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An Empirical Analysis of Factors Affecting Stock Prices: A Case of East Asian Countries

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During the last few decades, concurrent growth has been observed in some ASEAN stockmarkets and their respective economies. Such growth raises an empirical question as a result of the changing macroeconomic environment. Considering it, the current study, by applying Feasible General Least Squares (FGLS) and Panel-Corrected Standard Errors (PCSE) approaches, analyzed the key macro-economic determinants related to the stock prices performance of five ASEAN countries (Thailand, Indonesia, Malaysia, Singapore, and Philippines). The results showed that money supply, exchange rate, the Morgan Stanley Capital International (MSCI) global index, global interest rate, and the Global Financial Crisis (GFC) are important causal variables in explaining stock prices. The implications of this research can be practically employed by individual investors, portfolio managers, and institutional investors who tend to invest in ASEAN equity markets.

1. Introduction

Studies on defining stock price movements and how they are linked to macroeconomic factors have become widespread among economic and finance researchers over the past three decades. At this stage, they are well documented in financial economics literature (Miseman et al., 2013). Famous studies in this area were conducted by Ross (1976), Fama and Schwert (1977), Firth (1979), Fama (1981), and Chen et al. (1986). These studies explain the interactions between stock prices and macroeconomic variables. More specifically, the study by Ross (1976) is considered as pioneer research of this area which introduced the term "Arbitrage Pricing Theory (APT)."

Over the past few decades, researchers and investors have paid special attention to emerging markets, especially Asian ones (Megaravalli & Sampagnaro, 2018). ASEAN was founded on August 8, 1967, in the capital city of Thailand. The ASEAN Declaration (also called the Bangkok Declaration) was made by the founding fathers of ASEAN nations, Malaysia, Indonesia,Singapore, the Philippines, and Thailand. Later, Myanmar, Vietnam, Brunei Darussalam, Laos, and Cambodia became a part of it. Currently, ASEAN comprises 10 member nations (Association of Southeast Asian Nations, 2021). The ASEAN Economic Community (AEC) was incorporatedin 2015 to create trade opportunities, regional integration, and a cohesive economy. The combined GDP of ASEAN is approximately $2.8 trillion. It is a critical hub for global economic activity, which transits over $3.4 trillion worth of international trade each year. ASEAN has maintained a competitive growth rate of approximately 5 percent from 2014 to 2019 (ASEAN Stats, 2021). By 2030, ASEAN is expected that ASEAN will attain the status of the world's fourth-largest economy (Australian Government, 2021).

The Association of Southeast Asian Nations (ASEAN) is one of the largest emerging markets in Asia. It has an almost double population (622 million) compared to the American population (320 million). It is even greater than the total population of the European Union (506 million). ASEAN nations are economic powerhouses, as they are the seventh largest economies in the world (Association of Southeast Asian Nations, 2021). Although the ASEAN region faced difficulties due to different economic crises, such as the financial crisis of 1997-1999 and the global financial crisis (Duong & Huynh, 2020), it remained robust and resilient to these external shocks.

The approach adopted in this study is more comprehensive and unique from the previous literature. Besides selecting macroeconomic variables (inflation, money supply, exports, and exchange rate), this study also introduces global indicators (MSCI global index, global oil prices, and global interest rate) and the impact of the global financial crises of 2007-09. Nonetheless, to the best of our knowledge, the variables introduced in the current research were not used together in a single study. The selection of domestic macroeconomic variables, global indicators, and the global financial crisis are of significant value for investors and policymakers. Knowledge of these variables can assist investors in their decisions. The current study also attempts to analyze the effectiveness of Arbitrage Pricing Theory (APT) in the context of ASEAN nations. Moreover, the

current study also relies on advanced empirical techniques such as Panel-Corrected Standard Errors (PCSE) and Feasible General Least Squares (FGLS).

2. Literature Review

From a theoretical perspective, the relationship between selected macroeconomic variables (inflation, exports, money supply, and exchange rate), global indicators (Morgan Stanley Capital International (MSCI) Global Index,Global Oil Prices, and Global Interest Rate), and stock prices falls under the Arbitrage Pricing Theory (APT) presented by Ross (1976). APT is a multifactor model in which researchers can select any factor that has a potential relationship with stock prices (Gbadebog & Oyedeko, 2021).Basnet and Upadhyaya (2015)find that, in the long run, macroeconomic variables have strong cointegration with the stock prices of the ASEAN market.

2.1. Inflation

Consumer Price Index (CPI) is an economic tool used by the government to estimate a country's inflation rate. An increase in inflation puts downward pressure on stock prices as it increases the discount rate. Jamaludin et al. (2017)state that inflation has an inverse relationship with stock prices in ASEAN countries. In addition, Wongbangpo and Sharma (2002), covering the data period from 1985 to 1996, observed the negative impact of inflation on the stock prices of ASEAN countries. Megaravalli and Sampagnaro (2018), using data from 2008 to 2016 and including a sample of three Asian countries (China, India, and Japan), found an insignificant relationship between inflation and stock prices. Fama and Schwert (1977) introduced "hedging against inflation" theory and argued that stocks provide hedge against both expected and unexpected inflation. Their argument was based on Fisher (1930), who claimed that the interest rate is a function of expected real return and expected inflation rate. Therefore, as inflation increases, the expected return also increases to offset the higher inflation rate. The empirical support of Fama and Schwert (1977) is provided by Ibrahim and Aziz (2003), who demonstrate a significant positive relationship between inflation and stock prices in the Malaysian equity market.

2.2. Exports

Export-led economic growth has received special attention both theoretically and empirically. Exports are also a component of GDP; thus, an increase in exports leads to an increase in the GDP. ASEAN has transformed itself from an organization primarily concerned with regional security, focusing on economic growth. During this evolution, ASEAN accepted the general view that international trade and exports help promote development (Pan & Nguyen, 2018).

ASEAN nations are in a continuous quest to increase exports through international trade, as exports are considered engines of growth (Pan & Nguyen, 2018). Dahir et al. (2018) explained the indirect relationship between exports and stock prices were explained by Dahir et al. (2018). They argued that export-oriented companies benefit from currency depreciation from a theoretical perspective, as weak currency values enable them to export more goods and services. As a result, the stock prices increased. Lee and Brahmasrene (2018) insist that an increase in exports increases

the profits of firms and their stock prices. However, Celebi and Hönig (2019) found a negative impact of exports on stock prices

2.3. Money Supply

The quantity theory of money (Brunner, 1961; Friedman & Schwartz, 1965)stateda rise in the level of money supply changes the equilibrium position of money regarding asset holder's other assetsin the portfolio balance. These "other assets" also include equity share. Therefore, asset holders adjust their portfolio balances according to changes in money supply. Hence, an increase in the money supply increases the supply of money in the market. As a result, the demand and price of stocks increase. Under the quantitative theory of money, such an interaction between stock prices and money supply is described as a direct channel (Dhakal et al., 1993).

Tiryaki et al. (2018) argued that a tight monetary policy dampens stock prices, whereas a loose monetary policy stimulates stock prices. Moreover, applying the Non-linear Autoregressive Distributed Lag (NARDL) model from 1994 to 2017 narrated the asymmetric impact of money supply on stock returns in Turkey's market. Jamaludin et al. (2017) found that money supply has an insignificant impact on stock prices in the ASEAN market. A study by Celebi and Hönig (2019) before the European sovereign debt crisis and the 2007 Global Financial crisis found a positive impact of money supply on stock prices in the German market. However, this relationship reversed after these crisis periods. Regarding the role of policymakers, Hirota et al. (2020) argued that stability to asset prices can be provided by controlling money supply. In the context of the Indian market, Thanh et al. (2020)reported that the state's monetary policy influences the interaction between money supply and equity price.

2.4. Exchange Rate

The association between exchange rates and share prices is a complex topic to address. Such relationships may differ across countries and periods (Tang & Yao, 2018). "Stock-oriented" or "Portfolio Balance" approaches consider exchange rate as equalizing element for the demand and supply of financial assets such as shares and bonds (Rehan et al., 2019). The "Portfolio Balance" approach claims that the health of national currency can significantly influence the firm's market value. Olayeni et al. (2020) claimed that the exchange rate is a channel through which shocks to stock prices shift towards the economy.Numerous studies discuss the mechanism of the relationship between exchange rates and stock prices. Ding (2021) finds a correlation between exchange rates and stock prices and argues that this relationship is based on portfolio managers' preferences for domestic and foreign stocks. According to Tiryaki et al. (2018), exchange rates significantly affect stock prices. Jamaludin et al. (2017) find a positive impact of the exchange rate on the stock prices of ASEAN countries.

In the case of 11 emerging markets, by collecting data from 1988 to 2014, Tang and Yao (2018)find that the inner-financial structure plays a vital role in defining the relationship between exchange rates and stock prices. Additionally, by investigating the linkage between exchange rates

and stock prices, Dahir et al. (2018) find a significant positive correlation between exchange rates and equity prices. Such relationships hold in both the short and long runs.

2.5. Morgan Stanley Capital International (MSCI) Global Index

Changes in global stock prices can also affect global economic policy uncertainty (Hall & Bentley, 2018). Thus, this study inspected changes in global stock prices and their influence on ASEAN nations' stock price performance. Seehapan et al. (2018)applied the Impulse Response Function to the markets of Malaysia and Thailand in their study. They found a positive response of stock prices to the MSCI index performance. Harvey (1991) considered the MSCI index as a proxy for the state of the world economy and investigated the impact of MSCI on 17 countries' (16 OECD countries and Hong Kong) stock markets. He found that in the case of the Japanese economy, world returns are an important explanatory variable.

2.6. Global Oil Prices

Oil has become a significant source of energy since the last century. Its importance has drastically increased since World War II, as the use of automobiles has increased in the shape oftransportation. Subject to the ASEAN, it is one of the fastest-growing regions in the world. To maintain this pace, a sustained increase in energy supply required(Basnet & Upadhyaya, 2015). Although the ASEAN region holds 40 percent of the gas and oil reserves in the Asia-Pacific region, the Philippines, Thailand and Singaporestill depend on oil imports. Indonesia is one of the top liquid gas producers globally, whereas Malaysia is leading towards improving energy efficiency by enhancing energy technologies. Economic theory proposes that an asset price can be caluculated by its expected discounted cash flow (Fisher, 1930). Thus, any factor that impacts discounted cash flows can also affect asset prices. An increase in oil prices can increase costs, reduce profits, and decrease shareholder wealth. Therefore, an increase in oil prices is accompanied by a reduction in stock prices (Filis et al., 2011).In terms of the empirical relationship between oil and stock prices, Waheed et al. (2018) reported a significant positive relationship in Pakistan's market.

2.7. Global Interest Rate

Volatility in the interest rate is a critical factor in asset pricing.In theory, there is a negative relationship between the interest rate and stock prices because of the cash flow discounting model (Panda, 2008). The economic argument revolves around the discount rate used to calculate the present value of an asset. An increase in the interest rate also increases the discount rate, which pushes stock prices downward. Furthermore, an increase in the interest rate also represents an opportunity cost. For instance, the surge in the interest rate changes investors' preferences, shifting to interest-bearing securities from stocks. The inverse relationship can be proven if the interest rate falls (Wongbangpo & Sharma, 2002). Seehapan et al. (2018) find that the global interest rate, measured through the U.S. 3-month T-bill rate, explains the Malaysian market's stock prices.

2.8. Global Financial Crisis (GFC)

The Global Financial Crisis (GFC) was instigated by the US subprime crisis in 2007. This leads to confidence and liquidity crises. By 2008, it had reached the global level and resulted in market and regulatory failures (Kawai, 2009). GFC 2007-09 had anegative impact on the economic performance of almost all countries in the world (Trihadmini & Falianty, 2020), and its aftershocks are still evident (Aamir & Shah, 2018). Chen and Yeh (2021)established thattheglobal financial crisis of 2008 proved to be harmful to global financial markets. In the context of the Indian market, in the wake of the global financial crisis, foreign investors began to sell their stocks (Prasad & Reddy, 2009). This adversely affects economic growth.

The consequence of the global financial crisis (GFC) (2007-09) translated into the immediate and unexpected deterioration of wealth. Nguyen and Huynh (2019)argued that the GFC caused volatility in ASEAN countries' stock market indices. Similarly, Trihadmini and Falianty (2020) confirmed the contagion effect of the GFC from the stock markets of developed countries to the stock markets of ASEAN countries. However, in 2010, each of the ASEAN 5 nations recorded more than a 6 percent economic growth. This indicates that these economies have recovered from the adverse impact of the GFC (Basnet & Upadhyaya, 2015). In addition, Kawai (2009)stated that the spillover effect of the global financial crisis on the Asian market was limited and that this market remained robust. Majid et al. (2009)found that the stock markets of ASEAN countries remained cointegrated during the pre and post 1997 crisis periods. This integration increased further after the post-crisis period.

3. Data and Methodology

This study used annual data from 2000 to 2019 to provide an updated and robust picture. The study period was 20 years. A panel of five ASEAN nations–Indonesia, Malaysia, the Philippines, Singapore, and Thailand–was created. Thus, due to the panel, each variable consisted of 100 observations. Inflation, exports, money supply, exchange rate, Morgan Stanley Capital International (MSCI) global index, global interest rate, and Global Financial Crisis (GFC) were selected as independent variables. By contrast, stock prices were chosen as the dependent variable. The inflation is calculated using the natural log of the Consumer Price Index (CPI).

Exports (EXP) are the year-over-year percentage of total merchandise exports. Money Supply (MS) was measured through the year-over-year percentage of M2. The exchange rate (ER) is the natural log of the local currency value of each selected country in terms of United States dollars. The Morgan Stanley Capital International (MSCI) Global Index is a natural log of the MSCI World Index.Global Oil Prices (GO) are measured using the natural log of Brent Oil Prices.The Global Interest Rate (GIR) is the 30 days US Treasury bill rate. The Global Financial Crisis (GFC) is taken asa dummy variable that assumes the value of "1" in the case the period is related to the global financial crisis period and "0" otherwise. The year 2008-2009 were considered the global financial crisis period. Stock prices (SP) were measured using the natural log of each country's main stock market index. The data for the selected variables were extracted from the

Bloomberg Data Terminal. The summary of selected variables along with their measurement is provided in the Table 1

Table No 1: Selected Variables' Measurement along with Source

Variable	Description	Source
Stock Prices (SP)	The Straits Times Index for Singapore, The Kuala Lumpur Composite Index for Malaysia, The Jakarta Stock Exchange Composite Index for Indonesia, Philippines Stock Exchange Index for Philippines, and The Bangkok SET Index for Thailand	Data Terminal of Bloomberg
Inflation (INF)	Consumer Prices Index (CPI)	Data Terminal of Bloomberg
Export (EXP)	Total Merchandise Exports	Data Terminal of Bloomberg
Money Supply (MS)	M2	Data Terminal of Bloomberg
Exchange rate (ER)	Local currency in terms of United States' dollar	Data Terminal of Bloomberg
Morgan Stanley Capital International (MSCI) Global Index	MSCI World Index	Data Terminal of Bloomberg
Global Oil Prices (GO)	Brent Oil Prices	Data Terminal of Bloomberg
Global Interest Rate (GIR)	30 days US treasury bill rate	Data Terminal of Bloomberg
Global Financial Crisis (GFC)	Dummy variable 1 in case of crisis period, 0 otherwise. Year 2008 and 2009 are considered as global financial crisis period.	-

To analyze the association between stock prices and selected independent variables, the panel data technique was adopted because of its ability to control heterogeneity and serial correlation issues(Baltagi, 2005; Neagu & Teodoru, 2019; Shahzad et al., 2021).

$$SP_{it} = f(INF_{it} + EXP_{it} + MS_{it} + ER_{it} + MSCI_{it} + GO_{it} + GIR_{it} + GFC_{it}) \quad (1)$$

Considering the share prices of ASEAN nations as the dependent variable, the following estimation model was formed for the current study:

$$SP_{it} = a + \beta_1 INF_{it} + \beta_2 EXP_{it} + \beta_3 MS_{it} + \beta_4 ER_{it} + \beta_5 MSCI_{it} + \beta_6 GO_{it} + \beta_7 GIR_{it} + \beta_8 GFC_{it} + \varepsilon_t \quad (2)$$

In equation 2, *i* stands for country; *t* represents time; SP, INF, EXP, MS, ER, MSCI, GO, GIR, and GFC stand for stock prices,inflation, export, money supply, exchange rate, Morgan

Stanley Capital International global index,global oil prices, global interest rate, and Global Financial Crisis, respectively. Following Canarella and Gasparyan (2008), an empirical analysis is performed with the help ofPanel Corrected Standard Errors (PCSE) and Feasible Generalized Least Squares (FGLS) techniques since both techniques are suitable in case the data set violates OLS assumptions such as heteroscedasticity and autocorrelation (Hoechle, 2007).

Generalized least squares (GLS) was first defined by Alexander Aitken in (1936). The feasible generalized least squares (FGLS) estimator is an implementable form of GLS. The modeling process under the FGLS was performed in two stages. In the first stage, model estimation is done with the help of OLS or any other consistent but inefficient estimator. In the second stage, modeling was performed by implementing GLS ideas using a "consistent estimator of the covariance matrix of the errors".

Time-series-cross-section (TSCS) datasets contain such observations which are repeated overtime on the same set of units. This type of dataset is commonly applied in social science research. The TSCS also exhibits non-spherical errors owing to the contemporaneous correlation among theunits and unit-level heteroscedasticity (Bailey & Katz, 2011).When we fit linear models to TSCS data, it is normal to apply this non-spherical error structure to improve inferential and estimation efficiency with the help of the feasible generalized least squares (FGLS) estimatorrecommended by Parks (1967) and made famous by Kmenta (1986). As in our study, where T > N, FGLS produces optimistic standard error estimates (Hoechle, 2007).

In addition to FGLS, we also applied panel-corrected standard error (PCSE) techniques for robustness. Panel corrected standard errors (PCSE) werepresented by Beck and Katz (1995) in the context of time and cross-sectional dimensions. They argued that the GLS method exhibits such standard errors, which leads to extreme overconfidence, and the standard errors underestimate the variability by 50 percent or more. The PCSE estimator has better small-sample properties in the context of"original time-clustering setting" and is robust to cross-sectional heteroskedasticity (Millo, 2014). It is also free from autocorrelation, less sensitive to outliers, and provides accuratestandard error estimates (Ikpesu et al., 2019).

4. Results and Discussion

Table No 2: Descriptive Statistics

Variable	Number of Observations	Mean Value	Value of Std. Dev.	Min.	Max.
SP	1200	467.497	764.655	0.030	2732.582
INF	1200	3.275	3.004	-4.4	18.4
EXP	1200	6.621	14.764	-40.6	59.28
MS	1200	9.235	5.510	-2.2	39.69
ER	1200	2138.583	4330.013	1.203	15203
MSCI	1200	1406.071	382.624	738.18	2358.47
GO	1200	65.323	29.948	19.14	139.83
GIR	1200	1.543	1.744	0	6.210
GFC	1200	-	-	0	1

According to the descriptive statistics reported in Table 2, the mean value of share prices is 467.497, with a standard deviation of 764. The inflation has a mean value of 3.275, with a minimum value of -4.4 percent and a maximum value of 18.4 percent.

Table No 3: Correlation Results

Variable	INF	EXP	MS	ER	MSCI	GO	GI	GFC
INF	1							
EXP	0.102	1						
MS	0.340	0.038	1					
ER	0.578	0.045	0.260	1				
MSCI	-0.171	0	-0.030	0	1			
GO	0.103	0.089	0.321	-0.020	0.436	1		
GIR	0.140	0.212	0.037	0.008	0.010	-0.364	1	
GFC	0.142	-0.208	0.094	-0.004	-0.237	0.181	-0.179	1

Table 3 reports the correlation results of the current study. Exchange rate and global interest rate exhibit the minimum correlation value of 0.008. Whereas the highest correlation of 0.578 is observed among exchange rate and inflation.

Table 4 shows the estimation results of the Feasible Generalized Least Squares (FGLS) technique. In addition to FGLS, Panel Corrected Standard Errors (PCSE) technique was also applied for robustness purposes.

Table No 4: Estimation Results

	Feasible Generalized Least Squares (FGLS) Regression			*Panel Corrected Standard Errors (PCSE) Approach (For Robustness Purpose)*		
Variable	**Coefficient Value**	**Standard Error Value**	**P-value**	**Coefficient Value**	**Standard Error Value**	**P-value**
C	-4.510	1.732	0.009	-4.510	1.038	0
INF	-0.003	0.027	0.892	-0.003	0.028	0.896
EXP	-0.003	0.004	0.417	-0.003	0.003	0.297
MS	0.026**	0.012	0.032	0.026*	0.013	0.051
ER	-0.985***	0.024	0	-0.985***	0.023	0
MSCI	1.516***	0.277	0	1.516***	0.178	0
GO	0.241	0.165	0.145	0.241**	0.118	0.042
GIR	-0.119***	0.042	0.005	-0.119***	0.026	0
GFC	-0.047***	1.732	0.009	-0.047	0.110	0.666

* indicates the significance level at 0.1

** indicates the significance level at 0.05

*** indicates the significance level at 0.01

Table 4 presents the estimation results. According to the Feasible Generalized Least Squares (FGLS) results, inflation, exports, exchange rate, MSCI global index and Global Financial

Crisis (GFC) have a highly significant relationship with stock prices at the level of 0.01. At the same time, money supply has a negative relationship with stock prices at the 0.05 level. These results also proved robust using the Panel Corrected Standard Errors (PCSE) approach. However, GFC exhibits an insignificant relationship with the PCSE approach. However, the coefficient of global oil prices became significant in the context of the PCSE approach.

The positive association between money supply and equity prices indicates that the loose monetary policy adopted by ASEAN nations proved useful for stock prices.This highlights the important role of policymakers in the money supply and stock price relationship because they can provide stability to stock prices by controlling the money supply (Hirota et al., 2020). These results are in line with the quantity theory of money, which states that an increase in money supply increases stock prices by increasing demand for stocks (Dhakal et al., 1993). Accordingly, in the Indian market, Thanh et al. (2020) found that monetary policy plays an important role in defining the money supply and stock prices relationship. The results of the current study are supported by Celebi and Hönig (2019), who report a positive relationship during the post-European sovereign debt crisis and the 2007 global financial crisis. These findings contradict the results of Tiryaki et al. (2018), who reported a negative relationship in the Turkish market.

As the portfolio balance approach claims a significant relationship between exchange rates and stock prices (Rehan et al., 2019), the negative impact of the exchange rate on stock prices found in this study indicates that the health of national currencies of ASEAN nations significantly impacts their stock prices. Similar findings were reported by Ding (2021) in the late 1990s.Similarly, Upadhyaya et al. (2020) stated that exchange rate volatility negatively impacts the ASEAN region's performance in terms of its exports. These results have important implications for ASEAN policymakers, as reported by Olayeni et al. (2020); shocks in stock prices can shift towardsthe economy through the exchange rate.

The significant positive relationship between the MSCI global index and the stock prices of ASEAN countries indicates that ASEAN nations' stock markets can benefit from increased global equity market performance. This relationship can be justified by linking the ASEAN market with the global stock market, especially in China (Chien et al., 2015). Inchauspe et al. (2015) also found a similar result in the context of the relationship between the "MSCI Global Index" and "Wilder Hill New Energy Global InnovationIndex (NEX)" performance.

Since the ASEAN region holds 40 percent of gas and oil reserves in the context of the Asia-Pacific region (Basnet & Upadhyaya, 2015) and three ASEAN countries (Brunei, Malaysia, and Vietnam) remained net oil exporters from 2002 to 2016 (Kriskkumar & Naseem, 2019), the positive stock-oil relationship observed in this study.Our results support the claims made byZhu et al. (2011) and Ozturk and Al-Mulali (2015), who argue that an increase in oil prices pushes stock prices in an upward direction because oil prices have a positive association with domestic (Raza et al., 2018)and global economic activity (Dong et al., 2019).

As an increase in interest rate provides a substitute for investing in interest-bearing securities instead of shares (Wongbangpo & Sharma, 2002), the same is reflected in our study's

findings. An upward movement in the global interest rate causes a decrease in the ASEAN' stock prices. Similarly, according to the cash flow discounting model, an increase in the interest rate also increases the discount rate, which translates into reduced stock prices (Panda, 2008).

According to the results, the Global financial crisis 2008-09 negatively impacted the stock prices of ASEAN nations. As stated by Trihadmini and Falianty (2020), during the global financial crisis, ASEAN countries faced adverse spillover effects from developed markets. Kawai (2009)observed that many ASEAN countries such as Indonesia, Thailand, and Malaysia failed to adopt an effective monetary policy to offset the adverse impact of the GFC 2008-09. The reason for failing to adopt an effective mentor policy was that they were slow and reluctant to increase the interest rate in good times because of fear of hurting their economic growth. They were also fearful of allowing their currencies to appreciate it. Consequently, when the GFC 2007-09 took place, they had less monetary policy freedom to make their economy robust. Similar findings have been reported by Chen and Yeh (2021)study. Prasad and Reddy (2009) report that during the global financial crisis, foreign investors in India rapidly sold their stocks, which adversely affected the Indian economy.

In contrast to the results of previous studies (Ibrahim & Aziz, 2003; Wongbangpo & Sharma, 2002), which claimed a significant relationship between inflation and stock prices, the current study did not find such a relationship and leads to the rejection of hedging against the inflation theory proposed by Fama and Schwert (1977). The results indicate that, in the case of the ASEAN equity market, an increase in the inflation rate is not a cause of concern for investors. The current study also finds an insignificant impact of exports on stock prices. As Pan and Nguyen (2018) state, an increase in exports to the rest of the world is not a cause of the increase in the economic growth of the ASEAN region, and the same is true for the stock prices of the ASEAN market. Stock prices remain insensitive to increases in exports. These results reject Lee and Brahmasrene (2018) finding that an increase in exports increases stock prices. In summary, the current study found that, under the Arbitrage Pricing Theory (APT) framework, macroeconomic variables can explain the stock prices of ASEAN countries.

5. Conclusion

The current study attempted to analyze the causal relationship between stock prices of the ASEAN market and inflation, exports, money supply, exchange rate, Morgan Stanley Capital International global index, global oil prices, global interest rate, and Global Financial Crisis. By collecting data from 2000 to 2019, Panel corrected standard error (PCSE) techniques and Feasible Generalized Least Squares (FGLS) method were adopted for statistical analysis. Evidence suggests that money supply, exchange rate, Morgan Stanley Capital International (MSCI) global index, global interest rate, and Global Financial Crisis (GFC) are important determinants of the stock prices of ASEAN countries. For ASEAN economies, evidence suggests that by creating a conducive macroeconomic environment, favorable results can be obtained in the shape of increased stock prices.

Since the ASEAN region is a composition of different cultures and perspectives of 10 countries, foreign investors find it difficultto select their investment proportion in each market (Nguyen & Huynh, 2019). However, investors typically consider the ASEAN region as a potential investment market. Therefore, this study's limitation is that it does not address the dynamics of individual nations. Instead, it provides an overall picture of the ASEAN nations.

The implications of this study are important for various stakeholders such as policymakers and investors. The current study will be helpful for policymakers in ASEAN nations to understand the behavior of ASEAN stock markets. Specifically, they are going to negotiate various treaties, such as the "ASEAN Economic Community (AEC)" and the "Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)". Given that ASEAN 5 nations have adopted the floating exchange rate system, their central banks can now intervene in the market to control the exchange rate movement (Upadhyaya et al., 2020). As found in this study, that increase in exchange rate proving harmful for stock prices performance, the central bank of respective nations should adopt the effective measure to keep the exchange rate stable or even lower it. By doing so, the stock market performance of ASEAN nations can improve, which will ultimately increase their economic prosperity of ASEAN nations. In terms of the negative impact of the GFC on the ASEAN market, as suggested by Kawai (2009), ASEAN countries should closely work together with other major Asian economies such as China, India, and Japan, so that their views can be reflected in the agenda of global forums such as G8.

This study will be helpful to investors in their investment decisions. Based on the results of this study, they determine how different types of factors (global and domestic) impact the stock prices of ASEAN countries. As this study finds a positive correlation between global stock performance and the index performance of ASEAN countries, foreign investors can benefit by making ASEAN countries' stocks a part of their portfolio.

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