

Global Energy Market Factors, Global Economic Policy Uncertainty, and Macroeconomic Factors Affecting Thailand's SET Energy and Utilities Index

Pornwan Nunthaphad¹

Received: 10 August 2026 Revised: 30 August 2026 Accepted: 31 August 2026

Abstract

This study aims to examine the combined impacts of external factors at the international level on the SET Energy and Utilities Index (SETENERG) of the Stock Exchange of Thailand. Three independent variables include (1) global energy market, measured by the Crude Oil Volatility Index (OVX), the European Union Emissions Trading System (EU ETS) and the MSCI World Energy Index (MSCI_ENERGY); (2) Global Economic Policy Uncertainty Index (GEPU); and (3) macroeconomic factors, measured by the 10-year U.S. Treasury bond yield (US10Y) and the Thai baht to US dollar exchange rate (THB/USD). Time-series data were collected on a monthly basis for 114 months from April 2016 to October 2025 and analyzed with the Multiple Regression. The results indicate that OVX, MSCI_ENERGY, and US10Y have positive and statistically significant associations with SETENERG. In contrast, THB/USD has a negative and statistically significant association with SETENERG. EU ETS and GEPU do not exhibit statistically significant associations with SETENERG during the study period. These findings provide valuable insights for investors, policymakers, and other market participants into the relationships between global energy market factors, global economic policy uncertainty, and macroeconomic factors and the SET Energy and Utilities Index of Thailand.

Keywords: SET Energy and Utilities Index, Crude Oil Volatility Index, European Union Emissions Trading System, MSCI World Energy Index, Global Economic Policy Uncertainty, Macroeconomic Factors

¹ Faculty of Business Administration, Kasetsart University, Bangkok, Thailand

Corresponding author: pornwan.n@ku.th

Introduction

The Energy and Utilities sector is one of the major industry groups listed on the Stock Exchange of Thailand (SET), playing an important role in Thailand's capital market and economy. Owing to its economic significance and market size, the sector attracts considerable attention from both domestic and international investors. Consequently, movements in the Energy and Utilities sector index reflect changes in stock prices within the sector and may provide useful information for analyzing Thai capital market performance. However, the sector is highly exposed to external influences, including global energy market developments, economic policy uncertainty, and macroeconomic conditions, all of which may contribute to fluctuations in the Energy and Utilities sector index.

Among these influential factors, oil prices have received considerable attention because of their close relationships with economic activities and financial markets. Hamilton (1983) demonstrated that increases in oil prices contributed to nearly every U.S. recession during the post-World War II period, highlighting the important role of oil price fluctuations in shaping macroeconomic conditions. Extending this perspective to financial markets, Kilian and Park (2009) showed that the impact of oil price shocks on stock markets depends on the underlying source of the shock, such as aggregate demand, oil supply disruptions, or precautionary demand. Similarly, Park and Ratti (2008) reported that oil price changes significantly influence stock returns, although the magnitude and direction of these effects differ across countries. These findings indicate that the effect of oil market developments on stock markets are country-specific and depend on the economic and financial characteristics of each market.

Given Thailand's reliance on global energy markets and the substantial market capitalization of the Energy and Utilities sector in the Stock Exchange of Thailand (SET), fluctuations in global energy conditions are expected to have important implications for the sector's stock performance. In recent years, Thailand's Energy and Utilities sector has experienced increasing exposure to external shocks arising from fluctuations in global crude oil prices, the transition toward low-carbon

energy systems, stricter environmental regulations, and growing uncertainty from both international and domestic factors. These conditions have contributed to greater volatility in energy-related stock prices, potentially affecting investor expectations and market stability. Consequently, identifying the factors that drive movements in the Energy and Utilities sector index has become increasingly important for investors, policymakers, and other market participants.

Nevertheless, the external environment surrounding the Energy and Utilities sector extends beyond fluctuations in oil prices alone. To capture the multiple dimensions of uncertainty relevant to the sector, this study considers three groups of external factors. The first group comprises global energy market factors, represented by the CBOE Crude Oil Volatility Index (OVX), the European Union Emissions Trading System (EU ETS), and the MSCI World Energy Index (MSCI_ENERGY). The OVX serves as a proxy for uncertainty in the crude oil market and measures the 30-day expected volatility of crude oil prices based on options on the United States Oil Fund (USO). The EU ETS represents developments in carbon pricing and the global transition toward a low-carbon energy system. The MSCI World Energy Index captures broader movements in global energy equity markets and provides a reference for developments in the international energy sector. The second group comprises global economic policy uncertainty, represented by the Global Economic Policy Uncertainty Index (GEPU), which reflects uncertainty surrounding economic and policy conditions at the global level. The third group comprises macroeconomic factors, represented by the 10-year U.S. Treasury yield (US10Y) and the Thai baht to US dollar exchange rate (THB/USD), which reflect international financial conditions and exchange-rate dynamics relevant to the Thai market. Taken together, these variables represent multiple dimensions of the external environment surrounding Thailand's Energy and Utilities equity market.

Although previous studies have examined the relationship between oil prices and stock market performance, relatively limited attention has been given to the relationships between global energy market indicators, global economic policy uncertainty, and macroeconomic factors within a specific sector and national market context. In particular, evidence remains limited on how these multiple dimensions of

external conditions are associated with the performance of Thailand's Energy and Utilities equity market. This gap highlights the need for a sector-specific investigation that considers the specific exposure of the Energy and Utilities sector to global energy and financial conditions, rather than relying on oil prices as a single indicator of external market conditions.

By integrating these indicators within a sector-specific framework, the study provides a more comprehensive understanding of the external factors associated with movements in Thailand's Energy and Utilities equity market. The findings are expected to contribute to the literature by providing sector-specific evidence on the relationships between the Thai Energy and Utilities equity market and global energy market conditions, economic policy uncertainty, and macroeconomic factors. The findings may also useful information for investors, policymakers, and other market participants in assessing external risk exposure and sector-specific market dynamics.

Research Objective

The purpose of this study is to examine the relationships between the SET Energy and Utilities Index and three groups of external factors: (1) global energy market factors, represented by the COBE Crude Oil Volatility Index (OVX), the European Union Emissions Trading System (EU ETS), and the MSCI World Energy Index (MSCI_ENERGY); (2) global economic policy uncertainty, represented by the Global Economic Policy Uncertainty Index (GEPU); and (3) macroeconomic factors, represented by the U.S. 10-year Treasury yield and the THB/USD exchange rate.

Literature Review

Global energy markets play a crucial role in determining the performance of energy-related companies due to their direct influence on production costs, revenue expectations, and investment decisions. Unlike conventional stock market sectors, the Energy and Utilities sector is particularly sensitive to changes in global energy conditions because the profitability of firms within this sector is closely associated with energy prices, economic uncertainty, and global energy market developments.

Therefore, several global energy market indicators have been proposed as important factors for explaining movements in energy sector stock prices. This study considers three key indicators, including oil price volatility, carbon market conditions, and global energy industry performance, represented by the CBOE Crude Oil Volatility Index (OVX), the European Union Emissions Trading System (EU ETS), and the MSCI World Energy Index (MSCI_ENERGY), respectively.

Among these global energy market indicators, the OVX is widely recognized as a measure of expected crude oil price volatility. Fluctuations in oil price volatility can influence production costs, inflation expectations, corporate profitability, and investment decisions across industries. These effects are particularly pronounced in the energy sector, where corporate revenues and earnings are closely linked to crude oil price movements. Several empirical studies have documented significant relationships between the OVX and stock market performance. Previous studies found that oil price volatility had a significantly negative effect on stock market returns, suggesting that higher oil market uncertainty increases financial market risk and negatively affects investors' expectations. These effects may be particularly relevant for energy-related stocks as firms in this sector are directly exposed to fluctuations in crude oil markets (Xingguo & Shihua, 2017). However, empirical evidence remains mixed across different markets. For example, Mim et al. (2025) examined three Indian energy indices and found that oil price volatility had a positive effect on the BSE Oil and Gas index, but negative effects on the CNX Energy and BSE Power indices during 2010 – 2023. Their findings suggest that the impact of oil price volatility may depend on the characteristics of each energy market. Given the strong linkage between Thailand's Energy and Utilities sector and global crude oil markets, this study hypothesizes that oil price volatility, measured by the OVX, has a negative correlation with the SET Energy and Utilities Index (SETENERG).

In addition, the global transition toward cleaner energy and the execution of stricter environmental policies have increasingly influenced strategies and operating conditions of energy-related firms. Beyond oil price volatility, other global energy market indicators may also provide important information regarding factors affecting the energy sector stock performance. The European Union Emissions Trading System

(EU ETS) is one of the world's largest carbon pricing mechanisms. The price of European Union Allowances (EUAs), which represents the cost of emitting one tonne of carbon dioxide equivalent (tCO_2e), reflects changes in carbon market conditions and regulatory stringency. Environmental policies, particularly cap-and-trade mechanisms such as the EU ETS, can influence corporate valuation and stock prices by affecting firms' cost structures, profitability, risk exposure, and expected cash flows. These changes ultimately shape investment decisions and investor behavior in capital markets. Consistent with this view, Oestreich and Tsiakas (2015) found that German firms receiving free emission allowances under the EU ETS significantly outperformed those receiving fewer or no allowances. This positive effect was primarily attributed to higher expected cash flows resulting from lower compliance costs and the economic value of freely allocated emission allowances. Therefore, the EU ETS may influence the valuation of energy companies and, consequently, may have a positive association with the SETENERG Index.

Furthermore, the MSCI World Energy Index (MSCI_ENERGY) represents the performance of the global energy sector and serves as an indicator of international investor sentiment toward energy-related stocks. Changes in this index may capture global trends in energy investment and create spillover effects on regional energy markets, including Thailand. Previous studies have shown that global energy market conditions, particularly oil price movements, significantly affect energy sector stock returns. Arouri and Nguyen (2010), for example, found that favorable oil price movements positively influence energy sector stock returns in Europe. This finding suggests that favorable developments in global energy markets can improve the valuation and performance of energy companies, providing support for the potential transmission of global energy market conditions to domestic energy stock indices. Given that the MSCI_ENERGY may reflect changes in global energy market conditions and investor sentiment, it may subsequently influence the SETENERG. Therefore, this study hypothesizes that the MSCI_ENERGY is positively associated with the SETENERG Index.

Apart from global energy market factors, global economic policy uncertainty has become an important source of risk in financial markets. The Global Economic

Policy Uncertainty Index (GEPU) was developed by Davis (2016) as a global extension of the Economic Policy Uncertainty (EPU) Index previously introduced by Baker et al. (2016). The EPU Index captures uncertainty associated with economic policies and regulatory changes, including fiscal policy, monetary policy, taxation, and trade regulations. Such uncertainties may influence firms' expectations regarding future cash flows, profitability, and investment decisions. The GEPU then extends this concept to the global level by aggregating country-specific EPU indices and weighting them according to Gross Domestic Product at Purchasing Power Parity (PPP-adjusted GDP), thereby reflecting uncertainty in the global economic policy environment. An increase in GEPU reflects greater uncertainty in the global economic environment, which may increase investor risk aversion, delay investment activities, and negatively affect stock market performance, especially in emerging markets. Adam and Yacob (2022) examined the effects of GEPU on ASEAN stock markets and found it having a considerable negative impact on the Jakarta Stock Exchange, Kuala Lumpur Composite Index, and Stock Exchange of Thailand. Sethapramote (2021) found that an increase in GEPU significantly reduced Thai stock market returns. The study suggested that higher uncertainty increased investors' risk perception, leading to lower investment in equity markets and greater selling pressure. Together, these findings indicate that GEPU is negatively associated with the performance of the SETENERG Index.

Despite providing some evidences of the negative effects, the previous studies focused primarily on the impact of GEPU on the SET Index. However, limited research has examined the effects of GEPU on the SET energy and utilities index in particular. This current study attempts to narrow this knowledge gap by providing further evidence on the vulnerability and resilience of the Thai energy and utilities sector under global policy uncertainty. Given that the sector is an important component of the Thai stock market and is highly sensitive to global economic conditions, increases in GEPU may negatively influence the energy sector stock performance through higher risk perceptions, reduced investor confidence, and weaker expectations regarding future economic conditions. Accordingly, this study hypothesizes a negative association between the GEPU and the SETENERG Index.

Besides, global financial conditions also play an important role in determining asset valuations, investment decisions, and capital market dynamics. Among global financial indicators, the 10-year U.S. Treasury yield (US10Y) is widely recognized as a key measure of global financial conditions, reflecting changes in monetary policy expectations, economic outlook, and international capital movements. The US10Y serves as a benchmark for the risk-free rate in financial asset valuation. Changes in US10Y affect equity valuation through the discount rate channel as higher yields may increase the required rate of return and reduce the present value of future cash flows. However, changes in US10Y may also reflect market expectations regarding economic growth and future demand conditions. In the Thai context, Rungthanacharoen et al. (2025) found that the US10Y significantly influenced the SET Index, indicating that changes in global financial conditions can be transmitted to the Thai stock market. However, the effect of US10Y on sector-specific indices, like the energy sector, remains underexplored. Therefore, this study extends previous literature by examining the impact of US10Y on the SETENERG, hypothesizing a positive relationship between them.

In addition to the US10Y, exchange rate movements are another important macroeconomic factor influencing the stock market performance. The THB/USD exchange rate reflects international capital flows, external economic conditions, and the competitiveness of domestic firms in global markets. For the energy sector, exchange rate fluctuations are particularly important because many energy commodities are traded internationally and denominated in U.S. dollars. Changes in the exchange rate may affect import costs, operating expenses, and expected profitability of energy companies, thereby influencing stock valuations. In the Thai context, empirical evidence suggests that exchange rate movements are associated with the performance of energy and utility stock as currency depreciation may increase energy-related costs and affect firm profitability. Thirachanidasap and Koowattanatianchai (2019) found that a depreciation of the Thai baht increases energy import costs, thereby reducing the returns of energy sector stocks. The finding, of course, highlights the importance of exchange rate risk in the performance of the SETENERG.

Based on this literature review, existing studies have examined the influences of external factors on the domestic stock market performance. Even then, most have focused primarily on individual economic factors and broad market indices while the combined effect of various external factors on the sectoral stock price index has not been sufficiently explored. Therefore, this study narrows this knowledge gap by examining the influence of energy-related market conditions, global uncertainty, and financial factors particularly on the Thai energy sector to provide a more comprehensive understanding of the determinants of energy sector stock price movements and offer useful implications for investors, policymakers, and market participants in managing risks under an increasingly uncertain global economic environment.

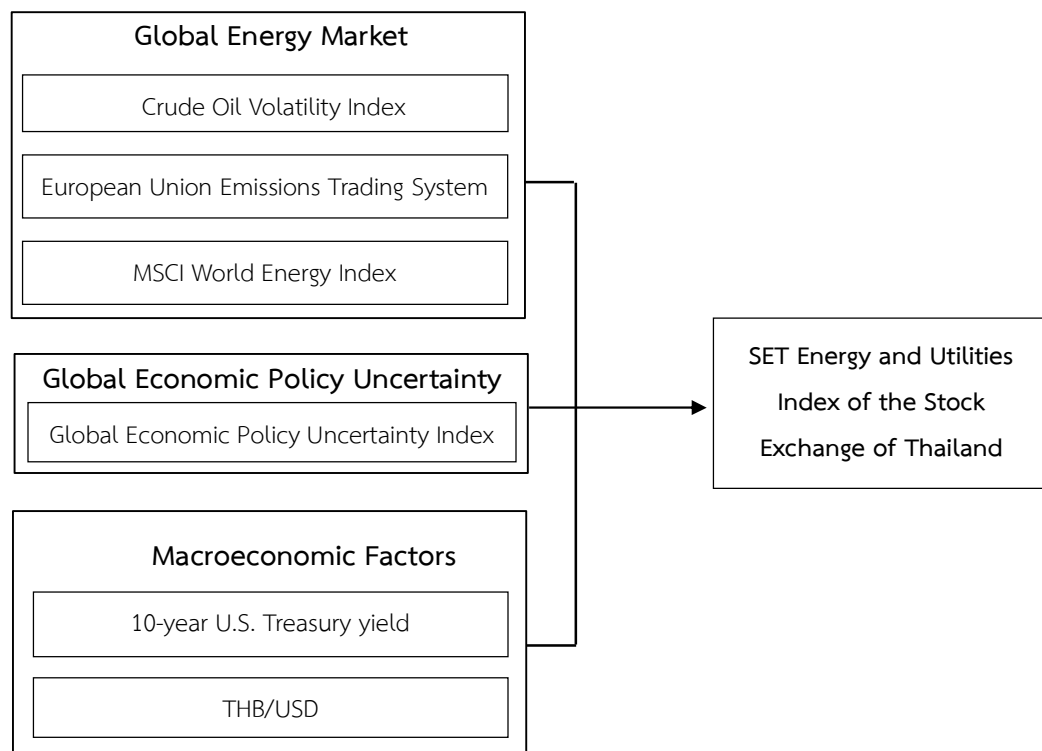


Figure 1 Conceptual Framework Research

Research Hypotheses

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

Hypothesis 1 Crude Oil Volatility Index (OVX) is negatively correlated with the SET Energy and Utilities Index (SETENERG).

Hypothesis 2 European Union Emissions Trading System (EU ETS) is positively correlated with the SET Energy and Utilities Index (SETENERG).

Hypothesis 3 MSCI World Energy Index (MSCI_ENERGY) is positively correlated with the SET Energy and Utilities Index (SETENERG).

Hypothesis 4 Global Economic Policy Uncertainty Index (GEPU) is negatively correlated with the SET Energy and Utilities Index (SETENERG).

Hypothesis 5 10-year U.S. Treasury yield (US10Y) is positively correlated with the SET Energy and Utilities Index (SETENERG).

Hypothesis 6 Exchange rate is negatively correlated with the SET Energy and Utilities Index (SETENERG).

Research Methods

This study uses secondary time-series data collected on a monthly basis. The dataset comprises data from April 2016 to October 2025, totaling 114 observations. Three independent variables include (1) global energy market (i.e., the OVX, the EU ETS, and the MSCI_ENERGY); (2) the GEPU; and (3) macroeconomic factors (i.e., US10Y and the THB/USD). Dependent variables are the SET Energy and Utilities Index (SETENERG) of Thailand. OVX, EU ETS, MSCI_ENERGY, US10Y and THB/USD were collected from investing.com. GEPU was downloaded from policyuncertainty.com while SETENERG was downloaded from set.or.th.

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. Following the diagnostic tests and necessary corrective procedures, the regression model was estimated to examine the relationships between the hypothesized independent variables and the SET Energy and Utilities Index, as illustrated below:

$$\text{SETENERG}_t = \beta_0 + \beta_1 \text{OVX}_{t-1} + \beta_2 \text{EU_ETS}_t + \beta_3 \text{MSCI_ENERGY}_t + \beta_4 \text{GEP}_{t-1} + \beta_5 \text{US10Y}_t + \beta_6 \text{THB_USD}_t + \varepsilon_{i,t}$$

Where,

SETENERG _t	= SET Energy and Utilities Index at time t
OVX _{t-1}	= Crude Oil Volatility Index at time t-1
EU ETS _t	= European Union Emissions Trading System at time t
MSCI_ENERGY _t	= MSCI World Energy Index at time t
GEP _{t-1}	= Global Economic Policy Uncertainty Index at time t-1
US10Y _t	= 10-year U.S. Treasury yield at time t
THB_USD _t	= Thai Baht per U.S. Dollar Exchange Rate at time t
β ₀	= Constant Term
β ₁ – β ₆	= Regression Coefficient
ε	= Error Term
t	= Time period, ranging from from April 2016 to October 2025

Research Results

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 used in this study

Variables	Unit	Maximum	Minimum	Mean	SD
SETENERG	Index points	894.48	448.67	662.17	113.99
OVX	Index points	170.55	21.32	39.34	17.11
EU ETS	EUR/tCO ₂ e	95.88	4.41	44.79	30.15
MSCI_ENERGY	Index points	266.48	97.28	208.92	41.96
GEPV	Index points	628.12	126.95	239.95	82.18
US10Y	Percentage	4.93	0.53	2.68	1.19
THB_USD	THB/USD	38.05	29.76	33.33	1.90

From Table 1, the dependent variable, SETENERG, records the minimum value of 448.67 points and the maximum of 894.48 points, with the mean 662.17.

For the global energy market factors, the OVX records the minimum value of 21.32 points and the maximum 170.55 with the mean 39.34. The EU ETS records the minimum value of 4.41 EUR/tCO₂e and the maximum 95.88 with the mean 44.79. The MSCI_ENERGY records the values from 97.28 to 266.48 points, with the mean of 208.92.

The global uncertainty factor, or the GEPV records the minimum value of 126.95 points and the maximum 628.12, with the mean 239.95.

Finally, for macroeconomic factors, the US10Y records the minimum value of 0.53% and the maximum 4.93%, with the mean 2.68%. The values of THB/USD range from 29.76 to 38.05 THB/USD, with an average of 33.33.

From the descriptive statistics reported above, values of the studied variables, including SETENERG, OVX, EU ETS, MSCI_ENERGY, GEPV, US10Y, and THB/USD, have relatively large S.D., ranging from 113.99, 17.11, 30.15, 41.96, 82.18, 1.19 to 1.90, and show relatively large range (max – min), as reported above. Overall, these values illustrate somewhat high fluctuations the values of the studied variables during the studied time period.

Inferential Statistics

To examine the relationships between the independent (i.e., OVX, EU ETS, MSCI_ENERGY, GEPU, US10Y, and THB/USD) and dependent variables (i.e., SETENERG), the inferential statistical technique, particularly the multiple linear regression analysis, was employed.

Prior to the multiple regression analysis, a series of preliminary diagnostic tests was performed to ensure that the underlying assumptions of the regression model were satisfied. The first diagnostic test assessed the stationary of the data using the Augmented Dickey–Fuller (ADF) unit root test. The results indicated that all variables, except for OVX and GEPU, were non-stationary at their levels. Therefore, the EU ETS, MSCI_ENERGY, US10Y, THB/USD and SETENERG were transformed using the first-difference procedure to achieve stationary (Table 2).

Table 2 Results of ADF Unit Root Test for Stationary

Variable	At Level		At First Difference		Order of Integration
	t-Statistic	Prob	t-Statistic	Prob	
SETENERG	-2.077384	0.2542	-10.35190	0.0000	I(1)
OVX	-5.481537	0.0000	-	-	I(0)
EU ETS	-0.979960	0.7586	-12.23123	0.0000	I(1)
MSCI_ENERGY	-1.452935	0.5538	-12.24984	0.0000	I(1)
GEPU	-3.560383	0.0081	-	-	I(0)
US10Y	-0.025536	0.7769	-9.972646	0.0000	I(1)
THB/USD	-2.228154	0.1976	-10.55118	0.0000	I(1)

Second, multicollinearity was assessed using correlation coefficients and the Variance Inflation Factor (VIF). The results showed that the correlation were below 0.80 and the VIF values were below 10, indicating no evidence of serious multicollinearity among the independent variables. Third, the Durbin–Watson (DW) statistic for the SETENERG model was 2.0799, indicating the absence of first-order autocorrelation.

Finally, the presence of heteroskedasticity was examined using the Breusch-Pagan-Godfrey test. The results indicated that there was no evidence of heteroskedasticity in the SETENERG model, suggesting that the variance of the error terms was constant. After confirming that all underlying assumptions were satisfied, the regression analysis was conducted. The results are presented in Table 2.

Table 3 The impact of independent variables on the SET Energy and Utilities Index (SETENERG)

Variable	Coefficient	Std. Error	t-Statistic	P-value	
Constant	-7.4348	8.7777	-0.8470	0.3989	
OVX(-1)	0.4661	0.1603	2.9078	0.0044	***
D(EU ETS)	0.0520	0.5280	0.0986	0.9217	
D(MSCI_ENERGY)	1.1420	0.2063	5.5354	0.0000	***
GEPUS(-1)	-0.0555	0.0339	-1.6393	0.1041	
D(US10Y)	39.4685	11.4004	3.4620	0.0008	***
D(THB_USD)	-38.0815	3.8264	-9.9523	0.0000	***
R-squared	0.6426	Adjusted R-squared		0.6226	
Prob (F-statistic)	0.0000	Durbin-Watson		2.0799	

*** significant at .01 level, ** significant at .05 level, * significant at .10 level

From the regression analysis, 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 0.6426 and an Adjusted R-squared of 0.6226, indicating that approximately 64.26% of the variation in the SETENERG is explained by the independent variables included in the model. The remaining 35.74% of the variation is attributable to other factors not captured by the model. The Durbin-Watson statistic of 2.0799 indicates no evidence of first-order autocorrelation in the residuals.

The regression results show that four independent variables are significantly associated with the SETENERG Index. Specifically, Crude Oil Volatility Index (OVX),

MSCI World Energy Index (MSCI_ENERGY) and 10-year U.S. Treasury yield (US10Y) have positive coefficient of 0.4661, 1.1420 and 39.4685, respectively, all of which are statistically significant at the 0.01 level. In contrast, the Thai baht to US dollar exchange rate (THB/USD) has a negative coefficients of -38.0815, which is statistically significant at the 0.01 level. The European Union Emissions Trading System (EU ETS) and Global Economic Policy Uncertainty Index (GEPU) are not statistically significant, indicating no statistically significant linear association with the SETENERG Index.

Notably, the coefficient of OVX is positive, contrary to the hypothesized negative relationship. As discussed in the Literature Review, previous empirical evidence on the relationship between oil price volatility and stock market performance is mixed (Mim et al., 2025), suggesting that the direction and magnitude of this relationship may vary depending on the characteristics of individual market. In the context of the SETENERG Index, the positive relationship observed in this study may therefore reflect other market-specific factors. However, the attempt to identify these factors is out of the current research scope, but this issue can be examined in research in the future. More details are discussed in the Conclusion and Suggestions.

Based on the regression results, the estimated regression equation for the SET Energy and Utilities Index is presented as follows.

$$D(\text{SETENERG}_t) = -7.4348 + 0.4661(\text{OVX}_{t-1}) + 0.0520D(\text{EU ETS}_t) + 1.1420D(\text{MSCI_ENERGY}_t) - 0.0555(\text{GEPU}_{t-1}) + 39.4685(\text{US10Y}_t) - 38.0815D(\text{THB_USD}_t)$$

$$D(\text{SETENERG}_t) = 0.4661(\text{OVX}_{t-1})^{***} + 1.1420D(\text{MSCI_ENERGY}_t)^{***} + 39.4685(\text{US10Y}_t)^{***} - 38.0815D(\text{THB_USD}_t)$$

Research Discussion

This study examines the relationships between the SET Energy and Utilities Index in Thailand and three groups of external factors: (1) global energy market factors, represented by the COBE Crude Oil Volatility Index (OVX), the European Union Emissions Trading System (EU ETS), and the MSCI World Energy Index); (2) global economic policy uncertainty, represented by the Global Economic Policy

Uncertainty Index (GEPV); and (3) macroeconomic factors, represented by the U.S. 10-year Treasury yield and the THB/USD exchange rate. The multiple regression analysis results are consistent with the research hypotheses in terms of significant effects of four independent variables, including the Crude Oil Volatility Index, the MSCI World Energy Index, the 10-year U.S. Treasury yield, and the THB/USD exchange rate.

However, it is noted that crude oil Volatility Index (the first independent variable) have the positive associated with the SETENERG Index, contrary to the hypothesized negative relationship. There are some possible reasons for this different result. For example, this finding may be explained by the specific characteristics of Thailand's Energy & Utilities sector. Unlike the broader SET Index, the SETENERG Index consists largely of energy-related firms with direct exposure to the oil market. In particular, the upstream sector, including companies engaged in petroleum exploration and production, represents a relatively large proportion of the sector. These companies can usually profit from rapid oil price increase conditioned, for example, by tight supply and geopolitical conflicts. In this case, oil price volatility may be perceived not only as a source of risk but also as an opportunity for energy companies, which may contribute to the positive relationship between OVX and the SETENERG Index.

Another point to note is that the significant effects of the European Union Emissions Trading System and the Global Economic Policy Uncertainty Index were not observed as previously hypothesized. Probably, the limited effect of the former can be attributed to the relatively early stage of carbon pricing mechanisms and environmental regulations in Thailand, and the latter to stronger effects of some other domestic factors or firm-specific fundamentals.

Other than these, the results are consistent with the hypotheses. For the significant effect of the MSCI World Energy Index, an increase in this index also increases the Thai energy stock market performance. That is to say, Thai energy stocks tend to move in the same direction as global energy market conditions. This consistent movement direction implies the integration of the domestic energy stock market into the international. Next, the 10-year U.S. Treasury bond yield is found having positive impact on the SET Energy and Utilities Index. This demonstrates the

influence of global financial conditions on the Thai energy stock market. It also shows that rising U.S. Treasury yields can signal stronger global economic conditions and improve future demand expectations. These conditions then support Thai energy sector performance. Finally, the significant negative relationship between Thai baht-U.S. dollar exchange rate and the SET Energy and Utilities Index represents the adverse effects of Thai currency depreciation. These may occur through increased import costs for energy-related businesses and potential capital outflows from foreign investors, which may reduce demand for Thai energy stocks.

New Knowledge

The findings of this study contribute to the literature on the relationship between global energy index and the SET Energy and Utilities Index. In particular, the significant positive effect of crude oil prices on the SET Energy and Utilities Index suggests that an increase in global oil prices is associated with improved performance of the Thai energy sector. This finding may be explained by the structure of the energy sector, particularly the relatively large share of upstream energy companies. Higher crude oil prices can probably be considered the opportunity, which could then yield higher revenues, and profitability of upstream firms, resulting in higher expected future cash flows and, consequently, higher stock valuations.

Beyond global energy prices, the findings also indicate that the SET Energy and Utilities Index is significantly influenced by several other global market and macroeconomic factors, including the MSCI World Energy Index, the U.S. 10-year Treasury yield, and the Thai baht-U.S. dollar exchange rate. These findings suggest that the performance of the Thai energy stock market is influenced by multiple systematic factors, extending beyond developments in the energy market alone. This perspective is consistent with the Arbitrage Pricing Theory (APT) proposed by Ross (1976), which posits that asset returns are influenced by multiple systematic risk factors rather than a single underlying factor. Accordingly, the findings extend the existing literature by demonstrating the relevance of a multi-factor framework for explaining the performance of the Thai energy stock market, in which global market

conditions and macroeconomic factors jointly contribute to sector-level stock performance.

Research Suggestions

Based on the empirical findings presented in the Inferential Statistics section and the discussion above, two main areas for future research are proposed. The first concerns the unexpected positive relationship between the Crude Oil Volatility Index (OVX) and the SET Energy and Utilities Index (SETENERG), while the second concerns the statistically insignificant associations of the European Union Emissions Trading System (EU ETS) and the Global Economic Policy Uncertainty Index (GEPU) with the SETENERG Index.

First, future research may further examine differences across energy subsectors or identify country-specific factors to better understand the transmission of oil market uncertainty to energy stock performance. Considering this, investors should consider the characteristics and structures of the energy sector across countries when assessing the implication of oil market uncertainty on energy stocks. Oil price volatility should not always be viewed as a risk factor as its association with energy stock performance may vary depending on firms' business structures, market position, and exposure to the oil market.

Second, the possible explanations for the statistically insignificant associations of the European Union Emissions Trading System and the Global Economic Policy Uncertainty Index (i.e., early stage of carbon pricing mechanisms and environmental regulations in Thailand and stronger influence of some other domestic factors or firm-specific fundamentals) are indeed just the propositions based on currently available facts. Even so, there has been no empirical evidence to confirm whether these conditions can actually contribute to such unexpected results, and these issues are not initially set in the current research scope. Thus, it is advisable that future research examine these issues.

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