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ASYMMETRIC DEPENDENCE BETWEEN STOCK MARKET RETURNS AND NEWS DURING COVID-19 FINANCIAL TURMOIL (CASE STUDY SSE 50, SET 50, LQ45, AND STI INDEX)

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Abstract: The purpose of this study is to see the asymmetric dependence between stock returns and news during the financial turmoil during COVID-19 on the SSE 50, SET 50, LQ45, and STI indices simultaneously or partially. Observations have been carried out for 216 working days from 3 January 2020 to 30 October 2020. The population in this study is the share prices of all stocks listed on the stock exchanges of China, Thailand, Indonesia, and Singapore. The research sample was SSE 50, SET 50, LQ45, and STI indices for the period January 2020 - October 2020. This research is quantitative using quantile regression. Method and involves Eviews 10 in its data analysis. The results show that RavenPack news index (the panic index/PI, the media hype index/HY, the fake news index/FNI, the country sentiment index/CSI, the infodemic index/CTI, dan the media coverage index/MCI), Credit Default Swap (CDS) rate on 5 year bonds issued by the central government, and the daily closing price of gold during weekdays in the period 3 January 2020 - 30 October 2020, there is no significant effect on stock returns on the SSE 50, SET 50, LQ45, and STI indices either simultaneously or partially.
Keywords: asymmetric dependency, stock market return, news, the quantile regression method.

Abstrak: Tujuan dari penelitian ini adalah untuk melihat ketergantungan asimetris antara *return* saham dan berita selama gejolak keuangan saat COVID-19 di indeks SSE 50, SET 50, LQ45, dan STI secara simultan maupun parsial. Pengamatan telah dilakukan selama 216 hari kerja sejak 3 Januari 2020 hingga 30 Oktober 2020. Populasi dalam penelitian ini adalah harga saham dari keseluruhan saham-saham yang terdaftar di bursa efek negara China, Thailand, Indonesia, dan Singapura. Sampel penelitian yaitu indeks SSE 50, SET 50, LQ45, dan STI periode Januari 2020 – Oktober 2020. Penelitian ini bersifat kuantitatif dengan menggunakan metode regresi kuantil dan melibatkan Eviews 10 pada analisis datanya. Hasil menunjukkan bahwa indeks berita RavenPack (the panic index/PI, the media hype index/HY, the fake news index/FNI, the country sentiment index/CSI, the infodemic index/CTI, dan the media coverage index/MCI), Credit Default Swap (CDS) rate pada obligasi 5 tahun yang diterbitkan oleh pemerintah pusat, dan harga penutupan harian emas selama hari kerja di periode 3 Januari 2020 – 30 Oktober 2020 tidak berpengaruh signifikan terhadap return saham di indeks SSE 50, SET 50, LQ45, dan STI baik secara simultan maupun parsial.
Kata kunci: ketergantungan asimetris, pengembalian pasar saham, berita, metode regresi kuantil.

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INTRODUCTION

The public news that is being discussed is one of the virus families of the coronavirus, namely SARS-CoV-2 or Coronavirus Disease-2019 (COVID-19). The announcement of a global health emergency was declared by WHO on January 30, 2020, because COVID-19 cases are spreading rapidly and WHO officially declares COVID-19 as a world pandemic on March 11, 2020 (World Health Organization, 2020). China was recorded as the country that first reported cases of COVID-19 in the world, namely on December 31, 2019. This disease was first detected in the city of Wuhan, Hubei Province, China with several infected patients being traders at the Huanan Fish Market (Bagaskara, 2020). The official announcement of COVID-19 as a pandemic encourages governments in each country to make efforts and take policies on handling COVID-19 by setting restrictions on interaction or direct contact between communities such as lockdown (Kompaspedia, 2020). With the limitation of interaction, the community activity outside the home is reduced. COVID-19 will harm the economy of ASEAN and the rest of the world in 2020. If a country's economy weakens, activity in the capital market will also have an impact because the value of portfolios or company assets such as stocks in investment instruments will be affected (IDX Channel, 2020). The trading dynamics in the capital market are seen as related to rumors and market sentiment originating from the news (Paramanik & Singhal, 2020). A growing number of studies have focused on understanding whether price movements in financial markets are driven by economic or political news (Cepoi, 2020). Information coming from social media channels has a significant influence on stock market dynamics, especially during times of economic or political uncertainty. The good and bad news about COVID-19 can be seen from an index on the RavenPack website. News about this pandemic has an impact on world capital markets. The first three months of 2020, all stock exchanges in the world experienced a decline in prices, which affected the global stock index (Fajar, 2020). The decline in stock prices that occurred in the world was experienced by the SSE 50, SET 50, LQ45, and STI indices. The following is the SSE 50 index scale from December 2019 to October 2020:

Picture 1. SSE 50 index magnitude, December 2019 - October 2020

Based on Figure 1, it can be seen that the SSE 50 index has decreased since December 2019 - March 2020 by 12%. In December 2019, the share price was recorded at the position of 3,063.22 then decreased to its lowest point, namely March 2020 at the position

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of 2,689.38. This fact proves that the existence of the first case of COVID-19 in China in December 2019 and limited community activities with the enactment of the lockdown had an impact on the capital market in China. The following is the SET 50 index scale from December 2019 to October 2020:

Figure 2. SET 50 index magnitude, December 2019 - October 2020

Based on Figure 2, it can be seen that the SET 50 index has decreased from December 2019 - March 2020 by 32.23%. In December 2019 the stock price was recorded at 1,068.5 then decreased to 756.91 in March 2020. Before the COVID-19 pandemic, Thailand's stock index was in the top position, replacing Singapore in May 2019 due to the strengthening baht price (The Star, 2020). This fact proves that the COVID-19 case has an impact on the capital market in Thailand. The following is the LQ45 index magnitude from December 2019 to October 2020:

Figure 3. LQ45 index magnitude, December 2019 - October 2020

Based on Figure 3, it can be seen that the LQ45 index has decreased since December 2019 - March 2020 by 35.16%. In December 2019 the share price was recorded at 1,014.47 positions then decreased in March 2020 to 691.13 position. Then in March - October 2020 the share price had an upward trend, but in September 2020 the share price declined again due to the announcement of the second PSBB in Indonesia. This fact proves that the COVID-19 case has an impact on the capital market in Indonesia. The following is the STI index magnitude from December 2019 to October 2020:

Figure 4. STI index magnitude, December 2019 - October 2020

Based on Figure 4, it can be seen that the STI index has decreased since December 2019 - March 2020 by 24.23%. In December 2019, the share price was recorded at 3,222.83 positions and then decreased to 2,481.23 in March 2020. The lowest price of the STI index occurred in October 2020, which was 2,423.84. This fact proves that the COVID-19 case has an impact on the capital market in Singapore. The COVID-19 pandemic affecting world capital markets has caused investment value to decline, so investors are looking for other alternatives by making investments that are considered safe. According to Cepoi (2020), the Credit Default Swap (CDS) rate on 5-year bonds and gold is considered a safe investment during this pandemic so that it can be used as a safety investment. So that when stock prices are down, the CDS rate on 5-year bonds and gold can maintain the investment value of investors where investors still benefit from the CDS rate and gold. Credit Default Swap (CDS) rate on 5 year bonds is considered a safe investment because it is an investment issued by the government so that it is not too risky. While gold is considered safe because the movement of the gold price is not too far away and the price of gold is considered to have a value that is opposite to the stock price, where if the stock price rises, the gold price falls (Cepoi, 2020). Research on the impact of COVID-19 on the capital market was also conducted by Cepoi (2020) with the research title "Asymmetric Dependence between Stock Market Returns and News during COVID-19 Financial Turmoil". The results of the study indicate that the stock market presents an asymmetric dependence on COVID-19 related information such as fake news, media coverage, and infodemics. So the authors are interested in knowing the asymmetric dependence between returns and news about a major event that is currently happening, namely the COVID-19 pandemic with the research objects, namely the SSE 50, SET 50, LQ45, and STI indices. The index was chosen because China was the country with the first COVID-19 cases in the world, while Thailand, Indonesia, and Singapore were chosen because they were the countries with the largest equity market in Southeast Asia and the most influential country in ASEAN (The Star, 2020).

Theoretical Framework and Hypothesis

In this study, the objects studied were the SSE 50, SET 50, LQ45, and STI indexes with the data taken from 216 working days from January 3, 2020, to October 30, 2020. The study began by looking at the movement of positive cases of COVID-19. in China, Thailand, Indonesia, and Singapore then looked at the stock price in each index of the country, and analyzed the factors that affect stock returns, namely news, CDS, and gold. The good and bad news regarding COVID-19 can be seen based on the news index on RavenPack, including the panic index/PI, the media hype index/HY, the fake news index/FNI, the country sentiment index/CSI, the infodemic index/CTI, and the media coverage index/MCI. Then look at gold and the Credit Default Swap (CDS) rate on 5-year bonds which are considered safe investments during the COVID-19 pandemic. The framework can be seen in Figure 5 below:

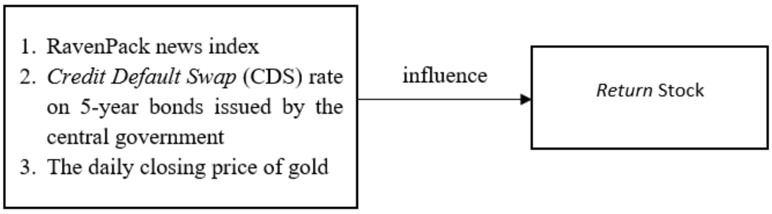

Figure 5. Framework

Research Hypothesis

H_1 : All RavenPack news indexes are the panic index/PI, the media hype index/HY, the fake news index/FNI, the country sentiment index/CSI, the infodemic index/CTI, and the media coverage index/MCI, Credit Default Swap (CDS) rate on 5-year bonds issued by the central government, and the daily closing price of gold together have a significant effect on stock returns.

H_2 : The panic index/PI has a significant effect on stock returns.

H_3 : The media hype index/HY has a significant effect on stock returns.

H_4 : The fake news index/FNI has a significant effect on stock returns.

H_5 : The country sentiment index/CSI has a significant effect on stock returns.

H_6 : The infodemic index/CTI has a significant effect on stock returns.

H_7 : The media coverage index/MCI has a significant effect on stock returns.

H_8 : Credit Default Swap (CDS) rate on 5-year bonds issued by the central government has a significant effect on stock returns.

H_9 : The daily closing price of gold has a significant effect on stock returns.

METHOD

The number of companies in the SSE 50, SET 50, LQ45, and LQ45 indexes are 175 companies. The research sample was 161 companies, which were determined using the purposive sampling method with the criteria that companies consistently registered after adjustments for the period January 2020 - October 2020. The data collection method used secondary data. According to Sugiyono (2013), secondary data is a source of research data obtained by researchers indirectly through intermediary media (has been collected by other people). The dependent variable in this study is stock returns, while the news index RavenPack news index (the panic index/PI, the media hype index/HY, the fake news index/FNI, the country sentiment index/CSI, the infodemic index/ CTI), Credit Default Swap (CDS) rate on 5-year bonds issued by the central government, and the daily closing price of gold as independent variables. Variable descriptions and their sources are presented in Table 1.

Table 1. Description of variables

Variable	Description
Stock market return	The difference between the closing price in the current period (Pt) with the closing price of the previous period (Pt-1) (Tandelilin, 2010). Stock return = $\frac{P_t - P_{t-1}}{P_{t-1}}$

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The panic index/PI	An index that measures the level of news chat referring to panic or hysteria and the coronavirus (RavenPack, 2020).
The media hype index/HY	An index that measures the percentage of news that talks about the new coronavirus. Values range between 0 and 100, with 75.00 indicating that 75% of all global news is about COVID-19(RavenPack, 2020).
The fake news index/FNI	An index measuring the level of media chatter about the new virus referring to misinformation or fake news alongside COVID-19 (RavenPack, 2020).
The country sentiment index/CSI	An index measuring sentiment levels across all the entities mentioned in the news along with the coronavirus. The index range between -100 (most negative), 100 (most positive) and 0 is neutral(RavenPack, 2020).
The infodemic index/CTI	An index that calculates the percentage of all entities (places, companies, etc.) that are associated with COVID-19 (RavenPack, 2020)
The media coverage index/MCI	An index that calculates the percentage of all news sources covering the coronavirus topic (RavenPack, 2020).
Credit Default Swap (CDS) rate	Credit Default Swap (CDS) rate on 5-year bonds issued by the central government (Investopedia, 2020).
Gold price	The daily closing price of gold (JM Bullion, 2020).

This research uses the quantile regression method. Unlike other econometric approaches that focus solely on average effects, quantile regression is a more powerful tool for dealing with weakness or value extremes across the distribution of asset returns (Cepoi, 2020). Quantile regression is a regression method that uses an approach by separating or dividing data into certain quantiles where it is suspected that there is a difference in the estimated value (Cepoi, 2020). Before doing quantile regression, this research requires a multiple linear regression test, classical assumption test (normality test, autocorrelation test, heteroscedasticity test). Multiple linear regression is a continuation of simple linear regression when simple linear regression provides only one independent variable (X) and one dependent variable (Y), but multiple linear regression is present to cover the weaknesses of simple linear regression when there is more than one independent variable (X) and one dependent variable (Y) (Kurniawan & Yuniarto, 2016). Below is a general model of multiple linear regression with p-parameters:

$$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + \cdots + \beta_p X_{pi} + \varepsilon_{it} + \mu_i$$

Where:

β_1	= intercept of the model
$\beta_2, \beta_3, \ldots \beta_p$	= partial regression coefficients of the i dependent variable
$X_{2i}, X_{3i}, \ldots X_{pi}$	= independent variables i with its parameters
Y_i	= the i dependent variable
μ_i	= residual (error) for the i observation

In this study, multiple linear regression is used to determine whether the distribution of data used in research is normal or not. The results of multiple linear regression can later be used to test for normality using the Jarque-Bera method. Then the classical assumption test is carried out, Pandoyo & Sofyan (2018) said that a classical assumption test is a form of prerequisite in regression analysis before testing the hypothesis. This test

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is done to ensure that normality, autocorrelation, multicollinearity, and heteroscedasticity are not present in the model used. If all of these conditions are met, the analysis model is suitable for use. In quantile regression, classical assumption tests carried out are normality test, autocorrelation test, and heteroscedasticity test.

1. Normality test: this study uses the Jarque-Bera method. The hypothesis contained in the normality test is H_0: the data has a normal distribution and H_a: the data does not have a normal distribution. If the value for Prob. F-count > 0,05, then H_0 is accepted and if the value is Prob. F-count < 0,05, then H_0 is rejected.
2. Autocorrelation test: this study uses the Breusch-Godfrey method. The hypothesis contained in the autocorrelation test is H_0: there is no correlation between residuals and H_a: there is a correlation between residuals. If the value for Prob. F-count > 0.05, then H_0 is accepted and if the value is Prob. F-count < 0.05, then H_0 is rejected.
3. Heteroscedasticity test: this study uses the Breusch-Pagan-Godfrey method. The hypothesis contained in the heteroscedasticity test is H_0: the absence of heteroscedasticity in the data distribution and H_a: the presence of heteroscedasticity in the data distribution. If the value for Prob. F-count > 0.05, then H_0 is accepted and if the value is Prob. F-count < 0.05, then H_0 is rejected.

After doing multiple linear regression tests and classical assumption tests, then it can be continued in the quantile regression test. The data is divided into groups each 25%, 50%, 75%, and 100% into quantile 1 (Q_1) for data 0 - 0.25, quantile 2 (Q_2) for data > 0.25 - 0.5, quantile 3 (Q_3) for data > 0.5 - 0.75, and quantile 4 (Q_4) for data > 0.75 - 1. Next for each group, regression was performed. Generally, at any level(τ)throughout the distribution is given a set of variables, the quantile conditions indicate $Q_y(\tau|x) = \inf\{k: F(k|x) \geq \tau\}$ where the function $F(\cdot\,|x)$ is a function of the conditional distribution. Thus, quantile regression is illustrated specifically as:

$$Q_{Yi,t}(\tau|X_{i,t}) = \alpha_i + x_{i,t}^T\beta(\tau)$$

Where:

i	= number of entities (countries)
t	= number of periods (days)
$Y_{i,t}$	= stock returns
$X_{i,t}$	= the set of covariates
$\beta_{(\tau)}$	= regression coefficient, general slope coefficient (slope)
α_i	= constanta, intercept, individual-specific fixed effect coefficients

In order to explain the unobserved heterogeneity of countries, we follow Koenker (2004) which treats the fixed effect as a disturbance parameter. The intelligence of this approach comes from the introduction of the term penalty in problem minimization which leads to the algorithm:

$$\min_{(\alpha,\beta)} \sum_{k=1}^{K} \sum_{t=1}^{T} \sum_{i=1}^{N} w_k \rho_{\tau k}\left(Y_{i,t} - \alpha_i - x_{i,t}^T\beta(\tau_k)\right) + \lambda \sum_{i}^{N} |\alpha_i|$$

Where:

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K = quantile index

$\rho_{\tau,k}$ = quantile loss function

w_k = the relative weight assigned to the k quantile

λ = penalty for reducing fixed effect individual in achieving that efficiency higher for the global slope coefficient

RESULT AND DISCUSSION

1. Multiple Linear Regression

a. Chinese State Multiple Linear Regression

Table 2 Multiple Linear Regression in China

Equation: UNTITLED Workfile: CHINA::Untitled\
View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Dependent Variable: Y
Method: Least Squares
Date: 01/23/21 Time: 12:54
Sample: 1/03/2020 10/30/2020
Included observations: 216

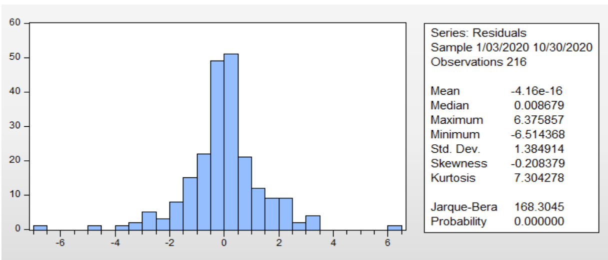
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.028695	0.043349	0.661944	0.5087
X2	-0.048321	0.031081	-1.554695	0.1215
X3	-0.002030	0.106011	-0.019150	0.9847
X4	-0.000287	0.004622	-0.062029	0.9506
X5	-0.005776	0.019459	-0.296837	0.7669
X6	0.040510	0.025003	1.620200	0.1067
X7	-0.555159	0.440052	-1.261577	0.2085
X8	0.000850	0.001160	0.732754	0.4645
C	-0.124138	1.535567	-0.080842	0.9356

R-squared	0.027416	Mean dependent var	0.037315
Adjusted R-squared	-0.010172	S.D. dependent var	1.404298
S.E. of regression	1.411422	Akaike info criterion	3.567846
Sum squared resid	412.3672	Schwarz criterion	3.708483
Log likelihood	-376.3274	Hannan-Quinn criter.	3.624664
F-statistic	0.729393	Durbin-Watson stat	2.050688
Prob(F-statistic)	0.665452		

Source: Output Eviews10

Based on Table 2, it can be seen that the multiple linear regression test for China produces a regression equation: Y = – 0,124138 + 0,028695 – 0,048321 – 0,002030 – 0,000287 – 0,005776 + 0,040510 – 0,555159 + 0,000850

Table 3 China's State Normality Test



Source: Output Eviews10

Based on Table 3, the Jarque-Bera value is 168.3045 with a probability value of 0.0000. Because the probability value <0.05, China's state data is not normally distributed.

Table 4 China's Autocorrelation Test

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Equation: UNTITLED Workfile: CHINA::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.109185	Prob. F(2,205)	0.8966
Obs*R-squared	0.229842	Prob. Chi-Square(2)	0.8914

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 01/23/21 Time: 12:57
Sample: 1/03/2020 10/30/2020
Included observations: 216
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.000546	0.043571	0.012528	0.9900
X2	-0.001736	0.031608	-0.054911	0.9563
X3	-0.003398	0.106787	-0.031821	0.9746
X4	-6.81E-05	0.004657	-0.014632	0.9883
X5	0.000364	0.020015	0.018178	0.9855
X6	0.001256	0.025255	0.049717	0.9604
X7	-0.008631	0.442346	-0.019513	0.9845
X8	-1.22E-05	0.001169	-0.010396	0.9917
C	0.034570	1.548992	0.022318	0.9822
RESID(-1)	-0.028083	0.071757	-0.391357	0.6959
RESID(-2)	0.016719	0.071186	0.234858	0.8146

R-squared	0.001064	Mean dependent var	-4.16E-16
Adjusted R-squared	-0.047664	S.D. dependent var	1.384914
S.E. of regression	1.417535	Akaike info criterion	3.585300
Sum squared resid	411.9284	Schwarz criterion	3.757189
Log likelihood	-376.2124	Hannan-Quinn criter.	3.654744
F-statistic	0.021837	Durbin-Watson stat	1.998735
Prob(F-statistic)	1.000000		

Source: Output Eviews10

Based on Table 4, it can be seen that the autocorrelation test for China produces a Chi-Square probability value of 0.08914. So that the data has no autocorrelation, meaning that the data for a certain day has no relationship with the previous data.

Table 5 Chinese State Heteroscedasticity Test

Equation: UNTITLED Workfile: CHINA::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	3.116447	Prob. F(8,207)	0.0024
Obs*R-squared	23.21900	Prob. Chi-Square(8)	0.0031
Scaled explained SS	67.21746	Prob. Chi-Square(8)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 01/23/21 Time: 12:58
Sample: 1/03/2020 10/30/2020
Included observations: 216

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.672019	5.032768	-0.530924	0.5960
X1	0.443887	0.142075	3.124311	0.0020
X2	-0.065741	0.101866	-0.645366	0.5194
X3	-0.287044	0.347446	-0.826153	0.4097
X4	-0.014545	0.015150	-0.960109	0.3381
X5	-0.010176	0.063775	-0.159563	0.8734
X6	0.057384	0.081947	0.700251	0.4846
X7	1.418610	1.442254	0.983606	0.3265
X8	-0.001018	0.003803	-0.267748	0.7892

R-squared	0.107495	Mean dependent var	1.909107
Adjusted R-squared	0.073002	S.D. dependent var	4.804583
S.E. of regression	4.625886	Akaike info criterion	5.941987
Sum squared resid	4429.557	Schwarz criterion	6.082623
Log likelihood	-632.7346	Hannan-Quinn criter.	5.998804
F-statistic	3.116447	Durbin-Watson stat	2.005605
Prob(F-statistic)	0.002403		

Source: Output Eviews10

Based on Table 5, it can be seen that through the Heterokedasticity Test: Breusch-Pagan-Godfrey the Chi-square probability is 0.0031. So that the Chinese state data there is no heteroscedasticity.

b. Thailand's Multiple Linear Regression

Table 6 Multiple Linear Regression in Thailand

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Equation: UNTITLED Workfile: THAILAND::Untitl...

Dependent Variable: Y
Method: Least Squares
Date: 01/23/21 Time: 13:15
Sample: 1/03/2020 10/30/2020
Included observations: 216

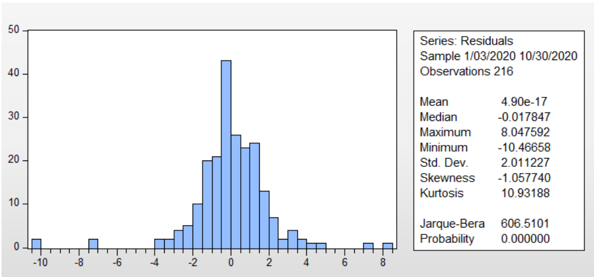
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	-0.013589	0.032246	-0.421407	0.6739
X2	-0.008194	0.026785	-0.305917	0.7600
X3	0.063141	0.056308	1.121350	0.2634
X4	0.010745	0.010614	1.012274	0.3126
X5	0.028431	0.013014	2.184630	0.0300
X6	0.003243	0.025075	0.129330	0.8972
X7	6.013919	1.584170	3.796258	0.0002
X8	0.004600	0.001582	2.906590	0.0041
C	-14.82981	4.214181	-3.519024	0.0005

R-squared	0.087205	Mean dependent var	-0.149213
Adjusted R-squared	0.051928	S.D. dependent var	2.105108
S.E. of regression	2.049723	Akaike info criterion	4.314060
Sum squared resid	869.6827	Schwarz criterion	4.454697
Log likelihood	-456.9185	Hannan-Quinn criter.	4.370878
F-statistic	2.471991	Durbin-Watson stat	2.539421
Prob(F-statistic)	0.014037		

Source: Output Eviews10

Based on Table 6, it can be seen that the multiple linear regression test for Thailand produces a regression equation: Y = – 14,82981 – 0,013589 – 0,008194 + 0,063141 + 0,010745 + 0,028431 + 0,003243 + 6,013919 + 0,004600.

Table 7 State Normality Test of Thailand



Source: Output Eviews10

Based on Table 7, it can be seen that the Jarque-Bera value is 606.5101 with a probability value of 0.0000. So Thailand's data is not normally distributed.

Table 8 Thailand Autocorrelation Test

Equation: UNTITLED Workfile: THAILAND::Untitled\

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	8.568072	Prob. F(2,205)	0.0003
Obs*R-squared	16.66279	Prob. Chi-Square(2)	0.0002

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 01/23/21 Time: 13:32
Sample: 1/03/2020 10/30/2020
Included observations: 216
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	-0.014503	0.031375	-0.462254	0.6444
X2	0.005060	0.025914	0.195244	0.8454
X3	0.027093	0.054867	0.493796	0.6220
X4	-0.000484	0.010249	-0.047260	0.9624
X5	-8.92E-06	0.012563	-0.000710	0.9994
X6	-0.006215	0.024291	-0.255854	0.7983
X7	-0.757888	1.543901	-0.490891	0.6240
X8	-0.000687	0.001538	-0.446804	0.6555
C	2.060489	4.104856	0.501964	0.6162
RESID(-1)	-0.292380	0.071822	-4.070918	0.0001
RESID(-2)	-0.034594	0.070654	-0.489626	0.6249

R-squared	0.077143	Mean dependent var	4.90E-17
Adjusted R-squared	0.032125	S.D. dependent var	2.011227
S.E. of regression	1.978658	Akaike info criterion	4.252298
Sum squared resid	802.5932	Schwarz criterion	4.424188
Log likelihood	-448.2482	Hannan-Quinn criter.	4.321742
F-statistic	1.713614	Durbin-Watson stat	1.993615
Prob(F-statistic)	0.079495		

Source: Output Eviews10

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Based on Table 8, it can be seen that the autocorrelation test for Thailand produces a Chi-Square probability value of 0.0002. So that the data has autocorrelation, meaning that the data for a certain day has a relationship with the previous data.

Table 9 Heteroscedasticity Test of Thailand

Equation: UNTITLED Workfile: THAILAND::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	4.546365	Prob. F(8,207)	0.0000
Obs*R-squared	32.28043	Prob. Chi-Square(8)	0.0001
Scaled explained SS	147.2225	Prob. Chi-Square(8)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 01/23/21 Time: 13:34
Sample: 1/03/2020 10/30/2020
Included observations: 216

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	55.83050	24.57725	2.271633	0.0241
X1	0.342356	0.188061	1.820455	0.0701
X2	0.043116	0.156209	0.276018	0.7828
X3	-0.311083	0.328389	-0.947298	0.3446
X4	-0.140002	0.061903	-2.261646	0.0248
X5	0.038955	0.075898	0.513250	0.6083
X6	-0.016250	0.146238	-0.111120	0.9116
X7	-11.73651	9.238938	-1.270331	0.2054
X8	-0.027176	0.009229	-2.944595	0.0036

R-squared	0.149446	Mean dependent var	4.026309
Adjusted R-squared	0.116575	S.D. dependent var	12.71834
S.E. of regression	11.95406	Akaike info criterion	7.840792
Sum squared resid	29580.20	Schwarz criterion	7.981429
Log likelihood	-837.8056	Hannan-Quinn criter.	7.897610
F-statistic	4.546365	Durbin-Watson stat	1.747235
Prob(F-statistic)	0.000041		

Source: Output Eviews10

Based on Table 9, it can be seen that through the Heterokedasticity Test: Breusch-Pagan-Godfrey the Chi-square probability is 0.0001. So that Thailand's data has no heteroscedasticity.

c. Indonesian State Multiple Linear Regression

Table 10 Indonesian State Multiple Linear Regression

Equation: UNTITLED Workfile: INDONESIA::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Dependent Variable: Y
Method: Least Squares
Date: 01/23/21 Time: 14:01
Sample: 1/03/2020 10/30/2020
Included observations: 216

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	-0.000419	0.036953	-0.011332	0.9910
X2	-0.027668	0.031599	-0.875602	0.3823
X3	-0.066461	0.083145	-0.799342	0.4250
X4	0.007729	0.012706	0.608333	0.5436
X5	0.004103	0.017564	0.233603	0.8155
X6	0.006317	0.025426	0.248449	0.8040
X7	0.800461	0.432216	1.851991	0.0655
X8	0.004123	0.001948	2.116548	0.0355
C	-11.45143	5.278154	-2.169590	0.0312

R-squared	0.039307	Mean dependent var	-0.087639
Adjusted R-squared	0.002179	S.D. dependent var	2.335729
S.E. of regression	2.333183	Akaike info criterion	4.573118
Sum squared resid	1126.855	Schwarz criterion	4.713754
Log likelihood	-484.8967	Hannan-Quinn criter.	4.629935
F-statistic	1.058678	Durbin-Watson stat	1.775630
Prob(F-statistic)	0.393539		

Source: Output Eviews10

Based on Table 10, it can be seen that the multiple linear regression test for Indonesia will produce a regression equation: Y = – 11,45143 – 0,000419 – 0,027668 – 0,066461 + 0,007729 + 0,004103 + 0,006317 + 0,800461 + 0,004123

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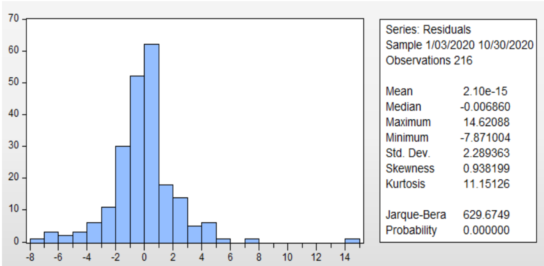
Table 11 Indonesian State Normality Test



Source: Output Eviews10

Based on the graph results in Table 11, it can be seen that the Jarque-Bera value is 629.6749 with a probability value of 0.0000. So that Indonesian state data is not normally distributed.

Table 12 Indonesian Autocorrelation Test

Equation: UNTITLED Workfile: INDONESIA::Unti...

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.978621	Prob. F(2,205)	0.0531
Obs*R-squared	6.099644	Prob. Chi-Square(2)	0.0474

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 01/23/21 Time: 14:06
Sample: 1/03/2020 10/30/2020
Included observations: 216
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.003238	0.036688	0.088261	0.9298
X2	-0.009450	0.031608	-0.298980	0.7653
X3	-0.003284	0.082498	-0.039811	0.9683
X4	-0.001123	0.012601	-0.089096	0.9291
X5	0.002637	0.017477	0.150865	0.8802
X6	0.004169	0.025372	0.164310	0.8696
X7	0.052305	0.429553	0.121767	0.9032
X8	0.000312	0.001935	0.161364	0.8720
C	-0.826671	5.245831	-0.157586	0.8749
RESID(-1)	0.128277	0.070089	1.830204	0.0687
RESID(-2)	-0.126227	0.069910	-1.805561	0.0725

R-squared	0.028239	Mean dependent var	2.10E-15
Adjusted R-squared	-0.019164	S.D. dependent var	2.289363
S.E. of regression	2.311196	Akaike info criterion	4.562991
Sum squared resid	1095.033	Schwarz criterion	4.734880
Log likelihood	-481.8030	Hannan-Quinn criter.	4.632434
F-statistic	0.595724	Durbin-Watson stat	1.973700
Prob(F-statistic)	0.816431		

Source: Output Eviews10

Based on Table 12, it can be seen that the Chi-Square probability value is 0.0474. So that the data has autocorrelation, meaning that the data for a certain day has a relationship with the previous data.

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Table 13 Indonesian State Heteroscedasticity Test

Equation: UNTITLED Workfile: INDONESIA::Untit...

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	3.311659	Prob. F(8,207)	0.0014
Obs*R-squared	24.50840	Prob. Chi-Square(8)	0.0019
Scaled explained SS	114.2452	Prob. Chi-Square(8)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 01/23/21 Time: 14:07
Sample: 1/03/2020 10/30/2020
Included observations: 216

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-16.41155	36.16572	-0.453788	0.6505
X1	0.103573	0.253197	0.409061	0.6829
X2	-0.504302	0.216515	-2.329173	0.0208
X3	-0.458705	0.569704	-0.805163	0.4216
X4	-0.106869	0.087060	-1.227537	0.2210
X5	-0.088494	0.120346	-0.735326	0.4630
X6	0.593263	0.174221	3.405230	0.0008
X7	4.606506	2.961529	1.555448	0.1214
X8	-0.008513	0.013349	-0.637739	0.5243

R-squared	0.113465	Mean dependent var	5.216920
Adjusted R-squared	0.079203	S.D. dependent var	16.66026
S.E. of regression	15.98688	Akaike info criterion	8.422188
Sum squared resid	52905.15	Schwarz criterion	8.562825
Log likelihood	-900.5963	Hannan-Quinn criter.	8.479006
F-statistic	3.311659	Durbin-Watson stat	1.742490
Prob(F-statistic)	0.001390		

Source: Output Eviews10

Based on the graphic results in Table 13, it can be seen that through the Heterokedasticity Test: Breusch-Pagan-Godfrey the Chi-square probability value is 0.0019. So the Indonesian state data there is no heteroscedasticity.

d. Singapore State Multiple Linear Regression

Table 14 Multiple Linear Regression in Singapore

Equation: UNTITLED Workfile: SINGAPURA::Unti...

Dependent Variable: Y
Method: Least Squares
Date: 01/23/21 Time: 14:22
Sample: 1/03/2020 10/30/2020
Included observations: 216

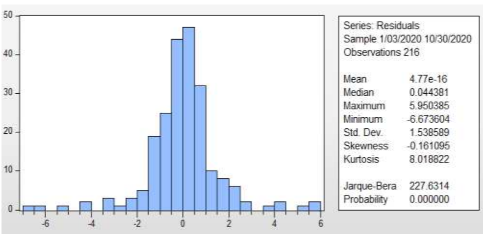
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	-0.052338	0.048256	-1.084607	0.2794
X2	-0.017797	0.027386	-0.649859	0.5165
X3	-0.241194	0.166230	-1.450971	0.1483
X4	-0.004559	0.010018	-0.455123	0.6495
X5	0.017343	0.017241	1.005897	0.3156
X6	0.014955	0.023327	0.641116	0.5222
X7	0.639312	0.622933	1.026293	0.3060
X8	0.000516	0.001340	0.384686	0.7009
C	-2.031537	2.942784	-0.690345	0.4908

R-squared	0.044586	Mean dependent var	-0.123935
Adjusted R-squared	0.007662	S.D. dependent var	1.574080
S.E. of regression	1.568038	Akaike info criterion	3.778301
Sum squared resid	508.9599	Schwarz criterion	3.918938
Log likelihood	-399.0565	Hannan-Quinn criter.	3.835119
F-statistic	1.207510	Durbin-Watson stat	2.311060
Prob(F-statistic)	0.295961		

Source: Output Eviews10

Based on Table 14, it can be seen that the multiple linear regression test for Singapore produces a regression equation: Y = – 2,031537 – 0,052338 – 0,017797 – 0,241194 – 0,004559 + 0,017343 + 0,014955 + 0,639312 + 0,000516.

Table 15 Singapore Normality Test



Source: Output Eviews10

Based on Table 15, it can be seen that the Jarque-Bera value is 227.6314 with a probability value of 0.0000. So the data for Singapore is not normally distributed.

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Table 16 Singapore Autocorrelation Test

Equation: UNTITLED Workfile: SINGAPURA::Untit...

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	5.285612	Prob. F(2,205)	0.0058
Obs*R-squared	10.59225	Prob. Chi-Square(2)	0.0050

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 01/23/21 Time: 14:24
Sample: 1/03/2020 10/30/2020
Included observations: 216
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	-0.022088	0.049991	-0.441840	0.6591
X2	0.001798	0.026845	0.066972	0.9467
X3	0.017524	0.163238	0.107354	0.9146
X4	0.002624	0.009850	0.266435	0.7902
X5	1.09E-05	0.016911	0.000643	0.9995
X6	0.003297	0.022942	0.143718	0.8859
X7	0.159360	0.612877	0.260020	0.7951
X8	-2.38E-05	0.001316	-0.018094	0.9856
C	-0.237971	2.886157	-0.082452	0.9344
RESID(-1)	-0.142172	0.073115	-1.944503	0.0532
RESID(-2)	0.152745	0.070288	2.173142	0.0309

R-squared	0.049038	Mean dependent var	4.77E-16
Adjusted R-squared	0.002650	S.D. dependent var	1.538589
S.E. of regression	1.536549	Akaike info criterion	3.746538
Sum squared resid	484.0014	Schwarz criterion	3.918428
Log likelihood	-393.6261	Hannan-Quinn criter.	3.815982
F-statistic	1.057122	Durbin-Watson stat	2.030741
Prob(F-statistic)	0.397192		

Source: Output Eviews10

Based on Table 16, it can be seen that the autocorrelation test for the country of Singapore produces a Chi-Square probability value of 0.0050. So that the data has autocorrelation, meaning that the data for a certain day has a relationship with the previous data.

Table 17 Heteroscedasticity Test of the State of Singapore

Equation: UNTITLED Workfile: SINGAPURA::Untit...

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	7.618654	Prob. F(8,207)	0.0000
Obs*R-squared	49.13257	Prob. Chi-Square(8)	0.0000
Scaled explained SS	158.3568	Prob. Chi-Square(8)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 01/23/21 Time: 14:26
Sample: 1/03/2020 10/30/2020
Included observations: 216

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.81324	10.51875	1.313201	0.1906
X1	0.443100	0.172486	2.568901	0.0109
X2	0.160760	0.097891	1.642240	0.1021
X3	-0.534821	0.594175	-0.900106	0.3691
X4	0.005972	0.035807	0.166768	0.8677
X5	-0.077365	0.061627	-1.255376	0.2108
X6	-0.019991	0.083381	-0.239753	0.8108
X7	-0.613106	2.226627	-0.275352	0.7833
X8	-0.008821	0.004790	-1.841474	0.0670

R-squared	0.227466	Mean dependent var	2.356296
Adjusted R-squared	0.197609	S.D. dependent var	6.257049
S.E. of regression	5.604831	Akaike info criterion	6.325909
Sum squared resid	6502.726	Schwarz criterion	6.466545
Log likelihood	-674.1981	Hannan-Quinn criter.	6.382726
F-statistic	7.618654	Durbin-Watson stat	1.309739
Prob(F-statistic)	0.000000		

Source: Output Eviews10

Based on the graphic results in Table 17, it can be seen that through the Heterokedasticity Test: Breusch-Pagan-Godfrey the Chi-square probability value is 0.0000. So that the data for the Singapore state does not have heteroscedasticity.

2. Quantile Regression

a. Chinese State Quantile Regression

Table 18 China's State Quantile Regression

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Equation: UNTITLED Workfile: CHINA::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Quantile Process Estimates
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of process quantiles: 4
Display all coefficients

	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.250	-0.044372	0.078979	-0.561819	0.5748
	0.500	0.000971	0.035596	0.027277	0.9783
	0.750	-0.000401	0.057860	-0.006929	0.9945
X2	0.250	-0.012899	0.051849	-0.248788	0.8038
	0.500	-0.042161	0.021810	-1.933084	0.0546
	0.750	-0.022873	0.028778	-0.794822	0.4276
X3	0.250	-0.184130	0.227968	-0.807699	0.4202
	0.500	0.009750	0.079263	0.123003	0.9022
	0.750	0.093149	0.181373	0.513579	0.6081
X4	0.250	0.005874	0.006249	0.940062	0.3483
	0.500	-0.002679	0.003594	-0.745287	0.4569
	0.750	-0.008140	0.005497	-1.480742	0.1402
X5	0.250	0.016465	0.025171	0.654124	0.5138
	0.500	0.003797	0.017685	0.214728	0.8302
	0.750	0.001773	0.020950	0.084624	0.9326
X6	0.250	0.008727	0.031211	0.279608	0.7801
	0.500	0.033885	0.019409	1.745799	0.0823
	0.750	0.014966	0.029139	0.513623	0.6081
X7	0.250	-0.601483	0.475973	-1.263690	0.2078
	0.500	-0.219914	0.374136	-0.587791	0.5573
	0.750	-0.165728	0.513252	-0.322898	0.7471
X8	0.250	4.81E-05	0.001227	0.039246	0.9687
	0.500	0.000256	0.001028	0.249209	0.8034
	0.750	0.000539	0.001606	0.335543	0.7376
C	0.250	0.902284	1.546157	0.583566	0.5601
	0.500	-0.184335	1.088967	-0.169275	0.8657
	0.750	-0.231212	1.519914	-0.152122	0.8792

Source: Output Eviews10

Based on Table 18, it can be seen that X_1 for quantile 0.25 (Q_1) has a coefficient of -0.044372, quantile 0.5 (Q_2) has a coefficient of 0.000971, and quantile 0.75 (Q_3) has a coefficient of - 0.000401. So that at X_1 the value of $Q_1 \neq Q_2 \neq Q_3$ means that there is a difference in the coefficient on each quantile. The probability value on X_1 or the panic index (PI) for Q_1 is 0.5748, meaning that X_1 does not have a significant effect on Y or stock returns in China. In the same quantile, namely $Q_{1,}$ although the probability value at X_2 is different from the probability X_1, it still does not have a significant effect on Y because the probability value > 0,05 is 0.8038. Then the equation can be formed as below:

1. Quantile 0,25: Y = 0,902284 – 0,044372 – 0,012899 – 0,184130 + 0,005874 + 0,016465 + 0,008727 – 0,601483 + 4,81E-0,5
2. Quantile 0,5: Y = -0,184335 + 0,000971 -0,042161 + 0,009750 – 0,002679 + 0,003797 +0,033885 – 0,219914 + 0,000256
3. Quantile 0,75: Y = -0,231212 – 0,000401 – 0,022873 + 0,093149 – 0,008140 + 0,001773 +0,014966 – 0,165728 + 0,000539

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b. Thailand State Quantile Regression

Table 19 Thai State Quantile Regression

Equation: UNTITLED Workfile: THAILAND::Untitled\
View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Quantile Process Estimates
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of process quantiles: 4
Display all coefficients

	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.250	0.012795	0.030717	0.416560	0.6774
	0.500	-0.015516	0.028639	-0.541778	0.5886
	0.750	-0.005893	0.026309	-0.223980	0.8230
X2	0.250	0.015802	0.029893	0.528616	0.5976
	0.500	0.021682	0.023139	0.937000	0.3499
	0.750	0.016254	0.021016	0.773388	0.4402
X3	0.250	0.017218	0.052429	0.328401	0.7429
	0.500	0.044927	0.054016	0.831725	0.4065
	0.750	0.005930	0.041140	0.144148	0.8855
X4	0.250	0.013245	0.012439	1.064792	0.2882
	0.500	0.002076	0.008876	0.233902	0.8153
	0.750	-0.013884	0.010093	-1.375589	0.1704
X5	0.250	0.012619	0.013190	0.956719	0.3398
	0.500	0.008910	0.010139	0.878779	0.3805
	0.750	0.025435	0.011183	2.274389	0.0240
X6	0.250	-0.021992	0.024701	-0.890345	0.3743
	0.500	-0.018765	0.020680	-0.907387	0.3653
	0.750	-0.019129	0.020108	-0.951274	0.3426
X7	0.250	4.142182	1.626500	2.546684	0.0116
	0.500	0.993326	1.461987	0.679436	0.4976
	0.750	1.633502	1.553927	1.051209	0.2944
X8	0.250	0.004109	0.001657	2.480410	0.0139
	0.500	7.33E-05	0.001320	0.055566	0.9557
	0.750	-0.000150	0.001200	-0.125385	0.9003
C	0.250	-12.03745	4.413890	-2.727175	0.0069
	0.500	-1.450769	3.695956	-0.392529	0.6951
	0.750	-1.492700	3.654399	-0.408467	0.6834

Source: Output Eviews10

Based on Table 19, it can be seen that X_1 for quantile 0.25 (Q_1) has a coefficient of 0.012795, quantile 0.5 (Q_2) has a coefficient of -0.015516, and quantile 0.75 (Q_3) has a coefficient of - 0.005893. So that at X_1 the value of $Q_1 \neq Q_2 \neq Q_3$ which means that there is a difference in the coefficient on each quantile. The probability value on X_1 or the panic index (PI) for Q_1 is 0,6774, meaning that X_1 does not have a significant effect on Y or stock returns in Thailand. Whereas for quantile 0.25 (Q_1) on X_7 with a probability of 0.0116, X_8 with a probability of 0.0139, and C with a probability of 0.0069, it means that the Credit Default Swap (CDS) rate on 5-year bonds issued by the central government (X_7), daily closing price of gold (X_8), and C has a significant effect on Y or stock returns in Thailand. In addition, X_5 in quantile 0,75 (Q_3) has a probability value < 0.05, which is 0.0240, which means that the infodemic index (X_5) has a significant effect on Y. Then an equation can be formed as in below:

1. Quantile 0,25: Y = -12,03745 + 0,012795 + 0,015802 + 0,017218 + 0,013245 + 0,012619 – 0,021992 + 4,142182 + 0,004109
2. Quantile 0,5: Y = -1,450769 – 0,015516 + 0,021682 + 0,044927 + 0,002076 + 0,008910 – 0,018765 + 0,993326 + 7,33E-05
3. Quantile 0,75: Y = -1,492700 – 0,005893 + 0,016254 + 0,005930 – 0,013884 + 0,025435 - 0,019129 + 1,633502 - 0,000150

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c. Indonesian State Quantile Regression

Table 20 Indonesian State Quantile Regression

Equation: UNTITLED Workfile: INDONESIA::Untitled\
View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Quantile Process Estimates
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of process quantiles: 4
Display all coefficients

	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.250	0.015702	0.032310	0.485995	0.6275
	0.500	-0.005556	0.027444	-0.202459	0.8398
	0.750	0.012968	0.066473	0.195094	0.8455
X2	0.250	-0.032331	0.039181	-0.825168	0.4102
	0.500	0.007486	0.028550	0.262199	0.7934
	0.750	0.009845	0.034750	0.283316	0.7772
X3	0.250	-0.061377	0.338790	-0.181166	0.8564
	0.500	-0.006688	0.056374	-0.118644	0.9057
	0.750	-0.069037	0.101479	-0.680311	0.4971
X4	0.250	0.021818	0.016703	1.306214	0.1929
	0.500	0.005392	0.008588	0.627862	0.5308
	0.750	-0.011833	0.012991	-0.910873	0.3634
X5	0.250	0.014378	0.020341	0.706855	0.4805
	0.500	-0.001203	0.012657	-0.095013	0.9244
	0.750	-0.006183	0.016065	-0.384880	0.7007
X6	0.250	-0.012242	0.027101	-0.451704	0.6520
	0.500	-0.008991	0.021840	-0.411679	0.6810
	0.750	6.27E-05	0.026280	0.002385	0.9981
X7	0.250	0.349770	0.727688	0.480659	0.6313
	0.500	0.171751	0.340056	0.505067	0.6140
	0.750	0.731783	0.511277	1.431283	0.1539
X8	0.250	0.005851	0.002706	2.162183	0.0318
	0.500	0.000985	0.001698	0.580211	0.5624
	0.750	0.000917	0.001799	0.509348	0.6111
C	0.250	-11.98265	8.299650	-1.443754	0.1503
	0.500	-2.492910	4.355474	-0.572362	0.5677
	0.750	-5.534372	5.474119	-1.011007	0.3132

Source: Output Eviews10

Based on Table 20, it can be seen that X1 for quantile 0.25 (Q_1) has a coefficient of 0.015702, quantile 0.5 (Q_2) has a coefficient of -0.005556, and quantile 0.75 (Q_3) has a coefficient of 0, 012968. So that at X_1 the value of $Q_1 \neq Q_2 \neq Q_3$ which means that there is a difference in the coefficient on each quantile. The probability value on X_1 or the panic index (PI) for Q_1 is 0.6275, meaning that X_1 does not have a significant effect on Y or stock returns in Indonesia. At the same quantile, namely Q_1, although the probability value at X_2 is different from the probability X_1, it still does not have a significant effect on Y because the probability value> 0.05 is 0.4102. Whereas for quantile 0.25 (Q_1) at X_8 with probability 0.0318 means daily closing price of gold (X_8) have a significant effect on Y. Then an equation can be formed as in below:

1. Quantile 0,25: Y = -11,98265 + 0,015702 – 0,032331 – 0,061377 + 0,021818 + 0,014378 – 0,012242 + 0,349770 + 0,005851
2. Quantile 0,5: Y = -2,492910 – 0,005556 + 0,007486 – 0,006688 + 0,005392 – 0,001203 – 0,008991 + 0,171751 + 0,000985
3. Quantile 0,75: Y = -5,534372 + 0,012968 + 0,009845 – 0,069037 – 0,011833 – 0,006183 + 6,27E-05 + 0,731783 + 0,000917

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d. Singapore State Quantile Regression

Table 21 Singapore State Quantile Regression

Equation: UNTITLED Workfile: SINGAPURA::Untitled\

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Quantile Process Estimates
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of process quantiles: 4
Display all coefficients

	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.250	-0.077207	0.108619	-0.710803	0.4780
	0.500	0.001234	0.036415	0.033887	0.9730
	0.750	-0.043371	0.041557	-1.043658	0.2979
X2	0.250	0.010326	0.024809	0.416231	0.6777
	0.500	-0.003204	0.019270	-0.166256	0.8681
	0.750	0.034052	0.036733	0.927028	0.3550
X3	0.250	-0.149222	0.274018	-0.544571	0.5866
	0.500	-0.168187	0.122356	-1.374569	0.1708
	0.750	-0.180213	0.141198	-1.276314	0.2033
X4	0.250	-0.003053	0.010835	-0.281801	0.7784
	0.500	-0.000457	0.007924	-0.057646	0.9541
	0.750	0.011793	0.009523	1.238299	0.2170
X5	0.250	-0.002356	0.016408	-0.143565	0.8860
	0.500	0.002877	0.013282	0.216604	0.8287
	0.750	-0.002547	0.015927	-0.159949	0.8731
X6	0.250	-0.007837	0.021381	-0.366532	0.7143
	0.500	0.002542	0.016123	0.157683	0.8749
	0.750	-0.003335	0.026374	-0.126431	0.8995
X7	0.250	0.551568	0.699922	0.788041	0.4316
	0.500	-0.147329	0.445013	-0.331067	0.7409
	0.750	0.121589	0.732162	0.166068	0.8683
X8	0.250	0.001557	0.001518	1.025211	0.3065
	0.500	-0.000677	0.001041	-0.650603	0.5160
	0.750	-0.001289	0.001689	-0.763190	0.4462
C	0.250	-3.397981	3.116216	-1.090419	0.2768
	0.500	1.227674	2.196977	0.558801	0.5769
	0.750	1.962287	3.666897	0.535136	0.5931

Source: Output Eviews10

Based on Table 21, it can be seen that X1 for quantile 0.25 (Q_1) has a coefficient of -0.077207, quantile 0.5 (Q_2) has a coefficient of -0.001234, and quantile 0.75 (Q_3) has a coefficient of -0.043371. So that at X_1 the value of $Q_1 \neq Q_2 \neq Q_3$ which means there is a difference in the coefficient on each quantile. The probability value on X_1 or the panic index/PI for Q_1 is 0,4780, meaning that X_1 does not have a significant effect on Y. Then the equation can be formed as below:

1. Quantile 0,25: Y = -3,397981 – 0,077207 + 0,010326 – 0,149222 – 0,003053 – 0,002356 – 0,007837 + 0,551568 + 0,001557
2. Quantile 0,5: Y = 1,227674 + 0,001234 – 0,003204 – 0,168187 – 0,000457 + 0,002877 + 0,002542 – 0,147329 – 0,000677
3. Quantile 0,75: Y = 1,962287 – 0,043371 + 0,034052 – 0,180213 + 0,011793 – 0,002547 – 0,003335 + 0,121589 – 0,001289

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2. Hypothesis testing

a. Chinese State Hypothesis Test

Table 22 China's State Hypothesis Test

Equation: UNTITLED Workfile: CHINA::Untitled\
View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Quantile Slope Equality Test
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of test quantiles: 4
Test statistic compares all coefficients

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Wald Test	17.70131	16	0.3417

Restriction Detail: b(tau_h) - b(tau_k) = 0

Quantiles	Variable	Restr. Value	Std. Error	Prob.
0.25, 0.5	X1	-0.045343	0.067707	0.5031
	X2	0.029261	0.043941	0.5055
	X3	-0.193879	0.198013	0.3275
	X4	0.008553	0.005358	0.1104
	X5	0.012668	0.021963	0.5641
	X6	-0.025158	0.027712	0.3640
	X7	-0.381569	0.414059	0.3568
	X8	-0.000208	0.001105	0.8506
0.5, 0.75	X1	0.001372	0.049709	0.9780
	X2	-0.019288	0.025742	0.4537
	X3	-0.083400	0.152349	0.5841
	X4	0.005461	0.004617	0.2369
	X5	0.002024	0.018421	0.9125
	X6	0.018918	0.025122	0.4514
	X7	-0.054185	0.454891	0.9052
	X8	-0.000283	0.001367	0.8361

Equation: UNTITLED Workfile: CHINA::Untitled\
View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Symmetric Quantiles Test
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of test quantiles: 4
Test statistic compares all coefficients

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Wald Test	5.671404	9	0.7723

Restriction Detail: b(tau) + b(1-tau) - 2*b(.5) = 0

Quantiles	Variable	Restr. Value	Std. Error	Prob.
0.25, 0.75	X1	-0.046715	0.082606	0.5717
	X2	0.048549	0.048780	0.3196
	X3	-0.110479	0.252977	0.6623
	X4	0.003092	0.007130	0.6645
	X5	0.010643	0.029548	0.7187
	X6	-0.044076	0.036986	0.2334
	X7	-0.327384	0.632352	0.6047
	X8	7.47E-05	0.001761	0.9662
	C	1.039742	1.891576	0.5825

Source: Output Eviews10

Based on Table 22, there is no significant difference in quantile 0.25 and quantile 0.5 for X_1. Quantile 0.5 and quantile 0.75 on variable X_1 have a probability value > 0.05, so there is no significant difference. Likewise, for quantile 0.25 and quantile 0.75 on variable X_1, the difference was also not significant. So that for quantiles 0.25, 0.5, and 0.75 have a difference that is not strong enough.

b. Thai State Hypothesis Test

Table 23 Hypothesis Test of Thailand

Equation: UNTITLED Workfile: THAILAND::Untitled\
View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Quantile Slope Equality Test
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of test quantiles: 4
Test statistic compares all coefficients

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Wald Test	24.46806	16	0.0798

Restriction Detail: b(tau_h) - b(tau_k) = 0

Quantiles	Variable	Restr. Value	Std. Error	Prob.
0.25, 0.5	X1	0.028311	0.027878	0.3098
	X2	-0.005880	0.025992	0.8210
	X3	-0.027709	0.051033	0.5872
	X4	0.011169	0.010520	0.2884
	X5	0.003709	0.011265	0.7419
	X6	-0.003227	0.021655	0.8815
	X7	3.148855	1.459431	0.0310
	X8	0.004036	0.001426	0.0047
0.5, 0.75	X1	-0.009623	0.025413	0.7049
	X2	0.005428	0.020815	0.7943
	X3	0.038996	0.045458	0.3910
	X4	0.015961	0.008871	0.0720
	X5	-0.016525	0.009984	0.0979
	X6	0.000363	0.019259	0.9849
	X7	-0.640175	1.417116	0.6515
	X8	0.000224	0.001182	0.8498

Equation: UNTITLED Workfile: THAILAND::Untitled\
View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Symmetric Quantiles Test
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of test quantiles: 4
Test statistic compares all coefficients

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Wald Test	5.983236	9	0.7416

Restriction Detail: b(tau) + b(1-tau) - 2*b(.5) = 0

Quantiles	Variable	Restr. Value	Std. Error	Prob.
0.25, 0.75	X1	0.037934	0.041667	0.3626
	X2	-0.011308	0.035737	0.7517
	X3	-0.066705	0.078849	0.3976
	X4	-0.004792	0.014119	0.7343
	X5	0.020235	0.015823	0.2010
	X6	-0.003591	0.031249	0.9085
	X7	3.789031	2.173153	0.0812
	X8	0.003812	0.001976	0.0537
	C	-10.62861	5.512140	0.0538

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Source: Output Eviews10

Based on Table 23, there is no significant difference in quantile 0.25 and quantile 0.5 for X_1. Quantile 0.5 and quantile 0.75 on variable X_1 have a probability value > 0.05, so there is no significant difference. Likewise, for quantile 0.25 and quantile 0.75 on variable X_1, there was no significant difference. So that for quantiles 0.25, 0.5, and 0.75 have a difference that is not strong enough.

c. Indonesian State Hypothesis Test

Table 24 Indonesian State Hypothesis Test

Equation: UNTITLED Workfile: INDONESIA::Untitle...

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Quantile Slope Equality Test
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of test quantiles: 4
Test statistic compares all coefficients

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Wald Test	23.17863	16	0.1090

Restriction Detail: b(tau_h) - b(tau_k) = 0

Quantiles	Variable	Restr. Value	Std. Error	Prob.
0.25, 0.5	X1	0.021259	0.028401	0.4541
	X2	-0.039817	0.034178	0.2440
	X3	-0.054689	0.311907	0.8608
	X4	0.016426	0.014532	0.2584
	X5	0.015581	0.016866	0.3556
	X6	-0.003251	0.024771	0.8956
	X7	0.178018	0.615673	0.7725
	X8	0.004866	0.002279	0.0328
0.5, 0.75	X1	-0.018525	0.057267	0.7463
	X2	-0.002359	0.030711	0.9388
	X3	0.062349	0.084894	0.4627
	X4	0.017225	0.011037	0.1186
	X5	0.004980	0.014272	0.7271
	X6	-0.009054	0.023151	0.6957
	X7	-0.560031	0.437720	0.2007
	X8	6.86E-05	0.001713	0.9681

Equation: UNTITLED Workfile: INDONESIA::Untitle...

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Symmetric Quantiles Test
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of test quantiles: 4
Test statistic compares all coefficients

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Wald Test	5.795641	9	0.7602

Restriction Detail: b(tau) + b(1-tau) - 2*b(.5) = 0

Quantiles	Variable	Restr. Value	Std. Error	Prob.
0.25, 0.75	X1	0.039784	0.063482	0.5309
	X2	-0.037457	0.047526	0.4306
	X3	-0.117038	0.322972	0.7171
	X4	-0.000799	0.018573	0.9657
	X5	0.010601	0.022194	0.6329
	X6	0.005803	0.035562	0.8704
	X7	0.738050	0.758068	0.3303
	X8	0.004797	0.002922	0.1007
	C	-12.53121	8.608290	0.1455

Source: Output Eviews10

Based on Table 24, at quantile 0.25 and quantile 0.5 for X_1 there is no significant difference. Whereas for quantile 0.5 and quantile 0.75 on variable X_1, it has a probability value > 0.05, so it has an insignificant difference. Likewise, for quantile 0.25 and quantile 0.75 on variable X_1, it has a probability value > 0.05, so it is not a significant difference. So that for quantiles 0.25, 0.5, and 0.75 have a difference that is not strong enough.

d. Singapore State Hypothesis Test

Table 25 Singapore State Hypothesis Test

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Equation: UNTITLED Workfile: SINGAPURA::Untitle...

Quantile Slope Equality Test
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of test quantiles: 4
Test statistic compares all coefficients

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Wald Test	22.23502	16	0.1358

Restriction Detail: b(tau_h) - b(tau_k) = 0

Quantiles	Variable	Restr. Value	Std. Error	Prob.
0.25, 0.5	X1	-0.078441	0.096526	0.4164
	X2	0.013530	0.021792	0.5347
	X3	0.018965	0.231717	0.9348
	X4	-0.002597	0.009292	0.7799
	X5	-0.005232	0.014984	0.7269
	X6	-0.010379	0.018954	0.5840
	X7	0.698897	0.591196	0.2371
	X8	0.002234	0.001303	0.0866
0.5, 0.75	X1	0.044605	0.036886	0.2266
	X2	-0.037256	0.030864	0.2274
	X3	0.012026	0.125354	0.9236
	X4	-0.012249	0.008438	0.1466
	X5	0.005424	0.014056	0.6996
	X6	0.005877	0.022369	0.7928
	X7	-0.268918	0.616588	0.6627
	X8	0.000612	0.001410	0.6641

Equation: UNTITLED Workfile: SINGAPURA::Untitle...

Symmetric Quantiles Test
Equation: UNTITLED
Specification: Y X1 X2 X3 X4 X5 X6 X7 X8 C
Estimated equation quantile tau = 0.5
Number of test quantiles: 4
Test statistic compares all coefficients

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Wald Test	5.946607	9	0.7452

Restriction Detail: b(tau) + b(1-tau) - 2*b(.5) = 0

Quantiles	Variable	Restr. Value	Std. Error	Prob.
0.25, 0.75	X1	-0.123046	0.102059	0.2280
	X2	0.050786	0.038093	0.1825
	X3	0.006939	0.255143	0.9783
	X4	0.009653	0.012950	0.4560
	X5	-0.010657	0.021717	0.6236
	X6	-0.016256	0.030062	0.5887
	X7	0.967815	0.844897	0.2520
	X8	0.001622	0.001922	0.3987
	C	-3.891042	4.068294	0.3389

Source: Output Eviews10

Based on Table 25, there is no significant difference in quantile 0.25 and quantile 0.5 for X_1. Whereas for quantile 0.5 and quantile 0.75 on variable X_1, it has a probability value > 0.05, so it has an insignificant difference. Likewise, for quantile 0.25 and quantile 0.75 on variable X_1, it has a probability value > 0.05, so it is not a significant difference. So that for quantiles 0.25, 0.5, and 0.75 have a difference that is not strong enough.

CONCLUSION

From the results of this study, it can be seen that H_0 is rejected, which means that the independent variable is the RavenPack news index (the panic index/PI, the media hype index/HY, the fake news index/FNI, the country sentiment index/CSI, the infodemic index/CTI), Credit Default Swap (CDS) rate on 5-year bonds issued by the central government, and the daily closing price of gold has no significant effect on the dependent variable, namely stock returns on the SSE 50, SET 50, LQ45, and STI indices simultaneously. nor partial. Based on the explanation of the conclusions, the suggestion that can be given by the researcher is that in testing time series, you can use various other methods besides quantile regression to test the asymmetric dependence between stock returns and news, such as using the GARCH, ARIMA, method.

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