

**ผลกระทบของดัชนี S&P 500 Scored & Screened ราคาสินค้าโภคภัณฑ์
ดัชนีความผันผวน VIX และ ปัจจัยทางเศรษฐกิจมหภาค ที่มีต่อดัชนีตลาดหลักทรัพย์
แห่งประเทศไทย (SET Index) และ ดัชนี FTSE Bursa Malaysia
The Impact of the S&P 500 Scored & Screened Index, Global Commodity
Prices, the CBOE Volatility Index, and Macroeconomic Factors on
the Stock Exchange of Thailand (SET) Index and
the FTSE Bursa Malaysia EMAS Index**

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บทคัดย่อ

การศึกษานี้มีวัตถุประสงค์เพื่อศึกษาผลกระทบของดัชนี S&P 500 Scored & Screened ราคาสินค้าโภคภัณฑ์ (ราคาทองและราคาน้ำมันดิบเบรนท์) ดัชนีความผันผวน VIX และ ปัจจัยทางเศรษฐกิจมหภาค (อัตราแลกเปลี่ยน และ ดัชนีราคาผู้บริโภค) ที่มีต่อดัชนีตลาดหลักทรัพย์แห่งประเทศไทย (SET Index) และ ดัชนี FTSE Bursa Malaysia EMAS (FBMEMAS Index) โดยใช้ข้อมูลรายไตรมาสระหว่างปี 2560 ถึงเดือนกันยายน 2568 จากฐานข้อมูลทางการเงิน Investing.com และ TradingView โดยใช้วิธีการวิเคราะห์สมการถดถอยเชิงเส้น แบบจำลอง SET Index ใช้วิธีประมาณค่าด้วยวิธี Huber-White robust standard errors เพื่อแก้ไขปัญหาความแปรปรวนไม่คงที่ ผลการศึกษาพบว่า ดัชนีความผันผวน VIX เป็นตัวแปรเดียวที่ไม่มีผลกระทบอย่างมีนัยสำคัญทางสถิติต่อตลาดหุ้น ในทางตรงกันข้าม ดัชนี S&P 500 Scored & Screened และ ราคาน้ำมันดิบเบรนท์ มีความสัมพันธ์ในทิศทางเดียวกันกับดัชนีตลาดหลักทรัพย์แห่งประเทศไทย และ ประเทศมาเลเซียเมื่อเปรียบเทียบดัชนีตลาดหลักทรัพย์ทั้งสอง พบว่า อัตราแลกเปลี่ยนและดัชนีราคาผู้บริโภค (CPI) มีความสัมพันธ์ในทิศทางตรงกันข้ามกับ SET Index อย่างมีนัยสำคัญทางสถิติ ในขณะที่ FBMEMAS Index ได้รับผลกระทบเชิงบวกอย่างมีนัยสำคัญจากราคาทองคำ กล่าวคือ SET Index มีความอ่อนไหวต่อภาวะทางการเงินภายในประเทศ ขณะที่ FBMEMAS Index มีความอ่อนไหวต่อการเปลี่ยนแปลงของราคาทองคำ ผลการศึกษานี้แสดงให้เห็นว่า แม้ตลาดหุ้นทั้งสองแห่งจะได้รับอิทธิพลอย่างมีนัยสำคัญจากภาวะเศรษฐกิจโลกและดัชนีตลาดหุ้นระหว่างประเทศที่สำคัญ แต่พลวัตของตลาดมีความแตกต่างกัน การศึกษานี้ช่วยให้เห็นถึงความเหมือนและความแตกต่างของปัจจัยที่มีอิทธิพลต่อตลาดหุ้นในแต่ละประเทศ และสะท้อนให้เห็นถึงประเด็นที่น่าสนใจสำหรับการวิจัยในอนาคต เพื่อศึกษาลักษณะเฉพาะของตลาดในแต่ละประเทศและบทบาทของลักษณะดังกล่าวต่อผลการดำเนินงานของตลาดหุ้นภายในประเทศให้ลึกซึ้งยิ่งขึ้น

คำสำคัญ: ดัชนีตลาดหลักทรัพย์แห่งประเทศไทย ดัชนี FTSE Bursa Malaysia EMAS ดัชนี S&P Scored and Screened

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Abstract

This study examines the impact of the S&P 500 Scored & Screened Index (SP_ESG), global commodity prices (gold and Brent crude oil prices), the CBOE Volatility Index (VIX), and macroeconomic factors (exchange rate and Consumer Price Index: CPI) on the Stock Exchange of Thailand Index (SET Index) and the FTSE Bursa Malaysia EMAS Index (FBMEMAS Index). Time-series data were collected on a monthly basis for 105 months from January 2017 to September 2025 from the Investing.com and TradingView financial databases and analyzed using multiple linear regression. For the SET Index model, Huber-White robust standard errors were employed to account for potential heteroskedasticity. From the analysis, the VIX is the only one having no statistically significant effect on the identified stock markets during the studied time period. Unlike the VIX, the SP_ESG and Brent crude oil prices have significant positive effects on both. Across the two stock market indices, in comparison, the SET Index was found significantly negatively affected by the exchange rate and CPI, but the FBMEMAS was significantly positively affected by gold prices. That is to say, the former is more sensitive to domestic financial conditions, but the latter to changes in gold prices. Overall, the findings indicate that although both capital markets are significantly influenced by global economic conditions and major international stock market indices, their underlying market dynamics differ. The comparative analysis provides insights into similarities and differences in factors influencing stock markets across countries and reveals opportunities for future research to further explore country-specific market characteristics and their roles in local stock market performance.

Keywords: Stock Exchange of Thailand (SET) Index, FTSE Bursa Malaysia EMAS Index, S&P Scored and Screened Index

Introduction

Environmental, social, and governance (ESG) investing has become an increasingly important component of global capital markets, extending beyond developed economies and progressively influencing investment behavior in emerging markets. As institutional investors incorporate ESG considerations into portfolio allocation decisions, shifts in the global ESG sentiment may affect cross-border capital flows, investor confidence, and asset pricing dynamics in emerging economies. Consequently, stock markets in emerging markets such as Thailand and Malaysia are influenced not only by domestic macroeconomic conditions but also by global sustainable investment trends. However, the extent to which global ESG-related investment conditions influence stock market performance in emerging Asian economies remains an empirical question, particularly given differences in market structures and investor characteristics across countries.

To capture global ESG-related investment conditions, this study employs the S&P 500 Scored & Screened Index (SP_ESG), formerly known as the S&P 500 ESG Index, as a proxy for global ESG investment conditions. The index comprises large US companies that meet both financial and ESG screening criteria, making it a representative indicator of sustainable investment performance in the world's largest capital market (S&P Global, 2026). Given the dominant role of the US financial system, movements in this index may reflect shifts in global ESG investment sentiment and transmit information to international investors, thereby influencing cross-border capital flows and portfolio allocation decisions.

Changes in global ESG investment conditions may therefore transmit to emerging equity markets through cross-border capital flows, investor sentiment, and risk perceptions. This mechanism is particularly relevant for Thailand and Malaysia, where domestic equity markets are closely connected to global financial markets. However, limited attention has been given to whether changes in global ESG investment conditions are transmitted to emerging ASEAN equity markets and whether such transmission differs across countries. Thailand and Malaysia are considered interesting research settings for reasons. One is that both are emerging ASEAN economies, while their domestic financial markets and economic structures differ. The comparative analysis allows the study to assess whether the transmission of global ESG investment conditions is consistent (or varied) across emerging ASEAN markets. To demonstrate such similarities (or differences), the current study employs the SET Index and the FTSE Bursa Malaysia EMAS Index (FBMEMAS) to represent stock market performance in Thailand and Malaysia, respectively. By examining ESG-related investment conditions as a potential channel of international financial transmission, this study extends the understanding of how global ESG developments may influence emerging equity markets.

In addition to ESG-related factors, global commodity prices are also important factors influencing stock market movements. Gold and Brent crude oil prices, in particular, have received considerable attention due to their roles in global financial markets. Gold prices are widely recognized as a safe-haven asset during periods of heightened global economic and financial uncertainty. When global risks increase, investors tend to reduce their

exposure to risky assets such as equities and reallocate their portfolios toward gold, thereby exerting upward pressure on gold prices. Conversely, rising gold prices are often associated with declining investor confidence in equity markets, which may generate downward pressure on stock market indices, including those in Thailand and Malaysia. As a result, gold prices are commonly used as an indicator of market risk perception and risk-averse investor behavior in global financial markets.

In addition to gold prices, Brent crude oil prices are another important global commodity factor that may influence stock market performance. Brent crude oil prices play an important role in global financial markets as they reflect changes in economic activity, energy demand, and commodity market conditions. Fluctuations in crude oil prices can significantly influence corporate profitability, investor expectations, and stock market performance. Interestingly, although increases in oil prices may raise production costs for certain industries on the one hand, they may also signal stronger global economic growth and higher energy demand on the other hand. Furthermore, higher oil prices may enhance the profitability and market valuation of energy-related companies, particularly in economies where the energy sector constitutes a significant component of the stock market. These considerations are expected to be particularly relevant to Thailand and Malaysia. Thailand's stock market includes several large-capitalization firms operating in the energy sector, which is classified as one of the major sectors within the resources industry of the Stock Exchange of Thailand (Stock Exchange of Thailand, 2024). Malaysia has a well-developed oil and gas industry and is the second-highest producer of petroleum in Southeast Asia (U.S. Energy Information Administration, 2024). Given the importance of the energy sector in the economic and capital market structures of both countries, fluctuations in Brent crude oil prices are expected to have a more pronounced effect on their stock market indices.

The CBOE Volatility Index (VIX) is a real-time market index widely recognized as a measure of market risk and investor sentiment. Derived from the implied volatility of S&P 500 index options, it reflects market expectations of volatility over the next 30 days and is commonly regarded as a proxy for investor fear and uncertainty. Although the VIX is based on the US equity market, its movements are widely considered to have spillover effects on global financial markets. During periods of heightened market uncertainty, investors often reduce their exposure to riskier assets, particularly equities in emerging markets. Consequently, changes in the global risk sentiment may affect changes in the SET Index and the FBMEMAS Index.

Macroeconomic factors, particularly exchange rates and inflation, are also key determinants of stock market performance in emerging economies. Exchange rate movements, particularly the exchange rates of the Thai baht and Malaysian ringgit against the US dollar, can affect the competitiveness and profitability of listed firms, especially those engaged in international trade. Exchange rate fluctuations may also reflect cross-border capital movements, which are closely monitored by international investors. In addition, the Consumer Price Index (CPI) captures domestic inflationary pressures and serves as an indicator of macroeconomic stability. High inflation may reduce purchasing power, increase production costs, and influence monetary policy decisions, particularly interest rate adjustments, all of which have important implications for stock market valuation and investor behavior.

Taken together, the preceding discussion indicates that stock market movements in Thailand and Malaysia are influenced by a combination of global and domestic factors, including global ESG investment conditions, commodity prices, global financial uncertainty, exchange rates, and domestic macroeconomic conditions. However, comparative evidence on the influences of these factors across Thailand and Malaysia remains limited, particularly within a common analytical framework.

Accordingly, this study aims to examine the impact of global and domestic factors on stock market performance in Thailand and Malaysia. The specific objectives are

- 1) To examine the impact of the S&P 500 Scored & Screened Index (SP_ESG), gold prices, Brent crude oil prices, the VIX, exchange rates, and the Consumer Price Index (CPI) on the SET Index; and
- 2) To examine the impact of the S&P 500 Scored & Screened Index (SP_ESG), gold prices, Brent crude oil prices, the VIX, exchange rates, and the Consumer Price Index (CPI) on the FTSE Bursa Malaysia EMAS Index (FBMEMAS).

The findings are expected to provide useful implications for investors regarding portfolio diversification and risk management, as well as for policymakers seeking to enhance the resilience and stability of emerging capital markets.

Literature Review

The Arbitrage Pricing Theory (APT), proposed by Ross (1976), provides the theoretical foundation for examining the influence of multiple systematic risk factors on asset returns. The theory allows macroeconomic and financial market factors to be incorporated into a single framework for explaining asset price movements.

Accordingly, this study applies APT as an overarching theoretical lens to examine the relationships between global ESG investment conditions, commodity prices, global financial uncertainty, exchange rates, inflation, and stock market performance in Thailand and Malaysia. These factors may affect equity markets through various transmission channels, including cross-border capital flows, investor sentiment, inflation expectations, and changes in economic fundamentals.

Within this context, the S&P 500 Scored & Screened Index (SP_ESG) provides a relevant measure of ESG-oriented investment conditions in the US equity market. Prior studies generally suggest that stronger ESG performance may be associated with greater financial stability and resilience during periods of uncertainty (Broadstock et al., 2021; Friede et al., 2015). However, empirical evidence on the relationship between ESG-oriented market indices and broader equity market performance remains mixed and varies across index types and market contexts. For example, Kilic et al. (2022) reported significant return and risk spillovers between the MSCI Global ESG Index and stock markets in developed and emerging markets, suggesting that ESG-related indices may be connected to broader international financial markets. Nevertheless, evidence based specifically on the SP_ESG remains limited, as much of the existing literature examines other ESG indices with different index constructions, constituent selection criteria, and geographic coverage. It therefore remains unclear whether movements in the SP_ESG are associated with stock market performance in emerging ASEAN economies such as Thailand and Malaysia.

Apart from such sustainability-oriented benchmark indices as the SP_ESG, global commodity prices, particularly gold and Brent crude oil prices, have been widely recognized as important factors influencing stock market performance. In particular, gold is generally considered a safe-haven asset that attracts investors during periods of financial uncertainty; and crude oil prices affect stock markets through various channels, including production costs, inflation expectations, corporate profitability, and investor sentiment. Previous studies have provided empirical evidence. For instance, Baur and Lucey (2010) confirmed the safe-haven properties of gold, indicating that investors tend to increase their demand for gold during periods of financial uncertainty. This safe-haven mechanism implies an inverse relationship between gold prices and stock market performance, as capital may shift from equities toward gold when uncertainty increases. Consistent with this mechanism, Hidayat and Sudjono (2022) found that world gold prices had a significant negative effect on the Jakarta Composite Stock Price Index (JCI). Similarly, Haider (2018) reported a significant negative relationship between gold prices and the KMI 30 Index, indicating that increases in gold prices are associated with lower stock market returns. Evidence from Thailand is also consistent with this inverse relationship, as Lengkayan et al. (2026) found that gold prices had a significant negative effect on the SET Index. Evidence from Malaysia is also consistent with this inverse relationship, as Kareem et al. (2020) found a significant negative relationship between the FTSE Bursa Malaysia KLCI and the Gold Price Index. Taken together, the existing evidence generally supports an inverse relationship between gold prices and stock market performance across emerging markets. Evidence from both Thailand and Malaysia is consistent with this relationship, providing a stronger basis for examining gold prices as a global factor affecting the equity markets of these two ASEAN economies.

Regarding Brent crude oil prices, previous studies have highlighted the important role of oil market dynamics in stock market performance. Ningrum and Mustafa (2023) reported that oil prices had a significant positive effect on the JCI. Kang et al. (2016) further demonstrated that a US oil supply shock positively affected the US real stock returns. They also found that, after distinguishing between US and non-US oil supply shocks, oil demand shocks and oil supply shocks were equally important in explaining variations in the US real stock returns. Accordingly, commodity price fluctuations can influence equity markets through their effects on the investor sentiment, corporate profitability, and macroeconomic conditions. However, the direction and magnitude of these effects may vary across countries, depending on market structures, industry composition, and the role of commodity-related sectors in the economy. Particularly in this study, it is possible that oil price increases will have a positive effect, considering the importance of the energy sector in the economic and capital market structures of both countries (Stock Exchange of Thailand, 2024; U.S. Energy Information Administration, 2024). Accordingly, this study hypothesizes that Brent crude oil prices have a positive effect on stock market indices in Thailand and Malaysia.

For the CBOE Volatility Index (VIX), it is widely recognized as a leading indicator of global financial uncertainty. Derived from S&P 500 Index option prices, the VIX reflects expected market volatility and is commonly referred to as the fear index. Higher VIX levels indicate increased risk aversion and typically lead to capital reallocation from equity markets. Empirical studies by Whaley (2000) and Sarwar (2012) found a negative relationship between the VIX and stock returns; and those by Iskenderoglu and Akdag (2020) and Lestari et al. (2023) further confirmed its significant influence on both developed and emerging markets, particularly during periods of heightened uncertainty. Overall, the VIX serves as an important global transmission mechanism of financial risk across equity markets. Lestari et al. (2023) confirmed that the VIX significantly influenced the volatility of Southeast Asian stock markets, including Thai and Malaysian markets.

Collectively, the existing literature suggests that the VIX functions as a global transmission mechanism of financial uncertainty, exerting substantial influence on equity market performance across countries. These findings underscore the importance of incorporating the VIX as a key explanatory variable when examining stock market behavior under global financial uncertainty.

Furthermore, exchange rates and inflation, proxied by the Consumer Price Index (CPI), represent important macroeconomic determinants of stock market performance as they influence the overall economic environment. Exchange rate movements influence equity markets through trade competitiveness, capital flows, and corporate earnings, while inflation affects real returns and investment behavior. Empirical evidence by Abdalla and Murinde (1997) showed that currency depreciation generally had a negative effect on stock prices in emerging markets due to increased uncertainty and capital outflows. Moreover, Fama (1981) found inflation negatively associated with stock returns, reflecting weaker macroeconomic conditions and reduced real economic activity. However, the effects of exchange rates and inflation may vary depending on country-specific economic structures and financial market characteristics. Therefore, their effects on stock market performance in Thailand and Malaysia may not necessarily be uniform.

Based on the theoretical perspective and empirical evidence discussed above, this study develops a conceptual framework to examine how global ESG investment conditions, commodity prices, global financial uncertainty, exchange rates, and inflation are associated with stock market performance in Thailand and Malaysia. The framework integrates these factors within the APT perspective while considering the potential transmission of global and domestic factors to emerging equity markets.

Figure 1 and 2 present the conceptual framework of the study. They illustrate hypothesized relationships among studied factors of Thai and Malaysian stock markets, respectively.

Conceptual Framework

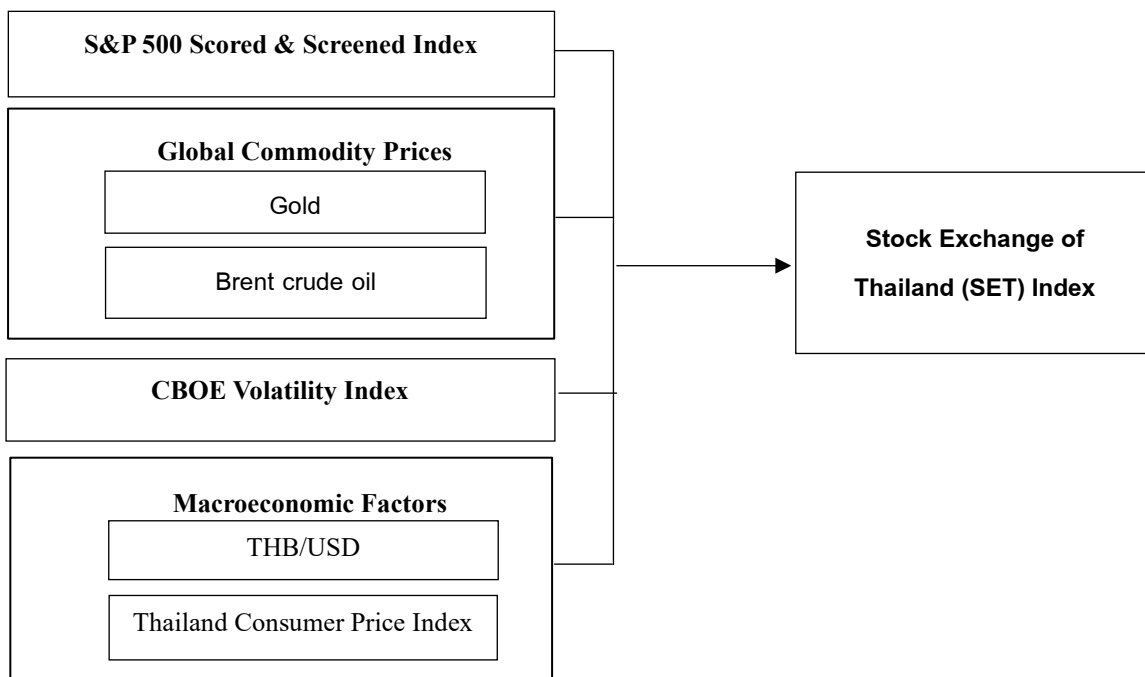


Figure 1 : The Impact of independent variables on the Stock Exchange of Thailand (SET) Index

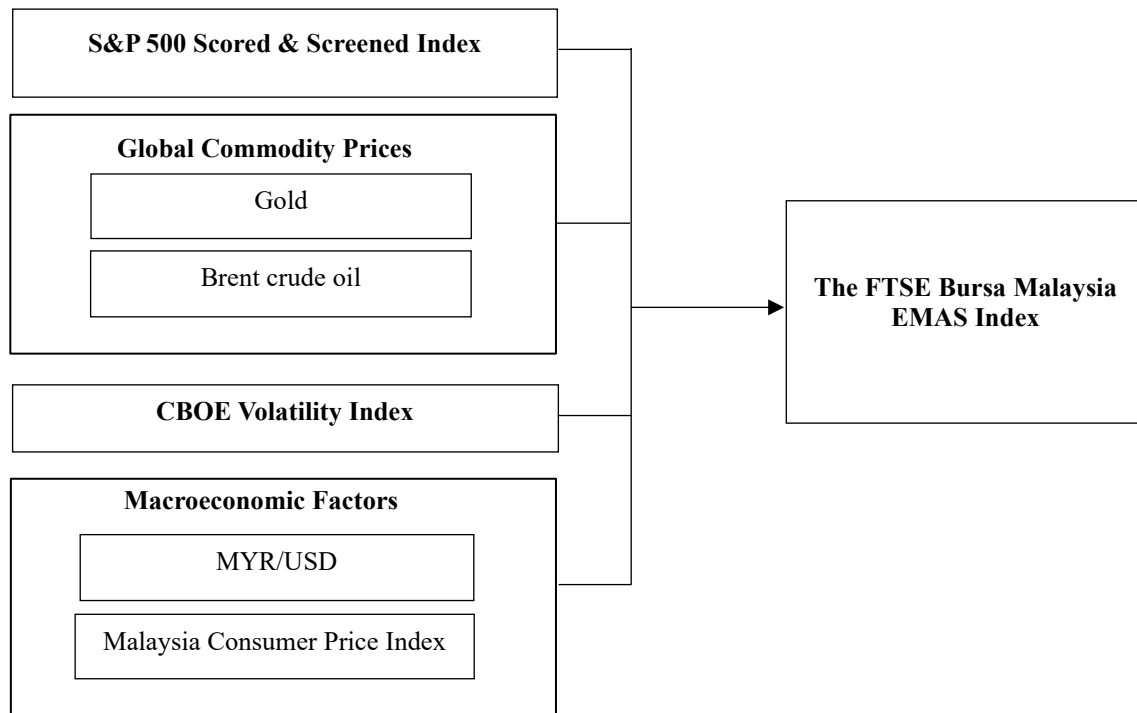


Figure 2 : The Impact of independent variables on the FTSE Bursa Malaysia EMAS Index

Research Hypotheses

From Figure 1 and 2, the following research hypotheses are formulated to address the research objectives.

- Hypothesis 1** S&P 500 Scored & Screened Index is positively correlated with the SET Index and FBMEMAS Index.
- Hypothesis 2** Gold is negatively correlated with the SET Index and FBMEMAS Index.
- Hypothesis 3** Brent crude oil is positively correlated with the SET Index and FBMEMAS Index.
- Hypothesis 4** CBOE Volatility Index is negatively correlated with the SET Index and FBMEMAS Index.
- Hypothesis 5** Exchange Rate is correlated with the SET Index and FBMEMAS Index.
- Hypothesis 6** Consumer Price Index is correlated with the SET Index and FBMEMAS Index.

Methodology

This study uses secondary time-series data collected on a monthly basis from the Investing.com and TradingView financial databases. The dataset comprises data from January 2017 to September 2025, totaling 105 observations. The independent variables comprise four categories. 1) the S&P 500 Scored & Screened Index (SP_ESG); 2) global commodity prices, represented by the gold price (GOLD) and Brent crude oil price (BRENT); 3) market uncertainty, measured with the CBOE Volatility Index (VIX); and 4) macroeconomic factors, represented by the Thai baht to US dollar exchange rate (THB/USD), Malaysian ringgit to US dollar exchange rate (MYR/USD), Thailand Consumer Price Index (THCPI), and Malaysia Consumer Price Index (MYCPI). Dependent variables are the Stock Exchange of Thailand Index (SET Index) and the FTSE Bursa Malaysia EMAS Index (FBMEMAS Index), which represent the stock market indices of Thailand and Malaysia, respectively.

The statistical analysis consists of two components: descriptive and inferential statistics. Descriptive statistics, including maximum, minimum, mean, and standard deviation (S.D.), were employed to summarize the characteristics of the studied variables. An inferential statistical method, specifically the multiple linear regression, was then employed to test the research hypotheses. Prior to the regression model estimation, a series of diagnostic tests, including the unit root test, the multicollinearity test, the autocorrelation test, and the heteroskedasticity test, was conducted to ensure that the underlying assumptions of the multiple regression analysis were not violated. In particular, the SET Index model employed Huber-White heteroskedasticity-robust

standard errors to obtain consistent and robust statistical inference. Following the diagnostic tests and necessary corrective procedures conducted, the regression model 1 and 2 were estimated to examine the effects of the four independent variables on the SET Index and the FBMEMAS Index, as illustrated below:

Model 1: SET Index

$$SET_t = \beta_0 + \beta_1 SP_ESG_t + \beta_2 GOLD_t + \beta_3 BRENT_t + \beta_4 VIX_t + \beta_5 THB_USD_t + \beta_6 THCPI_t + \varepsilon_t$$

Model 2: FTSE Bursa Malaysia EMAS Index

$$FBMEMAS_t = \beta_0 + \beta_1 SP_ESG_t + \beta_2 GOLD_t + \beta_3 BRENT_t + \beta_4 VIX_t + \beta_5 MYR_USD_t + \beta_6 MYCPI_t + \varepsilon_t$$

Where,

SET _t	= Stock Exchange of Thailand (SET) Index
FBMEMAS _t	= FTSE Bursa Malaysia EMAS (FBMEMAS) Index
SP_ESG	= S&P Scored and Screened Index
GOLD	= Gold Price
BRENT	= Brent crude oil price
VIX	= CBOE Volatility Index
THB_USD	= Thai baht per US dollar Exchange Rate
MYR_USD	= Malaysian ringgit per US dollar Exchange Rate
THCPI	= Thailand Consumer Price Index
MYCPI	= Malaysia Consumer Price Index
β ₀	= Constant Term
β ₁ – β ₆	= Regression Coefficient
ε	= Error term
t	= Time period, ranging from January 2017 to September 2025

Results and Discussion

Table 1 presents the descriptive statistics (i.e., the maximum, minimum, mean, and standard deviation) for all variables included in this study. The analyses can describe overall characteristics of the dataset and highlight any irregularity that may influence subsequent analyses.

Table 1 The descriptive statistics of all variables examined in this study

Variables	Unit	Maximum	Minimum	Mean	SD
SET Index	Index points	1,830.13	1,089.56	1,522.88	171.21
FBMEMAS Index	Index points	13,371.86	9,239.81	11,501.44	807.97
SP_ESG	USD	581.90	188.87	335.24	107.09
GOLD	USD/oz	3,858.41	1,190.40	1,839.23	572.92
BRENT	USD/barrel	116.21	25.92	70.22	16.75
VIX	Index points	53.54	9.51	18.93	7.27
THB_USD	THB per USD	37.99	29.72	33.15	1.89
	MYR per USD				
MYR_USD		4.77	3.86	4.29	0.21
THCPI	Index points	100.99	90.16	95.50	3.91
MYCPI	Index points	135.20	117.60	125.28	5.42

Among the stock market indices, the SET Index recorded values ranging from 1,089.56 to 1,830.13 points, with an average of 1,522.88 points and a standard deviation of 171.21, indicating moderate fluctuations during the studied time period. Similarly, the FBMEMAS Index ranged between 9,239.81 and 13,371.86 points with a mean value of 11,501.44 and a standard deviation of 807.97, suggesting greater variability than the SET Index.

The SP_ESG had a minimum value of 188.87 and a maximum value of 581.90, with a mean of 335.24 and a standard deviation of 107.09, indicating substantial variation over the sample period. Among the commodity price variables, gold prices ranged from USD 1,190.40 to USD 3,858.41 per ounce with an average of USD 1,839.23 and a relatively high standard deviation of 572.92, indicating considerable price volatility.

Brent crude oil prices varied between USD 25.92 and USD 116.21 per barrel, with a mean of USD 70.22 and a standard deviation of 16.75, reflecting significant fluctuations in global energy markets.

The VIX, which serves as a proxy for global market uncertainty, recorded values between 9.51 and 53.54 with a mean of 18.93 and a standard deviation of 7.27, suggesting periods of elevated financial market volatility.

Regarding the exchange rates, the THB/USD ranged from 29.72 to 37.99 with a mean of 33.15 and a standard deviation of 1.89, indicating relatively low exchange rate volatility over the sample period. The MYR/USD ranged from 3.86 to 4.77 with an average of 4.29 and a relatively low standard deviation of 0.21, indicating greater exchange rate stability than its counterpart during the studied time period.

Lastly, THCPI ranged from 90.16 to 100.99 with a mean of 95.50 and a standard deviation of 3.91, indicating relatively stable consumer prices over the sample period. Similarly, MYCPI ranged from 117.60 to 135.20 with a mean of 125.28 and a standard deviation of 5.42, also indicating relatively low variation throughout the studied time period.

Overall, the descriptive statistics indicate that the dataset exhibits sufficient variation across the hypothesized variables, supporting the suitability of subsequent multiple regression analysis to examine their effects on the SET Index and the FTSE Bursa Malaysia EMAS Index.

To examine the relationships among the independent (i.e., SP_ESG, gold prices, Brent crude oil prices, the VIX, exchange rate, and CPI) and dependent variables (i.e., the SET Index and the FBMEMAS Index), the inferential statistical technique, particularly the multiple linear regression analysis, was employed. The regression results, including the estimated coefficients, R-squared, Adjusted R-squared, F-Statistic, and significance levels, of the SET Index and the FBMEMAS Index are reported in Tables 2 and 3, respectively.

Prior to the multiple regression analysis, a series of preliminary diagnostic tests was conducted to verify the suitability of the data. First, the Augmented Dickey–Fuller (ADF) unit root test revealed that several variables were non-stationary in level. Accordingly, the variables were transformed using the first-difference approach to achieve stationarity. The results in Figure 3 show that all variables are non-stationary in levels, except for the VIX, which is stationary. To address the non-stationarity, the non-stationary variables are transformed using first difference and logarithmic transformations to reduce sensitivity to extreme values and focus the analysis on proportional changes.

Table 2 Results of ADF Unit Root Test for Stationarity

Variables	ADF Test Level	ADF Test First Difference	Order of Integration
SET	0.4481	0.0000**	I(1)
FBMEMAS	0.1883	0.0000**	I(1)
SP_ESG	0.9853	0.0000**	I(1)
GOLD	1.0000	0.0000**	I(1)
BRENT	0.3156	0.0000**	I(1)
VIX	0.0006	0.0000**	I(0)
THB_USD	0.1802	0.0000**	I(1)
MYR_USD	0.2711	0.0000**	I(1)
THCPI	0.8708	0.0000**	I(1)
MYCPI	0.9818	0.0000**	I(1)

** significant at 0.05 level

Second, multicollinearity was assessed using correlation coefficients and the Variance Inflation Factor (VIF). The results show that the correlation are below 0.80 and VIF values are below 10, indicating no evidence of serious multicollinearity among the independent variables. Third, the Durbin-Watson statistics (2.0544 for the SET Index model and 2.3447 for the FBMEMAS Index model) confirmed the absence of first-order autocorrelation. Finally, as heteroskedasticity was detected in the SET Index model, robust Huber-White standard errors were applied to obtain reliable statistical inference in the presence of heteroskedasticity, whereas no evidence of heteroskedasticity was found in the FBMEMAS Index model. Overall, the diagnostic test results supported the use of the models for subsequent multiple regression analysis.

Table 3 Multiple Regression Results for the relation between independent variables and the Stock Exchange of Thailand (SET) Index

Variables	Coefficient	Standard Error	t-Statistic	P-value
Constant	-0.0051	0.0120	-0.4232	0.6731
D(LOGSP_ESG)	0.3057	0.1016	3.0097	0.0033 ***
D(LOGGOLD)	-0.0733	0.1069	-0.6855	0.4946
D(LOGBRENT)	0.1544	0.0407	3.7933	0.0003 ***
VIX	0.0001	0.0006	0.1162	0.9078
D(LOGTHB_USD)	-0.4298	0.1661	-2.5880	0.0111 **
D(LOGTHCPI)	-1.6155	0.8200	-1.9701	0.0517 *
R-squared	0.4253	Adjusted R-squared		0.3897
Prob (F-statistic)	0.0000	Durbin-Watson		2.0544

*** significant at 0.01 level, ** significant at 0.05 level, * significant at 0.10 level

For the SET Index, the results indicate that the estimated model is statistically significant. The Prob (F-statistic) of 0.0000 indicates that at least one independent variable is significantly associated with the dependent variable and that the explanatory variables are jointly significant. The model reports an R-squared value of 0.4253 and an Adjusted R-squared of 0.3897, indicating that approximately 42.53% of the variation in the SET Index is explained by the independent variables included in the model. The remaining variation may be associated with other factors not captured by the model. The Durbin–Watson statistic of 2.0544 indicates no evidence of first-order autocorrelation in the residuals.

The regression results show that four independent variables are significantly associated with the SET Index. Specifically, S&P Scored & Screened Index (SP_ESG) and Brent crude oil price (BRENT) have positive coefficient of 0.3057 and 0.1544, respectively, both significant at the 0.01 level. In contrast, the THB/USD exchange rate (THB_USD) and Thailand Consumer Price Index (THCPI) have negative coefficients of -0.4298 and -1.6155, significant at the 0.05 and 0.10 level, respectively. Gold prices and the CBOE Volatility Index (VIX) are not statistically significant, indicating no evidence of a linear association with the SET Index. The relationships among the studied variables can be represented by the following model:

$$D(\text{LOGSET}_t) = -0.0051 + 0.3057D(\text{LOGSP_ESG}_t) - 0.0733D(\text{LOGGOLD}_t) + 0.1544D(\text{LOGBRENT}_t) + 0.0001(VIX_t) - 0.4298D(\text{LOGTHB_USD}_t) - 1.6155D(\text{LOGTHCPI}_t)$$

$$D(\text{LOGSET}_t) = 0.3057D(\text{LOGSP_ESG}_t)^{***} + 0.1544D(\text{LOGBRENT}_t)^{***} - 0.4298D(\text{LOGTHB_USD}_t)^{**} - 1.6155D(\text{LOGTHCPI}_t)$$

Further analysis to estimate factors influencing the performance of Malaysian stock market was then conducted. The results are presented in Table 4 below.

Table 4 Multiple Regression Results for the relation between independent variables and the FTSE Bursa Malaysia EMAS Index

Variable	Coefficient	Std. Error	t-Statistic	P-value
Constant	-0.0004	0.0084	-0.0534	0.9575
D(LOGSP_ESG)	0.2294	0.0700	3.2753	0.0015 ***
D(LOGGOLD)	0.1435	0.0717	2.0007	0.0482 **
D(LOGBRENT)	0.1009	0.0276	3.6613	0.0004 ***
VIX	-0.0002	0.0004	-0.4383	0.6622
D(LOGMYR_USD)	-0.1426	0.1500	-0.9508	0.3441
D(LOGMYCPI)	-0.2824	0.5877	-0.4805	0.6319
R-squared	0.4181	Adjusted R-squared		0.3821
Prob (F-statistic)	0.0000	Durbin-Watson		2.3447

*** significant at 0.01 level, ** significant at 0.05 level, * significant at 0.10 level

For the FBMEMAS Index, the results indicate that the estimated model is statistically significant. The Prob (F-statistic) of 0.0000 indicates that at least one independent variable is significantly associated with the dependent variable and that the explanatory variables are jointly significant. The model reports an R-squared value of 0.4181 and an Adjusted R-squared of 0.3821, indicating that approximately 41.81% of the variation in the FBMEMAS Index is explained by the independent variables included in the model. The remaining variation may be associated with other factors not captured by the model. The Durbin–Watson statistic of 2.3447 indicates no evidence of first-order autocorrelation in the residuals.

The regression results show that three independent variables are significantly associated with the FBMEMAS Index. Specifically, S&P Scored & Screened Index (SP_ESG) and Brent crude oil price (BRENT) have positive coefficients of 0.2294 and 0.1009, respectively, both significant at the 0.01 level. In addition, gold prices have a positive coefficient of 0.1435, significant at the 0.05 level. The CBOE Volatility Index (VIX), MYR/USD exchange rate (MYR_USD) and Malaysia Consumer Price Index (MYCPI) are not statistically significant, indicating no evidence of a linear association with the FBMEMAS Index. The relationships among the studied variables can be represented by the following model:

$$D(\text{LOGFBMEMAS}_t) = -0.0004 + 0.2294D(\text{LOGSP_ESG}_t) + 0.1435D(\text{LOGGOLD}_t) + 0.1009D(\text{LOGBRENT}_t) - 0.0002(\text{VIX}_t) - 0.1426D(\text{LOGMYR_USD}_t) - 0.2824D(\text{LOGMYCPI}_t)$$

$$D(\text{LOGFBMEMAS}_t) = 0.2294D(\text{LOGSP_ESG}_t)^{***} + 0.1435D(\text{LOGGOLD}_t)^{**} + 0.1009D(\text{LOGBRENT}_t)^{***}$$

Conclusions and Suggestion

The empirical findings reveal both common characteristics and market-specific dynamics in the Thai and Malaysian equity markets. Overall, the CBOE Volatility Index is the only variable with no statistically significant relationship with the two stock markets observed in this study. This result implies that changes in global market uncertainty, as measured by US stock market volatility, cannot sufficiently explain stock market movements in Thailand and Malaysia after controlling for other global and domestic factors. Hence, the following discussion focuses on other influencing factors, for which significant relationships are observed.

For the variables exhibiting statistically significant associated, the findings indicate that the S&P 500 Scored & Screened Index and Brent crude oil prices are significantly associated with stock market movements in both countries. However, the strength of these associated may differ across the two markets, potentially reflecting differences in economic structures, market compositions, and market conditions. In Malaysia, positive association between Brent crude oil prices and the stock market may be consistent with the country's position as a net oil exporter and the importance of the energy sector. Similarly, in Thailand, this association may be related to the significant representation of energy and petrochemical companies in the equity market.

The S&P 500 Scored & Screened Index is significantly associated with the performance of both the Stock Exchange of Thailand (SET) Index and the FTSE Bursa Malaysia EMAS Index, suggesting that movements in the global ESG equity market are reflected in the stock markets of both countries. This finding is

consistent with the increasing integration of ASEAN capital markets with international financial markets, where global market conditions, investor sentiment, and risk appetite may be reflected in regional stock market movements.

For the other variables exhibiting statistically significant associations, key differences between the two stock markets are noteworthy. First, gold prices exhibit a statistically significant positive association with the FTSE Bursa Malaysia EMAS Index, whereas no statistically significant association is observed with the Stock Exchange of Thailand (SET) Index. The absence of a statistically significant association with the SET Index suggests that gold price movements were not significantly related to Thai stock market movements during the study period. In contrast, the significant positive association observed in Malaysia indicates that movements in gold prices were significantly associated with movements in the Malaysian equity market during the study period. These differences indicate that the relationship between global commodity prices and stock market movements is not necessarily consistent across countries and may vary according to country-specific market characteristics, investment behavior, and the importance of commodities within each economy. Overall, the findings suggest that the association between gold prices and equity market movements varies across markets, highlighting the importance of considering market-specific characteristics when examining the relationship between commodity prices and stock market performance.

Second, macroeconomic sensitivity differs between the two countries. In Thailand, both the exchange rate (THB/USD) and Consumer Price Index (THCPI) exhibit statistically significant negative associations with the SET Index, whereas neither variable is statistically significant for the FTSE Bursa Malaysia EMAS Index. This difference may reflect country-specific economic structures, market characteristics, and macroeconomic conditions.

These findings indicate that the performance of the SET Index and the FTSE Bursa Malaysia EMAS Index is statistically associated with a range of systematic factors, including developments in the S&P 500 Scored & Screened Index, global commodity prices, market volatility as represented by the VIX, and macroeconomic conditions. The findings therefore suggest that stock market performance is associated with multiple dimensions of market-wide and macroeconomic conditions, rather than with a single factor alone. From a theoretical perspective, this pattern is consistent with the Arbitrage Pricing Theory (APT) proposed by Ross (1976), which provides a multi-factor framework for understanding asset returns in relation to systematic risk factors. Accordingly, the findings are consistent with a multi-factor perspective for interpreting the performance of the Thai and Malaysian stock markets.

Overall, the comparative findings suggest that although Thailand and Malaysia are both emerging ASEAN markets exposed to global financial conditions, their stock markets exhibit different relationships with various economic and financial factors. These differences highlight the importance of country-specific market characteristics, including market composition, investor behavior, and economic structures, in understanding the heterogeneous relationships observed across the two equity markets. While some factors, such as the S&P 500 Scored & Screened Index and Brent crude oil prices, show similar positive associations with both markets, other variables, including gold prices, exchange rates, and inflation, exhibit different statistical relationships across Thailand and Malaysia. Therefore, recognizing the heterogeneous responses of individual stock markets to global and domestic factors is important for investors and policymakers when evaluating market conditions and developing appropriate investment and policy strategies.

1. Recommendations for Practical Implications

From a practical perspective, the significant positive association suggests the relevance of the S&P 500 Scored & Screened Index and Brent crude oil prices to the movements of both markets. Listed companies in Thailand and Malaysia may strengthen ESG disclosure and transparency to align with international sustainable investment practices. Investors may also monitor global ESG equity benchmarks and Brent crude oil prices as part of a broader set of indicators reflecting international market conditions, investor sentiment, and developments in global commodity markets. However, these considerations should be interpreted alongside other relevant market and economic factors, as the observed associations indicate relationships between the variables.

For Thailand, the significant results for the exchange rate and CPI suggest that investors and listed companies should pay greater attention to Thai baht fluctuations and domestic price pressures when assessing market conditions and investment risks.

2. Recommendations for Practical Implications

For policymakers in Thailand and Malaysia, the significant association between the S&P 500 Scored & Screened Index (SP_ESG) and both domestic markets suggests the importance of monitoring global ESG investment trends and strengthening sustainable finance frameworks. Policymakers in both countries may

promote ESG disclosure and transparency to enhance alignment with international sustainable investment practices.

3. Recommendations for Future Research

Future research could incorporate additional variables that may explain market movements, such as interest rates, foreign capital flows, and industry-specific factors. It could also examine structural breaks associated with major events during 2017–2025, such as the COVID-19 pandemic, major geopolitical conflicts, and global energy price shocks. These approaches may provide a more comprehensive understanding of the factors influencing the markets of Thailand and Malaysia.

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