The Impact of Covid-19 Pandemic on Property Stock Indexes in ASEAN Countries

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Abstract. The world economic projection is certain to experience a decline due to the COVID-19 pandemic. In the first quarter of 2020, several world institutions, such as the IMF, revised their projections for global economic growth. The COVID-19 pandemic has significantly impacted on various industrial sectors, including property sector. Prior to the pandemic, the property sector's performance began to show a positive trend after the last few years tended to be stagnant. However, the COVID-19 pandemic has caused the performance of the property sector to decline again due to regulations issued by the governments to limit social activities. Regarding the spread of COVID-19 cases since the outbreak first appeared in Wuhan, ASEAN was the first region to report COVID-19 cases outside China. This study examines the impact of the COVID-19 pandemic on property stock indexes in ASEAN countries from quarter I-2020 to quarter IV 2020. By using regression panel method, the growth in confirmed cases of COVID-19 is negatively and significantly impacts property stock indexes return. In addition, the findings of this study indicate that, during 2020, the most negatively affected property sectors caused by pandemic as compared to that in Indonesia are property sectors in Thailand and Singapore.

Keywords: Covid-19, Property Stock Indexes, Return, ASEAN

1 Introduction

The COVID-19, also known as the coronavirus pandemic was first identified in December 2019 in Wuhan, China and is an ongoing global crisis caused by the acute respiratory syndrome SARS-CoV-2. The World Health Organization (WHO) defined this virus as the 2019-nCOV virus on January 12, 2020, then officially categorized this virus as an infectious disease by declaring a Public Health Emergency of International Concern on January 30, 2020 and then declaring this virus a pandemic on January 11. March 2020. This pandemic is the fifth pandemic since the first flu pandemic that occurred in 1918. According to data from WHO, as of June 12, 2021, globally there were more than 174 million confirmed cases and more than 3.7 million deaths. making this pandemic one of the deadliest pandemics in history.

In the report released by WHO regarding the spread of COVID-19 cases since the outbreak first appeared in Wuhan, ASEAN was the first region to report COVID-19 cases outside China. It was noted that Thailand was the first country in ASEAN to report COVID-19 cases with a total of 2 cases on January 13, 2020. The next ASEAN countries to report cases of COVID-19 were Singapore and Vietnam on January 23, 2020, Malaysia on January 25, 2020, followed by with Cambodia on January 27, 2020. One month after these countries, cases of COVID-19 have been confirmed to spread to Indonesia, Brunei Darussalam, Myanmar, and

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Laos from March 2, 2020 to March 24, 2020.

Table 1. Date of First Confirmed Case of COVID-19 in ASEAN

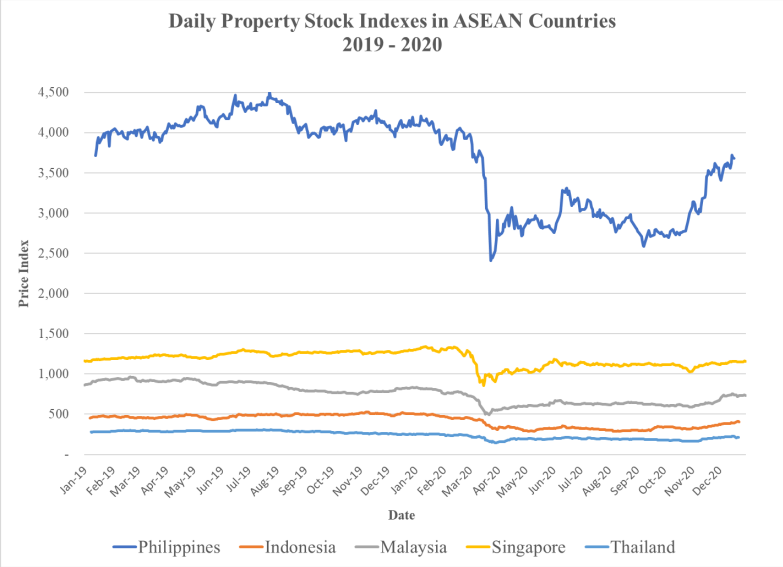
No	Country	First Date of Confirmed Cases
1	Thailand	13 January 2020
2	Singapura	23 January 2020
3	Vietnam	23 January 2020
4	Malaysia	25 January 2020
5	Cambodia	27 January 2020
6	Indonesia	2 Market 2020
7	Brunei	10 Market 2020
8	Myanmar	23 March 2020
9	Laos	24 March 2020

According to Statista's research [1], the ASEAN Market has more than 600 million people or 9% of the total world population. The combined per capita income of ASEAN countries over the last few years has increased and reached an average of US$13,025 in 2020. Singapore has the highest GDP per capita in ASEAN at US$65,234 followed by Brunei at US$29,314. ASEAN countries have many middle-income families which increase the demand for various products, such as property, electronics, mobile phones and gadgets, cars, and services related to education, health and recreation.

The COVID-19 pandemic had a significant impact on various industrial sectors, particularly in the property sector. Prior to the pandemic, the property sector's performance began to show a positive trend after the last few years tended to be stagnant. However, the COVID-19 pandemic has caused the performance of the property sector to decline again. Some of the decline in performance of listed companies was due to the temporary closure of several shopping centers, hotels and office buildings as well as construction work on property projects which had to be temporarily halted. In addition, property sales performance such as houses and apartments from small to large scale also stalled because there was a physical distancing system imposed by the government during this pandemic. Fig. 1 shows the historical performances of property stock indexes in ASEAN Countries from 2019-2020.

Stock market returns may respond to major events such as political events [2], national disasters [3] and pandemic diseases, for example SARS [4] or Ebola outbreak [5]. In 2020, COVID-19 has impacted global economic in various sectors Global trade performance is also disrupted due to the slowdown in the manufacturing sector, particularly China, the major player in logistics distribution channels, which has been hit hard in the first quarter of 2020. The world economic projection is certain to experience a decline due to the COVID-19 pandemic. In the first quarter of 2020, several world institutions, such as the IMF, revised their projections for global economic growth.

Graph 1. Shows the historical performances of property stock indexes in ASEAN Countries from 2019-2020.



According to Colliers International research [6], the high growth rate of investment in ASEAN countries indicates that there was a huge demand from non-ASEAN investors to invest in the region. High demand also came from North Asia investors to invest in the ASEAN countries; property sectors. One of the reason for investing in the property sectors is its average high investment yield in the range of 4.5% to 10%. In addition, several countries such as Indonesia, Vietnam, and the Philippines have been focusing on infrastructure development, provide opportunities for transit-oriented development (TOD)-oriented property development and industrial estate development. Furthermore, investors are attracted to invest in a country that provide tax incentives such as Malaysia. The incentives seek to stabilize Malaysia's property market and reduce investors's operating expenses.

Many studies have been conducted to investigate the stock returns responses to the COVID-19 pandemic. Ashraf [7] examines the return of stock market indexes in response to the COVID-19 pandemic in 64 countries in the first quarter of 2020. Similarly, Al-Awadhi et al. [8], investigate the impact of COVID-19 pandemic on the return of stock market indexs. However this study only focus on stock market indexes on the Shanghai Stock Exchange and Hang Seng Index.

From the research background, our main objective for this study is to be more focused on specific sectors most affected, particularly in property sector. The main problem is because when using stock market indexes from specific countries during a pandemic, there are several sectors that have benefited from the COVID-19 pandemic, for example such as information technology, health, etc, thus creating uncertainty for stock investors who wish to invest in certain sectors. As a result, in order to provide more accurate information, the author is interested in conducting a more specific study to measure the impact of COVID-19 on specific sector returns, and one of the sectors that has been heavily impacted is the property sector. Also, since the COVID-19 pandemic is still ongoing global pandemic event and to the best of author's knowledge, the impacts of the pandemic on property sector in ASEAN countries is limited, this study aim to fill this gap by measuring the impact of COVID-19 on property

sector stock indexes in ASEAN countries. The results of this study contribute to literature and policy makers.

2 Method

This study employs these following data: the number of confirmed cases from COVID-19 in ASEAN countries obtained from John Hopkins University (JHU) Coronavirus Resource Center from the first case occurred in each country in Q1- 2020 until Q4-2020, daily property stock indexes in ASEAN countries gained from Bloomberg from Q1 -2020 until Q4-2020, daily exchange rate taken from www.investing.com, and interest rate obtained from International Monetary Fund Dataset.

ASEAN consist of 10 countries namely Brunei Darussalam, Philippines, Indonesia, Cambodia, Malaysia, Myanmar, Singapore, Thailand, Laos, and Vietnam. However, some countries such as Brunei Darussalam, Cambodia, Vietnam, Myanmar and Laos are removed from this sample due to following reasons. Brunei Darussalam is not included in the sample because it lacks of a stock exchange, while other countries were removed because there are no property stock indexes categories in their stock market exchanges. Table 2 summarize the result of sample selection.

Table 2 lists the property stock indexes and the number of daily data observations from each country. Moreover, Fig. 2 shows the daily returns for property stock indexes and number of daily confirmed COVID-19 cases. The figures in general shows that the returns of property stock indexes are negatively related to daily confirmed COVID-19 cases.

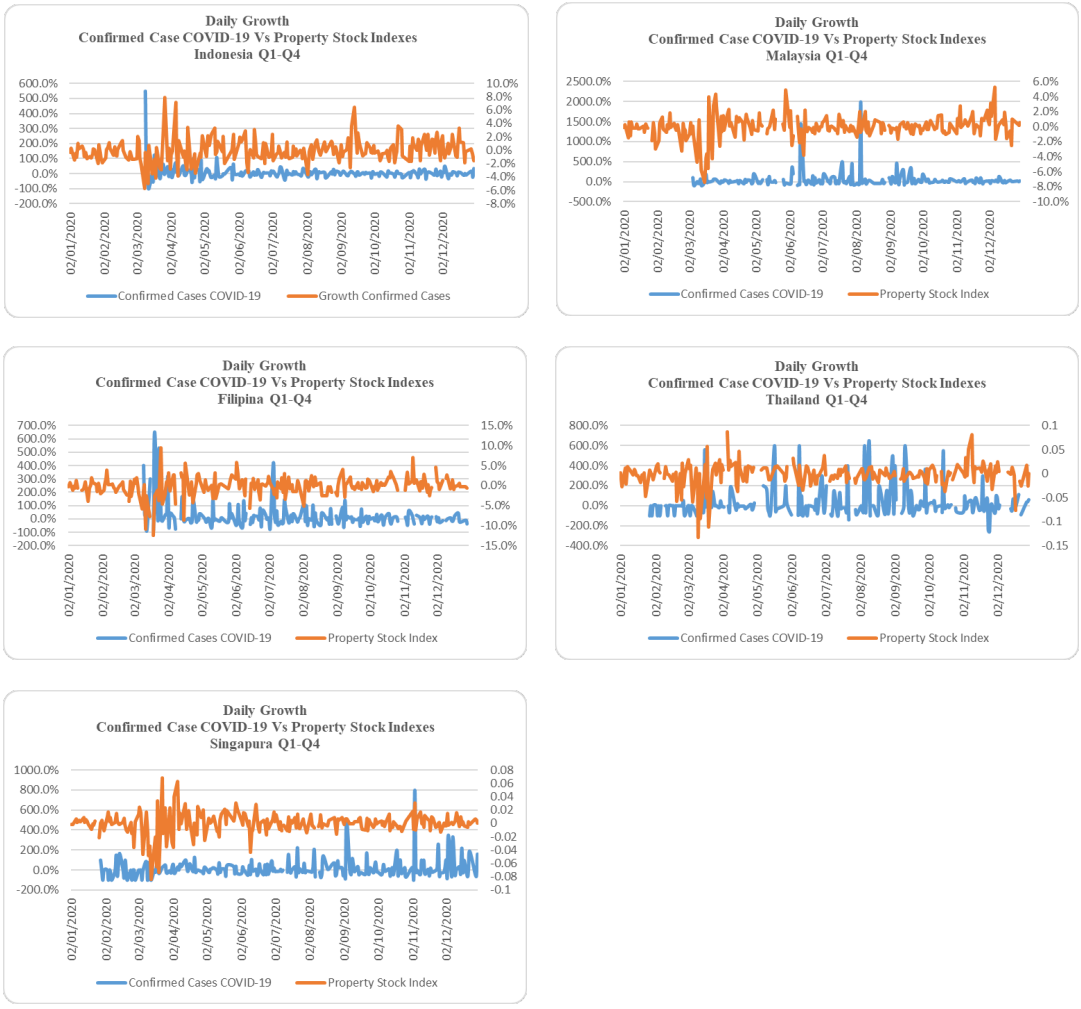
Table 2. Result of Sample Selection

Country	Stock Exchange	Property Stock Indexes
Brunei Darussalam	X	X
Filipina	√	√
Indonesia	√	√
Cambodia	√	X
Malaysia	√	√
Myanmar	√	X
Singapura	√	√
Thailand	√	√
Laos	√	X
Vietnam	√	X

Table 3.`Property stock indexes and number of observation we used in this research from each country

Country	Property Stock Indexes	Ticker	Observation
Philippines	Philippines Stock Exchange Property Sector Index	PPROP	982
Indonesia	Jakarta Stock Exchange Construction Property and Real Estate Index	JAKPROP	982
Malaysia	Bursa Malaysia Properti Index	KLPRP	982
Singapore	iEdge SG Real Estate Index	SGXRE	982

Country	Property Stock Indexes	Ticker	Observation
Thailand	Stock Exchange of Thailand Property Development Index	SETPROP	982



Graph 2. Daily confirmed cases and returns for property stock indexes for each country.

To analyze the impact of COVID-19 confirmed cases on property stock indexes returns, this study employs common effect model regression panel.

This study applies the following regression model:

$$Y_{c,t} = \propto_c + \beta_1 COVID-19_{c,t-1} + \sum_{k=1}^{k} \beta_k X_c^k + \varepsilon_{c,t} \quad (1)$$

$$Y_{c,t} = \propto_c + \beta_1 COVID-19_{c,t-1} + \sum_{k=1}^{k} \beta_k X_c^k + \sum_{t=1}^{T-1} \varepsilon_t D_t + \varepsilon_{c,t} \quad (2)$$

Where $Y_{c,t}$ is dependent variable which defines the return of property stock indexes in country c at day t. $\propto_c$ is the Constanta or intercept. COVID-19 is daily growth of confirmed COVID-19 cases. X_c^k is the control variables for the countries, including daily returns of stock market indexes for each country, growth of daily exchange rate, and interest rates. D_t is a set of daily fixed-effects dummy variable. This variable is used to control daily international events which affect the stock price occurred in each country.

The confirmed COVID-19 cases is an independent variable that is measured as the daily growth data of confirmed cases for each country from quarter 1 2020 until quarter 4 2020. According to previous research from Ashraf et al [7] that this variable that has higher correlation compared to cases of death due to COVID-19. It also can be found from previous study that stock indexes respond negatively to the growth in confirmed cases of COVID-19 pandemic

Some control variable in this research as follow: daily returns of stock market index, daily exchange rate, and monetary interest rates. Stock market index, is an index that measures a stock market performance that helps investors compare current price levels with historical prices and in general, it is computed from the prices of selected stocks. In this research, it is also measured as the daily growth data for each country's index from quarter 1 2020 until quarter 4 2020. Based on previous research from Chen et al. [9], Ichev and Marinc [5], Ashraf [7], Al-Awadhi et al. [8], there is a strong relationship between stock prices and stock market indexes. Ashraf [7] examines the return of stock market indexes in response to the COVID-19 pandemic in 64 countries in the first quarter of 2020. The result shows that the market stock index has negative relationship and significance to the growth in confirmed case. Al-Awadhi, et al. [8] investigate the impact of COVID-19 pandemic on the return of stock market indexes. By analyzing stocks on the stock exchange listed on the Hang Seng Index and the Shanghai Stock Exchange Composite Index during the COVID-19 pandemic, the result also shows that the market stock index has negative relationship and significance to the growth in confirmed case. Ichev and Marinc [5] analyze the impact on stock returns of companies around the world using another outbreak pandemic case which is Ebola virus. The research also shows that Ebola has a negative relationship and significance to the market stock index and the most significant impact is companies that have exposure in the US and Europe. Chen et al. [9] investigates the impact of the SARS outbreak on the performance of hotel stocks in Taiwan that occurred in 2003. By using market stock indexes as one of the variable, the results are also significant Moreover the analysis also shows that from several tourism segments, the most affected is hospitality, while other segments also directly affected such as car rental, restaurants, and travel agents.

Exchange rate is the value of one nation's currency versus the currency of another nation. In this research we compared each country currency against USD currency and measured as daily growth data. Khan [10] shows that there is a significant influence between exchange rate and stock market returns. By investigate the impact of exchange rate on stock returns in Shenzhen Stock Exchange using Autoregressive Distributed Lag Model (ARDL), the results show that exchange rate has a negative and significant influence on stock returns of Shenzhen stock exchange.

Interest rate is defined as the proportion of an amount loaned which a lender charges as interest to borrower. In this research we used each country's interest level during quarter 1 to

quarter 4 2020. Alam and Uddin [11] investigate the relationship between interest rate and stock price in developed and developing countries. From the results shows that finds that interest rates have significant negative relationship on stock prices.

3 Results and Discussion

Table 4 presents the summary statistics of the variables used in this research. It can be seen that the maximum, minimum, and mean of property stock indexes returns are -0.01, -0.13, and 0.09 respectively, means that daily returns of property stock indexes in ASEAN swung between negative 13 percent and confirmed 9 percent.

Table 4. This table defines the summary statistic of variables included in this research.

Variable	Obs.	Mean	Std	Min.	Max
Return Prop	982	-0.0001	0.0205	-0.1332	0.0933
Δ Conf. Cases	982	0.1796	1.0925	-9.0000	14.5000
Return Market	982	0.0004	0.0172	-0.1079	0.1019
Δ Currency	982	-0.0001	0.0064	-0.0379	0.0468
Interest Rate	982	0.0197	0.0129	0.0050	0.0450

Table 4 displays that the average return on property stock indexes in ASEAN countries in 2020 is -0.02%, indicating a decline trend in property stock indexes in each country. In the meantime, the average of daily growth rate of confirmed cases is 0.179 (17.9%), its minimum and maximum values were -9.0 (-900.0%) and 14.5 (1,450 %) respectively. In addition, the standard deviation of daily confirmed case is 1.0925, implying that there is a significant increase in the growth of confirmed cases. There was a significant increase of up to 1.450% in the first quarter of 2020 period in June 2020 which occurred in Malaysia.

From the return of stock market indexes variables in ASEAN-5 countries, in 2020 the average daily growth was 0.0004 (0.04%), the minimum value was -0.1079 (-10.8%) and the maximum value was 0.1019 (10.1%). From the results, it shows that the average stock price index in each country is still relatively stagnant despite a significant decline due to the pandemic. The largest decrease occurred in Singapore by 11.6% on 27 May 2020 (second quarter 2020) while the largest increase occurred in Indonesia by 10.1% on 26 March 2020 (first quarter 2020).

In the daily growth rate of exchange rates, the average growth was -0.0001 (-0.01%), the minimum value was -0.0379 (-3.7%) and the maximum value was 0.0468 (4.6%). In general, the exchange rate tends to weaken against the USD during the COVID-19 pandemic in 2020. The largest decline and increase occurred in Indonesia on May 4, 2020 and March 24, 2020, respectively by -3.7% and 4.6%.

The interest rate growth rate tends to decrease gradually in the first quarter of 2020 to the fourth quarter of 2020. The lowest interest rate in this study was from Thailand at 0.5% which occurred in the second quarter to fourth quarter 2020. The highest interest rate is 4.5% from Indonesia in the first quarter of 2020. The policy of reducing interest rates is in line with the policies of the respective governments to improve the national economy and maintain people's purchasing power.

Table 5 presents the result of common effect regression model. Model 1 shows the regression result by using Common Effect Model (CEM) with span of study time periods from

quarters 1 to 4 2020, while Model 2 shows the regression result by using CEM with daily fixed-effect dummy variable.

Table 5. The result of panel regression technique.

Variable	Q1-Q4	
	(1)	(2)
Δ Conf. Cases	-0,00107***	-0,00097**
	(0,00043)	(0,00045)
Return Market	0,81888***	0,54287***
	(0,27295)	(0,03355)
Δ Currency	-0,21080***	-0,17870**
	(0,07268)	(0,08202)
Interest Rate	-0,03908	-0,00950
	(0,03644)	(0,03429)
DFEV	-	Yes
Constant	0,00070	0,00950
	(0,00086)	(0,03429)
Observasi	982	982
R-squared	0,488	0,676

Notes: The standard errors are given in parenthesis
*** statistical significance at 1%
** statistical significance at 5%
* statistical significance at 10%

Both Model 1 and Model 2 find that the return on the property stock index have negative relationships to the growth rate of confirmed cases with at 1% and 5% significance level respectively. This shows that the return on the property stock index decreases as confirmed case increases. Otherwise, a decrease in the confirmed case will increase the return on the property stock index.

The market stock index return variable has a positive relationship to the return on the property stock indexes with a significance level of 1%. These results support the research of Chen [9], which uses the market stock index return variable to determine the performance of the property sector.

The daily currency variable has a negative relationship to the return on the property sector stock price index and has a significance level of 1%-5%. This results also support research from Khan [10] which explains that daily changes in currency values have a negative relationship and have a significant effect on stock indexes.

Interest Rate variable is not significant from the result. This results do not support research from Alam et al. [11] which explains that Interest Rate always has significant relationship to stock returns.

In general, the results of this study provide evidence to support Ashraf [7] and Al-Awadhi et al. [8] that find inverse relationships between confirmed case and stock returns.

Furthermore, Table 6 shows the results of the CEM regression for the impact of the COVID-19 pandemic on the return of property stock indexes among ASEAN countries by using Indonesia as the base case.

Table 6. The impact of the COVID-19 pandemic between countries using Indonesia as the base case.

Variable	Property Stock Indexes Return
	Q1-Q4
Δ Confirmed Cases	-0,00103**
	(0,0004)
Return Market	0,81618***
	(0,02732)
Δ Currency	-0,20374***
	(0,07274)
Interest Rate	-0,42421**
	(0,13466)
Philippines	-0,00623**
	(0,00307)
Malaysia	-0,00775**
	(0,00365)
Thailand	-0,01289**
	(0,00566)
Singapore	-0,01126**
	(0,00514)
Constant	0,01505**
	(0,00643)
Observasi	982
R-squared	0,491

Notes: The standard errors are given in parenthesis
*** statistical significance at 1%
** statistical significance at 5%
* statistical significance at 10%

In quarter 1 to 4, the coefficient of Philippines is -0.00623 and significant at 5%, This indicates that during 2020, the impact of COVID-19 pandemic on property stock indexes returns in Philippines is larger than that in Indonesia.

Likewise, Thailand has a coefficient value of -0.01289 and significant at 5%, implying that the effect of crisis in 2020 a significantly greater impact on property stock indexes returns in Thailand compared to that in Indonesia.

Moreover, Singapore and Malaysia have coefficient values of -0.01126 and -0,00775 respectively, which are significant at 5%. These also imply that the impacts of pandemic on property stock index returns in Singapore and in Malaysia are more severe than that in Indonesia.

In general, Table 6 indicates that in 2020 the countries that experienced the largest and the second largest impacts of pandemic on the return of property stock indexes are Thailand and Singapore. respectively

4 Conclusion

The results show that throughout 2020, the daily change in the growth of confirmed cases due to the COVID-19 pandemic negatively and significantly impacts the return of property stock indexes. This shows that the return on the property stock index decreases as confirmed case increases. Otherwise, a decrease in the confirmed case will increase the return on the property stock index.

Moreover, the result finds that, among ASEAN countries, compared to Indonesia, Thailand and Singapore experience the largest negative impact of the pandemic on property stock indexes returns.

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