

The Impact of Commodities and Digital Assets on Leading Stock Markets: A Study of Cryptocurrency, Gold, and Oil

Putri Mutmainna¹, Nora Ria Retnasih²

¹UIN Maulana Malik Ibrahim Malang, 200501110160@student.uin-malang.ac.id

² UIN Maulana Malik Ibrahim Malang, noraria@uin-malang.ac.id

Article Info

Received February, 2024

Revised March, 2024

Published March, 2024

Keywords:

*Cryptocurrency, Gold
Prices, World Oil Prices,
Composite Stock Index*

Abstract

This research examines the influence of Cryptocurrencies, Gold Prices, and World Oil Prices on the world's best Composite Stock Index during the 2014-2023 period. Purposive sampling approaches were used in conjunction with non-probability strategies to acquire data. Data on cryptocurrencies, gold prices, global oil prices over a ten-year period, and the world's best Composite Stock Index—that is, data on the US, Japan, Germany, England, South Korea, France, Hong Kong, Europe, and Indonesia—are the forms of research data that are available. Panel data regression analysis with the Fixed Effect Model (FEM) was used to evaluate the hypotheses. The study's findings indicate that cryptocurrencies have a favorable impact on the Composite Stock Index, and that a gain in cryptocurrencies indicates an individual's capacity for investing. Rising gold prices are a sign of more people investing in the stock market since gold prices have a favorable impact on the Composite Stock Index. Meanwhile, world oil prices have a negative effect on the Composite Stock Index because the higher the world oil price, the more indirect the income of investors will decrease. Cryptocurrencies, gold prices and world oil simultaneously influence the Composite Stock Index.

INTRODUCTION

The development of information technology has encouraged innovation in the economic and financial sectors, especially in the investment sector. Technological innovation enables the digitalization of assets, facilitating investor transactions to access information and make better investment decisions. However, technological advances also present new challenges, such as market volatility and regulatory uncertainty, especially when it comes to cryptocurrencies. The Covid-19 pandemic disrupts global economic activity, and can reduce stock indices due to business closures and economic uncertainty (Khan et al., 2020). So investors experience high uncertainty, which triggers market volatility and a shift to haven assets such as gold and bonds. And the government and central bank need to take stimulus steps to influence market sentiment.

In the digital era, world financial markets have become more complex and interconnected, with the rapid growth of cryptocurrencies. Cryptocurrencies are creating a new financial ecosystem that has the potential to change the global investment landscape (Manjula, 2022). cryptocurrencies such as Bitcoin have emerged as an investment alternative with underlying blockchain technology, despite facing challenges such as high price volatility and regulatory uncertainty (Ghorbel, 2022). Cryptocurrencies are not only attractive to individual investors but also to financial institutions and governments. Apart from that, gold and oil prices also play an important role in the global economy. Gold, as a safe haven asset, is often used as a hedge when economic uncertainty occurs. Meanwhile, oil, as the main energy source, affects production costs and company profits in various industrial sectors. These two commodities can influence the composite stock index through price changes that reflect global economic health and market sentiment.

Figure 1.1
Gold Price Level Graph Per Year

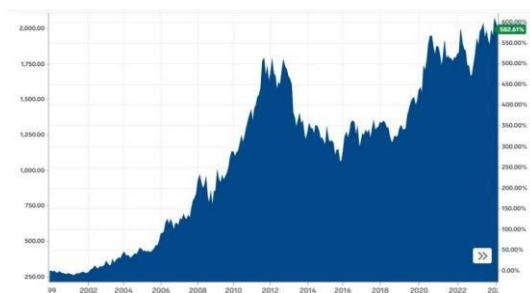


Figure 1.2
Graph of Oil Price Levels Per Year



Source: Market Insider, 2024

Stock indices from the best countries such as the Nikkei 225 (Japan), the FTSE 100 (UK), and the S&P 500 (US) are the main barometers of the global economy. The world's cryptocurrencies, gold, and oil influence this stock index in various ways. Cryptocurrencies offer portfolio diversification but also carry the risk of volatility. Rising gold prices often signal economic uncertainty, prompting investors to shift from stocks to gold. Conversely, high oil prices can suppress company profits outside the energy sector, affecting stock performance in related sectors (Orhan, 2022). Understanding the interactions between cryptocurrencies, gold, and oil with the composite stock index is important for investors and financial analysts in managing risk and making better investment decisions.

This research focuses on comparing the influence of these factors on the world's best composite stock indices, providing valuable insights into dynamic and complex global financial markets. This research aims to analyze the influence of cryptocurrency, gold, and oil on the market value of the composite stock index. This research is expected to provide a new contribution to understanding the factors that influence global financial market performance and the implications for stakeholders.

LITERATURE REVIEW

Cryptocurrency

Cryptocurrency is an evolution of financial technology that has the potential to replace paper money with digital money in future transactions. Digital currency has a similar function to conventional currency, but does not have a physical form. Instead, cryptocurrencies consist of blocks of data validated by

hashes. Cryptocurrency is a technological instrument based on cryptography and algorithms, forming various signals and instructions to create virtual currency (Hambali, 2020). Cryptocurrency itself has several types, namely Bitcoin, Ethereum, Litecoin, and Dogecoin. However, this research will focus on Bitcoin.

According to the Financial Action Task Force (2018), Bitcoin is a form of virtual currency. Virtual currency, according to the FATF, is a digital representation of value that can be electronically transferred and serves as (1) a medium of exchange; (2) a unit of account, and (3) a store of value, even though it does not have the status of legal tender in any jurisdiction. Apart from that, transactions using Bitcoin are still categorized as financial transactions. Traditional transactions are usually centralized, while cryptocurrencies are decentralized, which is the main difference between conventional currencies such as the Rupiah and cryptocurrencies (Prasantyo, 2018).

Gold

Gold is a financial standard that is considered a durable medium of exchange and is accepted by many countries in the world, and is accepted globally after the currencies of the G-7 countries (the name for the seven countries with the largest economies) (Mariani, 2010). Gold prices tend to follow increases in the value of the currencies of the G-7 countries. Gold is more expensive the more the foreign money is worth. Aside from that, gold prices often rise in tandem with inflation. The price of gold will rise in direct proportion to inflation, and this relationship will frequently see gold prices rising faster than inflation. (Basit, 2020). The classical economic view states that precious metals are a safe haven, meaning that buying precious metals is an investment with low risk and is believed to not lose purchasing power due to inflation or changes in exchange rates. Historically, central banks around the world held gold reserves to pay debts, collateralize printed banknotes, and maintain the stability of the exchange rates of their currencies.

Brent Oil WTI

World oil prices are formed through the demand and supply mechanism

in the global oil market. The world's crude oil is usually valued based on international oil market spot prices, with West Texas Intermediate (WTI) and Brent as the main standards. Crude oil traded on WTI is known to be of high quality. World oil prices play an important role in global economic growth (Soesanto et al, 2024). Fluctuations in crude oil prices also affect a country's capital market. An increase in world oil prices can have an impact on a country's export and import sectors, and can also encourage inflation (Septiawan et al, 2016). Excessive inflation due to rising world oil prices can provide negative sentiment for stock investors, which in turn can cause the share prices of several companies to decline.

Dewi et al. (2022) Crude oil is the main commodity that is very necessary for global economic activity. World oil prices function as an indicator of the global economy, because increasing oil demand is often interpreted as a sign of global economic recovery after the crisis. The demand for mining commodities typically rises in tandem with an increase in the world's oil consumption. On the other hand, The drop in energy costs is a sign that the world economy is not recovering as much. As a result, rising crude oil prices raise expectations for business success, which raises stock prices and boosts profits for the mining industry.

Research shows a positive correlation between oil prices and stock returns. Hutapea, et al (2014) found that world oil prices have a positive and significant influence on stock returns in the United States. Research by Movahedizadeh et al. (2014) also shows a positive influence on stock returns in Tehran. Benakovic and Posedel (2010) stated that there is a positive influence of world oil prices on stock returns.

Composite Stock Index

The Composite Stock Index is a statistical measure that reflects the overall movement of stock prices selected based on certain criteria and methodology, and evaluated periodically (Jogiyanto, 2008). In addition to serving as a benchmark for active portfolios, this index aims to measure market sentiment, become a passive investment product akin to index mutual funds and index exchange-traded funds (ETFs), and serve as a proxy for asset class in asset



allocation as well as for measuring and modeling investment returns, systematic risk, and performance-adjusted risk.

Ningtyas (2022) said that the Composite Stock Index reflects share price movements from a group of shares selected using certain criteria and methodology, and evaluated periodically for investment purposes. This index makes it easier for investors to monitor stock performance in general amidst the large number of shares issued by various issuers. The stock index functions as a reference for stock investment, helping investors determine whether to sell, hold, or buy shares based on stock price movement trends.

The function of the Composite Stock Index is as an indicator of market conditions within a certain period. If a stock price index rises, usually most of the share prices in it also tend to rise. For example, if the Composite Stock Index rises by 59.77 points, most shares in the Composite Stock Index also tend to increase, although some stocks may not move or even fall. Through stock indexes, investors can measure market sentiment, making it an investment product whose value continues to rise in the future, becoming a benchmark for active portfolios, a proxy for measuring investment returns, knowing systematic risk, measuring risk-adjusted performance, and as a proxy for class assets in asset allocation (Setiantp, 2016). Stock indices also serve as a reference for active portfolios, allowing comparisons between the performance of different types of stocks.

Research from Wicaksono, et al. (2023) entitled Bitcoin VS Gold: Which One Is The Most Powerful in Boosting The Shariah Equity Index? Global Evidence has similarities with this research, namely comparing digital assets (bitcoin) and gold with the composite stock price index, while the difference is that the research examines the conventional composite stock price index and the largest countries in the world, whereas the previous study examined the composite stock price index Sharia in Islamic countries.

Research from Ghorbel, et al (2020) entitled Connectedness between cryptocurrencies, gold and stock markets in the presence of the COVID-19 pandemic has similarities in research related to cryptocurrencies, gold during Covid-19. Meanwhile, the difference is that this research discusses its influence on the composite stock price index, whereas the previous research only discussed

the relationship between cryptocurrency, gold and, the stock market during COVID-19.

The similarities between this research and research from Ghazani, et al (2021) entitled Cryptocurrencies, gold, and WTI crude oil market efficiency: a dynamic analysis based on the adaptive market hypothesis, namely researching cryptocurrencies, gold, and oil. Meanwhile, the difference is, that research from Majid Mirzaee, et al do not link it to the composite stock price index. The research entitled Analysis of Cryptocurrency, Bitcoin and the Future has similarities with this research, namely analyzing cryptocurrency (bitcoin). However, there are no other variables and they are not related to stock indexes like this research. The similarity of the research entitled The Economics of Bitcoin Mining, or Bitcoin in the Presence of Adversaries is research related to bitcoin, but there are no other variable equations in this research.

From the research entitled "Bitcoin in Conventional Markets: A Study on Blockchain Induced Reliability, Investment Slopes, Financial and Accounting Aspects" there are similarities, namely the discussion regarding Bitcoin and investment in conventional markets. However, this is different from this research which discusses gold and oil on the composite stock price index. The similarities from the research entitled "The E Comparison of the Asymmetric Relationship between Bitcoin and Gold, Crude Oil, and the U.S. Dollar before and after the COVID-19 Outbreak" namely researching bitcoin, gold, oil during the Covid-19 period, but previous research did not discuss composite stock indices in several countries like the one in this research.

From research by Greaves, et al. (2015) entitled "Using the Bitcoin Transaction Graph to Predict the Price of Bitcoin" there are similarities, namely in the bitcoin variable which discusses the use of digital currency, but there is no discussion regarding the influence of Bitcoin, gold, and oil on the composite stock index as in this research. The similarity between Harald Vranken's (2017) research "Sustainability of Bitcoin and Blockchains" and this research is that there is discussion regarding Bitcoin which is increasingly in demand, but there is no discussion regarding the composite stock index.

RESEARCH METHODS

This research is quantitative research with a research period of January 2014 to December 2023. This research uses secondary data in the form of panel data with data on Cryptocurrency, Gold, and World Oil for 10 years monthly sourced from investing.com, Markets.businessinsider.com, and spglobal.com. The composite stock indices used as research samples are the S&P 500 (US), Nasdaq Composite (US), Nikkei 225 (Japan), DAX 30 (Germany), FTSE 100 (UK), CAC 40 (France), KOSPI (South Korea), Hang Seng (Hong Kong), Euro Stoxx 50 (Europe), JKSE (Indonesia). This study's analytical approach makes use of the Panel Data Regression model which is useful for considering existing theories to capture existing economic phenomena. Then carry out a panel data regression model selection test (Chow, Hausman, and Lagrange Multiplier Tests) and finally, the Classical Assumptions test (normality test, multicollinearity test, heteroscedasticity test and autocorrelation test) which are statistical requirements that must be carried out in multiple linear regression analysis based on ordinary least square using software in the form of Eviews 12 to process the data that has been collected.

RESULTS AND DISCUSSION

1. Results of Descriptive Statistical Analysis

Descriptive statistical analysis contains several pieces of information, namely observation, mean, median, maximum, minimum, and std. Dev. Data Based on the results of descriptive statistical data in Table 1, it is known that the samples studied were 99 data samples originating from 10 companies over 10 years (2014-2023).

Table 1. Descriptive Statistics Results

	<i>Cryptocurrency</i>	Gold	Brent Oil WTI	Composite Stock Index
Mean	10966.98	1415.706	59.80404	7785.020
Median	4735.100	1310.800	54.38000	7063.440
Maximum	61309.60	1985.900	105.3700	15644.97
Minimum	218.5000	1060.800	18.84000	4103.880
Std. Dev	16102.01	260.5589	19.17369	3369.718
Observation	99	99	99	99

Cryptocurrency values range from a low of 218.5000 to a maximum of 61309.60, with an average value of 10966.98. The lowest price of gold was 1060,800 with the highest price being 1985,900 with an average gold price of 1415,706. The lowest world oil price is 18.8400 and the highest value is 105.3700 with an average value of 59.80404. The lowest value of the Composite Stock Index was 4103.880 and the highest value was 15644.97 with an average value of 7785.020.

2. Model Specifications Test

There are three models for regression, especially the Chow Test and Hausman Test for identifying the test model and the Common Effect Model, Fixed Effect Model, and Random Effect Model.

Table 2. Chow Test

Test Summary	Statistic	d.f.	Prob.
Cross-section F	8.475089	(9,1186)	0.0000
Cross-section Chi-square	74.733647	9	0.0000

Based on the results of the Chow test, it is known that the p-value is 0.0000, which means that the p-value is <0.05 . The model chosen is the Fixed Effect Model (FEM). As a result, in order to choose between the Fixed Effect Model and the Random Effect Model, it is necessary to perform the Hausman Test.

Table 3. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	76.275799	3	0.0000

Based on the results of the Hausman Test, it is known that the p-value is 0.0000, which is simulated if the p-value < 0.05 , the model chosen is the Fixed Effect Model (FEM). Thus, the specification test results use FEM and do not require the Lagrange Multiplier Test.

3. Classic Assumption Test

The Normality, Multicollinearity, Heteroscedasticity, and Autocorrelation tests are the classical assumption tests that are performed based on the Fixed Effect Model (FEM) determination.

a. Normality Test

Table 4. Normality Test

Jarque-Bera	Prob.
1.064458	0.587294

Based on the results of the calculations that have been carried out, it is known that the p-value of Jarque-Bera is $1.064458 > 0.05$, so it is stated that the data is normally distributed.

b. Multicolonearity Test

Tabel 5. Multicolonearity Test

	<i>Cryptocurrency</i>	Gold	Crude Oil WTI
<i>Cryptocurrency</i>	1.000000	0.791186	0.375284
Gold	0.791186	1.000000	0.300881
Crude Oil WTI	0.375284	0.300881	1.000000

Based on the results of the Multicollinearity Test on the Cryptocurrency, Gold, and World Oil Price variables. If the multicollinearity value is < 0.85 , it is considered that there are no symptoms of multicollinearity. From the test results it is known that Cryptocurrency against Gold Prices got a value of 0.791186, the test results for the Cryptocurrency variable against World Oil Prices were 0.375284 and the test results for the variables Gold Prices and World Oil Prices were 0.300881. Thus, it is known that the multicollinearity values of the three (0.791186, 0.375284, and 0.300881) are < 0.85 so there are no symptoms of multicollinearity.

c. Heteroscedasticity Test

Tabel 6. Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	511.3337	350.1816	1.460196	0.1470
<i>Cryptocurrency</i>	0.006443	0.004743	1.358484	0.1770
Gold	-0.252032	0.244997	-1.028715	0.3058
Crude Oil WTI	6.986431	2.418486	2.888762	0.0046

Based on the results of the Heteroscedasticity Test on the Cryptocurrency, Gold Price, and World Oil Price variables. If the p-value < 0.05 it is declared that it does not pass the Heteroscedasticity Test. In the test results, the Cryptocurrency variable is 0.1770, the Gold Price is 0.3058, and the Oil Price is 0.0046. Thus, only the Cryptocurrency and Gold Price variables (0.1770 and 0.3058) > 0.05 passthe Heteroscedasticity Test.

d. Autocorrelation Test

Tabel 7. Autocorrelation Test

Obs*R-Squared	Prob. Chi-Square
4.350342	0.1136

Based on the results of the Lagrange Multiplier Autocorrelation Test on the Cryptocurrency, Gold, and World Oil Price variables. If the Obs*R-Squared Probability value is > 0.05 then the Autocorrelation Test assumption is stated to be met. The test results found a Probability Obs*R-Squared value of $0.1136 > 0.05$ so it was declared to have passed the Autocorrelation Test.

4. Panel Data Regression Analysis

Tabel 8. Partial Test Fixed Effect Model Cross Section Weight

Variable	Coefficient	Std. Error	t-statistic	Prob.
Constanta	-1142.662	609.9564	-1.873350	0.0636
Cryptocurrency	0.124457	0.008261	15.06602	0.0000
Gold	5.755281	0.426743	13.48654	0.0000
Crude Oil WTI	-9.171788	4.212590	-2.177233	0.0315

Based on the results of the T (Partial) Test carried out, it is said that the independent variable effect the dependent variable if the p-value < 0.05 . in table 8 the partial test results show that cryptocurrency effect the Composite Stock Index ($0.0000 < 0.05$) with a t-statistic value of 15.06602, gold prices effect the Composite Stock Index ($0.0000 < 0.05$) with a t-statistic value of 13.48654 and world oil prices partial effect on the Composite Stock Index ($0.0315 < 0.05$) with a t-statistic value of -2.177233. The equations found for cryptocurrency, gold prices, and oil prices for the Composite Stock Index are as follows:

$$\text{Composite Stock Index} = -1142.66197811 + 0.124456741053C + 5.7552813686HE - 9.17178840997HMD$$

Tabel 9. Simultaneous Test Fixed Effect Model Cross Section Weight

F-statistic	Prob
647.6299	0.00000

The F test results are declared to have a simultaneous effect if the p-value < 0.05 . Thus, based on the results of the F Test (Simultaneous) carried out on the Cryptocurrency, Gold, and Crude Oil Price variables on the Composite Stock Index, it is known that they have a simultaneous influence ($0.0000 < 0.05$).

Tabel 10. Determination Test *Fixed Effect Model Cross Section Weight*

<i>R-Squared</i>	<i>Adjusted R-squared</i>
0.944118	0.942660

Based on the results of the determination test (R-squared), it is known that the Adjusted R-squared value is 0.942660, so it is known that the influence of Cryptocurrency, Gold, and World Oil Prices on the Composite Stock Index is 94.26%.

DISCUSSION

1. 1. The influence of cryptocurrency on the Composite Stock Index

Cryptocurrency is the result of technological advances in the field of digital-based financial investment. The cryptocurrency was first created in 2009 with Bitcoin as the first "coin" (Lola Br Ginting et al., 2023). The cryptocurrency system is decentralized so it has no authority so it is distributed based on the market resulting in very fluctuating prices. However, this condition causes many people to look at cryptocurrency (Hasani, 2022). Although the economies of different nations vary, bitcoin fluctuations have a significant impact on the US stock market. Even obey Horváth et al., (2018) *cryptocurrency affects the stock market in the United States* (Sihombing et al., 2020).

Based on the results of tests that have been carried out, it is known that cryptocurrency influences the value of the world's best Composite Stock Price Index. This is supported by research conducted by (Sihombing et al., 2020) shows the influence of cryptocurrency on stock prices. The changes that occur in cryptocurrency have an impact on the stock market, where cryptocurrency is one of the investment instruments that is being widely discussed in society. The increase in cryptocurrency indirectly reflects an increase in people's income. The increasing number of people using bank facilities affects the quality of the bank, thereby increasing the bank's share price (Sihombing et al., 2020).

Cryptocurrency has the same characteristics as shares, namely high risk, and high return based on capital gain and capital loss measurements. The more potential that can be explored, the more cryptocurrency enthusiasts there are (Milando et al., 2023). The increasingly widening cryptocurrency ecosystem certainly influences developments in the investment sector. Recently,

cryptocurrency has received attention in Indonesia, especially by the Commodity Futures Trading Supervisory Agency (Bappebti). Entering 2019, Indonesia is one of the countries that has started carrying out the highest cryptocurrency transactions and continues to show growth (Yanida et al., 2023). However, cryptocurrency cannot be used as a currency that replaces currency in Indonesia (Hertanto et al., 2024).

However, several studies have suggested that there is no influence of cryptocurrency on stock prices. Research conducted by (Sarumaha, 2023) explains share prices are not influenced by cryptocurrency. This is because the legality of cryptocurrency in several countries is still questionable. This condition is a consideration for investors (Sarumaha, 2023).

2. Effect of Gold Prices on the Composite Stock Index

Gold is an investment commodity that has a long history. Gold investment has safe haven properties, which means that when the investment world experiences turmoil, the value of gold remains safe and stable (Hertanto et al., 2024). Gold plays a role in maintaining the value of an investment because of its safe nature. The gold commodity continues to be a consideration when making investments, especially during the COVID-19 pandemic, the investment market experienced shocks, and the price of gold remained stable (Kurniawan, 2022). The price of gold is one of the things that influences the Composite Stock Index because many investors switch to investing in gold, and the stock market will experience a decline. Therefore, gold is always a "safe" investment option (Citra Asmara et al., 2022).

It is known that based on the outcomes of the experiments that have been conducted in 10 companies during the 2014-2023 period, gold prices influenced the Composite Stock Index. This is confirmed by research conducted (Adnyana & Nurwulandari, 2022). In his research, he explained that the price of gold had an influence on the Composite Stock Index in the 2012-2020 period, but the influence given by gold was not significant. This is due to investors' fear of investing in the stock market because of its fluctuating nature and other fundamental factors (Adnyana & Nurwulandari, 2022). Apart from that, gold,



which provides reciprocity that is influenced by price increases, means that gold does not influence the composite stock index (Oktariansyah et al., 2023).

However, this is different from several other findings which explain that the price of gold does not effect the Composite Stock Price Index. This is because the stable price of gold is the main reason that investors are reluctant to switch to investing in the stock market (Kurniawan, 2022). Gold is an investment instrument that is flexible so that it continues to adapt to prevailing inflationary conditions. This phenomenon encourages investors to accumulate their investments in gold to protect the value of their money and avoid risks. Gold investment is considered a low-risk investment because its adaptable nature makes gold chosen for investment with minimal risk (Rival & Rohman, 2022).

3. The influence of world oil prices on the Composite Stock Index

The global economy is significantly influenced by the price of oil. The fluctuating nature of world oil prices affects a country's stock market. The increase in world oil prices is an advantage for mining sector companies on the IDX because it increases the company's net profit (Darmawan & Saiful Haq, 2022). This makes world oil a factor that influences the movement of the Composite Stock Index. This is in line with the results of research that has been carried out. It is known that world oil prices influence the composite stock index. The increase in world oil prices influences the increase in mining prices so that companies have the potential to increase profits. Thus, the share price of the mining sector increases, indirectly affecting the Composite Stock Index in a country (Asmara & Juliannisa, 2019).

However, this is different from other findings which explain that world oil prices do not effect the Composite Stock Index. This condition is in line with several studies that have been conducted, one of which was research conducted (Dewi, 2020). Research conducted by (Hanoeboen, 2017). It is known that world oil prices do not effect the Composite Stock Index. As with the phenomenon of increasing fuel prices, the prices of goods and services rise, causing a decline in demand for goods and services. Thus, investor income has decreased. Moreover, Indonesia is a country that produces petroleum, but it only explores without

processing so it does not maximize the resources it has (Hanoeboen, 2017).

CONCLUSIONS AND RECOMMENDATIONS

Based on the research results and discussions that have been presented, it can be seen that there is a positive influence of cryptocurrency on the Composite Stock Index, where the increase in cryptocurrency shows people's investment capacity. Gold prices have a positive effect on the Composite Stock Index so rising gold prices indicate an increase in investors in the stock market. Meanwhile, world oil prices hurt the Composite Stock Index because the higher the world oil price, the more indirect the income of investors will decrease. However, simultaneously cryptocurrency, gold, and world oil prices influence the world's best Composite Stock Index. The limitation of this research is that the limited literature is still not relevant enough to answer the required questions. Apart from the limitations, this research can be a reference and knowledge regarding investment so that you can wisely choose appropriate investment instruments. The suggestion from this research is the need to further investigate research on the Composite Stock Index, it is important to include additional aspects that affect the index. Apart from that, there is a need to discuss cryptocurrencies in more depth.

REFERENCE

- Adnyana, I. M., & Nurwulandari, A. (2022). Pengaruh Harga Emas Dunia, Sti Index, N225 Index, Ks11 Index, Dji Index, Terhadap IHSG Dan Dampaknya Pada Indeks Idx30 Bursa Efek Indonesia (2012-2020). *Jurnal Ilmiah Akuntansi Dan Keuangan*, 4(7), 2022.
<https://Journal.Ikopin.Ac.Id/Index.Php/Fairvalue>
- Aivaz, K. A., Munteanu, I. F., & Jakubowicz, F. V. (2023). *Bitcoin In Conventional Markets: A Study On Blockchain-Induced Reliability, Investment Slopes, Financial And Accounting Aspects. Mathematics*, 11(21), 4508.
- Asmara, T. C., & Juliannisa, I. A. (2019). Faktor – Faktor Yang Mempengaruhi Indeks Harga Saham Gabungan (IHSG). 1–10.
- Basit, A. (2020). Pengaruh Harga Emas Dan Minyak Dunia Terhadap Indeks Harga Saham Gabungan (IHSG) Periode 2016-2019. *Revenue: Jurnal Manajemen Bisnis Islam*, 1(2), 95-110.
- Bc, M., & Bs, S. (2022). Analysis Of Cryptocurrency, Bitcoin And The Future. *East Asian Journal Of Multidisciplinary Research*, 1(7), 1293-1302.
- Benakovic, D., & Posedel, P. (2010). Evidence from estimating a multifactor model on the croatin market. *Business systems research*, 1-50.

- Citra Asmara, T., Desmintari, D., & Arrafi Juliannisa, I. (2022). Faktor–Faktor Yang Mempengaruhi Indeks Harga Saham Gabungan. *Jurnal Indonesia Sosial Sains*, 3(5), 822–834. <https://doi.org/10.36418/Jiss.V3i5.590>
- Darmawan, S., & Saiful Haq, M. S. (2022). Analisis Pengaruh Makroekonomi, Indeks Saham Global, Harga Emas Dunia Dan Harga Minyak Dunia Terhadap Indeks Harga Saham Gabungan (IHSG). *Jurnal Riset Ekonomi Dan Bisnis*, 15(2), 95. <https://doi.org/10.26623/Jreb.V15i2.4381>
- Dewi, I. P. (2020). Pengaruh Inflasi, Kurs, Dan Harga Minyak Dunia Terhadap Indeks Harga Saham Gabungan Di Bursa Efek Indonesia. *Jurnal Ilmu Manajemen*, 17(1), 10–19.
- Dewi, Y., Saryono, S., Dini, A., Maghfiroh, M., & Mauli, R. (2022). Dampak kenaikan harga bahan bakar minyak (BBM) terhadap sembilan bahan pokok (Sembako) di kecamatan tambun selatan dalam masa pandemi. *Jurnal Citizenship Virtues*, 2(2), 320-326.
- Ghazani, M. M., & Jafari, M. A. (2021). Cryptocurrencies, Gold, And Wti Crude Oil Market Efficiency: A Dynamic Analysis Based On The AdaptiveMarket Hypothesis. *Financial Innovation*, 7(1), 29.
- Ghorbel, A., Loukil, S., & Bahloul, W. (2022). Connectedness Between Cryptocurrencies, Gold And Stock Markets In The Presence Of The Covid-19 Pandemic. *European Journal Of Management And BusinessEconomics*, (Ahead-Of-Print).
- Greaves, A., & Au, B. (2015). Using the Bitcoin transaction graph to predict the price of Bitcoin. 2015. *Quoted*, 3, 22.
- Hanoeboen, B. R. (2017). Analisis Pengaruh Harga Minyak Dunia, Nilai Tukar Rupiah, Inflasi Dan Suku Bunga Sbi Terhadap Indeks Harga Saham Gabungan (IHSG). *Cita Ekonomika, Jurnal Ekonomi*, 11(1), 35–40.
- Hasani, M. N. (2022). Analisis *Cryptocurrency* Sebagai Alat Alternatif Dalam Berinvestasi Di Indonesia Pada Mata Uang Digital Bitcoin. *Jurnal Ilmiah Ekonomi Bisnis*, 8(2), 329–344. <http://ejournal.stiepancasetia.ac.id/index.php/jiebjilid>
- Hertanto, R., Muchtar, M., Sihombing, P. R., & Statistik, B. P. (2024). Dinamika Pasar *Cryptocurrency* : Pengaruh Harga Bitcoin , Emas , Minyak Mentah , Dan IHSG Terhadap. *Journal Of Law, Administration, And Social Science* Volume, 4(3), 430–440.
- Huda, N., & Hambali, R. (2020). Risiko Dan Tingkat Keuntungan Investasi *Cryptocurrency*. *Jurnal Manajemen Dan Bisnis: Performa*, 17(1), 72-84.
- Hutapea, G., Margareth, E., & Tarigan, L. (2014). Analisis pengaruh kurs US \$/IDR, harga minyak, harga emas terhadap return saham. *Buletin Ekonomi*, 18(2), 23-33.
- Karimimalayer, M., Aziz, F. B. A., Bagherpour, E., Movahedizadeh, H., & Sedeh, N. S. (2014). A Comparison of Quality Management and Industrial Criteria between Iran and Developed Countries (Case Study: Japan). *Research Journal of Applied Sciences, Engineering and Technology*, 7(20), 4359-4363.

Kurniawan, A. M. Z. (2022). Harga Minyak, Harga Emas, Nilai Tukar Idr/Usd, Dan

- Jumlah Positif Covid-19 Serta Implikasinya Terhadap Indeks Harga Saham Gabungan Di Bursa Efek Indonesia. *Jurnal Manajemen Dan Perbankan (Jumpa)*, 9(2), 54–72.
- Lola Br Ginting, L., Simanjuntak, L. V., & Romadiyah, N. (2023). Analisis *Cryptocurrency* Sebagai Alat Investasi Masyarakat Di Indonesia : Kajian Studi Literatur. *Jurnal Ilmu Komputer, Ekonomi Dan Manajemen (Jikem)*, 3(2), 6147–6155.
- Mariani, H. (2010). Emas: Kandungan dan Penggunaan. Jakarta. PT. Elex Media Komputindo.
- Milando, D. O., Rahim, R., & Adrianto, F. (2023). Analisis Pengaruh World Commodity Price Terhadap Harga Bitcoin Dengan Indeks Dolar Sebagai Variabel Moderasi. *Jurnal Informatika Ekonomi Bisnis*, 5, 4–9. <https://doi.org/10.37034/infec.v5i4.691>
- Ningtyas, P. M. A. (2022). Estimasi Risiko Indeks Harga Saham Gabungan (IHSG) Berdasarkan Pengaruh Indeks Asing Menggunakan Value At Risk (VaR) Dan Expected Shortfall (ES) Dengan Metode Vector Autoregressive (VAR) Dan Vector Error Correction Model (VECM) (Doctoral dissertation, Institut Teknologi Sepuluh Nopember).
- Oktariansyah, O., Eko Putra, A., Sari, V., Usman, B., & Sundari, Y. (2023). Pengaruh Faktor Makro Ekonomi Dan Harga Komoditas Terhadap Indeks Harga Saham Gabungan Pada Bursa Efek Indonesia. *Jurnal Media Akuntansi (Mediasi)*, 5(2), 312–325. <https://doi.org/10.31851/jmediasi.v5i2.11353>
- Orhan, E. (2022). The Effects Of The Russia-Ukraine War On Global Trade. *Journal Of International Trade, Logistics And Law*, 8(1), 141-146.
- Purusottama, A., Budihardjo, A., Elfriede, D. P., Ramadhanti, F., Honggo, H., Setiawati, I. B., ... & Hartono, Y. (2022). *Fenomena Bisnis Ekonomi Terkini: Capita Selecta Seri 1 2021-2022* (Vol. 1). Prasetiya Mulya Publishing.
- Rival, L. O., & Rohman, F. (2022). Analisis Dampak Makroekonomi Dan Harga Emas Terhadap Indeks Harga Saham Gabungan Di Bei Periode 2017-2021 The Impact Of Macroeconomics And Gold Prices On The Idx Composite Index 2017-2021. *Jurnal Akuntansi Dan Perpajakan*, 8(1), 60–79. <http://jurnal.unmer.ac.id/index.php/ap>
- Sarumaha, A. (2023). Pengaruh *Cryptocurrency* Terhadap Harga Saham Dalam Negeri Kurun Waktu 2019-2021. *Syntax Literate ; Jurnal Ilmiah Indonesia*, 8(3), 2011–2021. <https://doi.org/10.36418/syntax-literate.v8i3.11504>
- Septiawan, D. A., Hidayat, R. R., & Sulasmiyati, S. (2016). Pengaruh Harga Minyak Dunia, Inflasi, dan Nilai Tukar Terhadap Pertumbuhan Ekonomi Indonesia. *Jurnal Administrasi Bisnis (JAB)*, 40(2).
- Setiantp, B. (2016). Mengungkap Strategi Investor Institusi Sebagai penggerak utama kenaikan harga saham. BSK Capital.
- Shangguan, Z., Wang, M. Y., & Sun, W. (2020). What Caused The Outbreak Of Covid-19 In China: From The Perspective Of Crisis Management. *International Journal Of Environmental Research And Public Health*, 17(9), 3279.

- (2020). *Cryptocurrency*, Nilai Tukar Dan Real Asset Terhadap Harga Saham Pada Perbankan Indonesia Yang Terdaftar Di Bursa Efek Indonesia. *Ekonomi Dan Bisnis*, 6(2), 171 M. <https://doi.org/10.35590/Jeb.V6i2.1263>
- Soesanto, E., Wahyuningrum, C., & Rosyada, M. I. F. (2024). Dinamika Pasar Minyak Dan Gas Bumi: Implikasinya Terhadap Keseimbangan Ekonomi Global. *MENAWAN: Jurnal Riset dan Publikasi Ilmu Ekonomi*, 2(2), 174-180.
- Soni, W. A. T., Arief, M., Titis, M., & Khaerul, M. M. (2023). Bitcoin Vs Gold: Which One is the Most Powerful in Boosting the Shariah Equity Index? Global Evidence. *Studies in Business and Economics*, 18(1), 5-36.
- Vranken, H. (2017). Sustainability of bitcoin and blockchains. *Current opinion in environmental sustainability*, 28, 1-9.
- Was' An, G. H. (2022). Pendekatan Analisis Vector Error Correction Model (Vecm) Dalam Hubungan Kondisi Makro Ekonomi Dengan Non Performing Financing Berdasarkan Pengelompokan Modal Inti Bank Umum Syariah Di Indonesia. *Jurnal Neraca Peradaban*, 2(2), 129-136.
- Weiss, M. A., Schwarzenberg, A. B., Nelson, R. M., Sutter, K. M., & Sutherland, M. D. (2020). *Global Economic Effects Of Covid-19*. Congressional Research Service.
- Yanida, P., Pratiwi, L. N., & Nugrahani, W. P. (2023). Comparative Evaluation Of Portfolio Performance: A Study Of *Cryptocurrency*, Stock, And Foreign Exchange Investments. *Jurnal Ilmu Keuangan Dan Perbankan*, 13(1), 45-62.