



Impact of The Covid-19 Pandemic on Capital Market Performance: Comparative Analysis

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ABSTRACT: Knowing the differences in the performance of the capital markets of developing countries in Asia before and during the Covid-19 pandemic and the impact of the Covid-19 pandemic on the performance of the capital markets of developing countries in Asia. This study is a comparative study with a population of 42 developing countries in Asia with a sampling technique using the purposive sampling method with secondary data in the form of stock exchange indexes taken 12 months before and 12 months during the Covid-19 pandemic. The data analysis technique used in this study is the normality test and hypothesis testing (paired T-test) assisted by the statistical program for special science (SPSS). The results of the Paired T-test show the t-table value with a significant level of 1.98010 with a t-count before and during the pandemic of 2.374 and a t-table of $0.019 < 0.05$, there are differences in the performance of the capital markets of developing countries in Asia before and during the COVID-19 pandemic. 19 and the impact of the COVID-19 pandemic on the performance of the capital markets of developing countries in Asia.

KEYWORDS: Capital Markets; Performance; Investment

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I. INTRODUCTION

A pendulum is a weight suspended from a pivot so that it can swing freely. When a pendulum is displaced sideways from its resting equilibrium position, it is subject to a restoring force due to gravity that will accelerate it back toward the equilibrium position [1] and [2]. When released, the restoring force combined with the pendulum's mass causes it to oscillate about the equilibrium position, swinging back and forth. The time for one complete cycle, a left swing and a right swing, is called the period. The period depends on the length of the pendulum and also on the amplitude of the oscillation. However, if the amplitude is small, the period is almost independent of the amplitude [3] and [4].

Double pendulum is a mechanical system that is most widely used for demonstration of the chaotic motion. It is described with two highly coupled, nonlinear, 2nd order ODE's which makes it very sensitive to the initial conditions [5] and [6]. Although its motion is deterministic in nature, sensitivity to initial conditions makes its motion unpredictable or 'chaotic' in the long run in this paper discusses in the first part purpose of the double pendulum [7], in the second section, the system of coordinates is presented and in the third section, the equations of motion it's numerical solutions are investigated by using ODEs [45]. Whereas in the final section, behavior of the system and simulation of the double pendulum are discussed by this paper and explain how to linearize the double pendulum investigate modeling the Linearization Error.

This paper is not only analyzed the dynamics of the double pendulum system and discussing the physical system, but also explain how the Lagrangian and the Hamiltonian equations of motions are derived, we will analyze and compare between the numerical solution and simulation, and also change of angular velocities with time for certain system parameters at varying initial conditions.

II. MATERIAL AND METHOD

Capital Market Performance Before the Pandemic

Table 1 Capital Market Performance Before the Pandemic

No	Country name	Index	Bookkeeping	Change
1	Indonesia	JCI	6,299	1.70%
2	Malaysia	KLCI	1,631	4.43%
3	Thailand	SET Index	1,639	0.99%
4	Philippines	PSEI	7,909	4.68%
5	China	Shanghai Composite	2,919	21.20%
6	Vietnamese	VN	971.53	8.12%
7	Bangladesh	Dhaka Stock Exchange 30	1,724.90	2.05%
8	India	National Stock Exchange	11,705.90	0.85%
9	Pakistan	Karachi 100	41,768.66	0.30%
10	Sri Lanka	CSE All Share	5,908.93	0.46%

Source:(www.investing.com) 2019 data.

Capital Market Performance in Indonesia In 2019 was recorded quite well in the midst of a dynamic global economy. The increase in the number of investors and the growth of the capital market industry also demonstrate the confidence of investors and capital market players in the fundamentals and prospects of the Indonesian economy. The positive record of the Indonesian capital market rose even though it was only 1.70% at the end of 2019, the Indonesian capital market was still able to score a number of positive achievements.

Among developing countries, indices that are in the green zone in 2019 are the FTSE Bursa Malaysia KLCI, Thai Set 50 Index in Thailand, and the Jakarta Composite Index (JCI). In particular, the JCI rose 1.70% to 6,296. then China's Shanghai Composite Index rose 21.90%, making it one of the best indexes in Asia. For Pakistan, the Karachi 100 Index rose 0.30%, followed by the CSE All Share up 0.46%, then the Dhaka Stock Exchange rose 2.05% and the National Stock Exchange rose 0.85%.

The exchange with the best performance in Southeast Asia in 2019 was the Vietnam VN index which shot up 8.12%, followed by the Strait Times Index (STI) and the Philippines PSEI, which rose 4.68%. In fifth place after the JCI, the Thailand SETI index rose 0.99%. In contrast, Malaysia's FTSE BM index throughout 2019 was connected to 4.43%. With this performance, the Malaysian stock index became the index with the worst performance not only in Southeast Asia, but also in the Asia Pacific.

The virus that triggered supply chain shocks in China has caused a global economic shock. Emerging economies in East Asia and the Pacific, which are recovering from trade tensions (trodetension) and battling Covid-19. As a result, the Indonesian capital market throughout 2020 still showed weakness. From the stock exchanges in the Asia Pacific region, Indonesia experienced a decline in the composite stock price index or JCI. JCI closed at 6,683 this position fell 0.20%. Highs i.e. Bangladesh (DSE 30) closed 2,620.59 on the day this position was down 2.48%, Pakistan (Karachi 100) was down -0.03%, Philippines (PSEI) was down -0.89%, India (National Stock Exchange) down -0.85%, followed by Thailand (SET Index) down 0.43%. Vietnam (VN) closed down 0.24%. Malaysia (KLCI) down -2.66%, China (Shanghai Composite) down -0, 41% on the other hand, the Sri Lankan stock (CSE All Share) experienced a strengthening up 1.36%. This can be seen from table 2 below.

Table 2 Capital Market Performance During the Pandemic

No	Country name	Index	Bookkeeping	Change
1	Indonesia	JCI	6,683	0.20%
2	Malaysia	KLCI	1,545.99	-2.66%
3	Thailand	SET Index	1,627.59	0.43%
4	Philippines	PSEI	7,454.49	-0.89%
5	China	Shanghai Composite	3,498.94	-0.41%
6	Vietnamese	VN	1,461.50	0.24%
7	Bangladesh	Dhaka Stock Exchange 30	2,620.59	2.48%
8	India	National Stock Exchange	60,292.05	-0.85%
9	Pakistan	Karachi 100	46,629.88	-0.03%
10	Sri Lanka	CSE All Share	10,522.60	1.36%

Source:(www.investing.com)2020 data

Theoretical Framework

According to Rodoni and Ali (2010: 183), market indexes are a means of measuring the performance of securities, especially stocks listed on exchanges used by world exchanges. JCI is used to measure stock performance. Its function is also as a benchmark for portfolio performance, market trend indicator, profit level indicator and as a derivative product development facility.

Widoatmodjo (2015: 11), Analyzing the state of the capital markets is inextricably linked to evaluating the macroeconomic environment as a whole. The state of the economy as a whole should have a significant

impact on how the capital market is performing. There is a good association between the capital market and macroeconomics.

Understanding In general, the capital market is a place where buyers and sellers get together to undertake transactions in order to raise capital. Companies that require capital (issuers) are sellers in the capital market and attempt to sell securities there. While the purchaser (investor) is a party seeking to invest in the business in order to profit. (Dewi & Vijaya, 2018:15)

By exchanging securities, the capital market brings together parties with extra cash and those in need of cash. The trading of long-term financial instruments (securities), including those issued by governments, public agencies, financial institutions, and private corporations, can also be referred to as the capital market (financial market). (Kosim & Maulani, 2021:1)

Capital traded in the capital market is capital which, when measured from time, is long-term capital. Therefore, for issuers it is very profitable considering the relatively long payback period, both ownership and debt. Capital is ownership for a period of time until the company is dissolved. While debt capital, the period is relatively limited, within a certain time and can also be transferred to another owner if it is no longer needed as well as ownership capital.

The capital market instruments traded are in the form of securities that can be traded back by their owners, both ownership capital market instruments are in the form of shares, while those that are debt are realized in the form of bonds. (Dewi & Vijaya, 2018:15)

An index is needed as an indicator to observe price movements of securities. In the IDX, there are several indices that can be used to analyze the development of the capital market in a certain period. One of the indexes used by capital market players is the Composite Stock Price Index (IHSG).

The Composite Stock Price Index or JCI is a price index used in the Indonesia Stock Exchange as a benchmark for investors to measure profits by observing market movements. In the global world, this entity is known as the Indonesia Composite Index (ICI) or IDX Composite. (OCBC NISP, accessed on November 2021)

Previous Research

Research conducted by (Pambudi, 2017) with the title analysis of capital market integration of the United States (DJIA), Japan (NIKKEY 225), Hong Kong (HANGSENG), South Korea (KOSPI), Singapore (STI), Malaysia (KLSE), Indonesia (JCI) in 2010-2015. The variables used consist of seven variables including the United States Capital Market (DJIA), Japan (NIKKEY 225), Hong Kong (Hangseng), South Korea (KOSPI), Singapore (STI), Malaysia (KLSE), and Indonesia (JCI).

The correlation results show that the major capital markets in Asia and the United States are classified as fairly – very strong. With the lowest value of 0.568 and the highest of 0.910. And the result is that the major exchange correlations in Asia and the United States are integrated.

The research was conducted by (Octaveral & Rahardi, 2021) with the title Capital Market Reaction in Southeast Asia Against the Covid-19 Pandemic. The variable used is the Stock Price Index of the four capital markets in Indonesia, Malaysia, Singapore and Thailand.

This study seeks to see the effect of changes in the number of infected with COVID-19 and changes in the death rate due to COVID-19 on four capital markets in Southeast Asia. Changes in the Composite Index from the capital markets of Indonesia, Malaysia, Singapore and Thailand are used as proxies to measure market reaction using the OLS panel data regression model approach. To control the impact that may arise from the fundamental differences of the four capital markets, the natural log of PBD is used as a control variable. In addition, to control for the effect of the difference in transaction days, a dummy variable is also included in the regression model. The results show that changes in the number of infected with COVID-19 are proven to significantly affect changes in the composite market index. The market response regarding this is moving in a negative direction.

The research was conducted by Dedi Junaedi and Faisal Salistia (2020) with the title The Covid-19 Pandemic's Effects on Indonesia's Capital Market: A Case Study of the Composite Stock Index (ISHG). The JCI is the variable in use, while the number of Covid-19 cases in Indonesia, China, and Spain is the independent variable.

According to the study's findings, both internal and external factors affect how the Composite Stock Index (IHSG) moves on the Jakarta Stock Exchange. The dynamics of the capital market were impacted internally by the Covid-19 pandemic conditions and social distance policies (WFH and PSBB) in the nation (indicated by the movement of the JCI index on the JSX). The Covid-19 pandemic that affected China and Spain also had an impact on market dynamics in Indonesia (JCI Index). Likewise, stock market dynamics in Hong Kong (Hangseng), London (FTSE100) and New York (NASDAQ).

The research was conducted by M.Hasan Rifa'i, Junaedi, Arista Fauzi Kartika Sari (2020) with the title The Effect of the Covid-19 Pandemic Event on the Composite Stock Price Index. The variable used is the Composite Stock Price Index.

Based on the results of his research, it can be concluded that there are differences in the Composite Stock Price Index before and during the COVID-19 pandemic in 2020. It can be seen that the results of the JCI calculation have an average value of 1364,85714 before 7 days of the Covid-19 pandemic event, and have an average value of an average of 1299.142857 after 7 days of the covid pandemic event.

The study, *The Impact of the Covid-19 Pandemic Event on the Composite Stock Price Index at PT Bank Mayapada International Tbk*, was carried out by Viola Syukrina E. Jarnosl and Khadijah (2021). Research data collected before the Covid-19 event in Indonesia was announced, research data collected when the Covid-19 event in Indonesia was first reported, and research data collected after the Covid-19 case in Indonesia was first described nationwide were the variables considered in this study.

Based on the results of research using paired sample t-test, namely the stock price of PT. bank Mayapada, Tbk before and after the announcement of the covid-19 case in Indonesia showed a significant value of $0.00 < 0.00$. The existence of this Covid-19 case caused stock prices to decline, companies with an atmosphere of encouraging more digitalization in the framework of e-banking, internet banking and e-wallet. This transition is considered to be very helpful for the efficiency of the company, so that the stock price can increase again.

Mind Frame

Differences in Capital Market Performance Before and During Covid-19

The capital market is one indicator of a country's economy. The capital market fulfills two roles, namely the economic function and the financial function, and as a result, it plays a significant role in the economy of a nation.

The market index is a tool for measuring the performance of securities, especially stocks listed on exchanges used by world exchanges. JCI is used to measure stock performance. Its function is also as a benchmark for portfolio performance, market trend indicator, profit level indicator and as a derivative product development facility. (Rodoni & Ali, 2010).

In this study, descriptive analysis approaches, normality tests, and hypothesis testing—specifically, the paired T-test—were utilized to get different test results in capital market performance before and after the COVID-19 epidemic.

Impact of Covid-19 on capital market performance

The world economy is currently in a slump due to the COVID-19 pandemic. The Covid-19 incident became a corona virus that emerged from the city of Wuhan. Of course, the Covid-19 pandemic will cause many disruptions to the country's economy.

Several nations have enacted lockdowns, regional quarantines, and extensive social restrictions in an effort to stop the epidemic (PSBB). A number of the affected nations have implemented lockdowns, regional quarantines, and extensive social restrictions in an effort to stem the virus' spread. Before the pandemic, the effects must have been considerably different from what they are now. Of course, the economy of the nation was far more stable before the epidemic than it was following the Covid-19 pandemic. However, each country has a varied influence both before and after this epidemic, depending on the policies chosen by the country.

In this study, to obtain the results of the analysis and hypothesis of the impact of the COVID-19 pandemic on the performance of the capital markets of developing countries in Asia, this can be seen from the paired T-test.

From the framework of the difference in the performance of the capital market before and during the Covid-19 pandemic, it can be seen that the impact of COVID-19 is as follows.

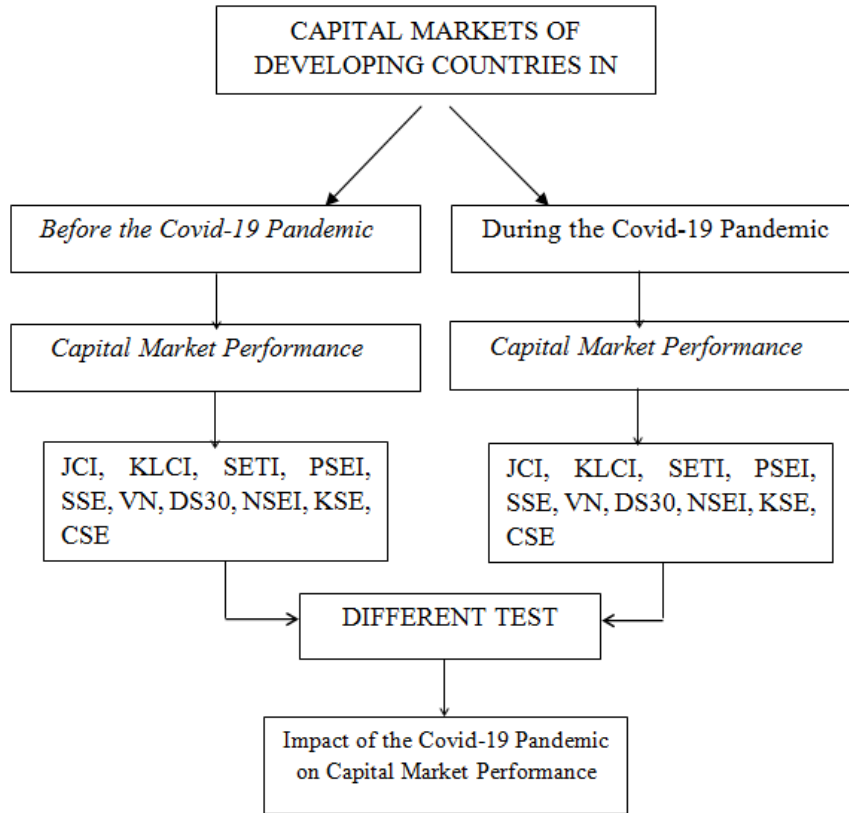


Figure 1. Thinking Framework

Source: Author

Hypothesis: There are differences in the performance of the capital markets of developing countries in the Asian region before and during the Covid-19 pandemic.

METHOD

Types of Research

The type of research used in this research is comparative research, namely research that compares one sample with another sample, whether the comparison is done independently (independently) or in pairs. Comparing the performance of the capital markets of developing countries in Asia before and during the COVID-19 pandemic which are listed on the Indonesia Stock Exchange and www.investing.com.

Variable Indicators

The variable in this study is the performance of the capital market, which is an achievement and development of a company in terms of its capital market. The indicator in this study is the stock price index.

Population and Sample

The sampling technique was done by purposive sampling method to get the right sample for the researcher. Purposive sampling method is a method used to take research samples based on certain criteria. The selected sample must meet the following criteria:

- a. All capital markets in developing countries in Asia
- b. Countries with high Covid-19 growth rates
- c. The ethnic Chinese population in a country.

Based on the above criteria, the number of capital markets in developing countries in Asia is 16. So that the sample in this study is 10 capital markets in developing countries in Asia with stock indexes, namely:

Table 3 Research Sample

No	Country	Index	Symbol
1	Indonesia	Composite Stock Price Index	JCI
2	Malaysia	Kuala Lumpur Composite Index	KLCI
3	Thailand	SET Index	SETI
4	Philippines	PSE Composite Index	PSEI

5	China	Shanghai Composite	SSE
6	Vietnamese	VN-Index	VN-Index
7	Bangladesh	Dhaka Stock Exchange 30	DS30
8	India	National Stock Exchange	NSEI
9	Pakistan	Karachi 100	KSE
10	Sri Lanka	CSE All Share	CSE

Source: www.investing.com

This study as a whole uses secondary data in the form of stock exchange index data taken 12 months before and 12 months during the covid-19 pandemic, journals, articles, and previous studies.

Data Collection Technique

The data collection method used in this study was through the collection of data on documents.

Data Analysis Technique

The analytical method used by researchers in conducting this research is quantitative analysis, namely in the form of stock market indexes of the capital markets of developing countries in the Asian region.

The analytical technique used in this research is descriptive statistical analysis technique, normality test and hypothesis testing (paired T-test).

Financial Analysis

- 1) Indonesia (JCI)
- 2) Malaysia (KLCI)
- 3) Thailand (SETI)
- 4) Philippines (PSEI)
- 5) China (SSE)
- 6) Vietnamese (VN)
- 7) Bangladesh DSE)
- 8) India (NSE)
- 9) Pakistani (zkse)
- 10) Sri Lanka (CSE)

Statistic analysis

Data Normality Test

To ascertain if the data are regularly distributed or not, a data normality test is performed. The purpose of the normality test is to choose the appropriate statistical test instruments for hypothesis testing. A parametric test is employed if the data are regularly distributed. On the other hand, it is preferable to select a non-parametric statistical test tool if the data is not regularly distributed. The hypothesis testing in this work used parametric statistical tests after performing a normality test with one Kolmogorov Smimov sample because the sample data complied with a normal distribution.

Descriptive Statistical Analysis

Descriptive statistical analysis provides not intended to test hypotheses, but rather to provide information about the data held. Only data that is presented and analysed along with computations are used in this study in order to explain the conditions or properties of the data in issue. The mean, standard deviation, maximum, and minimum are the measurements that were employed in this investigation. (Sugiyono, 2012:199).

- 1) Hypothesis testing
 - a) Paired t-test

Paired t-test is a parametric test for the same or no different hypotheses between two variables (Sunarjanto, 2007). Here are some steps in using the paired t-test, namely:

- (1) Determining Hypothesis Formulation

there is no difference in the performance of the capital markets of developing countries in Asia before and during the covid-19 pandemic : H₀

there are differences in the performance of the capital markets of developing countries in Asia before and during the covid-19 pandemic : H_{1a}

- (2) Determine the Real Level (α) and the t-table value.

Determine the value of t table with 95% confidence level error rate (α) 5% + 0.05 with degrees of freedom (df) = n-1

- (3) Determining Testing Criteria

Determining the value of $t_{count} \leq t_{table}$ then H₀ is accepted and H_a is rejected, on the other hand if the value of $t_{tabung} > t_{table}$ then H₀ is rejected and H_a is accepted.

- (4) Determining the Statistical Test Value

Meanwhile, according to Prabarandi (2010), there are several steps for conducting paired sample

T-test testing, namely:

- (a) Calculate the difference between the before and after equations.
- (b) Calculate the total d, then find the Mean of d
- (c) Calculate the average d (-d) then squared the difference and calculate the total difference squared.
- (d) Find the standard deviation with the formula: $Sd^2 = 1/[n-1] \times [\text{total}(d \div d \text{ average})]^2$
- (e) Find t count with the formula: $t \text{ hit} = \frac{(X1 - X2)}{Sd / \sqrt{n}}$

In using the statistical test value, the researcher uses SPSS ver 16.0 to perform data processing

(5) Making Conclusions

Concluding if H_0 is accepted or rejected:

H_{10} is accepted and H_{1a} is rejected, meaning that there is no difference in the performance of the capital markets of developing countries in Asia before and during the Covid-19 pandemic.

H_{10} is rejected and H_{1a} is accepted, meaning that there are differences in the performance of the capital markets of developing countries in Asia before and during the covid-19 pandemic

Descriptive Analysis

According to Sugiyono (2014: 21) With no intention of drawing generalizations or conclusions that apply to the entire population, the descriptive analysis method is a statistic that is used to analyze data by summarizing or describing the data that has been obtained as it is.

In this study, a descriptive approach was employed to explain how Covid-19 affected how well Asian emerging nations' capital markets performed. Analysis can then be produced from this data to serve as input for issuers and investors.

III. RESULTS AND DISCUSSION

Statistical Analysis Results

This test contains a statistical analysis of the performance of the capital market before and during the covid-19 pandemic by looking at the Stock Price Index data and processed using SPSS Version 16.

Table 4 Stock Index Data Before and During the Covid 19 Pandemic

	Before Covid		When Covid	
JCI	Mrch '19	6532.97	Mrch '20	3602.81
	Apr'19	3407.64	Apr'20	3307.24
	My'19	6468.75	My'20	2753.01
	Jn'19	4340.29	Jn'20	3161.49
	Jly'19	11740.6	Jly'20	4753.61
	Agt'19	11586.2	Agt'20	4905.39
	Sept'19	6390.5	Sept'20	8490.3
	Oct'19	6328,47	Oct'20	5238,49
	Novr'19	6169.1	Novr'20	4870.04
	Dec'19	6228.32	Dec'20	5128,23
	Jnry'20	6011.83	Jnry'21	3404.11
Feby'20	6229.54	Feby'21	5979.07	
KLCI	Apr'19	3976.4	Apr'20	7200.79
	My'19	14040.3	My'20	6787.91
	Jn'19	4347.1	Jn'20	3227,49
	Jly'19	7952.72	Jly'20	5700.71
	Agt'19	7970.02	Agt'20	5838.84
	Sept'19	7999,71	Sept'20	6207,72
	Oct'19	4415.63	Oct'20	5928.45

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	Novr'19	7979.66	Novr'20	5884.18
	Dec'19	7779.07	Dec'20	5864.23
	Jnry'20	7977.12	Jnry'21	6324
	Feby'20	4247.23	Feby'21	6791.46
	Mrch'20	3511.62	Mrch'21	7139,71
SETI	February 2019	1641.73	February 2020	1514.14
	March 2019	3012.84	March 2020	813.06
	April 2019	1638.65	April 2020	1125.86
	May 2019	918.45	May 2020	789.5
	June 2019	1620,22	June 2020	2213.99
	July 2019	1730.34	July 2020	1339.03
	August 2019	1711.97	August 2020	1328.53
	September 2019	1654.92	September 2020	1310.66
	October 2019	1637.22	October 2020	1237.04
	November 2019	1601.49	November 2020	1194.95
	December 2019	872.93	December 2020	1408.31
	January 2020	1579.84	January 2021	1449.35
PSEI	Feby'19	8007,48	Feby'20	3595,79
	March'19	7705.49	March'20	6787.91
	Apr'19	7920.93	Apr'20	5321.23
	May'19	4364.55	May'20	9398.92
	Jn'19	7779.13	Jn'20	5838.84
	Jly'19	14576.4	Jly'20	6207,72
	Augt'19	8045.8	Augt'20	11872.1
	Sept'19	4379.33	Sept'20	3568.93
	Oct'19	7779.07	Oct'20	5864.23
	Nov'19	7977.12	Nov'20	3835.71
	Dec'19	7738.96	Dec'20	4119.22
	Jan'20	7815.26	Jan'21	7139,71
SSE	Dec'18	2386.45	Dec'19	5555.01
	Jan'19	2807.13	Jan'20	3337.81
	Feby'19	10175	Feby'20	8638,12
	March'19	5373.85	March'20	5545.94
	Apr'19	9018.69	Apr'20	5784.82
	May'19	5037.19	May'20	5263.68
	Jun'19	4928,22	Jun'20	4291.97
	July'19	4943.71	July'20	7130.3
	August'19	5056.89	August'20	4050,8
	Sept'19	2796.71	Sept'20	6667
	Oct'19	5106.45	Oct'20	6769
	Nov'19	5528.46	Nov'20	7014.27
VN	February 2019	866.06	February 2020	848.63

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	March 2019	904.98	March 2020	831.97
	April 2019	900.13	April 2020	610.76
	May 2019	890.55	May 2020	715.33
	June 2019	922.7	June 2020	1765.4
	July 2019	864.24	July 2020	770.53
	August 2019	883.19	August 2020	740.73
	September 2019	892.51	September 2020	823.93
	October 2019	922.89	October 2020	858.54
	November 2019	922.68	November 2020	892.55
	December 2019	887.47	December 2020	865.89
	January 2020	879.06	January 2021	1070.77
DS30	Apr'19	2007,96	Apr'20	1524.04
	May'19	1096.88	May'20	1492.37
	June'19	1967,21	June'20	807.19
	July'19	3364.85	July'20	1330.83
	Augs't'19	1876.59	Augs't'20	1365.37
	Sept'19	1929.09	Sept'20	1340.98
	Oct'19	1827.9	Oct'20	2342.23
	Nov'19	2198.59	Nov'20	2802.06
	Dec'19	1759.96	Dec'20	1695.99
	Jan'20	1627.74	Jan'21	1680.13
	Feb'y'20	1647.7	Feb'y'21	1687.4
	March'20	1513.34	March'21	1963,96
NSEI	Feb'y'19	10831	Feb'y'20	11962.1
	March'19	10792.5	March'20	11201.8
	Apr'19	11623.9	Apr'20	8597.9
	May'19	11748.2	May'20	9859.9
	Jn'19	11922.8	Jn'20	9580.3
	Jly'19	11788.9	Jly'20	10302.1
	Augt'19	5056.85	Augt'20	11073.5
	Sept'19	11023,3	Sept'20	11387.5
	Oct'19	11474.5	Oct'20	11247.6
	Nov'19	11877.5	Nov'20	11642.4
	Dec'19	14522.3	Dec'20	12969
	Jan'20	22172.4	Jan'21	13981.8
KSE	March 2019	40799,5	March 2020	41630.9
	April 2019	39054.6	April 2020	37983.6
	May 2019	38649.3	May 2020	29231.6
	June 2019	36784.4	June 2020	34111.6
	July 2019	35974.8	July 2020	33931.2
	August 2019	33901.6	August 2020	34421.9
	September 2019	31938.5	September 2020	39258.4

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	October 2019	29672.1	October 2020	4110.9
	November 2019	58451.5	November 2020	40571.5
	December 2019	34203.7	December 2020	39888
	January 2020	39287.7	January 2021	41068.8
	February 2020	40735.1	February 2021	43755.4
CSE	Feb'y'19	5989.9	Feb'y'20	5929.76
	March'19	5816.29	March'20	9221.2
	Apr'19	5557.24	Apr'20	4571.63
	May'19	5478,41	May'20	4571.63
	Jn'19	5310.95	Jn'20	4846.76
	Jly'19	5372.28	Jly'20	5149.57
	Augt'19	3978,58	Augt'20	8448.46
	Sept'19	5889.86	Sept'20	5329.33
	Oct'19	5738,24	Oct'20	5984.84
	Nov'19	3437.55	Nov'20	3287.51
	Dec'19	10294.2	Dec'20	6211.97
	Jan'20	3363.78	Jan'21	4108,77

Source: www.investing.com (processed data, 2022)

Financial Analysis

1) Indonesia (JCI)

Based on the table above, the JCI index data before the Covid-19 pandemic was highest in July 2019 at 11740.6 and the lowest in April 2019 at 3407.64. After the Covid-19 pandemic, the JCI was highest in September 2020, which was 8490.3 and the lowest was in May 2020, which was 2753.01.

This shows that the declining value of Indonesian stock prices is due to the COVID-19 pandemic, where previously the highest data value of 11740.6 fell to 849.3 and the lowest data with a value of 3407.64 fell to 2753.01.

2) Malaysia (KLCI)

The KLCI index before the Covid-19 pandemic was highest in May 2019 at 14040.3 and the lowest in March 2020 at 3511.6. After the Covid-19 pandemic, the highest KLCI was in April 2020, which was 720.79 and the lowest was in June 2020, which was 3227.49.

This shows the declining value of Malaysian stock prices due to the COVID-19 pandemic, where previously the highest data with a value of 14040.3 fell to 720.79 and the lowest data with a value of 3511.6 fell to 3227.49.

3) Thailand (SET))

The SETI index before the Covid-19 pandemic was highest in March 2019 at 3012.84 and the lowest in December 2019 at 872.93. After the Covid-19 pandemic SETI was highest in June 2020 at 2213.99 and the lowest was in in May 2020, which is 789.5.

This shows the declining value of Thai stock prices due to the Covid-19 pandemic, where previously the highest data value with a value of 3012.82 fell to 2213.99 and the lowest data with a value of 872.93 fell to 789.5.

4) Philippines (PSEI)

The PSEI index before the Covid-19 pandemic was highest in July 2019 at 14576.4 and the lowest in September 2019 at 4364.55. After the Covid-19 pandemic, the highest PSEI was in August 2020, which was 11872.1 and the lowest was in September 2020, which was 3568.93.

This shows the declining value of Philippine stock prices due to the COVID-19 pandemic, where previously the highest data with a value of 14576.4 fell to 11872.1 and the lowest data with a value of 4364.55 fell to 3568.93.

The SSE index before the Covid-19 pandemic was highest in February 2019 at 10175 and the lowest in December 2019 at 2386.45. After the Covid-19 pandemic, the highest SSE was in February 2020, which was 8638.12 and the lowest was in January 2020, which was 3337.81.

5) China (SSE)

The SSE index before the Covid-19 pandemic was highest in February 2019 at 10175 and the lowest in December 2019 at 2386.45. After the Covid-19 pandemic, the highest SSE was in February 2020, which was 8638.12 and the lowest was in January 2020, which was 3337.81.

This shows the declining value of Chinese stock prices due to the COVID-19 pandemic, where previously the highest data value of 10175 fell to 8638.12 and the lowest data value of 2386.45 fell to 3337.81.

6) Vietnamese (VN)

The VN index before the Covid-19 pandemic was highest in June 2019 at 922.89 and the lowest in July 2019 at 864.24. After the Covid-19 pandemic, the highest VN was in June 2020, which was 1765.4 and the lowest was in April 2020, which was 610.76.

This shows that the value of Vietnam's stock prices rose and fell due to the COVID-19 pandemic, where previously the highest data value with a value of 922.89 rose to 1765.4 and the lowest data with a value of 864.24 fell to 610.76.

7) Bangladesh (DS30)

The DS30 index before the Covid-19 pandemic was highest in July 2019 at 3364.85 and the lowest in May 2019 at 1096.88. After the Covid-19 pandemic, the highest DS30 was in November 2020, which was 2802.06 and the lowest was in June 2020, which was 807.19.

This shows the declining value of Bangladeshi stock prices due to the COVID-19 pandemic, where previously the highest data with a value of 3364.85 fell to 2802.06 and the lowest data with a value of 1096.88 fell to 807.19.

8) India (NSEI)

The NSEI index before the Covid-19 pandemic was highest in January 2019 at 22172.4 and the lowest in August 2019 at 5056.85. After the Covid-19 pandemic, the highest NSEI was in January 2020, which was 13981.8 and the lowest was in April 2020, which was 8597.9.

This shows that the value of Indian stock prices has gone up and down due to the COVID-19 pandemic, where previously the highest data with a value of 22172.4 fell to 13981.8 and the lowest data with a value of 5056.85 rose to 8597.9.

9) Pakistan (KSE)

The KSE index before the Covid-19 pandemic was highest in November 2019 at 58451.5 and the lowest in October 2019, at 29672.1. After the Covid-19 pandemic, the highest KSE was in February 2021, which was 43755.4 and the lowest was in May 2020, which was 29231.6.

This shows the declining value of Pakistan's stock prices due to the COVID-19 pandemic, where previously the highest data value of 58451.5 fell to 43755.4 and the lowest data value of 29672.1 rose to 29231.6.

10) Sri Lanka (CSE)

The CSE index before the Covid-19 pandemic was highest in December 2019 at 10294.2 and the lowest in January 2021 at 3363.78. After the Covid-19 pandemic, the highest CSE was in March 2020, which was 9221.2 and the lowest was in November 2020, which was 3287.51.

This shows that the value of Sri Lanka's stock prices has decreased due to the COVID-19 pandemic, where previously the highest data with a value of 10294.2 fell to 9221.2 and the lowest data with a value of 3363.78, down to 3287.51.

The higher the stock index value, the better the performance of the capital market. This is because the stock index has a function as an indicator that describes the condition of the capital market at a time. Through this index, investors can find out current stock price fluctuations. If the stock price index tends to be high, investors will have high confidence in the capital market and attract investors to invest. Apart from being a reference in investing, the stock index is also needed by investors to determine whether they will sell, hold, or buy a stock or several shares in the capital market.

Classic assumption test

Normality test

The purpose of the normality test is to determine whether or not the study's data have a normal distribution. The Kolmogorov-Smirnov test was used to determine the normality of the data given the following assumptions:

H_0 : Research data is normally distributed

H_1 : Research data is not normally distributed

The test criteria used are reject H_0 if the significance value $<$ value $<$ (level of error). In this case, the value $<$ 5% is used.

Table 5 Normality Test Results of Capital Market Performance Before and During the Covid-19 Pandemic

One-Sample Kolmogorov-Smirnov Test

		Capital Market Performance Transformation Before the Pandemic	Capital Market Performance Transformation During the Pandemic
N		120	120
Normal Parameters ^{a,b}	mean	8.501343721	8.416287668
	Std. Deviation	1.0640495189	1.0844225866
Most Extreme Differences	Absolute	.080	.079
	Positive	.080	.075
	negative	-.076	-.079
Test Statistics		.080	.079
asympt. Sig. (2-tailed)		.055c	.062c
a. Test distribution is Normal			
b. Calculated from data			
c. Lilliefors Significance Correction.			

Source: SPSS output processed by the author, 2022

Based on the output results, the significance value for the capital market performance variable before the Covid 19 pandemic was 0.055 and the capital market performance variable after the Covid 19 pandemic was 0.062. Because the significance value is more than 5%, it can be concluded that the value of capital market performance as measured by the stock index before the pandemic and during the COVID-19 pandemic is normally distributed. Previously, the performance of the capital market as measured by the stock index before the pandemic and during the Covid 19 pandemic had abnormal data, so it was necessary to transform the data to Log, Ln, Sqrt so that the assumption of normality can be met and can be continued for hypothesis testing through parametric statistical tests, namely Paired Sample t Test.

Descriptive Statistics Test

Table 6 Descriptive Statistical Test Results of Capital Market Performance Before and During the Covid-19 Pandemic

Paired Sample Statistics		mean	N	Std. Deviation	Std. Error Mean
Pairs 1	Capital Market Performance Transformation Before the Pandemic	8.501343721	120	1.0640495189	.0971339873
	Capital Market Performance Transformation During the Pandemic	8.416287668	120	1.0844225866	.0989937854

Source: Research Results, 2022 (Data processed)

Based on the paired samples statistic test table, a summary of the descriptive statistical results of the two samples studied, namely before the pandemic and during the pandemic, is shown. For the performance of the capital market as measured by the stock index value before the Covid-19 pandemic, the average value or mean of 8,501 was obtained. Meanwhile, the performance of the capital market as measured by the value of the stock index during the Covid-19 pandemic, obtained an average or mean of 8.416. The number of stock index data used as the research sample is 120. For the value of Std. Deviation (standard deviation) before the pandemic was 1.064 and during the pandemic was 1.084. The last is the Std.Error Mean value for before the pandemic of 0.097 and for during the pandemic of 0.099. Because the average value of the stock index before the Covid 19 pandemic was 8,501 > during the 8 pandemic,

Table 7 Test Results of Paired Sample Correlations of Capital Market Performance Before and During the Covid-19 Pandemic

Paired Samples Correlations		N	Correlation	Sig.
Pairs 1	Transformation of Capital Market Performance Before the Pandemic & Transformation of Capital Market Performance During the Pandemic	120	.933	.000

Source: Research Results, 2022 (Data processed)

The correlation test findings, the relationship between the two sets of data, or the relationship between stock index variables before and during the pandemic are displayed in the output table above based on the results. The correlation coefficient (correlation) is known to be 0.933 with a significance value (Sig.) of 0.000 based on the output mentioned above. It is possible to conclude that there is a correlation between the capital market's performance before and during the Covid 19 pandemic given the value of Sig. 0.000 0.05 probability.

Hypothesis Testing through Paired Sample t test

Table 8 Paired Samples Test Results of Capital Market Performance Before and During the Covid-19 Pandemic

		Paired Differences		Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
		mean	Std. Deviation		Lower	Upper			
Pairs 1	Capital Market Performance Transformation Before the Pandemic - Capital Market Performance Transformation During the Pandemic	.0851	.3925	.0358	.0141	.15601	2,374	119	.019

Source: Research Results, 2022 (Data processed)

According to the "Paired Samples Test" table, the value of t is displayed with a level of significance () 0.05 (df = n-1 = (120-1) = 119 of 1.98010. It can be said that there were differences in the performance of the capital markets of developing nations in the Asian region before and during the Covid 19 pandemic because the value of tcount before and during the pandemic is 2,374, then tcount > ttable or the value of Sig. (2-tailed) is 0.019 < 0.05.

Differences in the performance of the capital markets of developing countries in Asia before and during the COVID-19 pandemic

Investor preferences in making investment decisions are influenced by the findings of the paired sample t-test, which shows that there are disparities in capital market performance before and after the COVID-19 pandemic.

Before the onset of COVID-19, the world's economic conditions still showed good growth for investment. Since the Covid-19 case began to spread, the capital markets of Indonesia, Malaysia, Thailand, the Philippines, China, Vietnam, Bangladesh, Pakistan, India, have experienced negative performances. The regulators have tried hard by issuing various regulations, but they are still unable to withstand the collapse of the capital market. As time goes by, the number of COVID-19 sufferers in the world is increasing, the effect on the capital market is getting bigger. Previously, it was in a downward trend which was also influenced by negative sentiment from the Corona virus which spread so quickly in China. As a country with a fairly large economy, China certainly has a significant influence on the world economy.

The Indonesian capital market touched its lowest point in May 2020, which was 2753.01, for Malaysia it touched its lowest point in June 2020 of 3227.49, for Thailand it touched its lowest point in May 2020 of 789.5, for the Philippines it touched its lowest point. in September 2020 it was 3568.93, for China it touched its lowest point in February 2020 of 3337.81, for Vietnam it touched its lowest point in April 2020 of 610.76, for Bangladesh it touched its lowest point in June 2020 of 807, 19, for India it touched its lowest point in April 2020 of 8597.5, Pakistan had touched its lowest point in May 2020 of 29231.6 and Sri Lanka had touched its lowest point in November 2020 of 3287.51.

Tandelin (2010) states that macroeconomic factors have been empirically proven to have an influence on capital market conditions in several countries. . Inflation is a macroeconomic variable that describes the increase in the price of goods and services in a certain period. Inflation will tend to increase the production costs of companies to be lower. The further impact of this is that the stock price in the capital market will decrease. The difference in the performance of the capital market before and during the COVID-19 pandemic is certainly very detrimental to investors and the impact will be felt directly during the Covid-19 pandemic.

The occurrence of covid 19 gave a signal about the existence of information on the activity of declining stock price movements, this could be bad news for investors. The content of the signal theory is strong enough to make the market react because the information circulating is responded to by investors, which is indicated by differences in investment decisions taken during pre-covid-19 conditions and can affect investors' preferences in making investment decisions. The information obtained, as well as the amount of expertise and understanding of investors on investments, will have a significant impact on the choice to make an investment. Investment decisions that are different from decisions under normal conditions provide a signal that market participants respond to the information circulating.

The results of this study are in line with Dedi Junaidi (2020) which shows that the JCI movement is influenced by the Covid-19 condition which indicates that the market has been efficient in absorbing information. Furthermore, signal theory gives consistent results where the consistency shows that signal theory is able to capture differences. This research is also supported by Sari (2014) which shows that there is a

difference in the average composite stock price index between before and after the events of the presidential and vice presidential elections and the inauguration of the president and vice president. Another study stated by Pratiwi and Yusuf (2015) also shows that the Indonesian and Thai capital markets strongly reacted to the 2014 world cup events.

The impact of the COVID-19 pandemic on the performance of the capital markets of developing countries in Asia

According to the analysis' findings and the following hypothesis, the pandemic COVID-19 may have an impact on how the modal commerce in Asian nations operates. The findings of a paired t test, which demonstrated that "t hitung" was greater than "tabel" or that "Sig. (2-tailed) 0,05" was the threshold, demonstrated that the "adanyadampak pandemic COVID-19" had an effect on Asian currency exchange rates. The statistical summary of financial market operations previous to the Covid 19 pandemic shows that they were better than those carried out during the epidemic, as judged by the nilai rata-rata (mean) in the statistical summary.

Based on the results of data analysis that has been carried out, it is found that the hypothesis in this study is accepted, meaning that there are significant differences in capital market performance in developing countries in the Asian region before and during the Covid 19 pandemic.

Investors wishing to invest during the COVID-19 pandemic must pay attention to fundamental studies of the stocks they are about to buy, because this information allows them to understand the company's potential and estimate future profits. Investors planning to invest during the COVID-19 outbreak need to exercise caution and consider all their options.

The capital market's performance varied before and during the Covid-19 outbreak for a number of reasons. As stated in the study "Reaction of the Capital Market in Southeast Asia to the Covid-19 Pandemic" by (Octaveral & Rahardi, 2021). The study discovered a substantial inverse relationship between changes in the composite market index and changes in the number of Covid-19 infected individuals.

Then Dedi Junaedi and Faisal Salistia (2020) also through their research entitled "The Impact of the Covid-19 Pandemic on the Capital Market in Indonesia: A Case Study of the Composite Stock Index (ISHG)" found that the movement of the Composite Stock Index (CSPI) on the Jakarta Stock Exchange was influenced by internal conditions (covid-19 pandemic conditions and social distancing policies implemented by the government) and external conditions (covid-19 pandemic conditions in China and Spain).

This stock price index is needed as an indicator for observing price movements of securities. In this study, the stock price index is used as an indicator of capital market performance. According to Zulfikar (2016: 92) there are several factors that can affect stock prices, including company internal factors and company external factors. The condition of the Covid-19 pandemic is included in external factors.

IV. CONCLUSION

There are differences in the performance of the capital market against COVID-19 in developing countries in Asia. This is because it gives a signal about information on the stock market or declining stock price movements and makes the market react because the circulating information is responded to by investors, indicated by differences in investment decisions taken during conditions before Covid-19 so that investment decisions taken at the time conditions before covid-19 so that what is made in the capital market is influenced by investor preferences.

The impact of the COVID-19 pandemic on the performance of the capital markets of developing countries in Asia. This can be seen from the results of the paired t test, which shows that $t_{count} > t_{table}$ or with the value of Sig. (2-tailed) < 0.05 means H_0 is rejected and H_a is accepted which indicates that there is an impact of the COVID-19 pandemic on the performance of the capital markets of developing countries in Asia. When viewed from the average value (mean) in the descriptive statistical test, the performance of the capital market before the COVID-19 pandemic was better than the performance of the capital market during the Covid-19 pandemic.

Investors are advised to conduct fundamental and technical analysis first before investing in Asian capital markets. Companies or issuers listed on the Exchange must maintain stability in the midst of events that affect the capital market. The company is expected to provide performance certainty to investors so that investors have more confidence in the performance of the company in the midst of events that have a negative impact, such as the event of the implementation of the lockdown related to the COVID-19 pandemic.

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