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The Effect of Crypto Currency Return and Volume on The Indonesian, Philippine and Thailand Stock Exchange Period of 2020-2022

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Currently the crypto currency market continues to surge and is experiencing explosive growth. These fast-rising crypto currencies are attracting the attention of investors and traders, as they offer the potential for huge profits quickly. This research uses to analyzing about the effect of Crypto Currency Return and Crypto Currency Volume on Stock Exchanges in 3 Countries in Asia Region, namely Indonesian Stock Exchange, Thailand Stock Exchange and Philippines Stock Exchange, where these three countries are included in the category of countries with the most crypto currency users in the world. This analysis uses the time series data regression method by using purposive sampling to arrange the data. The research period uses a monthly scale from 1 January 2020 to 31 December 2022, with a total of 108 data. The test results by using t-test, f-test and coeficient deterimation show data that crypto currency returns, and crypto currency volume have an effect on the movement of the Stock Price Index in Indonesia, Thailand and the Philippines.

Keywords: Crypto Currency Returns, Crypto Currency Volume, Indonesia Stock Index, Philippines Stock Index, Thailand Stock Index

Introduction

Crypto currency is still one of the world's favorite investment assets, even though it is experiencing a decline in price. Based on data (Dwinanda et al., n.d.) There are 11.9% of internet users in the world who own crypto assets as of quarter III/2022. Meanwhile, Türkiye is the country with the highest percentage of crypto owners in the world. The percentage of internet users in Thailand and the Philippines who own crypto assets is 21.9% and 20.6%. Indonesia is in sixth position with 20.1% of internet users owning crypto assets.

Crypto currency was developed by Mr. David Chaum in 83 in the United States, which at that time was not yet popular with the use of digital currency. digicash became the forerunner to the use of digital money, which was originally proclaimed to have been usable since 1995, but could not be implemented due to problems with the use of tools for digital money transactions, namely computer devices and inadequate telecommunication networks so that digital transactions could not be carried out as expected.

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This project was then continued by Nakamoto Satoshi from Japan in 2009 who promoted Bitcoin as the first crypto currency that could be traded on the integrated money market. The convenience offered is that you don't need to use a lot of tools, just enough to use a cell phone and an adequate internet network. this is the starting point for using cryptocurrencies worldwide and can be used effectively for investors.
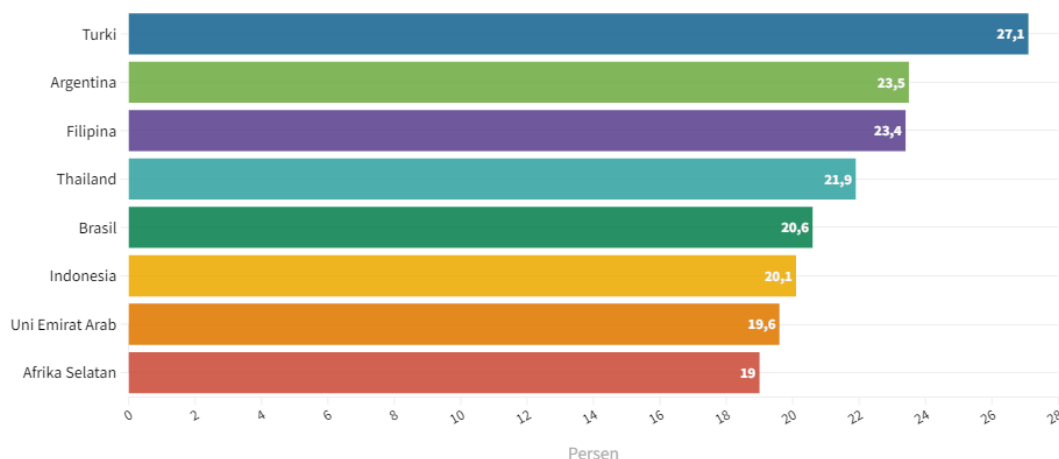

Figure 1. List of countries with the most crypto currency users in 2023
Source: www.dataindonesia.id

Indonesian Crypto Currencies

Currently investing in crypto currency in Indonesia is a separate trend based on Co FTRA data reaching 17.25 million people by the end of 2022. (Sihombing et al., 2021) The growing interest of investors is affected by the wider access of digital assets which is expanding thanks to technology.

Even now, Indonesia, in the program of several institutions, continues to strive to increase opportunities for the growth of the crypto market with the support of supervisory institutions namely finance services authority in Indonesia, to support, protect investors by creating the best policies. The bright potential for investment in Indonesia is believed to be one of the factors supporting the rapid growth of the crypto market.

It's nothing new for financial investors to know crypto currency as a transaction tool, in fact public interest in this currency is growing over time. This is of course also influenced by several investors who are campaigning for the use of crypto as a currency for digital payment transactions. As a more promising investment. the added value of using crypto currencies seems to be a strong attraction inviting potential investors to participate in using these currencies as a means of payment, thus making the crypto market grow. The uniqueness and ease of use of crypto assets is often reported as one of the factors that can bring big profits to investors.

Crypto exchanges that obtain permits and legalization from institutions related to the supervision and use of crypto in Indonesia are the basic rules for consumer protection so that digital transactions are safer. Bappebti as a supervisory institution in Indonesia, monitors trading in crypto assets. The list of crypto assets that can be traded in Indonesia is officially under the auspices of the institution. (Ilmu Keuangan dan Perbankan et al., 2023)there are 383 crypto assets registered as of 2022 and traded in Indonesia. Bit coin, Solana, Ethereum, Terra and Luna Coin are among the names of crypto assets that are legally traded in Indonesia. In the supervisory agency's current records there are 12.4 million crypto investors, this figure is more

than 8.1 million capital market investors. Data for 2021 even translucent transactions worth IDR 859.4 trillion.

Crypto currencies in Thailand

In Thailand, obtaining Bit coin and other crypto currencies can be done safely and effectively with the Oversight of government agencies in Thailand. Investors can use bank transfers, Prompt Pay, True Money, QR code payments and several other methods to deposit Thai Baht (THB) and buy, stake and trade digital assets in a regulated setting. (*Cryto Rikki*, n.d.)Crypto exchanges in Thailand consisting of Bybit, OKX, Bitkub, eToro, Binance Thailand have joined Japan in organizing crypto exchanges after issuing their first licenses to four applicants. The four approved as licensed brokers and crypto currency dealers in the country are Bx, Bitkub, Coins, and Satang Pro.

The deal was hailed as a major step forward for the legitimacy of crypto currencies in Thailand. In recent decades the increased use of crypto currencies has experienced significant developments. Even though it has become a mass issue in the country regarding whether or not the use of crypto is permissible in connection with the risks that are felt to be quite burdensome for investors, in fact until now crypto currencies are still used in digital transactions on the Thai financial market. (Filbert & Prasetya, 2017) the convenience provided by the kingdom of Thailand where until the final season of 2023 all transactions using crypto currency are exempt from value added tax where the rate in that country is 7%.

Crypto currencies in the Philippines

The increase in crypto currency users is the result of hard work on the part of the Philippine government, in this case the Central Bank of the Philippines (attention because the Central Bank of the Philippines (BSP) has launched a digital currency program at the central bank in the final period in 2022 and is welcomed by the public and investors. (Ilmu Keuangan dan Perbankan et al., 2023)

At this time alone the demographics of the Philippines have more investors with male gender than women with a ratio of 2 times more. So, it is no longer unusual for the Filipino people to be fluent in buying and selling crypto currencies where bitcoin is the prima donna of crypto currencies with data that nearly 40% of the crypto market is controlled by this investment sector. With almost 50% of the target market is from the age of 20 and over, and the rest are more than 35 years.(Filbert & Prasetya, 2017)

With total of fifteen percent they have regional average in Philippines. in 2021 the financial institution in Asean, namely UOB, provides data in the form of real facts in the Philippines which currently still uses cash transactions as the most widely used by the public, in fact there has been a shift in the period in which people prefer to use digital money in terms of a significant increase in the use of crypto currencies as a means of investment and payment. It compared to countries around Asia, almost half of the population of this country chooses to do digital transactions, so from 3 people it can be concluded that 1 of them is a user of crypto currency. This increase is quite significant considering the comparison between 2021 and 2021 data 2022 will almost double from 1.5 billion to 3 billion USD and have seven million trading volume transactions.

Other research data from (Ichsani & Pamungkas, 2022) was found that Crypto currency has good performance when compared to the movement of stock prices and gold prices through the calculation of the Sharpe Index and Jensen Index. The research (Sihombing et al., 2021)found that crypto currency has an effect on the Indonesian stock price index. (Liu & Tsyvinski, 2021) found that crypto currency returns strongly respond to crypto currency

network factors, as suggested by the theoretical literature. Existing data shows the population of cryptocurrency owners in the Philippines is a number of 7 million people with a probability of about 6% cryptocurrency users of the total population in the country. this is really a good development of transactions with crypto in the philippines

Framework

The Effect of Cryptocurrency Returns on Stock Market Indices

The results of the study (Ichsani & Pamungkas, 2022)show that there is a positive correlation between the price of Bitcoin and the stock exchange price index. The (Sihombing et al., 2021)significant difference indicates the risk variable while the value of risk and return has a relative relationship between investment instruments. (Bery & Worokinasih, 2018)

The results of the study (Chania et al., 2021)explain that there is a significant relationship between the Indonesian Composite Stock Price Index and Crypto currency volume in a positive and significant way on Cryptocurrency returns, while market value capitalization itself has a negative effect on Cryptocurrency returns. Results(Yoyo & Hanitha, 2023) which states that the stock price index is positively influenced by bitcoin and Cryptocurrency returns have a positive effect on a country's price index.

Effect of Cryptocurrency Volume on Stock Market Indices

The effect of falling prices has a significant effect on the motivation of investors in the crypto currencies market, causing weak prices for crypto currencies on the global market.(Chania et al., 2021) Research (Liu & Tsyvinski, 2021)on the effect of crypto currency returns and crypto currency volume on the stock price index of MENA countries, shows the results that crypto currency volume has a positive effect on the stock price index of MENA countries.(Hanitha, Yoyo, et al., 2022)

In contrast to the results of the influence of crypto currency returns on stock market performance which show positive results.(Hanitha, Purnama, & Purnama, 2021) Perhaps, investors diversify their portfolios by considering crypto currencies along with the stock market. (Ichsani & Pamungkas, 2022). Therefore, crypto currency volume has a positive effect on the stock price index because with an increase in crypto currency volume, investors will prefer to invest in crypto currency. (Purnama & Hanitha, 2021)Perhaps, investors diversify their portfolios by considering cryptocurrencies along with the stock market. These two markets seem to be a complement and not a substitute for investors in this region.

Effect of Cryptocurrency Return, Cryptocurrency Volume on Stock Market Indices of Indonesia, Phillippine, Thailand

Research conducted by (Elibouri, 2009) where research expansion is used to calculate the volume and volatility of cryptocurrency trading through testing of the widely used crypto currencies, namely Bitcoin, Dash, Ethereum, Nem, ripple stellar and lite coin. Which concludes that there is a negative and positive relationship between the several cryptocurrencies tested. And there are only 3 currencies, namely Dash, NEM and Lite coin which have the lowest volatility value among the others.

The Hypothesis Formulation

To find temporary answers to research problems through data collection from empirical facts, hypotheses are made. (Purnama & Hanitha, 2021) so the hypothesis of this research is:

H1: Crypto currency returns have a positive and significant influence on the Indonesia, Philippines and Thailand Stock Market Indices

H2: Crypto currency volume has a positive and significant influence on the Indonesia, Philippines and Thailand Stock Market Indices

Method

This research is descriptive quantitative method, which data collect by website source, paper and journal using secondary data (Yoyo & Hanitha, 2023) The population in this study used purposive sampling with time series data for the period 1 January 2020 to 31 December 2022 for a monthly period of 108 samples. This data is taken from the source website www.idx.co.id , www.investing.com which contains crypto currency data in the form of volume and return data for each country, namely Indonesia, the Philippines and Thailand.

The dependent variable of this study is the Stock Price Index Value in each country which is the object of research, namely the Composite Stock Price Index (Indonesia) on the Thai Stock Exchange (Thailand) and on the Philippine Stock Exchange (Philippines).(Hanitha, 2020a) The timeframe data used is yearly monthly data for 2 years from 2020-2022 in units of rupiah points (Indonesia), Peso points (Philippines), and Bath points (Thailand). This research used is the data significance test, chow test, data of linear regression, data of coefficient of determination, data of t-test and data of F-test.

Return Crypto currency is the rate of return on buying or investing crypto currency. (Hanitha, Purnama, Purnama, et al., 2021)The data return on crypto currency in this study is the total monthly return of crypto currency as a whole market cap starting from 1 January 2020 - 31 December 2022 in USD units.

Crypto currency Return Formula:

$$R = \frac{P_t - P_{t-1}}{P_{t-1}}$$

Pt = Crypto currency Price Value at the beginning of the period
Pt-1 = Crypto currency Price Value at the end of the period

The volume of crypto currency is the number of crypto currencies that are on the market. The total crypto currency data in this study is the overall crypto currency volume from market cap in monthly form starting from 1 January 2020 - 31 December 2022 (monthly data) in crypto currency units.

For testing normality data we can use JB (Jarqu Bera Test) as a residual tas. (Ghozali 2017, 145) this testing used by this research to find the normality of the data.it used for large sample, and have criteria as a normally data distributed if has more than 0.05 of probability.

By taking regression Linear we can deterimation for the effect about X independent variable to Y the dependent variable, and assume the value of the dependent variable based on the independent variable. (Hanitha, 2020a) Data processing in this study uses Eviews 10. Research model for this test can be show by this formulas:

$$Y = a + bX1 + bX2 + e$$

Y   = Indonesia Stock Indices, Phillippine Stock Indices, Thailand Stock Indices
X1 = Crypto currency returns
X2 = Crypto currency volume

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T Test Hypothesis

T test used for finding affect of independent to dependent variable which can calculate by the test. (Ghozali 2017, 65) The test criteria was as shown below:

1. H0 Accept if sig >0,05 significance.
2. H0 Rejected if sig vale < 0.05 significance

Coeficient of Determination

This coeficient named coefficient of determination predicted and calculated how can explain the variation of dependent variable to independet variable. Range value for this coeficient is 0 to 1. The result of this research is the coefficient of determination is shown by adjusted r2. (Purnama & Hanitha, 2021) The adjusted r2 value can change if the variable dependent dan independent hava changed.

Result

Measuring the validity of a data it is necessary to measure the validity. if it is able to measure and describe other data then the data is considered valid and can be used for further testing. And testing used the F test to find out the simultaneous results. The Coefficient of Determination value R^2 is used to test the magnitude of the influence of crypto currency returns and volume on stock market indices in Asia.

Table 1. Jarque Bera Test normality

	Y	X1	X2
Jarque-Bera	43.77878	2.937582	759.4912
Probability	0.060000	0.230204	0.080000
Observations	108	108	108

Source: Processed Data Results

On the table shows that value of JB Probability are 0.06>0.05 for Y, 0.23>0.05 for X1 and 0.08>0.05 for X2 so they conclude that the data have a normality.

Table 2. Descriptive Statistics Variable Test

	Y	X1	X2
Means	0.000859	0.050046	8.484907
Median	0.006900	0.017400	2.935000
Maximum	0.157600	0.529500	83.88000
Minimum	-0.216100	-0.360200	0.060000
std. Dev.	0.055989	0.215713	14.72999
Observations	108	108	108

Source: Processed Data Results

The following describes the results from table 1. The conclusions are as follows:

1. The Mean value for the Indonesian, Philippine and Thai Stock Price Indices (Y) is 0.000859, with a minimum value of -0.216100, and a Maximum value of 0.157600, and has a Std Deviation of 0.055989 with a total sample of 108 The mean value of the stock price index is not far from the standard deviation value of 0.055989, so the level for data deviation is low.
2. The Mean Return Crypto currency (X1) value is 0.050046, where the minimum number is -0.360200, and the maximum number is 0.529500, the std deviation value is 0.215713 with a sample of 108. This average value is close to the standard deviation value of 0.215713, thus it can be concluded that the data deviation is low.

3. The Mean Volume Crypto currency (X2) is 8.484907, has a minimum value of -0.060000, has a maximum value of 83.88000, and a standard deviation value of 14.72999 with a sample of 108. The mean for variable X2 is not far from the std deviation of 14, 72999, thus the Crypto currency Volume (X2) data deviation is low.

In statistics we use Chow Effect to search which model is used. The estimation model can be seen from the magnitude of the probability value according to(Hanitha et al., n.d.) we see that, the probability value is less than 0.05 then the Fixed effect model will be used, and vice versa if the Common effect is used > 0.05.

Table 3. Chow Test Results

Effect Test	Statistics	df	Prob.
Cross-section F	0.299370	(2,103)	0.7419
Chi-square cross-sections	0.625988	2	0.7313

Source: Processed Data Results

From the table it can be concluded that the probability value for the test is 0.7419 for the Chow Test where, the probability is higher than the value of 0.05 (0.0000 <0.05), so the conclusion is that the best estimate used is the best Common Effect Model . (Hanitha, 2020b) The Least Square model that will be used for further data estimation.

This research used pooling time series data as a linear regression model.(Hanitha, Silaban, et al., 2022) This analysis is used to determine the effect of Cryptocurrency Return (X1) and Cryptocurrency Volume (X2) on the Stock Price Index of Indonesia, the Philippines, and Thailand (Y). The form of the regression equation in this study uses a linear model (based on the best results from the regression)(Purnama et al., 2021)

Table 4. Regression Test Results

Variables	coefficient	std. Error	t-Statistics	Prob.
C	0.003361	0.006261	0.536886	0.5925
X1	0.088711	0.023694	3.744041	0.0003
X2	-0.000818	0.000416	-1.967450	0.0518

Source: Processed Data Results

The estimated equation from the results of Table 3 is:

$Y = 0.003361 + 0.088711X_1 - 0.000818 X_2$

The explanation of the variables for each variable value is as follows:

1. C value = 0.003361 means that if Cryptocurrency Returns (X1) and Cryptocurrency Volume (X2) are fixed, the Y variable, namely the Indonesian, Philippine and Thai Stock Price Index (Y) increases by 0.003361 units, and other variables are assumed to have a fixed value .

2. Result Variable X1 has a value of 0.088711 which means if the value (X1) of Crypto currency Returns increases by 1 unit, then the Indonesian, Philippine and Thai Stock Price Indices (Y) will increase by 0.088711 units and other variables remain constant.

3. The result of variable X2 is = -0.000818 This means that if (X2) Crypto currency Volume increases by 1 unit, then the Indonesian, Filipino and Thai Stock Price Indexes (Y) will decrease by 0.000818 units where the values of other variables are considered constant / constant.

Effect of Return Crypto currency (X1) on Indonesia Stock Price Index, Thailand Index and Philippines Index (Y)

In looking for the magnitude of the relationship between X variable and Y variable. Can choose by regression multiple analysis method R2. Coefficient of determination of the relationship between X variable and the Y Variable was used . (Zatira & Hanitha, 2021).

The results of the Regression test show a number of 0.1443, meaning that the variation of the dependent variable (Y) in the model, namely the Indonesian, Philippine and Thai Stock Price Indexes, can be explained by variations in Crypto currency Volume Crypto currency Returns of 14.43%, while the rest are not counted in this study.

The F-count value (Sig.) = 0.000 <0.05 is obtained, so it can be concluded that Ho is rejected because the value is smaller than 0.05 or Ha is accepted, this means that there is a strong influence from the two dependent variables together on the independent variable or this means Crypto currency Return values and Crypto currency Volumes have a strong joint effect on the Stock Price Indices of Indonesia, the Philippines and Thailand.

Meanwhile, the value of the eviews test shows an F sig value of 0.000379 <0.05, so that the Crypto currency Volume variable (X2) has a positive and significant effect on the Indonesia, Philippines and Thailand Stock Price Indices (Y).

The results of the analysis of variable testing with multiple regression testing the Random Effect model can be concluded that Crypto currency Volume has a positive and significant effect on the Stock Price Indices of Indonesia, the Philippines and Thailand. This means, if Crypto currency Volume is in an increasing condition, it will be followed by an increase in the Indonesian, Philippine and Thai Stock Price Indices. This opinion is supported by research from (Ichsani & Pamungkas, 2022) where found that crypto currency returns have a positive effect on the stock price index.

Based on the explanation above, it was found that the positive effect of crypto currency returns on the stock price indices of Indonesia, the Philippines and Thailand is due to the investors, the crypto market has much easier regulation and crypto trading can serve as a gateway to stock trading. This portfolio diversification theory supports the test results (Sihombing et al., 2021)which state that there is a positive correlation between crypto currency and stock prices, resulting in a significant role of crypto currency in investor portfolios.

Effect of Crypto currency Volume (X2) on Indonesia, Philippines, and Thailand Stock Price Indices (Y)

From the test it was found that the Crypto currency Volume (X2) has a significant influence on the Indonesian, Philippine and Thai Stock Price Indices (Y). So, it can be concluded that if the value of X2 increases, the value of variable Y will also increase significantly.

Crypto currency trading volume is an important metric for understanding market trends. Price movement accompanied by high volume of crypto currency indicates the start of a strong trend, high volume accompanied by an uptrend indicates high buyer interest pushing asset prices higher. This result is in accordance with the opinion (Chania et al., 2021)that crypto currency volume has a significant and positive value as an influence on the Composite Stock Price Index in Indonesia, the Philippines and Thailand.

Conclusion

From the several tests and results above, the following conclusions can be drawn that Crypto currency returns has a positive affect to Jakarta Composite Index in Indonesia, the

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Philippines and Thailand. It conclude that, If the Return Crypto currency value increases in value, then the value of Indonesian, Philippine and Thai Stock Prices will increase. Crypto currency volume influenced to Jakarta Composite Index in Indonesia, Philippines and Thailand. It means, if Crypto currency Volume increases, the stock indexes in Indonesia, the Philippines and Thailand will increase significantly. This data shows that investors in every country indices affected posotif by return and volume of the crypto currency.

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