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The comparison and relationship of IHSG, NIKKEI, and NASDAQ

Gracia H. Mamesah
Corresponding author:
graciahelenmamesah@gmail.com
Sam Ratulangi University
Indonesia

Kristianto Harikatan
Sam Ratulangi University
Indonesia

Lidya C. M. Hutapea
Sam Ratulangi University
Indonesia

Marchanda C. Palalangan
Sam Ratulangi University
Indonesia

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ABSTRACT

The movement of market indices in Indonesia, Japan and the United States tends to be uncertain during the COVID-19 pandemic. This study aims to examine the relationship between the three markets and compare performance during the pandemic. The samples used are the IHSG, NIKKEI, and NASDAQ with an observation period from 19 November 2021 to 31 May 2022. This study finds that during the observed period the market return of the IHSG still has a positive performance compared to NIKKEI and NASDAQ. However, the mean difference test also proves that the performance gap between the markets of the three countries is still relatively the same. In addition, this study also shows that there is a unidirectional relationship between IHSG, NIKKEI, and NASDAQ.

Keywords: returns; IHSG; NIKKEI; NASDAQ; Covid-19
JEL Classification: F62; G01; G11

1. Introduction

The composite stock price index or IHSG is a composite index of all types of stocks listed on the Indonesia Stock Exchange. The IHSG changes every day due to changes in market prices that occur every day and the addition of shares. The increase in the number of outstanding shares generally comes from new issuances or the entry of new issuers into the capital market. The increase in the number of new shares can also be caused by corporate actions in the form of splits, rights, warrants, stock dividends, bonus shares, and convection shares (Wajin, 2019).

Empirical evidence from Junaedi and Salistia (2020), Fauziyyah and Ersyafdi (2021), and Romieo et al. (2022) show that from 2021 to 2022, the world will experience the Covid-19 pandemic which causes an economic crisis that has a negative impact on stock price indices in the world, such as the United States, Japan and Indonesia. However, Suryani et al. (2021) also report that the effects of the Covid-19 pandemic tended to cause market index movements to increase as happened in Indonesia, Thailand, Malaysia, Singapore and the Philippines. In addition, empirical evidence from Gil-Alana and Claudio-Quiroga (2020), and Murdiyanto and Akbar (2021) also show that there is an index movement that is less stable during the pandemic in Japan during the pandemic.

2. Literature review

2.1. The relationship of capital market index: Indonesia and Japan

Empirically, the movement of market indices in Indonesia can or cannot be influenced by the Japanese capital market. Sakul (2011) proves that the movement of the index in Japan had no effect on the index in Indonesia during the period 2006 to 2008, but in the period 2009 to 2011, the capital market in Japan negatively affected the index in Indonesia. Consistently, Damajanti et al. (2018) prove that the condition of the capital market in Japan is not related to the condition of the capital market in Indonesia in the period 2 January to 31 August 2018. Setiawan and Mulyani (2020) also prove that the market index in Japan has no significant effect on the market index in Indonesia from January 2014 to December 2018. Under the same conditions, Gunawan (2022) also proves that there is no relationship between capital market conditions in Indonesia and Japan in the period 2017 to 2020. On the other hand, Widodo (2018) finds that the Japanese capital market has a positive effect on movement indices in Indonesia from 2009 to 2017. Similarly, Rohmawati and Zuhroh (2019) also find that in the period 2002 to 2016, the movement of the Nikkei 225 index had a positive and significant impact on indices in ASEAN countries including Indonesia. The same condition was also found by Salihin (2021) in the period 2018 to 2020 that the Japanese capital market had a positive, significant impact on the movement of market indices in Indonesia.

H1: The Indonesian market index correlates to the Japanese market index

H2: The market index performance in Indonesia and Japan is different

2.2. The relationship of capital market index: Indonesia and United States

Some empirical evidence shows that market movements in the United States tend to have an impact on market movements in Indonesia. Zabidi and Haryono (2018) prove that the increase in the Dow Jones index has a positive and significant impact on the composite stock price index in Indonesia, especially in the period 2012 to 2016. During the COVID-19 pandemic, Khoiri and Arghawaty (2020) prove that the Dow Jones index has a positive and significant influence on market indexes in Indonesia, especially for the period March 1, 2020, to July 2, 2020. In the same case, Sejati and Wijaya (2021) also find that the Dow Jones index has a significant positive effect on market index movements in Indonesia from January 2016 to May 2021. Bakhtiar and Purwani (2021) show that in the period 2014 to 2018, every increase in the Dow Jones Index will be accompanied by an increase in the market index in Indonesia. According to Setiana and Permadhy (2022), the Dow Jones index can have a significant positive impact on the IHSG in the long and short term.

H3: The Indonesian market index correlates to the United States market index

H4: The market index performance in Indonesia and United States is different

3. Research method

This study uses time series data with an observation period from 19 November 2021 to 31 May 2022. The samples used are the IHSG from Indonesia (or JKSE), the NIKKEI from Japan, and the NASDAQ from the United States. The IHSG, NIKKEI, and NASDAQ data are sourced from Yahoo Finance. The variable used in this study is the market return which is calculated from the difference between the current and previous daily market prices divided by the previous market price. To test the hypothesis, this study uses a correlation test with the following formula.

$$r = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2 \sum(y-\bar{y})^2}} \qquad (1)$$

For further hypothesis testing, this study uses analysis of variance (ANOVA) with the following basic formula.

$$SStotal = \sum(x-\bar{x})^2 \qquad (2)$$

4. Result and discussion

Table 1 presents the descriptive statistics of returns for IHSG, NIKKEI, and NASDAQ. The mean shows that the IHSG has a positive and higher return on average which means it has had a better performance during the observed period than NIKKEI and NASDAQ. During this period, NASDAQ seems to have the lowest performance as it has lowest mean. The standard deviation (StDev) also shows that NASDAQ has the highest value which implies that the market is more volatile. Otherwise, the StDev of IHSG has lowest value thus indicating less risky market.

Table 1. Descriptive statistics

Variable	N	Mean	StDev	Skewness	Kurtosis
NASDAQ	113	-0.0023	0.022	-0.45	2.21
NIKKEI	113	-0.0007	0.015	0.18	-0.44
IHSG	113	0.0006	0.009	-1.21	5.04

Furthermore, the value of skewness shows that NASDAQ has negative skew. As the NASDAQ has a negative mean, the skewness shows that low returns tend to be more frequent in this market. Figure 1 describes the histogram of the NASDAQ during the observed period.

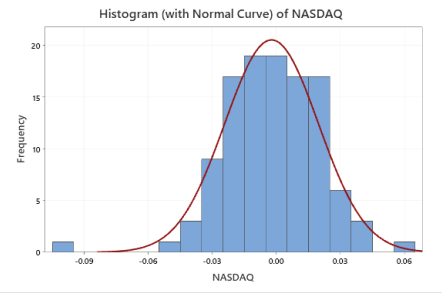

Figure 1. NASDAQ histogram

This study also finds that the skewness of NIKKEI is positive. But, similar to the NASDAQ, the mean of NIKKEI is also negative so the skewness showstendency of low returns during the observed period. Figure 2 describes the histogram of NIKKEI during the observed period.

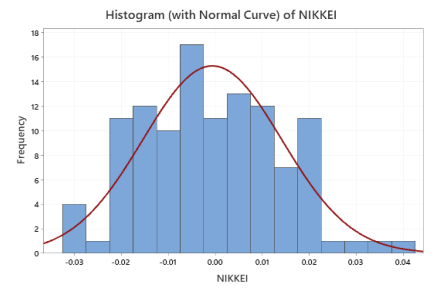

Figure 2. NIKKEI histogram

The next finding is IHSG with negative skewness but it has a positive mean. This result implies that the IHSG has more frequent higher market returns during the COVID-19 pandemic. Figure 3 describes the histogram of IHSG during the observed period.

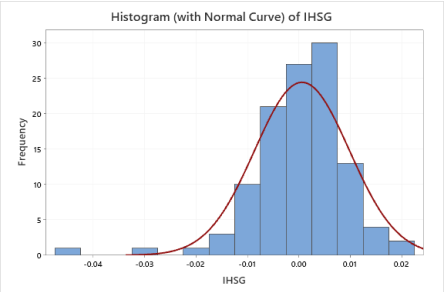

Figure 3. IHSG histogram

This study performs a correlation test to analyze the relationship between IHSG, NIKKEI, and NASDAQ. Table 2 shows that the IHSG has a positive correlation with NIKKEI and the relationship is significant at the 1% level. On this result, this study accepts H1 where there is a relatively low and unidirectional relationship between the IHSG and NIKKEI during the COVID-19 pandemic. The results of this study also show consistency with the findings from Widodo (2018) in the period 2009 to 2017, Rohmawati and Zuhroh (2019) in the period 2002 to 2016, and Salihin (2021) in the period 2018 to 2020.

In addition, this study also found that the IHSG has a positive correlation with the NASDAQ and the relationship is significant at the 1% level. On this result, this study also accepts H3 where there is a relatively low and unidirectional relationship between the IHSG and NASDAQ during the COVID-19 pandemic. Similar to NIKKEI, this study shows that an increase in NASDAQ returns will be followed by an increase in the IHSG. Evidence from this study is consistent with the findings of Zabidi and Haryono (2018), Khoiri and Arghawaty (2020), Sejati and Wijaya (2021), Bakhtiar and Purwani (2021), and Setiana and Permadhy (2022) where the movement of the capital market index in US still has links with the movement of the Indonesian capital market index.

Table 2. Correlation test

		NASDAQ	NIKKEI	IHSG
NASDAQ	Pearson Correlation	1	0.313	0.312
	Sig. (2-tailed)		0.001	0.001
NIKKEI	Pearson Correlation	0.313	1	0.360
	Sig. (2-tailed)	0.001		0.000
IHSG	Pearson Correlation	0.312	0.360	1
	Sig. (2-tailed)	0.001	0.000	

In further testing the hypothesis, this study conducted an ANOVA test with several procedures. First, this study testing the homogeneity of variances of returns to determine the points of the comparison to be used. At this stage, the hypothesis used to test the homogeneity of variances is noted as follows.

H0: Equal variances assumed
Ha: Equal variances not assumed

Table 3 shows that the results of the Levene test are significant at the level of 1%, 5%, and 10% so that H0 is rejected and it can be concluded that the variance of returns for the three returns is not assumed.

Table 3. Test of homogeneity of variances

Levene Statistic	31.896
df1	2
df2	336
Sig.	0.000

Second, this study conducts the ANOVA test to see differences across all indices. Table 4 shows that the result of the ANOVA test has F value of 0.890 and it is insignificant at the 1%, 5%, and 10% levels. This result indicates that the comparison of returns from IHSG, NIKKEI, and NASDAQ has no significant difference.

Table 4. ANOVA

Group variation	Sum of Squares	Mean Square	F	Sig.
Between	0.000	0.000	0.890	0.412
Within	0.088	0.000		
Total	0.088			

Supporting the results of Table 4, Table 5 presents in detail the differences between the IHSG, NIKKEI, and NASDAQ. Table 3 shows that the variances of all returns are not assumed so the Games-Howell test will be used to see differences between returns. Table 5 shows that the market return from IHSG is not different from the market return from NASDAQ. Similarly, the result also shows that the market return from IHSG is not significantly different from the market return from NIKKEI. Those results indicate that during the COVID-19 pandemic, all three markets still performed similarly.

Table 5. Mean difference test of returns

			Mean difference	Std. Error	Sig.
Bonferroni	NASDAQ	NIKKEI	-0.00162	0.00215	1.000
		IHSG	-0.00286	0.00215	0.553
	NIKKEI	NASDAQ	0.00162	0.00215	1.000
		IHSG	-0.00125	0.00215	1.000
	IHSG	NASDAQ	0.00286	0.00215	0.553
		NIKKEI	0.00125	0.00215	1.000
Games-Howell	NASDAQ	NIKKEI	-0.00162	0.00249	0.793
		IHSG	-0.00286	0.00224	0.410
	NIKKEI	NASDAQ	0.00162	0.00249	0.793
		IHSG	-0.00125	0.00164	0.727
	IHSG	NASDAQ	0.00286	0.00224	0.410
		NIKKEI	0.00125	0.00164	0.727

5. Conclusion

During 2021 until 2022, the continuation of the COVID-19 pandemic has caused the economic crisis to escalate so that it has a negative impact on stock price indices in the world including the United States, Japan, and Indonesia. This study provides empirical evidence about the relationship between the capital market and the comparison of market performance, especially between Indonesia, Japan and the United States. This study shows that in the period 19 November 2021 to 31 May 2022, market returns in Indonesia are still positive. These results indicate that the performance of the capital market in Indonesia tends to be more positive compared to the capital markets in Japan and the United States. However, the mean difference test also proves that the performance of market returns from the IHSG, NIKKEI, and NASDAQ is also not significantly different. These results prove that the performance gap between the markets of the three countries is still relatively the same. In addition, the results of the correlation test also show that there is a significant unidirectional relationship between the IHSG, NIKKEI, and NASDAQ.

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