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Can investors' sentiment and inflation influence share market return volatility? An ASEAN perspective

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Abstract

This study analysed the impact of psychological and macroeconomic factors on share market returns and its volatility in the ASEAN countries. This study specifically analysed the impact of investors' sentiment and inflation on the share market returns and its volatility in the ASEAN countries. This study analyses investors' sentiment and inflation by using the Consumer Confidence Index and Consumer Price Index on share market returns indices. The data of this study is based on 117 set from four ASEAN countries over a 10 years period. This study uses the Johansen cointegration test to evaluate the long-run cointegrating relationship among investor sentiment, inflation and market returns using different data set of IHSG, BM, PSEI, and SET. This study tells us that the Johansen co-integration test for IHSG, BM, PSEI, and SET confirms the existence of a long-run equilibrium of Trace and Maximum Eigenvalues among variables. This study shows that there is a simultaneous influence on both investors' sentiment and inflation on the share market returns volatility in the ASEAN countries. The results of this study show that investors' sentiment and inflation significantly influence the movement of the share market returns which constantly drives the share market returns volatility. The findings in this study serve as a reference to investors and other interested parties in understanding the factors which are influencing the share market returns volatility. Moreover, this study assists investors in forecasting future of share prices so they can make right decisions which ultimately, would reduce the risk of loss.

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1. Introduction

Many investigators in the share market invested a considerable amount of money with this hope to gain high returns on their investment. For obtaining the returns, it requires knowledge of share market volatility because it plays a vital role in shaping the investors' opinion on investment Yacob (2019). Nevertheless, many investors are not well informed about the right time to invest and how they can get right information about the cost of profit.(Knio, 2018). Insufficient knowledge of investors leads towards inappropriate investment strategies, which ultimately make a wrong decision. This situation creates an imbalance in the market of developing countries for investors (Knio, 2018) (Diebold & Yilmaz, 2009) due to their limited knowledge on share volatility. Share volatility is statistical way of demonstrating the spread of security returns or market index. High volatility suggests significant fluctuation of the share price in a short period while it indicates

greater risk as the share value can spread over a larger range of values. Thus, volatility measures the market risk and understands the market share returns that can facilitate the investors and lower the risk of loss.

Studies in financial economics suggest that the share market return volatility is influenced by various factors. One of the factors is psychological factor, such as investors' sentiment that contributes to the movement of share price (Brown & Cliff, 2004; Griffith, Najand, & Shen, 2020; Smales, 2017). Investors' sentiment towards the share market exchange includes positive or negative sentiment. Positive sentiments is happiness or confidence which moves the share price above the fundamental value and provides above-average returns, while negative sentiment involves fear which moves the share price below the fundamental value and eventually provides below-average returns (Smales, 2017). Additionally, the positive emotional sentiment motivates the investors to make risky investments, whereas the negative emotional sentiment discourages investors from taking risky investments. Share market return volatility is also affected by macroeconomic factors such as inflation (Knio, 2018; Schwert, 1989; Wasiuzzama & Angabini, 2011; Zakaria & Shamsuddin, 2012). The economics theory explains that inflation includes expected inflation and unexpected inflation. Expected inflation is not a risk for share market returns but unexpected inflation is considered a serious threat to share market returns (Dewi, Somsathid, Somjai, Ghani, & Pambuko, 2019; Sathyanarayana & Gargesa, 2018). Additionally, Kim and Nofsinger (2008) found that socially collective behaviours in the Association of Southeast Asian Nations (ASEAN) communities and cultures demonstrated different characteristics than the non-ASEAN countries, thus implying findings on psychological and macroeconomic factors of share market volatility in the non-ASEAN countries differ from the ASEAN countries.

This study examines the influence of psychological and macroeconomic factors, specifically investors' sentiment and inflation on share market return volatility in ASEAN countries, including Indonesia, Malaysia, Philippines, and Thailand. The findings of this study provide understanding for investors and other interested parties on the importance of investors' sentiment and inflation in share market return volatility and thus it reduces risk. In the subsequent section, Section 2, presents the literature review of this study. Section 3 explains the research methodology, followed by Section 4, which presents the results, and Section 5, concludes this study.

2. Literature Review

The market is generally denoted an institution that assists customers to purchase and investors to invest their money to buy and sell goods. A financial market possesses similar characteristics as an institution that aids in exchanging financial instruments, such as shares, bonds. Bruni, Fair, and O'Brien (1996) defined financial asset price volatility as the financial assets market-clearing prices determined by the power of supply and demand that impacts the share market. Share volatility does not change if the power of supply and demand remain stable gradually. The factors which determine supply and demand changes significantly cause the financial asset prices relevant to the volatility which exhibit significant changes as the prices move to restore the market equilibrium. Bruni et al. (1996) suggested three dimensions of financial asset price volatility, named as frequency, size, and speed. Schwert (1989) brought attention to the fact that "a significant feature, previously recognised by Officer (1973) is shares return variability and it was high during the 1929-1939 Great Depression." Officer (1973) had previously noted this phenomenon. He noted that the aggregate leverage has a strong link to volatility, and it explains a small fraction of the fluctuations in share volatility. This suggests that other factors are responsible for the volatility of share market return. Despite this, there is a possibility that the share market's return volatility will not always be negative. It is important to note loans, and deposits. Gurusamy (2009) mentioned that the capital market known as the security markets' main purpose is to direct the flow of savings into a long-term investment. One instrument traded in the market is corporate share. Corporate shares in most of the countries are traded publicly and bought in the secondary share market. Investors can only purchase shares from public listed companies in the share market, such as Bursa EFEK Indonesia, Bursa Malaysia, Philippines Share Exchange, and Share Exchange Thailand.

The Indonesia Share Exchange Market or Bursa EFEK Indonesia was established by the Dutch East Indies in 1912 in Jakarta. The share market ended during World War 1 and 2 and was later rebuilt after transferring authority from the Dutch to Republic Indonesia in 1977. Bursa Malaysia was established in 1960 and renamed as Share Exchange of Malaysia and Singapore (SEMS) when the countries' market merged in 1964. After Singapore gained independence, SEMS was disbanded in 1973 and Malaysian authorities formed Kuala Lumpur Share Exchange (KLSE) (Banks, 1996). The KLSE changed its name to Bursa Malaysia which possess the daily trade of many products., such as securities, derivatives, and exchange traded funds (ETF) as the main products. Meanwhile, the Philippines Share Exchange (PSE) was established in 1963 and originated from two major exchange markets, namely Makati Share Exchange (MKSE) and Manila Share Exchange (MSE). The exchange of Thailand was established in 1974 for security trading and the name formally converted to the Share Exchange of Thailand (SET) in 1991. Initially, Thailand in 1963 possessed a share exchange named Bangkok Share Exchange (BSE), but BSE failed due to low support from the government. Consequently, the Securities that "fundamentally justified volatility can form the basis for effective price discovery," yet "volatility's dependency indicates predictability," which is something that traders and medium-term investors appreciate (Gregoriou, 2009). Auinger (2015) suggested it vital for investors so they can comprehend and forecast the future volatility of the market in order to assess the risk of share ownership.

There are several studies in the financial economic literature which have been sought to examine psychological aspects and stock market volatility. These studies emphasised the importance of investor's attitude on the volatility of share market returns. Yacob (2019), for example, evaluated the impact of investor's attitude on Malaysian share market volatility during the crisis of 2008 and they discovered that investor's sentiment influences the share market returns. Wasiuzzama and Angabini (2011) found that the KLSE index saw increased volatility during the 1998 Asian financial crisis and the 2008 global financial crisis. Furthermore, the scenarios were related to investor sentiment overreaction during high risk or crisis periods. Investor sentiment, such as mood and emotions, are connected to psychological behaviour that influences the share market returns (Baker & Nofsinger, 2010). Fontanills and Gentile (2003) suggested that emotion is a key factor in triggering volatility when financial instruments are handled. Moreover, optimism and greed share higher prices while fear and panic share lower prices. The volatility becomes greater as the probability of emotion change in short time. Investor's sentiment and inflation can predict the future movement of share prices. Nevertheless, some studies that were conducted on a single country setting those are excluding the impact of investors' sentiment on a cross country setting, such as the ASEAN share market.

Smales (2017) stated that investors' sentiment positively impacts share market returns in the American share exchange. The volatility index (VIX) (known as fear index) was applied to test the share market returns. It is observed that, share market returns tend to be lower with high levels of fear sentiment. Hence, positively impacting market return volatility. Griffith et al. (2020) also noted a positive relationship between investors' sentiment and share market return volatility, where the former possessed a strong predictive power to predict share returns future movement. Five different sentiment-level measures were employed, namely fear, joy, gloom, stress, and volume. All measures demonstrated significant impact on share market returns, among all of them fear is the most significant influence on the prediction of share market returns. Canbaş and Kandır (2009) debated that investors' sentiment does not predict future share returns, only the turnover ratio of the share market predicted potential. This study proposed the following hypothesis based on the mixed findings.

H1: Investor sentiment positively impacts share market return volatility in the ASEAN share market exchange.

Other studies on financial economics also examined the influence of macroeconomic factors on share market return volatility. Schwert (1989) analysed the relationship between share volatility with real and nominal macroeconomic volatility, economic activity, financial leverage, and share trading activity using monthly data of United States (US) companies from 1857 to 1987. Davis and Kutan (2003) extended Schwert's study by investigating the influence of macroeconomics factors on the share market return volatility in 13 developed and industrialised countries in the US and other countries. The findings align with Schwert's (1989) weak evidence on the effect of inflation on share market return volatility. Hongsakulvasu and Liammukda (2020) analysed the effect of economic shock on share market return volatility in South Korea and Tokyo. It is observed that negative shocks exhibited more impact on market volatility than positive shocks. Aziz, Marwat, Mustafa, and Kumar (2020) investigated the influence of macroeconomic factors, such as industrial production, consumer price index, and exchange rate. The results demonstrate that the global economic policy caused a significant effect on the returns of the Turkish Islamic share index. Contrary to Hongsakulvasu and Liammukda (2020), the shocks in macroeconomic factors exhibited little influence on the volatility of Islamic indices returns. Other studies presented few evidences on the influence of macroeconomics variables and on the share market return volatility (Zakaria & Shamsuddin, 2012).

Several studies attempted to highlight inflation and its impact on the share market returns volatility. Inflation denotes a persistent change in the price level of goods and services in an economy often calculated in the Consumer Price Index (CPI) (Sathyanarayana & Gargesa, 2018). For instance, Davis and Kutan (2003) discovered an impact of inflation on market returns but only in several countries. Ilahi, Ali, and Jamil (2015) found a weak relationship between inflation and share market returns in the Karachi share exchange. Similarly, Nkoro and Uko (2016) discovered a negative relationship between inflation and market returns. Nonetheless,Yaya, Oluwa, and Shittu (2010) also found a contrasting result which indicates that inflation has a more significant impact in predication of the share market returns volatility in Nigeria. The findings are consistent with Dany-Knedlik and Garcia (2018) that show a higher degree of onward dynamics and a better anchoring of inflation expectations can improve the regional monetary policy frameworks. Inflation influences share market return volatility but its impact only occurs in several countries. Hence, the following hypothesis is developed:

H2: Inflation positively impacts the share market return volatility in the ASEAN share market exchange.

The classical theory describes rational decisions making from investors that impact the share market. The theory explains that competition among rational investors impacted the financial market excluding the irrational factors (Black, 1986). Yacob (2019) proposed that traders in the share market behave irrationally. Additionally, '*Theoretical, excess volatility proposes that people act irrationally on the information they receive, thus creating unexplained volatility in the share market*' (2019, p.755). De Long, Shleifer, Summers, and Waldmann (1990) formalised the role of investor sentiment in the financial market, stating that investors' sentiment triggers systematic risk. Apart from investors' sentiment, this study also suggests that inflation influences the share market returns (Dany-Knedlik & Garcia, 2018; Yaya et al., 2010). The studies often independently examine the influence of investors' sentiment and inflation on share market return volatility. There are limited studies which investigate

the impact of investors' sentiment and inflation simultaneously on the market returns. Hence, the following hypothesis is proposed:

H3: Investor sentiment and inflation impact simultaneously on share market return volatility in the ASEAN share market exchange.

3. Research Methodology

3.1. Sample

The public listed companies from four ASEAN countries were selected as the sample of study, specifically Indonesia, Malaysia, Philippines, and Thailand. The data for this study is collected from Indonesia Harga Saham Gabungan (IHSG) in Indonesia, Bursa Malaysia in Malaysia, the Philippine Stock Exchange Index (PSEI) in Philippines and the Stock Exchange of Thailand (SET) in Thailand. The data includes the monthly closing price of IHSG, KLSE, PSEI, and SET, consumer confidence, and consumer price indices based on a 10 years period from January 2009 to October 2019.

3.2. Research Instrument and Data Collection

The research instrument, content analysis is used in this study. The study relied on data in the CCI as a proxy to investor sentiment. The CCI indicates consumer attitudes or perceptions towards the economy, general business conditions, and personal financial well-being. The CCI also represents household perceptions of the combined impacts of business conditions in the local area, available jobs, and expected income for six months. A rising index describes an optimistic feeling of consumers while a declining index expresses a more pessimist side (Frumkin, 2000). Investors' sentiment in the study denotes a positive feeling illustrated by the CCI. Meanwhile, this study used CPI as a proxy to inflation. The CPI is an index that is employed to understand inflation movement throughout the year. The CPI is a price index measured each month by the Bureau of Labour Statistics to denote the market basket that the consumer purchases by utilising a bundle representing the "market basket." The CPI market basket demonstrates the decision of typical consumers and how they divide money among multiple goods and services (Case, Fair, & Oster, 2014).

3.3. Data Collection and Analyses

The data source was obtained from the official website of share market of Indonesia, Malaysia, Philippines, and Thailand. The inflation data was collected from International Monetary Fund's (IMF) website and share market return volatility from the exchange market official website of each country and Yahoo Finance. The Consumer Confidence Index (CCI) data was issued by Bank Indonesia, Malaysia Institute of Economic Study, Bangkok Sentral Ng Philippines, and University of the Thai Chamber of Commerce while the CPI data was issued by the IMF and the data from the share market of the four ASEAN countries. Furthermore, the study utilised the time series data analysis as well.

3.4. Johansen Cointegration Approach

This study evaluates the long-run cointegrating relationship among investors' sentiment, inflation and market returns using different data set of IHSG, KLSE, PSEI, and SET, this study uses the Johansen (JJ) cointegration test. Unlike other cointegration tests, which cope with the issue of heterogeneity. The JJ cointegration method is utilized due to its robustness to the non-stationarity issue.

Let us examine two integrated time series of the first order. At the first stage, we need to find out whether they are cointegrated. For this purpose, the vector autoregression model was evaluated. The order of the Vector autoregressive (VAR) model was determined by comparing the values of the standard Akaike (1981) and Schwert's (1978) criteria, as well as the absence of autocorrelation in the model residuals. Then, Johansen procedure was used for the selected number of lags in the vector autoregression model and the number of co-integration vectors was determined. If there was no co-integration, the presence of a short-term relationship between the indicators would be analysed.

The Johansen's test is based on VAR specification of order ρ. The VAR process is given as:

$$y_t = \phi_0 + \phi_1 y_{t-1} + \cdots + \phi_p y_{t-p} + \varepsilon_t, \quad t = 1, 2, \ldots, T .$$

Where y_t is an n × 1 vector of integrated variables of order one - commonly denoted as I (1) - and ε_t is an n × 1 vector of innovations. This function can be shown as:

$$\Delta y_t = \mu + y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i y_{t-i} + \varepsilon_t$$

Where:

$$\Pi = \sum_{i=1}^{p} A_i - I \cdot \Gamma_i = \sum_{j=i+1}^{p} A_j$$

The trace statistics are given as:

$$J_{trace} = -T \sum_{i=r+1}^{n} In(1-\lambda_i)$$

$$J_{trace} = -T\, In(1-\lambda_{r+1})$$

Where in this case, the mathematical expectation $\varepsilon_t = (\varepsilon_{1t}, \varepsilon_{2t})'$ is 0, which is a white noise with a non-degenerate covariance matrix. In this case, the length of the lag is taken into account the Schwert (1978) criteria.

4. Results and Discussion

4.1. Descriptive Statistics

Table 1 demonstrates data description for IHSG which indicates the impact of investors' sentiment and inflation on share market return volatility. The results suggest that the investors' sentiment, presented a minimum value of 97 and a maximum value of 128 with a mean value of 114.94 and a standard deviation of 7.561. The inflation indicated a minimum value of 89 and maximum value of 139 with a mean value of 114.68 and a standard deviation of 15.388. The results for share market returns data indicated a minimum value of 2549 and a maximum value of 6606 with a mean value of 4861.92 and a standard deviation of 996.932.

Table 1. Descriptive statistics: IHSG.

Variable	N	Min	Max	Mean	Std. deviation
Investor sentiment	117	97	128	114.94	7.561
Inflation	117	89	139	114.68	15.388
Share volatility	117	2549	6606	4861.92	996.932
Valid N (Listwise)	117				

Indonesian economy's outlook in 2015 is illustrated by the world bank, demonstrates prediction of less volatile inflation. Nevertheless, inflationary pressure could result from global crude oil prices, predicting the inflation to increase from a low level at the beginning of the year. The central bank can fail again in keeping the full-year inflation between 3% to 5%. Moreover, a weaker rupiah and lower fuel subsidies' increased prices of imported goods, reduced import demand. Rupiah could unlikely gain significant ground in 2015. Simultaneously, the US announced a possible increase in interest rates which produced suspicion in the Indonesian economy. Meanwhile, the economic outlook of 2019 predicted a weaker rupiah and it showed concern towards the trade war between the US and China. The overall outlook presented a mixed bag of investors who are adopting a wait-and-see approach towards Indonesia's presidential elections. The election of President Joko Widodo resulted in investors' confidence in the Indonesian economy, which leads to high confidence (worldbank.org). The highest value of investors' sentiment depicted by CCI are resulted from the confidence of Indonesian investors towards the future of Indonesian economy and performance.

The descriptive statistics analysis for the Bursa Malaysia share exchange has been shown in Table 2. Investors' sentiment had a low ratio of -40 and a maximum ratio of 52, with a mean of 0.35 and a standard deviation of 19.353, whilst inflation had a low level of 98 and a maximum level of 122, with a mean of 110.65 and a standard deviation of 7.569. The volatility of share market returns revealed a low value of 1174, a maximum of 1883, a mean value of 1646.99, and a standard deviation of 166.014. The lowest CCI value in 2019 could have been attributed to the 2019 economic prognosis, which predicted weaker growth due to the cancellation of significant manufacturing projects, bleak trade and export. Consumers were more confident in 2018, but not in 2019. The first quarter of 2019 saw 4.6% increase, although total economic activity was weighed down weaker-than-expected investment. Private consumption growth was solid, while export growth was slow due to lower external demand of manufactured goods. The gross domestic product (GDP) was forecast of 4.6% that is lower than 4.7%, which indicates a lack of confidence in the Malaysian economy.

Table 2. Descriptive statistics: Bursa Malaysia.

Variable	N	Min	Max	Mean	Std. deviation
Investor sentiment	117	-40	52	0.35	19.353
Inflation	117	98	122	110.65	7.569
Share volatility	117	1174	1883	1646.99	166.014

Table 3 illustrates the descriptive statistics analysis in the Philippines. The investors' sentiment depicted a minimum value of 68, a maximum of 85, a mean of 76.97, and a standard deviation of 3.655. The inflation presented a minimum value of 99, a maximum of 121, a mean of 108.76, and a standard deviation of 6.275. The share market return volatility presented a minimum value of 4898, a maximum of 8764, a mean of 7103.78, and a standard deviation of 895.873. The economic year of 2013, based on the world bank website presented an accelerated growth by 7.2% despite the effect of typhoons and other natural disasters during the year. The

strong macroeconomic fundamentals of the country supported domestic demand and protected the economy from the lingering weakness of the global economy that may produce more confident consumers and investors leading to the highest CCI value. The economy declined to 5.3% in the third quarter of 2014 due to weak expenses of government on the demand side and agricultural production on the supply side. Reduced government spending, delays and slowdowns in investment, and lower exports will likely limit economic growth to 6% in 2014 and 6.5% in 2015. Hence, consumers and investors in the Philippines were less confident on he country's economy.

Table 3. Descriptive statistics (PSEI).

Variable	N	Min	Max	Mean	Std. deviation
Investor sentiment	117	68	85	76.97	3.655
Inflation	117	99	121	108.76	6.275
Share volatility	117	4898	8764	7103.78	895.873

Table 4 presents Thailand share exchange descriptive statistics analysis. The results suggested the minimum value of investor sentiment was 68 and the maximum was 85 with a mean value of 77.08 and a standard deviation of 3.655. The minimum value for inflation was 86, the maximum was 103, the mean was 97.60, and the standard deviation was 4.716. The share market return volatility noted a minimum value of 432, a maximum value of 1830, a mean value of 1321.00, and a standard deviation value of 346.135. The economic outlook for Thailand suggested a 2.9% growth in 2013 compared to 6.5% in 2012 when Thailand was rebounding from devastating floods the preceding year. The disaster caused the lowest value of CCI for Thailand. In 2015, the predicted growth was up to 3.5% with domestic demand to recover with the fall in oil prices, increase in tourism, and higher public spending. Although the recovery of US and European Union (EU) markets is slow, Thailand exports benefited where the export was modest and lagging behind several Asian countries. Thailand also increased the quality of education to increase the skills and productivity of the labour force which is key to developing Thailand's competitiveness.

Table 4. Descriptive statistics (SET).

Variable	N	Min	Max	Mean	Std. deviation
Investor sentiment	117	68	85	77.08	3.655
Inflation	117	86	103	97.60	4.716
Share volatility	117	432	1830	1321.00	346.135

4.2. Preliminary Analyses

Table 5 illustrates the results for the Kolmogorov Smirnov (K-S) analysis on the normality test for all countries, the two-tailed depicted a value of 0.200 each, which is higher than 0.05. Therefore, the model was normally distributed.

Table 5. Normality test.

		Unstandardized residual (IHSG)	Unstandardized residual (KLSE)	Unstandardized residual (PSEI)	Unstandardized residual (SET)
N		117	123	93	129
Normal parameters [a,b]	Mean	0	0	0	0
	Std. deviation	268.569	120.419	584.299	84.045
Most extreme differences	Absolute	0.058	0.068	0.075	0.055
	Positive	0.058	0.042	0.075	0.055
	Negative	-0.046	-0.068	-0.064	-0.055
Test statistic		0.058	0.068	0.075	0.055
Asymp. sig. (2-tailed)		0.200[c,d]	0.200[c,d]	0.200[c,d]	0.200[c,d]

Note: a. Test distribution is normal.
b. Calculated from data.
c. Lilliefors significance correction.
d. This is a lower bound of the true significance.

A multicollinearity test was conducted to identify any multicollinearity between the independent variables within the model. The results in Table 6 indicate that the regression model for all the four ASEAN countries do not possess any multicollinearity due to the tolerance value of greater than 0.10 and the variance inflation factor (VIF) value of less than 10.00.

Table 6. Multicollinearity test.

Model	Y	X	Coefficient (Standardized)	Sig	Collinearity statistics	
					Tolerance	VIF
IHSG	Share volatility	Investor sentiment	0.348	0.00	0.523	1.911
		Inflation	0.689	0.00	0.523	1.911
BM	Share volatility	Investor sentiment	-0.256	0.00	0.986	1.014
		Inflation	0.609	0.00	0.986	1.014
PSEI	Share volatility	Investor sentiment	-0.031	0.652	0.985	1.015
		Inflation	0.761	0.000	0.985	1.015
SET	Share volatility	Investor sentiment	0.139	0.000	0.999	1.001
		Inflation	0.955	0.000	0.999	1.001

A heteroscedasticity test was performed to determine any heteroscedasticity condition. A good dataset should not signify any heteroscedasticity; hence the data should have a homoscedasticity condition. The study used a scatterplot to test whether the data do not indicate heteroscedasticity, as illustrated in Figure 1. Figure 1 depicts the heteroscedasticity result for all four ASEAN countries share exchange. The scatterplot above fulfilled the requirement that the data did not indicate any heteroscedasticity. The dots were not scattered above, under, or around 0, the dots were spread equally with no pattern illustrated on the figures.

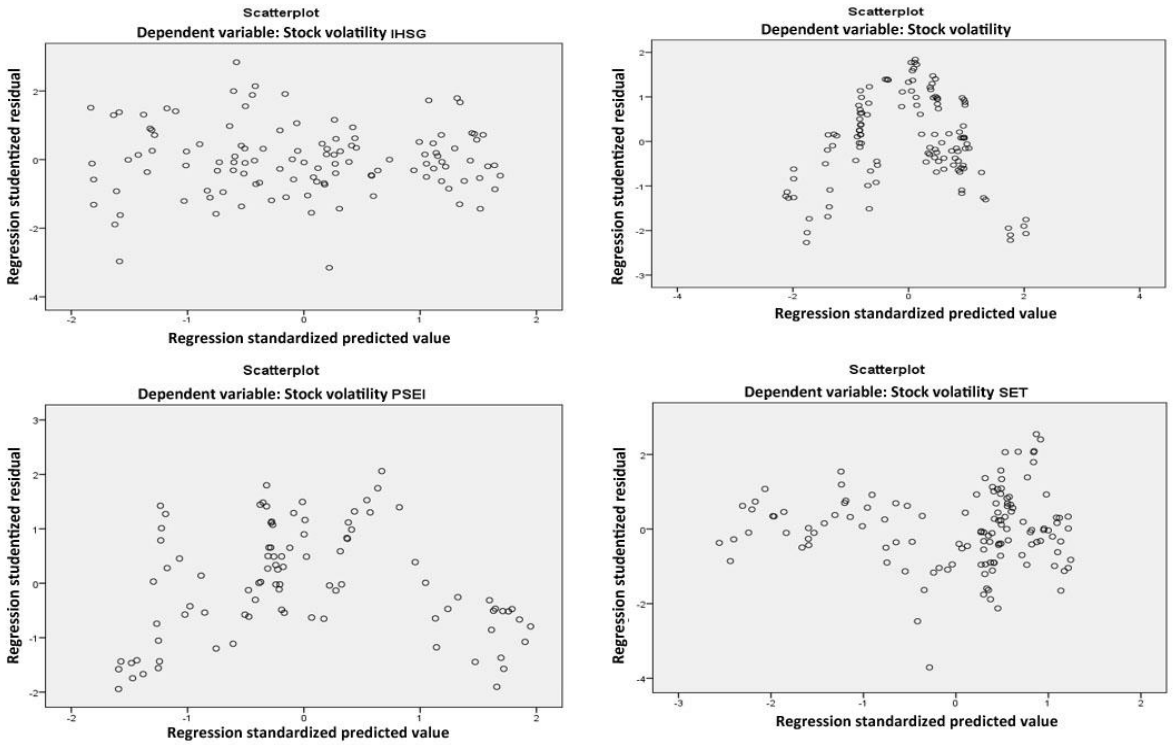

Figure 1. Heteroscedasticity tests.

4.3. Co-Integration Analysis

This section offers the co-integration analysis results for all share markets. First, for the IHSG, Table 7 presents the results of the cointegration test. The outcomes of SET's Johansen cointegration test. Trace and Maximum Eigenvalues establish the existence of a long-run equilibrium among variables using the IHSG data set, as shown by the results. The results of the Johansen co-integration test for SET are presented in Table 8. Trace and Maximum Eigenvalues establish the existence of a long-run equilibrium among variables using the KLSE data set, as shown by the results. The results of the Johansen cointegration test for SET are presented in Table 9. Trace and Maximum Eigenvalues confirm the existence of a long-run equilibrium among variables using the PSEI data set, as shown by the results. The results of the Johansen cointegration test for SET are presented in Table 10. Using the SET data set, the results indicate that both Trace and Maximum Eigenvalues demonstrate the existence of a long-run equilibrium among variables.

Table 7. Johansen cointegration test results (IHSG).

	Unrestricted cointegration rank test (Trace)				Unrestricted cointegration rank test (Max-eigen)			
Hypothesized no. of CE(s)	**Eigenvalue**	**Statistic**	**Value at 5%**	**Prob.****	**Eigenvalue**	**Statistic**	**Value at 5%**	**Prob.****
None *	0.259	42.236	29.797	0.001	0.259	33.587	21.131	0.000
At most 1	0.051	8.649	15.494	0.398	0.051	5.907	14.264	0.625
At most 2	0.024	2.741	3.841	0.097	0.024	2.741	3.841	0.097

Note: * Denotes rejection of the null hypothesis at the 0.05 level.
**MacKinnon, Haug, and Michelis (1999) p-values.

Table 8. Johansen cointegration test results (KLSE).

	Unrestricted cointegration rank test (Trace)				Unrestricted cointegration rank test (Max-eigen)			
Hypothesized no. of CE(s)	**Eigenvalue**	**Statistic**	**Value at 5%**	**Prob.****	**Eigenvalue**	**Statistic**	**Value at 5%**	**Prob.****
None *	0.115	23.395	29.797	0.227	0.115	15.157	21.131	0.278
At most 1	0.058	8.238	15.494	0.440	0.058	7.491	14.264	0.432
At most 2	0.006	0.746	3.841	0.387	0.006	0.746	3.841	0.387

Note: * Denotes rejection of the null hypothesis at the 0.05 level.
**MacKinnon et al. (1999) p-values.

Table 9. Johansen cointegration test results (PSEI).

	Unrestricted cointegration rank test (Trace)				Unrestricted cointegration rank test (Max-eigen)			
Hypothesized no. of CE(s)	**Eigenvalue**	**Statistic**	**Value at 5%**	**Prob.****	**Eigenvalue**	**Statistic**	**Value at 5%**	**Prob.****
None *	0.148	21.697	29.797	0,315	0.148	14.488	21.131	0.326
At most 1	0.076	7.209	15.494	0.553	0.076	7.128	14.264	0.474
At most 2	0.000	0.080	3.841	0.776	0.000	0.080	3.841	0.776

Note: * Denotes rejection of the null hypothesis at the 0.05 level.
**MacKinnon et al. (1999) p-values.

Table 10. Johansen cointegration test results (SET).

	Unrestricted cointegration rank test (Trace)				Unrestricted cointegration rank test (Max-eigen)			
Hypothesized no. of CE(s)	**Eigenvalue**	**Statistic**	**Value at 5%**	**Prob.****	**Eigenvalue**	**Statistic**	**Value at 5%**	**Prob.****
None *	0.141	40.010	29.797	0.002	0.141	18.858	21.131	0.101
At most 1	0.086	21.151	15.494	0.006	0.0861	11.168	14.264	0.145
At most 2	0.0773	9.982	3.841	0.001	0.0773	9.982	3.841	0.001

Note: * Denotes rejection of the null hypothesis at the 0.05 level.
**MacKinnon et al. (1999) p-values.

4.4. Multiple Regression Analyses

Table 11 demonstrates the regression analysis resulted from the data of the four ASEAN countries' share exchange. For Indonesia, investors' sentiment and inflation significantly affected market returns with a value of 0.000, that is lower than 0.05. The β_1 value of 45.869 suggests that the value of share returns increases by 45.869 percent with an increase of 1 percent of investors' sentiment. The β_2 value of 44.663 implies that the value of share returns is increased by 44.663 percent with an increase of 1 percent of investors' sentiment. For Malaysia, a β_1 value of -2.196 implies that the value of share returns is increased by -2.196 percent with an increase of 1 percent of investors' sentiment. The β_2 value of 13.365 signifies that the value of share returns increased by 13.365 percent with an increase value of 1 percent of investors' sentiment.

In Philippines, a β_1 value of -7.685 suggests that the value of share returns is increased by -7.685 percentage with an increase of 1 percentage of investor sentiment. The β_2 value of 108.689 denotes that the value of share returns increases by 108.689 percentage with an increase of 1 percentage of investor sentiment. Meanwhile, a β_1 value of 13.159 implies that the value of share returns is increased by 13.159 percentage with an increase of 1 percentage of investor sentiment. The β_2 value of 70.094 suggests that the value of share returns increases by 70.094 percent with an increase in 1 percent of investors' sentiment.

The share market return volatility is derived by the daily return movement of the share exchange. The situation is indicated through the indices issued by each country's market. The share market return movement can be up or down, creating volatility. This study found that investor sentiment significantly affects the share market returns in all ASEAN countries except the Philippines. Moreover, the findings revealed that investor sentiment positively affected Indonesian and Thailand share market return volatility. Thus, market return value decreases if investors' confidence is low, and increases if the confidence of investors is high.

The findings align with Ho and Hung (2012), where investors' sentiment affected share market return volatility in Japan. Nevertheless, Malaysia and the Philippines experienced a negative impact of investors' sentiment on share market return volatility. Therefore, the share market return value is decreased if investors' confidence remains high, and increases if the confidence of investors remains low. Similarly, Ho and Hung (2012) found that in the US and other countries, the lower the consumer's confidence is , the higher the market returns produces. The findings suggest that when the CCI is high, consumers are very optimistic about the financial situation, choosing whether to spend money, invest, or save it. The investors tend to spend more money to balance the overall economy. Ho and Hung (2012) also reported a negative relationship between CCI and market returns produced by investors who prefer to do consumption instead of investment when feeling confident about the country's economy and financial position. The findings revealed an impact of investor confidence on market returns while suggesting that investors' sentiment drives share market return volatility although no significant impact in the Philippines, similar to Smales (2017) and Griffith et al. (2020).

Table 11. Multiple regression test.

Model	Y	X	Unstandardised coefficient β	Standardised coefficient β	Model sig. value (F)	R^2
IHSG	Share volatility	Investor sentiment	45.869	0.348	0.000	92.7%
		Inflation	44.663	0.689		
BM	Share volatility	Investor sentiment	-2.196	-0.256	0.000	47.4%
		Inflation	13.365	0.609		
PSEI	Share volatility	Investor sentiment	-7.685	-0.031	0.000	57.5%
		Inflation	108.689	0.761		
SET	Share volatility	Investor sentiment	13.159	0.139	0.000	94.1%
		Inflation	70.094	0.955		

Inflation affects the share market returns in all ASEAN countries. The findings of this study suggest that inflation drives the value of share market returns. Saryal (2007) defines inflation as an underlying factor of conditional share market volatility, specifically in a highly inflated country. Additionally, this study revealed a simultaneous impact of investors' sentiment and inflation towards share market return volatility. This study also suggests that Indonesian investors tend to make more irrational decisions than the other ASEAN countries. Investors' sentiment and inflation in Indonesia denote the proportion of the variance for market returns with an adjusted R square of 0.926, which signifies the investors' sentiment and inflation that is categorised as influential factors with 92.6% of market returns explained by investor sentiment and inflation. Thus, other factors explain the ratio of 7.4% of market returns. Similar to Indonesia, Thailand exhibited an influential factor with an adjusted R square of 0.940. Malaysia and the Philippines also presented a semi-strong and robust correlation between investors' sentiment and inflation towards market returns with an adjusted R square of 0.465 and 0.565.

Conclusively, Indonesia and Thailand possess more investors with irrational decisions than Malaysia and Philippines with rational decision making. Thus, investors' sentiment and inflation drive share return up and down and produce volatility.

5. Conclusion

This study analysed the impact of investors' sentiment and inflation towards share market returns in ASEAN countries, specifically in Indonesia, Malaysia, Philippines, and Thailand. Before estimating the relationship among variables, this study finds out the long-run cointegrating relationship among investors' sentiment, inflation and market returns using different data set of IHSG, KLSE, PSEI, and SET. By using Johansen (JJ) cointegration test, we show that there exists a long-run equilibrium among variables. Content analysis is used on 10 years' worth of data, and it has been discovered that investors' sentiment significantly and positively influenced share market return volatility in ASEAN countries except for the Philippines. Philippine's investor sentiment and inflation only explained share market return volatility by 46.5%. The results contradict with the other ASEAN countries where two factors explain share market returns of more than the average of 50%. Moreover, this study suggested that inflation significantly and positively influenced share market return volatility in ASEAN countries. The findings of this study provide assistance to those investors who want to invest money in the ASEAN share market so they can predict the future market of share price in making better decisions for future endeavours. Furthermore, future investors can reduce the systematic risks which are caused by volatility.

This study noted several limitations. First, this study focused on four ASEAN countries in analysing the influence of investor sentiment and inflation on the share market volatility. Hence, it recommends this data for other ASEAN countries excluded from this study to allow more generalisability of the findings. Secondly, other psychological and macroeconomic factors were also excluded from this study. Future studies should include other variables, such as fear index or dividend policy. The findings can benefit present or future investors in the share market to understand the significance of investors' sentiment and inflation factors to the volatility of share returns and minimise the risk.

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