

**MACROECONOMIC FACTORS INFLUENCING STOCK MARKET INDEX:
CASE STUDY IN THAILAND**

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ABSTRACT

Stock market is considered an important part of the economy. The stock market is believed that it can influence or affect the economy of the country. The factors that can possibly affect the stock market are studied in several researches in order to forecast or support the investment decision in the stock market. Hence, this study is intended to explore the relationship between macroeconomic factors and stock market index in Thailand for the period of 2010-2020. The macroeconomic factors of the study include oil price, export value, and the real exchange rate. The study applies the multiple regression analysis to examine the relationship. The research result shows that all three variables have a significant impact on the stock market index of Thailand. The most impact factor is export value and the least impact factor is oil price. The research result would assist the financial investors to consider the macroeconomic factors for their investment decisions in the stock market.

KEYWORDS: Stock market index, oil price, export value, real exchange rate, stock market, macroeconomics

INTRODUCTION

Stock market is one of the important markets of the country. It can show the economic situation of the country. Several studies have examined the relationship between stock price movement and macroeconomic factors in order to understand the relationship. The studies of the relationship can be used to predict the stock price movement over the periods. For studies in the developing countries, Chen and Kim (2005) examined the impact of macro and non-macro-economic variables on the Chinese stock market on the hotel stock return. Ibrahim (2000), Ibrahim and Aziz (2003) and Janor et al. (2005) investigated the interactions between stock market and economic activities by predicting that the stock market leads the movement of macroeconomic variables.

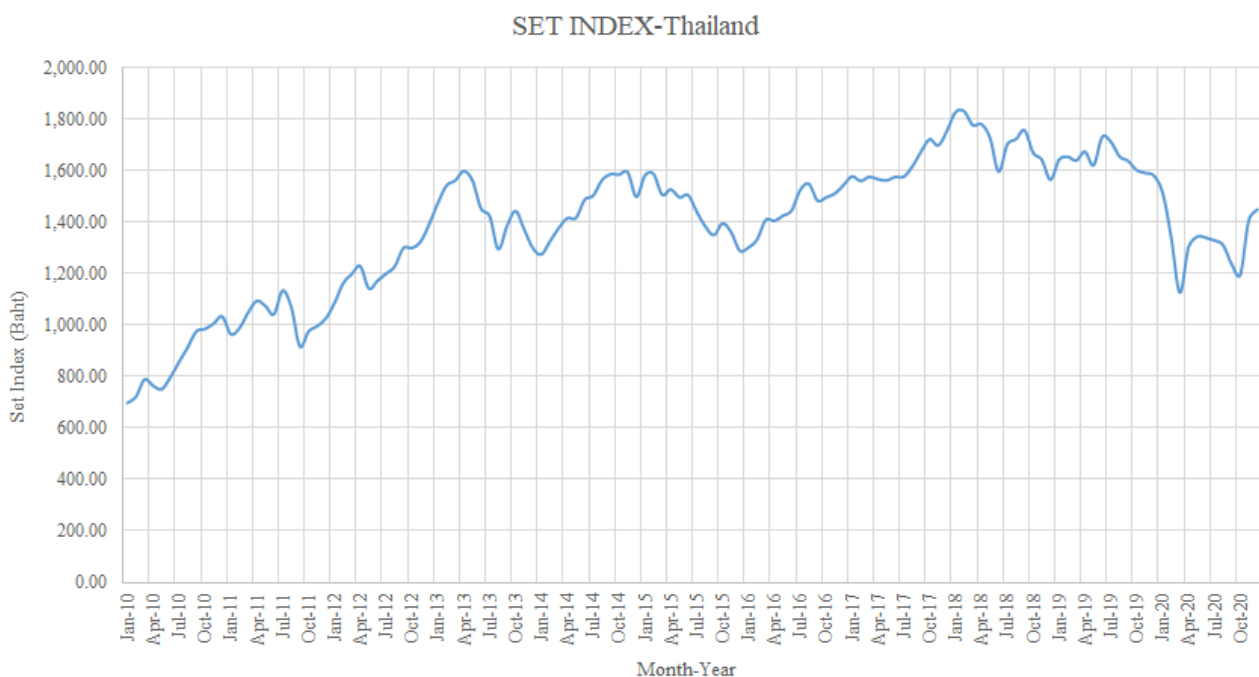
The relationship between stock market and economic activities is quite obvious regardless of its causality direction. Macroeconomic variables selected to examine the determinants of the stock market tend to differ for different studies. According to Chong and Goh 2003, the research studied the impact of macroeconomic variables including money supply and interest rate on stock prices. The study

suggests that competition among the profit-maximizing investors in an efficient market will ensure that all the significant information known about macroeconomic variables ‘change are fully reflected in current stock prices under the efficient market hypothesis. Therefore, the investors will not be able to earn abnormal profit through prediction of the future stock market movements.

This study examines the variables that are possible to affect the stock index movement of Thailand. The study aims to (1) assess the factors that are possible to affect the stock index (2) examine the relationship among those factors by examining the direct and indirect effects, and (3) provide the useful information to investors to assist them to make investment decisions.

Figure 1 shows data of the stock market index (Set Index) of Thailand from January 2010 to December 2020. The data shows the fluctuation of Set Index movement over the time period.

Figure 1: Set Index of Thailand (January 2010 - December 2020)



Source: https://www.set.or.th/en/market/market_statistics.html

1. LITERATURE REVIEW

1.1 Stock market index

Stock market indexes are quite important to macroeconomists, financial economists, and parties in the financial world. Consistent indices are important to assess regularities, which assists in understanding the behaviour of financial actors, the economy's evolution, and to make international comparisons (Hautcoeur, n.a.)

According to Tsira (2016), there are two ways in which the stock market index can be calculated and constructed. They are Price weighted Method and Market Capitalization Weighted Method. The base year of a stock market is the year in which the index was first constructed and the total value of shares in the market at that time, which is commonly assumed to either be '100' or '1000' points.

According to Hendry's (1986), the research studied short-run relationship between macroeconomic variables as well as the long-run adjustment to equilibrium, the study analyzed the influence of interest rate, inflation, money supply, exchange rate and real activity to capture the impact of the 1997 Asian financial crisis. The results showed the influence of macroeconomic variables on the stock market indexes in six countries under study. However, the type and magnitude of the associations differed depending on the country's financial structure.

Macroeconomic factors are considered as the macro fundamental factors with the most attention of investors in the capital market. The changes in macroeconomic factors have a possibility to affect the capital market. Therefore, the investors can see the estimated future trend of macroeconomic factors before making investment decisions in the financial market. This can be explained that investment growth will be determined by the volatility of macroeconomic factors in the future (Wahyudi, Hersugondo, Laksana, and Rudy, 2017).

1.2 Oil Price

Oil price is viewed as a key source of energy in the economy and normally measured an economic steadiness. Many studies indicated the changes of oil price influenced theoretically and empirically an economic fluctuation (Wei and Guo, 2017; Nusair, 2016; Jiménez-Rodríguez, 2015). The study of the relationships of oil prices and economic activities can be investigated through the supply-side effects which suggested that the higher oil price raises the production cost, while the lower productive input affects the slower development of productivity. However, the oil price can influence the economy by examining the demand side effects, for example, a low households' buying power, a low rate of consumption, and so on.

In recent decades, the considerable attention of oil prices and stock prices has been drawn, for instance, the projects by the International Energy Agency (IEA) predicted that oil will supply the world's energy approximately 30 percent in 2030 (IEA, 2017). For the Covid-19 pandemic period, a demand for fuel including oils has declined due to the excess of supply capacity with a low certainty on how fast this overhang will be absorbed. Especially oil markets, the demand has recently recovered and required the upstream investment to pull up from the low point in 2020 to be higher in the upcoming years (IEA, 2020). Several studies on the topics of oil prices influencing the stock indexes in developed and emerging markets were interesting among many researchers (Tsai, 2015; Cunado and de Gracia, 2014).

Mishra, Sharif, Khuntia, Meo, and Khan (2019) found that the increasing oil prices and inflation level caused increased cost of production, reduced profitability, leading to the change of cash flow. The discounted cash flow defined the asset prices; therefore, the rise of oil prices had a curtailing influence on the stock index. Shahrestani and Rafei (2020) affirmed the oil prices affected the stock market and added the oil price shock can influence the stock index under different economic conditions. The results advised the investors and financial policymakers to study the fluctuations in oil price change and how it controls the stock index.

1.3 Export Value

Export value is explained as the value for the export goods in currency. It refers to the worth of a commodity. Both import and export values normally indicate the economic strength and the sustainable trade surplus. If imports fall sharply, but exports surge, it might reveal that foreign economics are fairly better than the domestic economy. However, if imports are growing, but exports decline dramatically, this may indicate that the domestic economy is better than the overseas markets. A number of researchers have considered export value as the influence variable to the stock market in both direction and values. In 2005, the combination of Support Vector Machine (SVM) and other classification methods was developed to forecast the stock movement direction of Japan (Huang et al., 2005). The Japanese consumption capacity mainly relies on the domestic's market. Therefore, Japanese exports have a close relationship with the economic growth of the country. However, the exchange rate effect to the Japanese export so it was considered as another relevant factor for predicting the stock movement direction in the study.

Further various researchers have determined the relationship between the export value and stock market value. Türsoy et al., (2008) studied the relationship of Arbitrage Pricing Theory (APT) in Istanbul Stock Exchange (ISE). The effect of numerous macroeconomics variables such as money supply (M2), industrial production, crude oil price, consumer price index (CPI), import, export, gold price, exchange rate, interest rate, gross domestic product (GDP), foreign reserve, unemployment rate and market pressure index (MPI) with Istanbul Stock Exchange were observed. The results illustrated that export is significant in manufacturing of wood production.

Later, the Vector Autoregressive (VAR) model was applied to examine the relationship between ISE index and macroeconomic variables (BAŞCI, 2013). Variables we used in the model are exchange, gold, import, export and ISE 100 index. It was found that all macroeconomic variables affect the ISE index.

Odo et al., (2016) studied the impact of foreign direct investment on stock market growth in Nigeria. The relationship between stock market and foreign direct investment are considered. The relevant factors to be considered include market capitalization, foreign direct investment, export and import

values. Multiple linear estimation processes were employed to investigate such relationships. It reveals that export value has a negative significant relationship with the stock market growth during the period of study. This implies that export trade activities of Nigeria have negative effects on the Nigeria stock market.

The relationship of export performance and stock return of fishery companies in Vietnam was studied by VO (2019). The export performance in the study was measured by export intensity, export growth, and export market coverage. The relationship was analyzed by the Generalized Least Square Model. The finding indicates that both export intensity and export growth have a positive significant relationship with stock return while the export market coverage has no significant relationship with the stock return.

1.4 Real Exchange Rate

Real exchange rate is the currency exchange rate that has been adjusted. The actual exchange rate shows the competitive position in relation to foreign countries. Usually, real exchange rate is equal to the currency exchange rate multiplied by the ratio of the foreign price level relative to the domestic price level. Exchange rate changes are one of the factors that affect the operations of companies or large companies, including multinational companies. It especially happens, if these companies are located in countries/regions that use exchange rate systems. The growing volatility of the exchange rate has greatly affected the performance of these multinational companies. This is because some studies support that the size of the company positively correlates with the degree of exchange rate variation coefficient affects the rate of return of the stock market. Under the premise that large companies have a large number of international transactions. Therefore, the exchange rate fluctuation coefficient of a large company will affect the yield of its stock market (Temprasert and Sombuthwattana, 2018).

Several studies show that the relationship between exchange rate and stock market may vary. It can depend on the geographical area, economic conditions, relations with other countries, and domestic conditions. The different results can be due to the trade volume, equity, economic relations, risk assessment. According to Suriani and Kumar (2015), there is research studying the relationship between stock price and exchange rate in Turkey by applying Granger causality tests. It found that there is a unidirectional relationship that runs from price level changes to exchange rate changes but there is no reverse relation.

From the research of Bahmani-Oskooee and Sohrabian (1992), it also applied Granger causality tests to find the relationship between stock market and exchange rate for the period 1973- 1988. They investigated that there is a dual and bidirectional relationship between stock prices and exchange rates in the short run.

MATERIALS AND METHODS

1. Conceptual Framework

This paper analyzes the relationship of oil price, export value, and real exchange rate to the stock market index. The relationship is analyzed in the time period from year 2010 to 2020.

The multiple regressions were run over the data using an SPSS statistics program. According to Tabachnick (1996), the multiple regression is a multivariate regression analysis as there is more than one independent variable.

2. Hypothesis

H1: There is no significant relationship between oil price and stock market index.

H2: There is a significant relationship between oil price and stock market index.

H3: There is no significant relationship between export value and stock market index.

H4: There is a significant relationship between export value and stock market index.

H5: There is no significant relationship between real exchange rate and stock market index.

H6: There is a significant relationship between real exchange rate and stock market index.

3. Methodology

The form of empirical model used for this paper is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

The model for the analysis is given as:

$$\text{Stock Market Index} = \beta_0 + \beta_1 (\text{Oil Price}) + \beta_2 (\text{Export Value}) + \beta_3 (\text{Real Exchange Rate})$$

RESULTS

Table 1: Multiple Regression Analysis

Variable	B	SE	Beta	t	Sig
Constant	-2059.701	377.153		-5.461	.000
Oil Price	66.247	26.157	.168	2.533	.013
Export Value	11.543	2.067	.410	5.585	.000
Real Exchange Rate	21.066	4.191	.373	5.026	.000
R Square = 0.481 SE = 193.45019 F = 39.619 Sig = .000					

$$\text{Stock Market Index}_t = -2059.701 + 66.247 (\text{Oil Price}_t) + 11.543 (\text{Export Value}_t) + 21.066 (\text{Real Exchange Rate}_t)$$

Table 1 shows R square is 0.481. This value means that 48.1% of the dependent variable, stock market indices, is explained by the independent variables, which are oil prices, export value, and real exchange rate. The F significance is 0.00 which shows that the model is significant. The value of the standardized coefficient beta for oil price is 0.168, and the significant value is 0.013, which shows that oil price is significant to the value of stock market index. The value of the standardized coefficient beta for export value is 0.410, and the significant value is 0.000. These values also reveal that export value is significant to the value of stock market index. The standard coefficient beta of real exchange rate is 0.373 and the significant value is 0.000. The result also shows that there is a significant relationship between real exchange rate and stock market index.

DISCUSSION

This study examines the macroeconomic factors that can possibly affect the stock market index of Thailand over the period of 2010-2020 by using multiple regression methods. It was found that oil price, export value, and real exchange rate have a significant effect on the stock market index. This supports the hypotheses H2, H4, and H6. When this relationship was observed in detail, it shows that the export value, real exchange rate, and oil price have more impact on the stock market index respectively.

From the research result of this paper, it can assist the financial investors in the stock market to make proper decisions. As the stock market index's fluctuation can be affected by several factors in the economy. The investors shall consider the macroeconomic factors in the economy before making the investment decision. Several researches have studied the impact of macroeconomic factors on the stock market in several countries, including Thailand. However, there are some other macroeconomic factors that possibly affect the stock market in Thailand. Therefore, future research would be conducted to examine the impact of other macroeconomic factors on various sectors in the stock market.

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