indonesian economy is not in good condition.

This research is a replica of previously conducted research, namely research (Du et al., 2019; Gil-alana et al., 2020; Sami & Abdallah, 2020) which examines the effect of cryptocurrency stock prices. The difference in this study with other studies is that there are additional independent variables of money supply and the addition of foreign exchange rates as moderating variables. In addition, there is a GAP in previous research so that the authors conduct research again on the same independent and dependent variables. The objectives of this study were to: 1) To empirically prove the effect of Cryptocurrency on IHSG, 2) To empirically prove the effect of Money Supply on IHSG, 3) To empirically prove the effect of Foreign Exchange Rate in moderating the relationship between Cryptocurrency to IHSG, and 4) To empirically prove the effect of Foreign Exchange Rate in moderating the relationship between Money Supply to IHSG.

2. Theoretical Background

Random Walk Theory

Random Walk Theory formulated by Kendall in 1953, Viney (2007) in research (Chitenderu et al., 2014) stated that random walk is a theory that asserts every observation in a time series,

such as stock prices that depend on previous observations. In other words, this hypothesis states that price sequences do not exhibit predictive patterns over time, but can be best explained by a random walk. According to the random walk, it is clear that there is no correlation between previous and current prices. Therefore, if a stock price rises at one point in time, market participants cannot accurately predict that it will rise again the next day (Fama, 1965) in research (Chitenderu et al., 2014).

The difference between the share price and its intrinsic value is very small in a strong efficient market. Investors only receive relatively inaccurate information, which can lead to bidding up the share price resulting in only small differences in the price at which shares are bought and the price at which shares are sold. This is because investors' analysis is limited to reasonable fundamental analysis. At the same time, in weakly efficient markets there is a large difference between the inherent (intrinsic) value and the market price. A market is considered perfect when the price in the stock market is equal to the intrinsic value of the company. But in reality, there will never be a stock market price that matches the intrinsic value of the company.

Demand and Supply

The economic world runs on the two most important forms of activity in its formation, namely demand and supply. According to (Perkis, 2021), Demand shows the need for a certain amount of goods, if there is an increase in the price of goods, the demand for these goods will decrease and if there is a decrease in the price of goods, the demand for these goods will increase. Meanwhile, supply shows that an increase or decrease in goods will affect the price of an item, if there is an increase in the price of goods, there will be an increase in the number of goods offered and if the price of goods decreases, there will be a decrease in the price of goods offered.

Indonesia Composite Index (IHSG) (Y)

The Indonesia Composite Stock Price Index (IHSG) was first introduced on April 1, 1983 as an indicator of the price movement of stocks listed on the Indonesia Stock Exchange, whether common or preferred stocks. The stock exchange as a capital market is one of the driving forces of the country's economy. It is a means of forming capital and accumulating long-term funds with the aim of increasing the participation of the public in mobilizing resources to support national development financing (Sumaryoto et al., 2021). In addition, the stock market is also a representative for assessing the state of the country's companies, since almost all industries in the country are represented by the capital market, the rise (bullish) or fall (bearish) of the stock market can be identified by the rise and fall of stock prices, the highs and lows of the IHSG are very important because it determines the investors who use the data to decide whether to buy or sell the stocks they want. Changes in the IHSG can be determined by questions related to macroeconomic variables in Indonesia. Macroeconomic variables that are often influential are inflation, BI7DRR interest rate and Money Supply.

Cryptocurrency (X1)

According to (Lee et al., 2018), investors invest in cryptocurrencies because of the underlying assets and even the number of investors will increase dramatically, resulting in the risk of

cryptocurrency prices fluctuating. (Rahardja, 2023) added, because of the large profit level from playing cryptocurrency stocks, in Indonesia itself many see these benefits as a land to make investments, even some do not hesitate to use illegal means to benefit from cryptocurrency so that the government makes several regulations so that cryptocurrency investment players get guarantees so that cryptocurrency investments can be used legally in the country of Indonesia.

Cryptocurrencies face the challenge of gaining market and government recognition as a means of payment, building public confidence in their stability and achieving appropriate network externalities associated with their use (Dabrowski & Janikowski, 2018). (Dabrowski & Janikowski, 2018) add, although governments and central banks are unlikely to accept them as legal tender in their respective jurisdictions, the question of market recognition remains open and the rapid expansion of Bitcoin and other large-model cryptocurrencies in the world suggests that it can (to some extent). Currently, nearly 869 cryptocurrencies circulating in society, such as ethereum, ripple, dogecoin, dashcoin, and the most famous and most popular one today is Bitcoin (Lee et al., 2018).

Money Supply (X2)

When the money supply increases, the bank interest rate decreases, therefore, investors tend to invest their money instead of depositing it in banks and vice versa. The concept of money supply can be interpreted in a narrow or broad sense. In the narrow sense, money supply refers to cash or currency circulating in society, while in the broad sense, it refers to assets that can be easily converted into cash. Reviewing past studies, it is known that money supply has a significant impact on the volatility of stock prices (Sumaryoto et al., 2021). the higher the value of money circulating in society, the higher the economic growth, which in turn raises the value of the stock market returns. According to Hsing (2011) in research (Khan & Khan, 2018) stated that money supply can be increased to boost the economic activities to increase the stock market, but over increasement of money supply can lead to inflation and thus harm the stock market.

Foreign Exchange Rates (Z)

In the field of finance, an exchange rate, also referred to as a foreign-exchange rate, forex rate, FX rate, or Agio, represents the rate at which one currency can be traded for another. It also signifies the value of a country's currency in relation to another country's currency. This rate is influenced by various factors including the local demand and supply of foreign currencies, the country's trade balance, the strength of its economy, and other related elements. Essentially, an exchange rate indicates the cost of exchanging one currency for another, and it is subject to constant fluctuations as currencies are actively traded throughout the week, similar to the way other assets like gold or stocks experience price changes (Roy, 2021). There are several things that can affect the exchange rate of a country's money such as supply and demand for foreign currencies, financial and monetary crisis, and the political effect of sanctions (Khadivi et al., 2022).

Hyphotesis Development

1. Cryptocurrency is an option that can be used to invest, because the value of digital currencies can be exchanged for fiat currencies circulating in almost all countries using specific way. In this case, cryptocurrency is considered a commodity whose profit is obtained from the comparison between the purchase price and the sales price (Lee et al., 2018). Research conducted by Sami & Abdallah (2020) found that cryptocurrency has a positive impact on stock prices on the IDX. This is supported by the results of research conducted by Jimoh & Benjamin (2020) which found a positive correlation between cryptocurrency prices and the stock market in Nigeria. This means that if the value of cryptocurrency increases, the stock value will also increase, and vice versa, if the price of cryptocurrency depreciates, the stock price will also depreciate. This condition is closely related to supply and demand. When stock prices fall, investors withdraw from their investments and start looking for other investment products. Thus, this is a form of risk that can cause the Indonesia Composite Index (IHSG) to decline and companies will find it difficult to raise capital.

H1 : Cryptocurrency has a positive effect on the Indonesia Composite Index (IHSG)

2. The total value of money in circulation is the amount of money in circulation in society. A developing economy is characterized by an increase in the money supply. When an economy is generally doing well, the money supply in society also increases. However, the composition of money in circulation is also different, as the economic situation in a country develops, the currency used in society decreases and will be replaced by deposits if necessary. Meanwhile, with the decline in economic growth, the composition of money in circulation will weaken due to the increasing portion of quasi money (Sumaryoto et al., 2021). Research conducted by Conrad (2021) found that money supply has a positive and significant impact on the stock market. The results of this study are also supported by research conducted by Sumaryoto et al. (2021) and Picha (2017) who found that the amount of money circulating in the community has a positive influence on stock prices. This means that if the amount of money in circulation in the community increases, the stock price in the country will also increase, as well as if the amount of money in circulation does not increase, the stock price will decrease.

H2 : Money Supply has a positive effect on the Indonesia Composite Index (IHSG)

3. The focus of cryptocurrencies is on digital data transmission. Each transaction is validated using cryptographic methods (Monrat et al., 2019). The first and most popular type of cryptocurrency is Bitcoin, when bitcoin came out, bitcoin had no value at all, even bitcoin was not taken seriously by people and there was a lot of FUD (Fear, Uncertainty, Doubt) about bitcoin everywhere. Bitcoin's popularity has also increased recently due to the pandemic in Indonesia. The increase in the public savings rate results in the circulation of money in the community shrinking, there will be a risk if this can cause inflation so that to reduce it, Bank Indonesia must change the BI interest rate to adjust to the inflation rate in Indonesia (Gunawan & Anggono, 2021).

H3 : Foreign exchange rate is able to moderate the relationship between cryptocurrency and IHSG

4. The exchange rate indicates the price of a country's currency to obtain another country's currency, for example how many Indonesian rupiahs are needed to be exchanged for one unit of American dollar currency (Roy, 2021). According to (Berka et al., 2014) the exchange rate is the price or value of the currency of a country expressed in the value of the currency owned by another country. The exchange rate is divided into two parts, namely the nominal exchange rate and the real exchange rate. If the nominal value increases, the rupiah will experience devaluation, causing the value of the national currency to decrease, thereby increasing the amount of money in circulation in the community. An increase in the exchange rate price indicates a weakening of the national currency, the price of foreign currency will increase, this indicates that the value of the national currency against the price of goods and services has decreased. A decrease in the price of the currency is called an appreciation of the local currency, which is a sign that money becomes cheaper, changes in exchange rates are caused by changes in demand or supply in the forex market (Berka et al., 2014).

H4 : Foreign exchange rate is able to moderate the relationship between money supply and IHSG

3. Methodology

In this study, researchers used quantitative data analysis techniques. The variables contained in this study are dependent, independent, and moderation variables. The population and samples in this study amounted to 36 samples taken using observation data collection techniques by looking at JCI reports, cryptocurrency (bitpin), money supply, and foreign exchange rates (USD) through the websites www.coinmarketcap.com, www.bps.go.id, www.bi.go.id and www.idx.co.id. in the period 2020-2022. The second data collection is literature study. Data sampling using saturated sampling technique. The data test used in this research is descriptive statistical analysis and classical assumption test. The data was then analyzed using multiple linear regression analysis and Moderated Regression Analysis (MRA) methods through SPSS software with independent variables namely cryptocurrency (X1) and money supply (X2), the dependent variable is the Indonesian Stock Price Index (JCI) (Y), and the moderating variable is the Foreign Exchange Rate (Z).

4. Empirical Findings/Result

Descriptive Statistical Analysis

This analysis is carried out to find the level of fit of the relationship between variables through correlation analysis, predict using regression analysis, and make comparisons between sample and population data averages.

Table 1. Descriptive Statistical Analysis

Descriptive Statistics				
Variable	Minimum	Maximum	Mean	St. Dev
CC	-0,3981	0,4971	0,047073	0,2235424
MS	-0,0314	0,053	0,009335	0,0177162
FER	-0,1676	0,0944	0,003493	0,0478858
IHSG	-0,0739	0,1498	0,003935	0,0325787

Data source: Primary data processed by researchers, 2023

Based on table 1, the minimum value of cryptocurrency (X1) is -0.3981 and the maximum value is 0.4971, with an average value of 0.047073 at a standard deviation of 0.2235424. the minimum value of money supply (X2) is -0.0314 and the maximum value is 0.0530, with an average value of 0.009335 at a standard deviation of 0.0177162. the minimum value of IHSG is -0.1676 and the maximum value is 0.0944, with an average value of 0.003493 at a standard deviation of 0.478858. On the foreign exchange rate, the minimum value was -0.0739 and the maximum value was 0.1498, with an average value of 0.003935 at a standard deviation of 0.0325787.

Classical Assumption Test

Normality Test

The normality test aims to check whether the data used has a normal distribution or not. In this study, the normality test was carried out using the Kolmogorov-Smirnov non-parametric statistical test. The normality test has criteria if the significant value is greater than 0.05, it means that the data has a normal distribution, if the significant value is less than 0.05, it means that the data does not have a normal distribution.

Table 2. Normality Test

One-Sample Kolmogorov-Smirnov Test	
Asymp. Sig. (2-tailed)	,145 ^c

Data source: Primary data processed by researchers, 2023

The normality test aims to check whether the data used has a normal distribution or not. In this study, the normality test was carried out using the Kolmogorov-Smirnov non-parametric statistical test. Based on the table above, the normality test can be seen that the unstandardized residual value Asymp. Sig. $0.145 > 0.05$ so it can be concluded that the regression model used in this study meets the normality requirements.

Multicollinearity Test

This test is used to find out whether there is a relationship between independent variables. If there is a relationship, it means that the variable is multicollinearity. The presence of multicollinearity can be tested using the VIF (Varian Inflation Factor) method, if the VIF value is greater than 10 and the tolerance value is less than 10 then multicollinearity can be found, and if the VIF value is less than 10 and the tolerance value is more than 10 then multicollinearity cannot be found.

Table 3. Multicollinearity Test

Variabel	Tolerance	VIF
CC	0,857	1,167
MS	0,749	1,334
FEX	0,657	1,523

Data source: Primary data processed by researchers, 2023

Based on the test above, the cryptocurrency variable shows a tolerance value of 0.857, which means that there is no correlation between the independent variables with a VIF value of 1.167. The money supply variable shows a tolerance value of 0.749 so it can be concluded that there is no correlation between the independent variables with a VIF value of 1.334. The foreign exchange variable shows a tolerance value of 0.657, which means that there is no correlation between the independent variables and a VIF value of 1.523. It is proven that the tolerance variable is greater than 0.1 and the VIF value is less than 10, which means that there is no multicollinearity in the independent variables.

Autocorrelation Test

The autocorrelation test is used to determine if there is a relationship between period (n) and period (n- 1) in multiple linear regression. A good regression model is one that does not have autocorrelation in it. The autocorrelation test is carried out using the Durbin-Watson method, if the DW value is less than -2, indicating positive autocorrelation, if the DW value is -2 to +2, indicating no autocorrelation, and if the DW value is greater than +2, indicating negative autocorrelation.

Table 4. Autocorrelation Test

DW	dL	dU	4-dU
1,350	1,3537	1,5872	2,4128

Data source: Primary data processed by researchers, 2023

Based on the table above, it can be seen that the DW value is 1.350. This value when compared with the DW table with 5% confidence with a sample size of 36 with 2 independent variables, the DW value is 1.350, the dL value is 1.3537, the dU value is 1.5872, and the 4-dU value is 2.4128. From these data it can be concluded that $DW (1.350) < 4-dU (2.4128) < dU (1.5872)$ proves that there is no autocorrelation.

Heteroscedasticity Test

Heteroscedasticity is a confounding variable that has a different variant between one observation and another, or the variance between independent variables does not have the same result, this violates the assumption of homoscedasticity, namely each explanatory variable has a constant variant (the same). The decision base is based on the Glejser method, namely if Sig. is greater than 0.05 (5%) indicating the absence of heteroscedasticity, while if Sig. is less than 0.05 (5%) indicating heteroscedasticity. A good regression model is that there is no heteroscedasticity in it.

Table 5. Heteroscedasticity Test

Variables	Sig.
CC	0,387
MS	0,51
FER	0,619

Data source: Primary data processed by researchers, 2023

From the results of the Heteroscedasticity test using the Glejser method, the cryptocurrency variable has a Sig. value of 0.387, the money supply variable has a Sig. value of 0.510, and the foreign exchange variable has a Sig. value of 0.619. Each variable has a significant value above 0.05, which means that heteroscedasticity does not occur.

Multiple Linear Analysis Test

Table 6. Multiple Linear Analysis Test

	B	T _{hitung}	Sig	R Square	Sig. F
(Constant)	.125	.151	.881	.243	.010
CS	.101	3.114	.004		
MS	-.257	-.637	.528		

Data source: Primary data processed by researchers, 2023

Based on the test results above, it can be concluded that:

- Cryptocurrency shows the results of a significance value of $0.004 < 0.05$, the value of $t_{hitung} (3.114) > t_{table} (2.03452)$, and a beta value of 0.101 and a positive sign. So it can be concluded that cryptocurrency has a positive effect on IHSG returns.
- Money supply shows a significance value of $0.528 > 0.05$, the value of $t_{hitung} (0.637) < t_{table} (2.03452)$, and a beta value of 0.257 and a negative sign. So it can be concluded that money supply has no effect on IHSG return.
- The f value has a significance value of $0.010 < 0.05$, meaning that simultaneously the independent variable cryptocurrency and money supply affect the dependent variable IHSG.
- The R Square value is 0.243. This result means that 24.3% of the IHSG dependent variable is explained by the cryptocurrency and money supply variables, while the remaining 75.7% is influenced by other factors not included in this study.

Moderated Regression Analysis (MRA) Test

Table 7. Moderated Regression Analysis (MRA) Test

	B	T _{hitung}	Sig	R Square	Sig. F
(Contant)	.256	.356	.724	.511	.000
CS	.082	2.979	.006		
MS	.126	.358	.722		
CSND	-.009	-.759	.454		
MSND	-.239	-3.053	.005		

Data source: Primary data processed by researchers, 2023

Based on the MRA test results above, it can be concluded that:

- Cryptocurrency shows the results of a significance value of $0.006 < 0.05$, the value of $t_{hitung} (2.979) > t_{table} (2.03452)$, and a beta value of 0.082 and a positive sign. So it can be concluded that cryptocurrency has a positive effect on IHSG returns.
- Money supply shows a significance value of $0.722 > 0.05$, the value of $t_{hitung} (0.358) < t_{table} (2.03452)$, and a beta value of 0.126 and a negative sign. So it can be concluded that money supply has no effect on IHSG return.

- c. The interaction of cryptocurrency with foreign exchange rates shows the results of a significance value of $0.454 > 0.05$, the value of $t_{\text{count}} (0.759) < t_{\text{table}} (2.03452)$, and a beta value of 0.009 and a negative sign. So it can be concluded that foreign exchange rates are not able to moderate the relationship between cryptocurrency and IHSG.
- d. The interaction of money supply with foreign exchange rates showed a significance value of $0.005 < 0.05$, the value of $t_{\text{hitung}} (3.053) > t_{\text{table}} (2.03452)$, and a beta value of 0.239 and a negative sign. So it can be concluded that the foreign exchange rate is able to moderate the relationship of money supply to IHSG returns.
- e. The f value has a significance value of $0.000 < 0.05$, meaning that simultaneously the independent variables cryptocurrency, money supply, the interaction between cryptocurrency and foreign exchange rates, and the interaction between money supply and foreign exchange rates jointly affect the dependent variable IHSG.
- f. The R Square value is 0.511. This result means that 51.1% of the IHSG dependent variable is explained by the cryptocurrency variable, money supply, the interaction between cryptocurrency and foreign exchange rates, and the interaction of money supply with foreign exchange rates, while the remaining 48.9% is influenced by other factors not included in this study.

5. Discussion

The Effect of Cryptocurrency on the Indonesia Composite Index

Based on the results of multiple linear analysis results, it can be seen that cryptocurrency on the Indonesia composite index obtained a significance value of $0.004 < 0.05$, the value of $t_{\text{count}} (3.114) > t_{\text{table}} (2.03452)$, and a beta value of 0.101 and a positive sign. So it can be concluded that cryptocurrency has a positive effect on IHSG returns. These results indicate that H1 which states that cryptocurrency has a positive effect on the Indonesia composite index is supported.

This research is based on the theory of demand and supply which explains that the amount of demand and supply that occurs can affect changes in the price of a good, a high amount of demand will create an increase in the amount of goods to be provided and an increase in prices. An increase in demand for cryptocurrency will increase the price of cryptocurrency as a virtual currency. An increase in price and an increase in the number of goods will directly affect the stock price and be able to increase or decrease the stock return received. The results of this study indicate that cryptocurrency has a positive influence on the Indonesia composite index in line with the research of Jeris et al. (2022), Jimoh & Benjamin (2020), and Sami & Abdallah (2021) which state that cryptocurrency has a positive influence on stock prices.

The Effect of Money Supply on the Indonesia Composite Index

Based on the multiple linear analysis test results, it can be seen that the money supply on the Indonesia composite index obtained a significance value of $0.528 > 0.05$, the value of $t_{\text{count}} (0.637) < t_{\text{table}} (2.03452)$, and the beta value of 0.257 and a negative sign. So it can be concluded that money supply has no effect on IHSG return. These results indicate that H2

which states that money supply has a positive effect on the Indonesia composite index is not supported.

This research is based on the random walk theory which explains that stock prices have unpredictable properties due to their random movements. The random movement is caused by changes in stock prices based on new incoming information. Unpredictable here means that it cannot be known when the new information will arrive and when it will be known, whether the new information is good or bad information. So that today's information will be different from the information that will enter tomorrow because the truth is unpredictable.

The results of this study are supported by the differences in research results conducted by Sumaryoto et al. (2021), Conrad (2021), and Pícha (2017) who found that the money supply in society has a positive impact on stock prices, while research conducted by (Niyazbekova et al., 2016) and (Alifiah, 2014) found that the money supply has no effect on the composite index, then there is research conducted by (Alam & Rashid, 2015) and (Tursoy, 2016) found that the money supply has a negative impact on stock prices.

Foreign Currency Rates as a Moderator of Cryptocurrency on the Indonesia Composite Index

Based on the results of the MRA test, it can be seen that foreign exchange rates cannot moderate the relationship between cryptocurrency and the Indonesia composite index, obtained a significance value of $0.454 > 0.05$. So it can be concluded that foreign exchange rates unable moderate the effect of cryptocurrency on the Indonesia composite index. These results indicate that H3 which states that foreign exchange rates can moderate the effect of cryptocurrency on the Indonesia composite index is not supported.

This research is based on the random walk theory which explains that stock prices have unpredictable properties due to their random movements. The random movement is caused by changes in stock prices based on new incoming information. Information that is real time makes changes in the price of shares can change at any time, so that movements in the stock market cannot be predicted, different information can also cause different results so that even though there is information does not mean that it will directly affect the stock price.

The results of this study are based on the fact that foreign exchange rates have no influence on cryptocurrency in accordance with research conducted by Erdas & Caglar (2018), while research conducted by Corelli (2018) and Ibrahim & Basah (2022) found that there is no relationship between cryptocurrency and several different countries depending on the type of cryptocurrency and the country's currency.

Foreign Exchange Rate as a Moderator of Money Supply on the Indonesia Composite Index

Based on the results of the MRA test, it can be seen that the foreign exchange rate moderates the cryptocurrency on the Indonesia composite index, the significance value is $0.005 < 0.05$, the tcount value ($3.053 > t_{table} (2.03452)$), and the beta value is 0.239 and has a negative sign. So it can be concluded that foreign exchange rates can moderate the effect of money supply on the Indonesia composite index. These results indicate that H4 which states that

foreign exchange rates can moderate the effect of money supply on the Indonesia composite index is supported.

This research is based on the theory of demand and supply which explains that the amount of demand and supply that occurs can affect changes in the price of a currency exchange rate, a high amount of demand will create an increase in the value of the currency exchange rate to be provided as well as an increase in prices. The foreign exchange rate is the exchange rate of the rupiah against foreign currencies, the influence given by the foreign exchange rate on the money supply can be seen from the inflation rate, the main effect of inflation is that the higher the foreign exchange rate so that the amount of money in circulation will also be greater, so that the greater the value of the foreign exchange rate, the more money will circulate in the community which will have an impact on stock prices.

The results of the study are supported by research by Ligare et al. (2019) and García Matres & Viet Le (2021) which state that foreign exchange rates have an influence on money supply, besides that research by Antonio et al. (2021) and Reboredo et al. (2016) state that foreign exchange rates have a significant influence on the Indonesia composite index.

Research Limitations

The limitations of this study are: First, there are 75.7% variables that can affect IHSG that are not examined by the author; and Second, this study uses the Bitcoin cryptocurrency type while there are various other types of virtual currencies included in the cryptocurrency.

6. Conclusion

This study aims to test whether cryptocurrency and money supply affect the Indonesia Composite Index (IHSG) with foreign exchange rates as a moderating variable. Based on the results of data tests conducted, it can be concluded that cryptocurrency has a positive and significant effect on IHSG while money supply has no effect on IHSG. Foreign exchange rates are not able to moderate the relationship between cryptocurrency and IHSG but are able to moderate the relationship between money supply and IHSG. Simultaneously cryptocurrency and money supply together affect the IHSG by 24.3%.

Future research can add other investment product variables that are thought to have an effect on IHSG such as mutual funds and so on. Then the object of cryptocurrency can use other types registered with Bappebti and further researchers can increase the research period in order to create research updates. For investors, IHSG is often used as a reference in determining where to invest, there are several things that affect IHSG so that changes in its value can be known through the value of IHSG such as Cryptocurrency, while some things that do not affect IHSG such as money supply.

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