THE POWER PLAY: GEOPOLITICAL INFLUENCE ON EMERGING MARKET STOCK PERFORMANCE

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A final year project submitted in partial fulfillment of the requirement for the degree of

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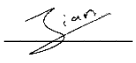
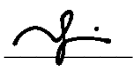
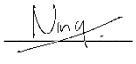
1. Chin Wei Jian	2103788	
2. Ng Qiao Wen	2105310	
3. Ning Yu Jie	2106773	
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DEDICATION

This study is dedicated to everyone who has contributed an effort for making this study complete. The efforts and time, regardless of direct or indirectly, are invaluable and truly appreciated. Without the endless support, completing this journey would not have been possible.

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PREFACE

The UBFZ3026 Research Project is submitted in partial fulfillment of the requirements of the Bachelor of Finance (Honours) degree at Universiti Tunku Abdul Rahman (UTAR). The title of this study is “The Power Play: Geopolitical Influence on Emerging Market Stock Performance.” This study was supervised by Mr. Lim Chong Heng, whose guidance and constructive feedback are appreciated. With the support of cited resources and past research, as well as the resources, facilities, and data access provided by the University, the contributors hereby attest that this final year project was carried out independently and completed fully on their own.

Geopolitical developments have become increasingly important in influencing financial markets, especially in emerging economies where volatilities are larger. This study focuses on examining how different aspects of geopolitical risk influence stock market performance, with a specific focus on Malaysia, Thailand and Philippines. By investigating the relationship between geopolitical factors and market behaviour, the study seeks to highlight patterns that are able to explain market reactions when faced with uncertainty. The purpose of this study is to provide deeper insights into the role of external shocks on financial stability, which can be valuable for academic research and practical investment decision-making.

ABSTRACT

In this era of globalization, emerging markets have become more closely linked with global trade and capital flows, make it high growth potential but also heightened vulnerability to external shocks. Geopolitical risks are particularly important due to unpredictability and the absence of standard policy tools for mitigation. This study investigates the effect of disaggregated geopolitical risk categories, geopolitical threats and acts, and the global GPR index on sectoral and overall stock market volatility in Malaysia, Thailand, and the Philippines. Using quarterly data from 2012Q1 to 2024Q3, OLS estimation is applied with control variables such as foreign portfolio investment, lagged volatility, and market portfolio. Diagnostic tests such as normality, heteroscedasticity, and serial correlation tests are conducted to ensure the reliability and accuracy of the results. The regression results indicate that the majority of disaggregated GPR categories show statistically insignificant relationship with sectoral and overall volatility across the three markets. Only limited significant results are observed in this study, suggesting that geopolitical risks exert weaker and less systematic effects in ASEAN emerging markets compared to global evidence. Lastly, this study contributes to the literature by providing comparative sectoral evidence for ASEAN economies, offering insights for investors and academic researchers as well as deepen understanding of the complex linkages between geopolitical risks and sectoral stock market volatility.

Keywords: geopolitical risk; sectoral stock market volatility; Malaysia, Thailand, Philippines; foreign portfolio investment; ordinary least squares

Subject Area: HB135-147 Mathematical economics
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LIST OF ABBREVIATIONS

AFTA	ASEAN Free Trade Area
ARCH	Autoregressive Conditional Heteroskedasticity
ASEAN	Association of Southeast Asian Nations
BSP	Bangko Sentral ng Pilipinas
DW	Durbin-Watson
EMH	Efficient Market Hypothesis
FDI	Foreign Direct Investment
FEM	Finite Element Method
FPI	Foreign Portfolio Investment
GDP	Gross Domestic Product
GNI	Gross National Income
GPR	Geopolitical Risk
GPRA	Geopolitical Acts
GPRT	Geopolitical Threats
IMF	International Monetary Fund
JB	Jarque-Bera
KLCI	Kuala Lumpur Composite Index
KLCM	Kuala Lumpur Consumer Products & Services Index

KLCT	Kuala Lumpur Construction Index
KLEN	Kuala Lumpur Energy Index
KLFI	Kuala Lumpur Finance Service Index
KLHC	Kuala Lumpur Health Care Index
KLIP	Kuala Lumpur Industrial Products & Services Index
KLPL	Kuala Lumpur Plantation Index
KLPR	Kuala Lumpur Property Index
KLRE	Kuala Lumpur REIT Index
KLTC	Kuala Lumpur Telecommunications & Media Index
KLTE	Kuala Lumpur Technology Index
KLTP	Kuala Lumpur Transportation & Logistics
KLUT	Kuala Lumpur Utilities Index
MP	Market Portfolio
OLS	Ordinary Least Squares
PSEi	Philippine Stock Exchange Index
PSFI	Philippine Stock Exchange Financials Index
PSHO	Philippine Stock Exchange Holding Firms Index
PSIN	Philippine Stock Exchange Industrial Index
PSMO	Philippine Stock Exchange Mining & Oil Index
PSPR	Philippine Stock Exchange Property Index
PSSE	Philippine Stock Exchange Services Index

RCEP	Regional Comprehensive Economic Partnership
REIT	Real Estate Investment Trust
REM	Random Effects Model
SET	Stock Exchange of Thailand
SETI	Stock Exchange of Thailand Index
THAGRO	SET Agro & Food Index
THCONSUMP	SET Consumer Products Index
THFINCIAL	SET Financials Index
THINDUS	SET Industrials Index
THPROPCON	SET Property & Construction Index
THRESOURC	SET Resources Index
THSERVICE	SET Services Index
THTECH	SET Technology Index
US	United States

CHAPTER 1: INTRODUCTION

1.0 Background of Study

In the era of globalization, economies are more interconnected than ever. The increase in the scale and depth of cross-border trade, investment, and capital flow has created sophisticated interdependencies that make economic events in one nation have an instantaneous impact on others. On a global basis, nations are generally grouped into two categories: advanced economies and emerging and developing economies ("Country Composition of WEO Groups", n.d.). Emerging markets stand at the crossroads of their development trajectory. They are transitioning from lower-income, less-developed profiles to more industrialization, higher productivity, and higher income levels. They are growing from virtually local trade to more intense participation in world trade, becoming key nodes for supply chain relocation due to competitive labor costs, rising infrastructure capacity, and expanding domestic markets. Typically, the developing markets record a Gross National Income 000 per capita of approximately USD 1,000 to USD 4,500. Their development tends to be driven by the development of the manufacturing sector, investment in infrastructure, and a rapidly growing middle class (Metreau et al., 2024). The economies receive global interest due to their combining growth potential with structural transformation, offering opportunities for high returns as well as elevated risks.

The emerging markets are highly integrated with global trade and investment flows, but are more sensitive to external shocks than the advanced economies. They are likely to attract Foreign Direct Investment (FDI) and portfolio capital searching for higher yields. However, the same attributes that make them attractive also bring structural vulnerabilities. Their capital markets are smaller, less mature, and less liquid, and thus the flows in and out of capital have a proportionally larger impact on asset prices and exchange rates. Such a change in sentiment among global investors can therefore generate unstable market reversals, amplifying

volatility in comparison to developed markets. Southeast Asian economies with high manufacturing growth rates, expanding consumer markets, and key roles in global supply chains have accounted for much of the recent year's FDI inflows and manufacturing exports in the region. Despite all this exposure, they are now even more important to the global financial system, having accounted for an average 5% Gross Domestic Product (GDP) growth over the past five years, more than double the 2% average for the advanced economies and playing a key role as nodes in global trade and production networks ("Real GDP Growth", n.d.).

Within the Asia-Pacific region, the Association of Southeast Asian Nations (ASEAN) ASEAN-4 or Tiger Cubs Economies – comprising Indonesia, Malaysia, Thailand, and the Philippines – form a special sub-group of emerging economies. They possess robust growth trajectories, young labor forces, and favorable geographical positions along leading global trade routes. Their high degree of openness makes them both responsive to opportunities and vulnerable to fluctuations in global demand, commodity prices, and geopolitical conditions. Regional trade agreements such as ASEAN Free Trade Area (AFTA) and the Regional Comprehensive Economic Partnership (RCEP) also connect their own economic performance increasingly to regional stability. Malaysia is a leading electronics exporter and commodities producer with very close trade relations to China, the United States, and neighboring countries. Thailand is the largest manufacturing hub and tourist hub, but remains highly sensitive to shifting global consumer taste and internal political stability. The Philippines is governed by a services-based economy with the support of foreign remittances, complemented by geopolitical strategic links in the South China Sea. Indonesia is resource-rich with rapid growth in a consumer market, high commodity exports, and increasing infrastructure investments. While Indonesia was initially included in this study's scope, recent reclassification of its sectoral stock indices created data inconsistencies, leading to its exclusion (Sadono, 2021). The analysis therefore focuses on Malaysia, Thailand, and the Philippines, which collectively continue to provide a diverse and representative economic and sectoral mix for the region.

Over the past three decades, the Tiger Cubs Economies underwent significant transformations, fueled by structural reforms, strategic investment

policies, and adaptive responses to global challenges. Following the path of the Four Asian Tigers, which are Hong Kong, Singapore, South Korea, and Taiwan, they developed competitive advantages centered on export-oriented growth, natural resource exports, and rapid industrialization (Mandzhieva et al., 2018). While enjoying the benefits of globalization and regional stability, they have also faced severe external shocks. The 1997 Asian Financial Crisis was a turning point, triggering capital flight, sharp currency devaluations, and deep recessions. In response, the economies strengthened bank regulation, tightened fiscal restraint, and built-up foreign exchange reserves to guard against future shocks. Apart from financial crises, geopolitical events – particularly in Southeast Asia – have greatly influenced investor sentiment and ASEAN-3 stock market performance. Unlike financial crises, which are usually solvable through standard policy measures, however, geopolitical crises do not have a standard "playbook" to fix it (Mishkin, 2009). Their roots are often found in historical tensions, cultural divides, or strategic rivalries, processes that are inconstant and outside the scope of conventional economic policy. This unpredictability makes events within geopolitical more difficult to manage, with effects usually longer lasting, uneven, and resistant to traditional measures.

Geopolitics encompasses the way geography, politics, and power dynamics among nations on global and regional affairs. Geopolitical events are always complicated, unpredictable, and often driven by a mixture of conflicts, territorial disputes, or political crises, and ideological differences. When major developments arise, they usually lead to long periods of geopolitical tensions that are able to influence diplomatic relations, trade flows, and capital movement. In today's interconnected world, even country-specific events can spread rapidly through international markets, drawing the attention of businesspersons, investors and academic researchers alike. Shifts in political landscape can affect investor sentiment instantly, the general outlook and expectations investors have towards market conditions. Positive developments, such as peace agreements or favorable trade negotiations, can increase optimism, leading to bullish behavior where investors buy more equities in expectation of higher returns. Conversely, adverse events such as military clashes or terrorism are likely to generate bearish sentiment, leading to sell-offs, portfolio rebalancing in favor of safer assets, and capital flight

away from riskier markets (Anusakumar et al., 2017). Behavioral finance explains this as a result of fear, uncertainty, and herding whereby perceived risk forces investors to rebalance portfolio regardless of unchanged fundamentals. Heightened tensions can amplify caution, prompting collective selling and increased volatility, while the easing of tensions can restore confidence and draw capital back into equities and other risk-sensitive assets.

To systematically quantify geopolitical risks, Caldara and Iacoviello (2022) developed the Geopolitical Risk (GPR) Index, which uses a dictionary-based methodology to detect newspaper articles containing words statistically linked with geopolitical tensions. The index classifies events into two components: Geopolitical Threats (GPRT) and Geopolitical Acts (GPRA). GPRT captures anticipatory nervousness or media coverage of impending or possible conflicts, while GPRA tracks actual shocks, like the beginning of a war or terrorist attacks. Importantly, GPRT rises typically indicate increases in market volatility as investors adjust their risk premium in preparation for unfavorable outcomes, whereas GPRA surges correspond with recent market pulldowns and liquidity pressures (Chen et al., 2025). The underlying dictionary is taken from geopolitical literature, historical corpora, and frequency analysis across high-tension news cycles, and some of the words like “invasion”, “blockade”, “nuclear”, “troops”, and “terror” are disproportionately witnessed in such waves. This systematic classification covers both the timing and nature of geopolitical events so as to enable a standardized and replicable means of linking changes in geopolitical events with investor sentiment changes and stock performance.

In short, the ASEAN-3 represents a critical case of studying the interaction between geopolitical risk and stock performance. Their strong global linkages create opportunities for growth but also expose them to heightened external risks. While prior studies have explored the influence of geopolitical risk on developed markets, there is limited research focusing on comparative sectoral analysis within emerging ASEAN economies. This study addresses that gap by examining how changes in the GPR Index affect sectoral stock performance in Malaysia, Thailand, and the Philippines, providing insights for both investors and academic researchers on navigating global uncertainties.

1.1 Problem Statement

1.1.1 Volatility of Emerging Markets in the Face of Geopolitical Risk

This study explores how geopolitical tensions or uncertainty, measured through the Geopolitical Risk Index (GPR) developed by Caldara and Iacoviello (2022), affects the sectoral stocks performance in three emerging ASEAN economies, namely Malaysia, Thailand and Philippines. Stock market in emerging countries is notoriously volatile as of the increasing unpredictability. For instance, according to International Monetary Fund (IMF) researchers, emerging markets get affected the strongest, by one type of the geopolitical risk events, that is the conflicts of international military such as the invasion of Ukraine by Russia in 2022, possibly due to more economic disruptions. They experienced a 5 percentage points average monthly drop in stock returns, double the amount for all other types of events. In fact, stocks fall around 1% globally per month in general, while emerging markets can drop as much as 2.5% (Fendoglu et al., 2025). Also, they can however become positive of the average stock market returns after the geopolitical events, with just 1 month period, depending on the characteristics of the conflicts and varied on countries and their sectors (Chisholm, 2025). For instance, the disruptions in supply chain may benefit the energy sector if it raises the prices of oil, while other sectors that depend on energy could experience a downturn. This evidence provides the foundation for the need to understand how geopolitical shocks ripple through the emerging economies amid their stock performance being difficult to predict.

1.1.2 Heterogeneous Sensitivity Across Emerging ASEAN Economies

Malaysia, Thailand and Philippines are countries representing key emerging ASEAN markets. Nevertheless, they have their own degree of sensitivity to different types of geopolitical events and risks uniquely even though they have similar characteristics like collaborate in the same regional trade, having similar development trajectories and policies development. For example, according to the study by Sadeghzadeh (2022), it was found that surges in geopolitical risk led to stock index level increased of stock markets in Thailand and Philippines but surprisingly had a less consistent and sometimes dampening effect in Malaysia. Hence, this study may uncover the similar and different patterns across these three markets.

1.1.3 Spillover Effects and Amplified Market Uncertainty

The stock performance of emerging countries like Malaysia, Thailand and Philippines is very unpredictable and tend to exhibit elevated volatility around occurrence of geopolitical shocks, due to the spillover effects and their high sensitivity. The spillover effects make predicting the market responses difficult, especially when financial contagion and global market sentiment interact with geopolitics. According to a study by Bonga-Bonga and Mpoha (2024), economic events in developed nations can lead to significant spillover effects on key regional emerging stock markets, including those in Asia, with examples like Brexit and the US-China trade war amplifying volatility through synchronized cycles and interdependence in stock returns. As emerging economies, countries like Malaysia, Thailand, and the Philippines are becoming more integrated with global economics, and their export-driven sectors that depend on global trade may suffer due to reduced demand and increased risk aversion by foreign investors, even if the geopolitical friction is not directly targeting the nation.

These countries are actively demanding for international funds entering and attracting foreign investors in order to seek for growth opportunities, but a spike in geopolitical risk can immediately reduce foreign investors' confidence. When they sense too much uncertainty, they

may interpret it as a sign that the country is having poor and ineffective risk management, which then influences the investor sentiment due to their confidence loss. They then will withdraw funds from the capital markets, fearing of the financial losses caused by the geopolitical risk. For instance, global supply chain, international trade, investors sentiment and stock markets were all being affected when US and China, the two largest economies in the world were having tariff war. It is like watching two elephants fighting and even those on the sidelines could get hurt in the chaos. Foreign investors might hesitate to invest or even pull out from the other countries, fearing their investments to be caught in the crossfire due to the difficulties to predict, disrupting supply chains and the clouded expectations from the tit-for-tat tariffs war.

The instability is further highlighted by the market movements in the real world. For example, Stock Exchange of Thailand (SET) Index, was down roughly 15% this year and remained as the poorest performer among several other global indices tracked by Bloomberg in March 2025, with reason partly due to foreign investors pulling out from market amid of the uncertainty occurred in market, including the Trump's trade war (Tan, 2025). In contrary, just after few months, Thai SET index then saw a rose of 14% in July 2025, the sharp rebound was driven by factors including the US's finalization of a lower-than-expected tariff, making it its best month since November 2020 (AmInvest, 2025). These examples not only reflect that the market can be highly volatile with a sudden two digits increase and decrease of performance in percentage, and that investor sentiment being shaken by geopolitical tensions, underscore on that the stock movement in these evolving economies is so unpredictable. The spillover effects further intensify the unpredictability, for instance a surge in US tariffs not only would affect the trade between US and China while Southeast Asian markets that rely on export like Malaysia, Thailand and Philippines could also feel the ripple effects through reduced demand and investor caution (Murugaboopathy & Banerjee, 2025). The combination of weak confidence and complex global linkages makes the forecasting process of stock movements in these emerging nations challenging, confirming on the

cruciality to understanding how geopolitical risk could influence the overall and sectoral stock markets for this study.

In short, this study investigates the impact of GPR on sectoral stock indices in Malaysia, Thailand and Philippines because these are fast growing, interconnected and yet distinctive emerging markets in their own ways. With also the fact that they are currently facing uncertainty raised from geopolitical events and volatile responses from investors. Failing to grasp on how GPR affects each individual sector may cause misguided decisions, risks of having opportunities being missed for investors.

1.1.4 Underrepresentation of Geopolitical Risk in Sector-Level Studies

Moreover, this study strives to fill the research gap with sectoral focus to add depth in the current world. Despite the theoretical significance of the GPR index, few empirical studies have adopted it in emerging markets, and even fewer have explored its disaggregated components such as war threats, peace threats and terror threats individually. Recent studies on developed countries such as the United States of America have found strong evidence that sectoral stock market volatility is sensitive to different categories of geopolitical risk (Chatziantoniou et al., 2025). However, there is still a lack of study in understanding how these risks affect an emerging country like Malaysia, Thailand and Philippines. According to Batten et al. (2023), who studied markets across Asia, Europe and the US, the Russia–Ukraine war, a geopolitical event, has historically triggered capital outflows and financial volatility. However, the study focuses only on the global banking sector, which fails to capture the heterogeneous impact across the other key sectors like plantation, energy, and technology. For example, the energy sector might be more affected by military conflicts, while the technology sector may be more sensitive to geopolitical tensions involving trade restrictions on semiconductors, which are likely to fall under the ‘GPR Threats’ category. Thus, sector-level analysis becomes essential, and this study aims to bridge

the research gap to investigate and reveal how different sectors play their roles differently in response to geopolitical tensions, for providing actionable insights for portfolio management.

In summary, this study aims to examine the impact of geopolitical risks on emerging countries due to the importances stated above and to bridge the research gap by focusing on the disaggregated GPR categories and how they impact emerging markets like Malaysia, Thailand and Philippines, particularly across their different industry sectors, indicated by their sectoral indices. To make the results more reliable, the study also includes other important factors like Foreign Portfolio Investment (FPI), past sector volatility, and the overall market sentiment, Kuala Lumpur Composite Index (KLCI) for Malaysia, Stock Exchange of Thailand Index (SETI) for Thailand and Philippine Stock Exchange Index (PSEi) for Philippines, as control variables to enhance the effectiveness in capturing the impact of geopolitical risks.

1.2 Research Questions

1. How do disaggregated categories in the Geopolitical Risk (GPR) Index affect sectoral stock market volatility in Malaysia?
2. How do disaggregated categories in the Geopolitical Risk (GPR) Index affect the overall stock market in Malaysia (KLCI)?
3. How do disaggregated categories in the Geopolitical Risk (GPR) Index affect sectoral stock market volatility in Thailand?
4. How do disaggregated categories in the Geopolitical Risk (GPR) Index affect the overall stock market in Thailand (SETI)?
5. How do disaggregated categories in the Geopolitical Risk (GPR) Index affect sectoral stock market volatility in Philippines?

6. How do disaggregated categories in the Geopolitical Risk (GPR) Index affect the overall stock market in Philippines (PSEi)?

1.3 Research Objectives

1. To investigate the effect of disaggregated geopolitical risk categories on the volatility of Malaysian sectoral stock indices.
2. To investigate the effect of disaggregated geopolitical risk categories on the volatility of overall stock market in Malaysia.
3. To investigate the effect of disaggregated geopolitical risk categories on the volatility of Thailand sectoral stock indices.
4. To investigate the effect of disaggregated geopolitical risk categories on the volatility of overall stock market in Thailand.
5. To investigate the effect of disaggregated geopolitical risk categories on the volatility of Philippines sectoral stock indices.
6. To investigate the effect of disaggregated geopolitical risk categories on the volatility of overall stock market in Philippines.

1.4 Hypotheses Development

H_1: Disaggregated geopolitical risk categories have a statistically significant effect on the volatility of Malaysian sectoral stock indices.

H_2: There is statistically significant and positive correlation between all categories risk of geopolitical and the volatility of Malaysian stock market index (KLCI).

H_3: Disaggregated geopolitical risk categories have a statistically significant effect on the volatility of Thailand's sectoral stock indices.

H_4: There is statistically significant and positive correlation between all categories risk of geopolitical and the volatility of Thailand stock market index (SETI).

H_5: Disaggregated geopolitical risk categories have a statistically significant effect on the volatility of Philippines' sectoral stock indices.

H_6: There is statistically significant and positive correlation between all categories risk of geopolitical and the volatility of Philippines stock market index (PSEi).

1.5 Significance of Study

This study may introduce new knowledge to several fields of audiences by studying how different types of geopolitical risk, as measured by the Geopolitical Risk Index (GPR), could influence the stock market volatility across the sectors in the emerging ASEAN economies, namely Malaysia, Thailand and Philippines. Unlike many existing studies that focus only on overall market indices or developed markets, this study focuses on the underexplored area, which is how disaggregated geopolitical risk categories affect the sectoral volatility in these emerging markets. Through this study, it could identify which sectors have higher sensitivity to which certain categories of geopolitical risk particularly, such as military conflicts, trade tensions that fall under peace threats, or events related to war. The findings from this study will provide a clearer picture on how different types of risks would be significant on certain performance of sectors in the capital markets, offering a better understanding with more details and increased depth as compared to previous studies.

By understanding the valuable insights from the findings, perspectives from different angles could be offered and several audiences could be benefited. Participants in the markets may be better off to the equipping and adopting in order to predict sectoral reactions during the occurrence of future geopolitical events. It can raise awareness among them about the vulnerabilities related to the economic circumstances that could be brought by the geopolitical risks, which also helps them to identify the potential losses that may arise if the risks are not being effectively managed. Therefore, encouraging them to take proactive steps such as

implementing targeted risk mitigation beforehand, improving strategies for communicating among the investors.

Furthermore, current and potential investors and fund managers may also be benefited from this study, as it offers a deeper understanding on how historical geopolitical events have affected sectoral stock performance in the past in these three countries. Although past performance may not repeat in the upcoming future, this information could be a guidance for them on their investment strategies assessment, helping them to make more informed decisions on the need to adjust their portfolio and funds allocation in the times of heightened geopolitical risks. By understanding which sectors are having higher sensitivity to specific geopolitical risks, it can support investors and fund managers to be aware of the sectoral vulnerability and the patterns of their resilience, therefore facilitate actions such as hedging or timing market entries and exits.

Moreover, this study also provides valuable insight for researchers, including both academic and institutional analysts. It introduces a sector-level volatility perspective in the emerging ASEAN countries for their reaction towards the international risk events. Researchers may use these findings to identify for new research questions, explore comparisons between countries across the sectors, or examine the control variables such as foreign portfolio investment flows, macroeconomic indicators and global market sentiment associated with the geopolitical risk. The results could serve as reference for comparative studies in the other regions or as an empirical basis in the level of sectors.

Ultimately, by using recent data from those countries and including the control variables like foreign portfolio investment, lagged sectors volatility and overall market sentiment, as well as by disaggregating geopolitical risk into distinct categories, this study will bridge an important gap in the literature and provide a clearer understanding and actionable insights for market participants including investors and fund managers as well as the researchers.

1.6 Conclusion

Overall, this study lays the groundwork for a deeper understanding of geopolitical impacts, as measured through geopolitical risk, foreign portfolio investment, and market portfolio, influencing emerging market stock performance. The understanding generated through this study is expected to bridge the gap between theoretical perspectives and real market consequences and be valuable to investors and scholars interested in unravelling the complexity of financial markets under conditions of geopolitical uncertainty.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter develops the conceptual and analytical basis for this study by examining existing knowledge and perspectives relevant to the study. It first outlines a guiding theory for understanding how geopolitical uncertainty influences investors' actions and sectoral market movements. The chapter also examines dependent variable, which is sectoral stock market volatility, and independent variables such as geopolitical risk, foreign portfolio investment, market portfolio, and lagged sectoral volatility, by relevant empirical findings. Together, these reviews provide theoretical grounding and empirical insights necessary for interpreting the relationships explored in later chapters.

2.1 Theoretical Review

2.1.1 Herding Behaviour

Herding behaviour, originally conceptualized by Keynes, refers to the tendency of investors to follow the actions of a larger group rather than relying on their own independent analysis or private information (Schumpeter & Keynes, 1936). Herding often occurs in periods of ambiguity, when irrational investors are doubting their own decisions, follow others for psychological comfort and reduce the risk of making wrong decisions. Scharfstein and Stein (1990) note that, amid uncertain outcomes, fund managers often mimic others' decisions to safeguard their reputations, a concern not just for smaller and younger investors. Traditionally, herding is linked to movements in stock indices, which are viewed as signals of collective sentiment. Similarly, geopolitical risks such as political instability,

conflicts like the Russian-Ukrainian war, or the US-China trade war, heighten market uncertainty and volatility, influencing investors' emotions and fostering irrational behaviour.

The GPR index, which quantifies geopolitical tensions such as military, nuclear threat, as well as war and terror acts, has increasingly become a reference point for investor sentiment. During heightened geopolitical tensions, investors interpret rising GPR scores as a proxy for increased uncertainty and risk aversion in global markets (Medhioub, 2025). Initially, institutional investors or those with insider information adjust their investment in respond to geopolitical events, often shifting to different sectors or safe-haven assets. This often triggers collective decision-making, where both institutional and retail investors rush to adjust their portfolios, shifting away from perceived risky assets. As a result, herding behaviour driven by changes in the GPR Index can instigate widespread volatility across stock markets, not due to changes in fundamental value, but as a reaction to perceived systemic risk.

Such behaviour is especially evident during geopolitical shocks, where the initial impact of events such as ceasefire agreements, trade sanctions, or diplomatic negotiations is amplified by collective investor reactions. A sudden spike in the GPR Index can trigger broad selloffs, not only in directly affected regions or sectors but also in unrelated areas, as fear spreads across markets. For instance, during the European debt crisis, rising geopolitical uncertainty significantly increased cross-market volatility (Beirne & Fratzscher, 2013), reflecting herding behaviour in response to perceived systemic threats. This highlights how geopolitical risks, as measured by the GPR Index, can drive market performance beyond fundamentals. Investor decisions often follow the actions of others, especially in uncertain times, explaining why even localized geopolitical events can lead to widespread and sometimes excessive market responses.

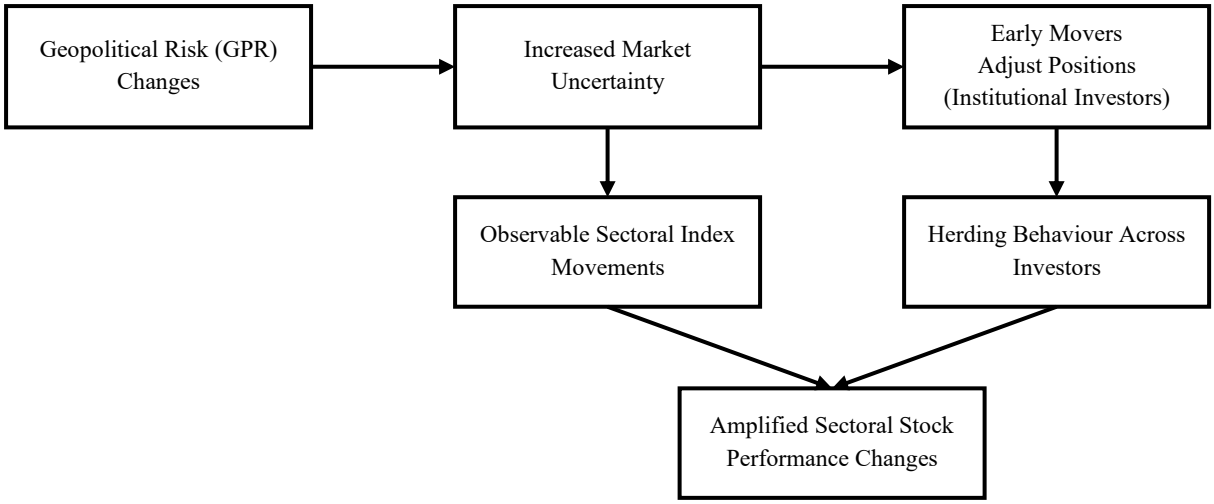


Figure 2.1. GPR Changes, Herding Behaviour, and Sectoral Stock Performance

2.2 Review of Variables

2.2.1 Sectoral Stock Market Volatility

Sectoral stock market volatility in three ASEAN countries which are Malaysia, Thailand and Philippines is being selected as the dependent variable in this study. In the context of the three ASEAN countries, this study focuses on sector-specific indices from main exchange of the country including Bursa Malaysia (Malaysia), the SET (Thailand), and the PSE (Philippines). Stock market volatility is generally defined as the degree of variation or fluctuation in stock returns over time, reflecting the level of uncertainty and instability in financial markets (Schwert, 1989; Yang, 2021). At the sectoral level, the prior study shows that volatility captures how different industries such as technology, finance, consumer goods, and energy experience heterogeneous risk exposures, offering more granular insights than aggregate market indices (Gencer & Demiralay, 2014).

Based on Gencer & Demiralay (2014), the journal shows that the performance of the stock market is assessed through its return and volatility.

Performance can present a wide variety of potential opportunities as well as threats to the broader economy. According to Zulkifli et al. (2024), the journal indicated that significant growth in the stock market sector often serves as an indication of improved productivity, technological development, and rising demand within that industry. These factors can boost linked industries through supply chain connections and have a positive impact on GDP growth. While Sehrawat and Giri (2017) extended that greater sectoral performance can also boost corporate finance capacity, allowing firms to make investments in growth, innovation, and job opportunities, which strengthens the overall economy. Conversely, a substantial drop in sectoral stock market performance can cause capital inflows to diminish, company confidence to erode, and sectoral production to shrink. This will hinder economic development and influence the whole financial system.

Sectoral stock market volatility in Malaysia, Thailand, and the Philippines can be influenced by a various of factors. In global perspective, changes in the price of commodities, particularly crude or palm oil, have an impact on industries linked to natural resources and cause ongoing volatility in sectoral indexes, notably in Malaysia and Thailand (Ngoc, 2022). While Gajurel and Chawla (2022) demonstrated that due to greater reactivity to capital flow in emerging countries, such as those in ASEAN, makes them more vulnerable to abrupt volatility driven by speculative flows. Lastly, macroeconomic conditions like inflation, GDP growth, and exchange rate can amplify sectoral indices swing, especially in interest rate-sensitive industries like banking and real estate (Chauhan et al., 2025).

In this study, sectoral stock market volatility serves as the dependent variable, aimed at exploring how various factors influence the performance of different sectors within the Malaysia, Thailand and Philippine's stock market. The focus remains on dissecting this variable to provide a comprehensive understanding of its definition, its opportunity and threat on the economy and its role in causing the sectoral stock market volatility as documented in the study.

2.2.2 Geopolitical Risk

According to Chatziantoniou et al. (2025) and Pan et al. (2023), both show the similar definition of geopolitical risk where they refer to uncertainties and potential disruptions in financial markets caused by events such as wars, terrorism, military buildups, nuclear threats, and other interstate conflicts. Chatziantoniou et al. (2025) carried out the study of geopolitical risk impact on stock market volatility measured by GPR index, which separated into eight subcategories and are grouped into geopolitical threats and acts. This variable is also widely recognized in others' literature for its significant impact on stock market volatility, but the effects vary by sector, country, and the categories of risk. It finally comes to a consensus that geopolitical risk amplifies market uncertainty, often leading to heightened volatility.

The relationship between geopolitical risk and stock market volatility produces a mixed result which support both positive and negative relationships. According to Chatziantoniou et al. (2025), the journal explored that geopolitical risk categories significantly affect the volatility of the US sectoral stock market, but the impact being heterogeneously by geopolitical risk categories and sector. It means that the different sectors respond uniquely to different categories of geopolitical risk, so the relationship between geopolitical risk categories and sectoral stock market volatility can be positive or negative. The journal concludes that GPR Threats drive up volatility, while the GPR Acts stabilize the sectoral stock market. It brings out that uncertainty will lead to stock market volatility because GPR Threat is a geopolitical event that has not happened, thus generate uncertainty. In contrast, the safe-haven effect defensive sector stabilizes the investor capital and thus reduces volatility. Similarly, Eissa et al. (2024) conducted a study in Middle Eastern emerging markets which include Egypt, Isreal, Saudi Arabia and Turkey. They claimed that these effects vary significantly across different market conditions and quantile (e.g. bullish and bearish market) because the investor's behaviour is driven

by uncertainty or risk aversion. Therefore, some markets react differently to geopolitical conflict.

On the other hand, the study from Yang et al. (2021) which conducted in China using the global and specific regional threats and acts of GPR index, indicated that the overall GPR is positive on China's stock market. Nonetheless, investors are more sensitive to escalate geopolitical threats rather than geopolitical acts in China's stock market as GPR Acts shows insignificant results. This signifies that the realization geopolitical actions have no impact on stock market volatility. While for the specific regional GPR index explored that there is heterogeneous effect on China's stock market, especially Middle East. The journal explained about the magnitude and even the direction of the effect can vary by country, reflecting differences in economic structures and investor behaviours. For example, GPR in Saudi Arabia may reduce the volatility in China's stock market by reducing their oil price volatility, given China's dependency on imported crude oil.

From several other journals such as Salisu et al. (2023) and Zhang et al. (2023), the positive relationship between geopolitical risk and stock market volatility has been supported. Salisu et al. (2023) examined the effect of geopolitical risk (GPR) on stock market volatility of 32 countries and explored that GPR has stronger impacts for emerging markets, oil-exporting economies, and relatively peaceful countries. Complementing this, Zhang et al. (2023) indicated that GPR creates uncertainty that delays investment and consumption, reduces trade, and encourages investors to move funds into safe assets and thus amplifies fluctuations in stock prices.

2.2.3 Foreign Portfolio Investment

Foreign Portfolio Investment (FPI) refers to short-term investment by foreign investors in financial assets such as purchase of stock and bonds without seeking to take direct control over the company, which are highly

sensitive to global and domestic economic conditions. Unlike foreign direct investment (FDI), which involves long-term commitments and including control and management roles, FPI is characterized by its flexibility as it allows for quick entry and exit from market (Sanusi & Dickason-Koekemoer, 2025; Haider et al., 2016). Some of the literature widely recognized foreign portfolio investment for its significant impact on stock market volatility.

The relationship between foreign portfolio investment and stock market volatility produces a single result which supports a positive relationship. According to Chhimwal and Bapat (2020), the study indicated that foreign portfolio investment is having a positive effect towards volatility of the India stock market, with small, medium and large cap of market segments. It highlighted that the herding behaviour of investors, particularly sudden FPI movements (FPI selling), creates a mismatch in demand and supply, leading to the stock prices away from their fundamental values and amplifying price fluctuations, which in turn rises stock market volatility, especially in emerging markets with less liquidity. The relationship is also being supported by Naik et al. (2021), whose study conducted in emerging countries. It proved that FPI activities like sudden buy and contrarian selling are significantly increasing Indian stock market volatility due to price pressure when there are large movement of FPI.

On top of that, the viewpoint of Chhimwal and Bapat (2020) and Naik et al. (2021), which related to “Herding Behaviour” and pressure when FPI withdrawals has been supported by Prabheesh et al. (2022). The journal extended that “Herding Behaviour” happened due to FPI lacks long terms commitment, so investor follow each other out, making it overreact and thus lead to fluctuations in stock market. Naik et al. (2021) also explored that information asymmetry of foreign investors because they may be less informed about local market, leading to more sensitive responses to news and sentiment. Additionally, due to short-term and liquid natures of FPI, it will create supply-demand imbalances, leading to depressing stock prices and thus increasing volatility. Lastly, Umutlu and Shackleton (2015) note that informed institutional investors' trading against the uninformed

individual investors drives the market volatility and adverse effects because information barriers to foreign investors, leading to follower's effect in Korea's stock market.

2.2.4 Market Portfolio

The market portfolio is a hypothetical portfolio of investment holdings that represents a specific segment of the securities in the financial market. It weighted by their market capitalization and serves as a macro-consistent benchmark for tracking the market changes over time and evaluating systematic risk as well as performance indicator of specific stock exchange for investors (Lo, 2016). In Malaysia, the FTSE Bursa Malaysia KLCI Index (KLCI) serves as the market portfolio. It comprises the 30 largest companies by market capitalization, spanning key sectors such as finance, technology, consumer goods, and plantations (Wei et al., 2023). There is a similar concept apply to Thailand and Philippines, where SETI and PSEi serve as their market portfolio, respectively. As a primary benchmark of each country, the market portfolio acts as a macroeconomic trend, making it an indicator of economic conditions and stock market performance.

The relationship between market portfolio and sectoral stock market volatility produces a single result which supports a positive relationship. According to Chatziantoniou et al. (2025), the journal showed that the market portfolio has a statistically significant positive effect on the sectoral stock market volatility. This relationship is further reinforced by Mahat et al. (2020) whose study the lead-lag effect between composite index and sectoral equity index taken place in Malaysia. The journal reveals that majority of sectors are strongly co-move with composite index in Malaysia. Furthermore, Ma et al. (2017) note in their study of the Chinese stock market that traders usually base their decisions mostly on the overall stock index. Higher behavioural consensus among traders leads to more synchronized swings across sectors, which lowers liquidity and raises market volatility. In addition, Poshakwale and Theobald (2004) also explained that larger cap

stock performance can influence small cap in India market due to information incorporated faster in large caps due to higher liquidity, while the thin trading in small caps lead to lagged large cap volatility to persist in small cap performance.

From another perspective, Dong et al. (2019) did not directly study about lead-lag effect of stock market, but he found that the investor reliance on index trends, contributes to extreme market behaviours such as synchronized trading. This means that investors will buy or sell the individual stock based on the market index at the same moment, so this journal had proved that the stock index influences individual stock performance through synchronized behaviour.

2.2.5 Lagged Sectoral Stock Market Volatility

Lagged sectoral stock volatility is defined as the measure of price fluctuations in a specific sector of the stock market indices from the previous period, typically quantified as the standard deviation or variance of stock returns (Laiboni, 2020). This variable captures historical price instability, providing a snapshot that influences future market behaviour. Therefore, the literature widely recognizes lagged volatility as a critical determinant of current volatility, as it reflects investor behaviour to prior market conditions.

The relationship between lagged stock market volatility and stock market volatility produces a single result which supports a positive relationship. According to the study from Oredegbe and Abioye (2022), it concluded that the information about the volatility in the previous period significantly influences the current stock market volatility due to investors' expectations that the resultant volatility from the shocks persist. This relationship is further reinforced by Bui et al. (2022) whose study conducted across 24 sectors in Vietnam stock market. The journal pointed out that the current volatility of some sectors is most affected by the market volatility from the previous periods such as development investment and education

sectors. Also according to Laiboni (2020), the author found that volatility in all Nairobi Securities Exchange sectors is influenced positively by their own shocks from the previous week, but the persistence of the past volatility depends on sectors.

Additionally, the journal of Torun (2007) extended that volatility exhibits a long memory process in the Turkish stock market and suggests that future volatility depends on its past realization, especially in emerging market. This statement was further explained by Gyamfi et al. (2016), who explained that long-term memory in stock market volatility is due to recurring macro-economic cycle. These memory effects are justified by lagged effects and repetitive irrational behaviour that are contrary to the efficient market hypothesis (EMH). Similar evidence was provided by Owidi and Mugo-Waweru (2016) in their study conducted on the Kenya stock market, which proved that due to persistence in volatility, past volatility has significant influence power on current volatility. Lastly, based on the regression results from the study of Chatziantoniou et al. (2025), it supported all the viewpoint of other journals because most of the current US sectoral stock market volatility is significantly impacted by their own past volatility.

2.3 Conclusion

In summary, this chapter reviewed the relevant literature that related to the relationship between independent variables; geopolitical risk categories, foreign portfolio investment, market portfolio and lagged sectoral stock market affect the sectoral stock market volatility. It started the discussion with theoretical framework which is “Herding Behaviour” as a guideline for understanding the direction of the research topic. While the variables review continues to examine the previous study and study about how these independent variables spread to affect the dependent variables. This chapter provides a significant insight into clearly understand the correlation of the variables.

CHAPTER 3: METHODOLOGY

3.0 Introduction

This chapter introduces the methodological framework to discuss the role of geopolitical risk in sectoral stock market volatility. The methodological framework deals with various geopolitical risk categories, foreign portfolio investment, and market conditions. In this chapter, the objective is to use time series analysis to examine the effects of disaggregated geopolitical risk categories on sectoral stock volatility in Malaysia, Thailand and Philippines respectively. Developments in time series econometrics provide a natural framework to model these relationships, extending the approach of Chatziantoniou et al. (2025) by incorporating foreign portfolio investment as an additional regressor. In this study, the estimation conducted will include Ordinary Least Squares (OLS) regression for each sector in these markets. To specify the model, the step taken first to outline the econometric model with justifications for the variables. The next step is to apply OLS separately to each sector to identify which geopolitical risk categories have significant effects on specific sectors. Lastly, diagnostic checking will proceed using Jarque-Bera for normality to assess if the skewness and kurtosis can match those of a normal distribution, ARCH for heteroscedasticity and Breusch-Godfrey for serial correlation to test for the autocorrelation in the error terms.

3.1 Scope of Study

This study utilises the time-series data from the first quarter of 2012 to the third quarter of 2024, encompassing 51 quarterly observations across 27 sectors in Malaysia, Thailand, and the Philippines. The analysis focuses on examining the impact of disaggregated geopolitical risk (GPR) categories on sectoral stock market volatility, extending the framework of Chatziantoniou et al. (2025) by incorporating

foreign portfolio investment (FPI) as an additional regressor, along with the market portfolio and the lagged sectoral volatility as control variables. Sectoral stock market volatility is measured as the quarterly percentage change in sectoral indices, calculated as (current price/previous price -1). GPR categories are transformed using the first difference of the natural logarithm (dlog) to capture percentage changes. FPI is made as a ratio to GDP (FPI/GDP) to account for differences of economic size across countries. The market portfolio is similarly transformed via dlog to reflect percentage changes in broad market indices (KLCI for Malaysia, SETI for Thailand, and PSEi for the Philippines), while lagged sectoral volatility uses a one-period lag to capture persistence effects. Sectoral stock price, GPR index, FPI data, Gross Domestic Product (GDP) data, and stock market index in each country are collected. The sample size for each sector may vary depending on the creation period and availability of the sectoral stock price. All variables are obtained from various reputable secondary sources as follows:

Table 3.1: Source of Data

Variable	Source of Data
Sectoral Stock Market Volatility across Malaysia, Thailand and Philippines	Refinitiv
Geopolitical Risk	Matteo Iacoviello GPR Index website
Foreign Portfolio Investment	Department of Statistics Malaysia, Bank of Thailand, Bangko Sentral ng Pilipinas (BSP)
Gross Domestic Product	Refinitiv
Lagged Sectoral Stock Market Volatility	Refinitiv
Market Portfolio	Refinitiv

3.2 Econometrics Model

$$y_{i,t} = \gamma_{i1}\gamma_{i,t-1} + \gamma_{i2}Market\ Portfolio_t + \sum_{j=1}^{8}\delta_{ij}Geopolitical\ risk\ category_{j,t} + v_{i,t} \quad - \text{Eq. (1)}$$

This study extends the framework from Chatziantoniou et al. (2025) by introducing foreign portfolio investments (FPI) as another regressor. With a focus on developing Southeast Asian economies like Malaysia, Thailand and Philippines, this improvement seeks to offer a more comprehensive knowledge of the variables influencing sectoral stock market volatility. The extended model is as follows:

$$y_{i,t} = \alpha_{i,t} + \sum_{j=1}^{8}\beta_{1i,t}GPR_{j,t} + \beta_{2i,t}FPI_t + \beta_{3i,t}MP_t + \beta_{4i,t}y_{i,t-1} + v_{i,t} \quad - \text{Eq. (2)}$$

Where,

$y_{i,t}$ = Sectoral Stock Market Volatility

$GPR_{j,t}$ = Geopolitical Risks Categories (j = war threats, peace threats, military buildups, nuclear threats, terror threats, beginning of war, escalation of war, terror acts)

FPI_t = Foreign Portfolio Investment

MP_t = Market Portfolio

$y_{i,t-1}$ = Lagged Sectoral Stock Market Volatility

$v_{i,t}$ = Error Term

Equation (2) aims to investigate the explanatory variables that influence sectoral stock market volatility across Malaysia, Thailand and Philippines over time. The dependent variable, $y_{i,t}$ and the independent variable, $y_{i,t-1}$ represents the volatility in a specific sector i at time t and $t-1$, respectively. In Malaysia, i indicates Finance, Plantation, Property, Construction, Consumer, Industrial, Technology, Energy, Healthcare, Real Estate Investment Trust (REIT), Telecommunications, Transportation and Utilities, which are sectors that are listed in Bursa Malaysia. In Thailand, i indicates Agro & Food Industry, Consumer Products, Financials, Industrials, Property & Construction, Resources, Services and

Technology listed in The Stock Exchange of Thailand (SET). While in Philippines, i indicates Financials, Industrial, Holding Firms, Property, Services, and Mining & Oil, which are sectors listed in Philippines Stock Exchange (PSE).

Equation (2) includes eight geopolitical risk categories, $GPR_{j,t}$, where j = War Threats (C1), Peace Threats (C2), Military Buildups (C3), Nuclear Threats (C4), Terror Threats (C5), Beginning War (C6), Escalation of War (C7) and Terror Acts (C8). Foreign Portfolio Investment, FPI_t are incorporated into Equation (2) to enhance the comprehensiveness of this model. Additionally, Market Portfolio, MP_t stands for FTSE Bursa Malaysia KLCI (KLCI) in Malaysia, SET Index (SETI) in Thailand and Philippine Stock Exchange Index (PSEi) in Philippines. The term $v_{i,t}$ denotes the error term, capturing the random stuffs that affect volatility. In addition, $\alpha_{i,t}$ denotes intercept, $\beta_{1i.t}$ captures the effect of various GPR events that affect market volatility, $\beta_{2i,t}$ represents the impact of international capital flows, $\beta_{3i,t}$ captures the impact of broader market volatility, and $\beta_{4i,t}$ represents the impact of the lag of the ith sectoral stock market volatility in Malaysia, Thailand and Philippines.

3.3 Research Variables

3.3.1 Sectoral Stock Market Volatility across Malaysia, Thailand and Philippines

In this study, sectoral stock market volatility across Malaysia, Thailand and Philippines is the dependent variable. Volatility, a common indicator of market risk and uncertainty reflects the extent of fluctuations in sectoral stock prices over a given period. Increased volatility denotes more price swings, which could be caused by shifts in investor sentiment, economic conditions and external shocks like geopolitical events.

For each country's stock market sectors, sectoral volatility is computed at the quarterly basis in order to account for this. The calculation is performed using the usual formula for percentage change as follows:

$$y_{i,t} = (\frac{x_{i,t}}{x_{i,t-1}} - 1) \quad - \text{Eq. (3)}$$

Where,

$x_{i,t}$ = stock price of a specific sector in the current quarter

$x_{i,t-1}$ = stock price of a specific sector in the previous quarter

The proportionate change in the sector's stock price from one quarter to the next is measured by this formula. This formula is also being supported by Chatziantoniou et al. (2025) as the study use this formula to calculate the volatility of US sectoral stock markets. Price increases are signified by positive values, whilst price decreases are signified by negative values. The analysis captures cross-country and cross-sector variations in market volatility by using this method across several sectors in Malaysia, Thailand, and the Philippines.

3.3.2 Geopolitical Risk (GPR)

Geopolitical Risk (GPR) categories, one of the main regressor in this study, measure the degree of political and security-related concerns that can affect one nation's financial and economic conditions. News-based indicators of tensions, including war threats, terrorist attacks or diplomatic conflicts are used to construct the GPR index. This study particularly looks into these eight categories that are listed by Caldara and Iacoviello. With this, a more detailed view is provided in which geopolitical risk categories may affect different sectoral market volatility of the studied countries.

Geopolitical risk is a key component in influencing the behaviour of financial market. As the political tension frequently increase, investors' confidence will be affected and thus lead to changes in portfolio flows as

there is uncertainty on the market conditions. This then shows a fluctuation in stock prices. With this, the study anticipates a positive correlation between sectoral stock market volatility and GPR events. Especially for emerging economies like Malaysia, Thailand and Philippines, with export-driven sectors such as manufacturing and commodities, GPR's impact may be easily amplified due to reliance on global trade and foreign investment (Umar et al., 2022). GPR is therefore an essential feature to incorporate into this study.

Each GPR categories index data is initially gathered on a quarterly basis. The study adopts the first difference of the natural logarithm (dlog transformation) to record percentage changes rather than absolute levels, which is computed as follows:

$$dlog(GPR_t) = ln(GPR_t) - \ln(GPR_{t-1}) \qquad -\text{Eq. (4)}$$

By applying transformation above, the GPR data can be converted into approximate percentage change and skewness can be reduced in the normal distribution, thus improving the variable's suitability for regression analysis later.

3.3.3 Foreign Portfolio Investment (FPI)

Foreign Portfolio Investment (FPI) tracks the flow of capital of foreign investors into or out of a nation's debt and equity markets. It reflects the sentiment and confident of international investor towards a country's economic potential. FPI plays a crucial role in understanding stock market movements in emerging markets like Malaysia, Thailand, and Philippines since portfolio flows are often extremely sensitive to the shifts in risk perception.

This variable is included because capital inflows and outflows have a direct impact on the stock market's liquidity and price stability.

Continuous inflows of capital may boost the demand, leading to a rise in market prices and possibly lower volatility by increasing liquidity. In contrast, abrupt outflows can cause steep price declines and increased volatility. As a result, this study hypothesises that volatility in sectoral stock markets will be significantly impacted by changes in FPI (in relation to GDP), with the direction of this impact relying on whether capital flows are entering or leaving the market.

To take into consideration the disparities in economic size among the studied countries, Gross Domestic Product (GDP) is incorporated in this study. FPI is expressed as a ratio of GDP. FPI itself could not tell how big a country's currency relative to the economy size, therefore the study standardized the measure by applying $\frac{FPI}{GDP}$ to reflect the relative magnitude of foreign portfolio flows in the economy.

3.3.4 Market Portfolio

Market portfolio captures the overall performance of a nation's stock market, which is usually calculated using a broad market index that accounts for the weighted average return of all listed sectors. It also serves as a benchmark in the financial markets as it encompasses entire market dynamics, investors' behaviour and macroeconomic conditions. Adding market portfolio into this study allows examination of how general market fluctuations influence sectoral volatility.

Since sectoral stock prices are frequently impacted by the broader market trends, this variable is included in this study. For instance, sectoral returns may increase in conjunction with the market during optimistic market conditions, while market-wide pessimism may raise volatility in all sectors during recessions. With significant market swings, either up or down, usually resulting in more volatility within certain sectors, it is anticipated that market portfolio will impact sectoral stock market volatility.

To quantify this variable, the first difference of natural logarithm (dlog) of the market portfolio index values is utilized and computed as follows:

$$dlog(MP_t) = ln(MP_t) - \ln(MP_{t-1}) \quad - \text{Eq. (5)}$$

This transformation helps in normalizing the data for econometric study by converting the market portfolio values into roughly percentage changes across quarters. With the percentage change over the level of the absolute index, the study can more accurately illustrate the dynamic relationship between sector-specific volatility and overall market performance.

3.3.5 Lagged Sectoral Stock Market Volatility

Lagged sectoral stock market volatility indicates the volatility of a particular sector in the last period. This term is used as an independent variable to account for volatility persistence, a well-established phenomenon in financial markets where high volatility in one period is typically followed by high volatility in the subsequent periods.

As sectoral volatility is rarely random and frequently exhibits patterns affected by investor behaviour, market structure, and prevailing economic conditions, this variable is included. For instance, it is more likely that the volatility continues into the current quarter if a sector experienced a significant price fluctuation in the previous quarter. Sectors with higher volatility in last period will have a high probability to have higher present volatility, as lagged sectoral stock market volatility is believed to be positively influence the sectoral stock market volatility across Malaysia, Thailand and Philippines.

In this study, lagged one over larger lag is being adopted due to its moderation and sufficiency in capturing volatility clustering. The shortest lag order might produce adequate outcomes for changing volatility patterns,

which means that lag one could correspond to the most significant current economic conditions instead of the higher lags. This is due to the validity of the lag depends on the investor sentiment, risk perception and market condition, and all these only carry over in a short-term (Schmidt, 2021). Besides, the influence of fresh market information and macroeconomic events typically react instantly to the stock market, causing the effect of higher lags to decay quickly. If Equation (2) includes too many higher lags, random fluctuations may be captured over significant patterns, leading to model inefficiency (Ghysels et al., 2005). Thus, the lagged value of the dependent variable, such as KLFI(-1) is then added as a distinct explanatory variable in the regression model. As a result, the impact of historical volatility on current volatility may be explicitly captured by the model.

3.4 Methodology

3.4.1 Ordinary Least Squares (OLS)

To analyse the impact of geopolitical risk categories, foreign portfolio investment, market portfolio and lagged sectoral stock market volatility on sectoral stock market volatility across Malaysia, Thailand and Philippines, this study applied Ordinary Least Squares (OLS) estimation. Equation (2) is applied separately to each of the 27 sectors as a time-series analysis with 51 quarterly observations from 2012Q1 to 2024Q3.

For example:

$$y_{i,t} = \alpha_{i,t} + \sum_{j=1}^{8} \beta_{1i,t} GPR_{j,t} + \beta_{2i,t} FPI_t + \beta_{3i,t} MP_t + \beta_{4i,t} y_{i,t-1} + v_{i,t} \quad - \text{Eq. (2)}$$

$$y_{REIT,t} = \alpha_{REIT,t} + \sum_{j=1}^{8} \beta_{REIT,t} GPR_{j,t} + \beta_{REIT,t} FPI_t + \beta_{REIT,t} MP_t + \beta_{REIT,t} y_{REIT,t-1} + v_{REIT,t} \quad - \text{Eq. (6)}$$

Where,

i (Malaysia) = Finance, Plantation, Property, Construction, Consumer, Industrial, Technology, Energy, Healthcare, REIT, Telecommunications, Transportation, Utilities

i (Thailand) = Agro & Food Industry, Consumer Products, Financials, Industrials, Property & Construction, Resources, Services and Technology

i (Philippines) = Financials, Industrial, Holding Firms, Property, Services, and Mining & Oil

Even though the study includes multiple sectors over time, which sounds like panel data, separate OLS regressions are conducted for each sector. This facilitates the analysis on how geopolitical risks affect individual sectors, say, the REIT sector over time, then the Finance sector over time, and so on. Unlike panel data methods (FEM or REM), OLS does not have to deal with sector differences, which makes it ideal for time-series data. Using OLS method offers the ease for estimation, interpretation and comparation across sectors.

3.5 Diagnostic Checking

3.5.1 Normality Test

Prior to doing a formal statistical analysis, it is important to evaluate the data's normality. Otherwise, erroneous inference will be made and come to a wrong conclusion (Das & Imon, 2016). Normality test is to be applied to the residuals in a regression model. If they are not normally distributed, the residuals should not be employed in Z tests or any other tests that are based on the normal distribution, including t test, F tests, and chi-squared tests. The explained variable or at least one explanatory variable may have the incorrect functional form or significant variables may be absent if the residuals are not normally distributed (Khatun, 2021). When one or more of

these systematic mistakes are fixed, normally distributed residuals may result. Jarque-Bera (JB) Test is being utilized in the study to check whether the residuals are normally distributed. This test uses skewness and kurtosis to assess deviation from normality. Skewness = 0 and Kurtosis = 3 showing the residuals are normally distributed.

Hypothesis Testing of Jarque-Bera (JB) Test:

H_0: The residuals are normally distributed.

H_1: The residuals are not normally distributed.

Decision Rule: Reject H_0 if p-value < significance level. Otherwise, do not reject H_0.

3.5.2 Heteroscedasticity Test

In a regression model, the residuals are assumed to have a constant spread once predictors have been used to explain the data. While according to Astivia & Zumbo (2019), heteroscedasticity happens when the variance of errors in a regression model is not constant across observations. This means that these errors vary in size depending on something not included in the model, making the error spread uneven. Violation of OLS assumption may lead to inefficient estimates. Rosopa et al. (2013) stated that even with heteroscedasticity, the econometric model's parameter estimates remain unbiased and consistent. However, the covariance matrix will be wrong, messing up the statistical tests and p-values. Besides, Rosopa et al. (2013) also claimed that Type I error rates will generally increase when the homoscedasticity assumption is violated. Type I error, also known as false-positive, refers to wrongly rejecting a true null hypothesis and making a false conclusion where a variable is significant or insignificant (Banerjee et al, 2009). ARCH Test is being conducted to test for heteroscedasticity problems.

Hypothesis Testing of ARCH Test:

H_0: There are no ARCH effects in residuals (homoscedasticity).

H_1: There are ARCH effects presented in residuals (heteroscedasticity).
Decision Rule: Reject H_0 if p-value ≤ significance level. Otherwise, do not reject H_0.

3.5.3 Serial Correlation Test

A linear regression assumes errors in the model to be independent from one another (Huitema & Laraway, 2009). When this assumption is not fulfilled, there is a correlation in residuals and serial correlation arises. In time series data, the correlation between a variable and its lagged values is referred to as serial correlation, or autocorrelation. To put it simple, serial correlation occurs when the predictors are not independent from each other. It often exists in a time series regression model, where observations frequently rely on historical values (Kumar, 2023). According to Huitema and Laraway (2009), when observations are made very close together across time, the outcome varies slowly, or significant predictors are omitted from the model, autocorrelation errors are likely to occur. With this, using OLS regression will lead to misleading statistical inferences. To determine if serial correlation exists, Breusch-Godfrey Serial Correlation LM Test is conducted in the study. This test is used compared to the Durbin-Watson (DW) Test as it identifies residuals with higher-order autocorrelation and still works even if lagged values are taken into account in the study.

Hypothesis Testing of Breusch-Godfrey Serial Correlation LM Test:
H_0: There is no autocorrelation up to the specified lag order.
H_1: There is autocorrelation up to the specified lag order.
Decision Rule: Reject H_0 if p-value < significance level. Otherwise, do not reject H_0.

3.6 Conclusion

In conclusion, the quantitative research flow is being discussed in this chapter. Scope of study, source of data, econometrics model, research variables and methodology are clearly described and stated. Lastly, several diagnostic checking also being proposed in this chapter to ensure the reliability and accuracy of the statistical results.

CHAPTER 4: RESEARCH ANALYSIS

4.0 Introduction

In this chapter, the outcomes of all econometric estimations in the previous chapter will be shown. In order to assess the impact of GPR categories on sectoral stock market performance, the study starts with the estimation of Ordinary Least Squares (OLS) regressions for each sector in Malaysia, Thailand and Philippines. This methodology enables study to capture how various sectors in each country react to the shift in geopolitical uncertainty. Then, diagnostic tests are performed after the estimation of models to guarantee the reliability and validity of the findings. A key assumption in OLS estimation is that the regressions' residuals are normally distributed, and this is specifically checked using the Jarque-Bera test. The ARCH test is used to check for heteroscedasticity, and the Breusch-Godfrey LM test is used to check for serial correlation in the error terms. Together, these tests verify that the OLS assumptions are true, ensuring the accuracy of the estimated coefficients. This chapter's following sections go into extensive detail about the findings of these tests and estimations, offering insights into how the three ASEAN economies have responded to geopolitical risk at the sectoral level.

4.1 Descriptive Analysis

The descriptive statistics offer a preliminary understanding of the key variables for Malaysia, Thailand and Philippines, showing variation in magnitude, variability and distribution that could affect how each country's market react to the macroeconomic and geopolitical risks (GPR) categories.

Table 4.1: Common Descriptive Analysis Output for GPR Variables across Studied Countries

	Mean	Median	Standard Deviation	Kurtosis	Skewness	Range	Sum	Count
GPR	102.7369	98.7671	37.3246	22.4555	4.0178	254.8876	5239.5835	51
GPRT	113.8485	100.8520	49.0388	24.5419	4.2660	337.4731	5806.2728	51
GPRA	91.1333	83.6329	41.2043	4.1409	1.7224	219.2114	4647.7974	51
War Threats	0.3531	0.3009	0.1997	12.8109	2.9053	1.2233	18.0074	51
Peace Threats	0.0441	0.0392	0.0269	1.3760	1.1946	0.1215	2.2500	51
Military Buildups	1.3320	1.2052	0.5709	7.5425	2.1317	3.2376	67.9321	51
Nuclear Threats	0.4880	0.4092	0.2747	3.1104	1.4235	1.4429	24.8869	51
Terror Threats	0.2156	0.1688	0.1912	8.3663	2.5039	1.0767	10.9932	51
Beginning of War	0.5463	0.3926	0.4039	3.7350	2.0084	1.7528	27.8597	51
Escalation of War	0.4011	0.4046	0.1817	-0.4677	0.3547	0.7512	20.4568	51
Terror Acts	0.5559	0.4495	0.4182	12.4074	3.0421	2.4929	28.3492	51

With 51 observations for each of the GPR-related factors across the datasets for Malaysia, Thailand and Philippines, the aggregate GPR shows a mean of 102.7369 and a median of 98.7671. This suggests that there is a slight positive skew (4.0178) in which the distribution is shifted towards the right with higher values, possibly caused by the periodic spikes in geopolitical tensions. Besides, moderate variability is reflected by the standard deviation of 37.3246. However, the extremely high kurtosis (22.4555) indicates a heavy-tailed distribution with outliers, as seen in the wide range of 254.8876. Comparing between the subcategories of GPR, GPRT has a higher mean (113.8485) than the GPRA (91.1333). GPRT also has a higher degree of dispersion as evidenced in its standard deviation of 49.0388, suggesting that threat-related risks are more prominent. Looking into the eight GPR categories, the means of War Threats and Peace Threats are both low, with 0.3531 and 0.0441 respectively. Nonetheless, War Threats has a higher standard deviation, revealing sporadic outbursts. With positive skewness (2.1317 and 1.4235), and high kurtosis (7.5425 and 3.1104), Military Buildups and Nuclear Threats exhibits fat-tailed

distributions. While the rest of the GPR categories all show low means but high kurtosis, signalling rare but impactful events.

Table 4.2: Descriptive Analysis Output for Malaysia

	Mean	Median	Standard Deviation	Kurtosis	Skewness	Range	Sum	Count
KLFPI/GDP	-0.0126	-0.0171	0.0507	0.7955	0.4909	0.2496	-0.6422	51
KLCI	1639.4457	1643.6300	136.9601	-0.6098	-0.1725	531.8200	83611.7300	51
KLFI	15781.8563	15708.7000	1415.8642	0.4658	-0.3424	7018.5100	804874.6700	51
KLPL	7529.0218	7539.9400	732.5022	-0.5863	0.2897	2978.7800	383980.1100	51
KLPR	1003.0231	1023.4200	259.3219	-1.1996	-0.0691	940.5300	51154.1800	51
KLCT	232.3333	236.2000	58.2116	-1.3947	-0.0125	202.0400	11849.0000	51
KLCM	593.8712	584.9500	50.5770	0.8629	0.9040	224.5800	30287.4300	51
KLIP	156.4529	155.4700	24.3388	-0.6997	0.1414	97.8400	7979.1000	51
KLTE	40.1527	32.5200	23.7762	-0.5764	0.7315	84.8800	2047.7900	51
KLEN	857.7472	820.3600	157.1716	0.0398	0.7596	623.9700	21443.6800	25
KLHC	1975.0580	1763.6800	704.3110	0.7163	1.1137	2488.7200	49376.4500	25
KLRE	860.8521	833.3650	83.7598	-0.4506	0.8682	290.1700	24103.8600	28
KLTC	622.3548	597.1800	56.4371	-1.3971	0.3149	176.4900	15558.8700	25
KLTP	835.0200	853.6500	125.1264	0.8425	-0.0879	575.8700	20875.5000	25
KLUT	1039.0948	944.6600	268.4852	3.1102	2.0023	954.8200	25977.3700	25

In Malaysia, the FPI/GDP ratio has a negative mean of -0.0126 and positive kurtosis (0.7955) and skewness (0.4909). With a mean of 1639.4457 and a median of 1643.63, the Malaysian market portfolio (KLCI), which serves as a proxy for the broader market exhibits a negative value in skewness and kurtosis. This suggests a flat distribution with lighter tails. Looking into each of the sectoral stock markets in Malaysia, both KLCT and KLPR reveals a mean of 232.3333 and 1003.0231

respectively and together having negative skewness and kurtosis, which implies fewer extremes. KLCT has a mean of 593.8712, kurtosis of 0.8629 which is about normal and positive skewness of 0.9040. Moderate variability can be seen in sectors like KLIP, KLTE and KLEN. Moreover, the descriptive statistics of sectors with fewer observations such as KLHC, KLRE KLTC, KLTP and KLUT are also shown in Table 4.2.

Table 4.3: Descriptive Analysis Output for Thailand

	Mean	Median	Standard Deviation	Kurtosis	Skewness	Range	Sum	Count
THFPI/GDP	-0.0148	-0.0166	0.0280	-0.4406	-0.0303	0.1171	-0.7562	51
SETI	1496.4633	1504.5500	156.1412	-0.3561	-0.3786	650.4000	76319.6300	51
THAGRO	424.1851	422.0400	41.9582	-0.8022	0.0673	164.0500	21633.4400	51
THCONSUMP	113.3808	120.5100	34.7861	-1.1194	-0.2679	119.1100	5782.4200	51
THFINCIAL	169.9700	173.4600	24.7317	-0.2565	-0.4713	101.0800	8668.4700	51
THINDUS	110.9380	113.5700	21.4886	-0.1572	-0.1197	96.5600	5657.8400	51
THPROPCON	122.6757	125.5500	19.9413	-1.0926	-0.2894	74.4400	6256.4600	51
THRESOURC	188.5575	184.4500	25.2126	-0.4530	-0.0957	109.0300	9616.4300	51
THSERVICE	420.1418	431.0300	81.9100	-0.3479	-0.6049	323.8100	21427.2300	51
THTECH	205.3504	190.2100	46.8200	-0.2423	0.6927	189.0000	10472.8700	51

In Thailand, the FPI/GDP ratio has a negative mean (-0.0148), kurtosis (-0.4406) and skewness (-0.0303). Similar to Malaysia, Thailand's market portfolio exhibits a positive mean of 1496.4633 and a median of 1504.55, while a negative kurtosis of -0.3561and a skewness of -0.3786. From Table 4.3, all sectors in Thailand shows a negative value in kurtosis. This indicates that the data points are generally more evenly distributed around the means and outliers are less common. This also suggests that there are less dramatic swings in that sectoral volatility, which would underrepresent extreme GPR events. Besides, only THAGRO and THTECH have positive skewness, while the others have negative skewness. At 323.8000, the

THSERVICE sector has the largest range, reflecting that it experiences significant volatility swings from low to high. Its sum of 21427.23 also reflects a high level of overall volatility exposure in comparison to the others.

Table 4.4: Descriptive Analysis Output for Philippines

	Mean	Median	Standard Deviation	Kurtosis	Skewness	Range	Sum	Count
PSFPI/GDP	0.0015	0.0013	0.0119	0.9779	-0.1858	0.0614	0.0773	51
PSEi	6879.1551	6903.5300	817.8240	-0.4432	-0.2727	3450.6900	350836.9100	51
PSFI	1665.8004	1694.8900	248.7811	0.1137	0.1613	1155.8200	84955.8200	51
PSIN	9992.9710	9826.9100	1375.3252	-0.3175	-0.2444	6470.2600	509641.5200	51
PSHO	6549.9316	6461.2200	968.5527	-0.1148	-0.3023	4372.6600	334046.5100	51
PSPR	3038.7804	2930.6300	579.3019	-0.3579	0.2497	2392.0600	154977.8000	51
PSSE	1707.3924	1663.5500	241.5585	-0.6689	0.2969	1039.2200	87077.0100	51
PSMO	11815.9282	10886.9300	4436.7720	2.2594	1.3735	21816.6900	602612.3400	51

From Table 4.4, Philippines shows a nearly zero positive mean (0.0015), positive kurtosis (0.9779) and negative skewness (-0.1858), indicating asymmetries unique to the country but typically lighter tails. Low variability is illustrated by the market portfolio's (PSEi) mean of 6879.1551, median of 6903.5300, and standard deviation of 817.8240, or roughly 12% of the mean. It displays negative kurtosis (-0.9779) and positive skewness (0.2727), implying a flat distribution with fewer extremes and a slight rightward tail. Given its wide range (21816.6900) and maximum (25978.5000), PSMO with its mean (11815.9282) distinguishes out with high kurtosis (2.2594) and positive skewness (1.3735), indicating larger tails and asymmetry. Besides, the sums of PSMO reflect substantial cumulative volatility exposure while the range shows its fluctuations in its stock prices.

4.2 Inferential Analysis (OLS)

Tables 4.5 to Table 4.13 present results significant at the 10%, 5%, and 1% levels, denoted by *, **, and ***. A variable is significant when its p-value is below 0.1, 0.05, or 0.01, indicating a meaningful relationship with the dependent variable.

4.2.1 Main GPR Index

Table 4.5: Generalized Regression Table Visualization for Malaysia

	GPR	FPI/GDP	MARKET PORTFOLIO	LAG	INTERCEPT
KLCI	0.0117	0.3705**		-0.2055	0.0069
KLFI	0.0095	0.1452	1.1498***	0.2415	0.0063
KLPL	0.0618***	-0.1336	0.8987***	-0.1406	-0.0087
KLPR	-0.0046	-0.1804	1.4360***	-0.0240	0.0012
KLCT	-0.0067	0.1023	1.5646***	0.0770	0.0084
KLCM	-0.0025	-0.0159	0.7756***	-0.0311	0.0020
KLIP	-0.0077	-0.0969	1.3884***	-0.0491	0.0092
KLTE	-0.0732	-1.0120**	1.8983***	0.0093	0.0221
KLEN	-0.0622	-0.2126	1.6745***	-0.2226	0.0189
KLHC	-0.0355	0.4517	1.3997	0.3637	0.0350
KLRE	-0.0107	-0.0143	0.2117	-0.3392**	-0.0016
KLTC	-0.0050	0.1639	0.8107***	-0.0334	0.0033
KLTP	-0.0510*	0.5094	1.3074***	-0.1151	0.0373**
KLUT	-0.0321	0.2515	0.8312***	0.3238*	0.0290*

Table 4.6: Generalized Regression Table Visualization for Thailand

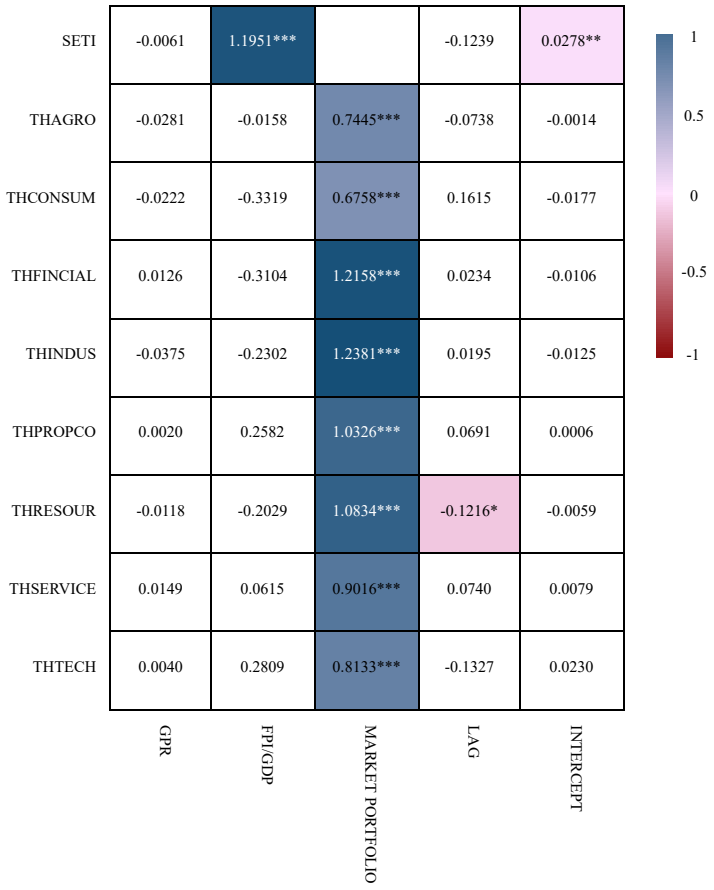
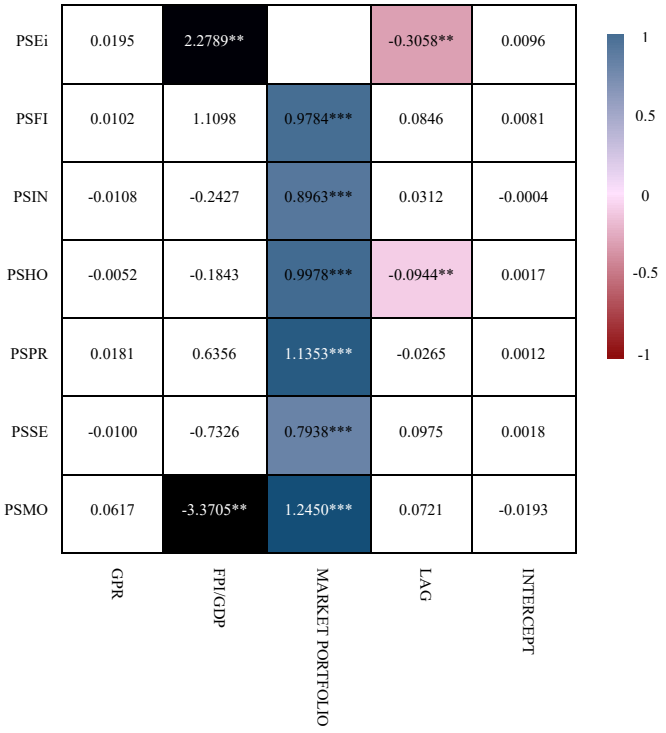


Table 4.7: Generalized Regression Table Visualization for Philippines



4.2.1.1 Malaysia

From Table 4.5, there are two sectoral market indices in Malaysia influenced significantly by the GPR index. Positive effects are observed on KLPL while negative effects are on KLTP. Interpretation is made as if the GPR category increases by 1%, the KLPL increases the sectoral volatility by 0.0618%, ceteris paribus. In contrast, the sectoral volatility of KLTP with coefficient -0.0510 will decrease by 0.0510% when the GPR index increases by 1%, holding other variables constant.

KLCI and KLTE show different trends in terms of foreign portfolio investment in relation to GDP. When compared to the FPI/GDP, the KLCI has a positive coefficient, suggesting that a greater FPI/GDP raises market volatility. For example, KLCI will increase volatility by 0.3705% for every percentage point increase in FPI/GDP, ceteris paribus. KLTE, on the other hand, has a negative coefficient when compared to the FPI/GDP. For instance, ceteris paribus, KLTE volatility will fall by 1.0120% for every percentage point increase in FPI/GDP. Furthermore, the outcome demonstrates that, with the exception of KLHC and KLRE, the market portfolio variable is substantial and strongly correlated with practically every sectoral stock market in Malaysia. According to the positive comovement, sectoral stock market volatility increases with market portfolio volatility. For instance, ceteris paribus, a 1% increase in the KLCI corresponds to a 1.4360% gain in the property sector index (KLPR). Lagged sectoral volatility is another aspect that contributes to the current volatility. While negative coefficients for KLRE indicate reversion tendencies, positive coefficients for KLUT indicate volatility persistence.

4.2.1.2 Thailand

In contrast to Malaysia, where numerous sectors respond to geopolitical events, Thailand's overall and sectoral volatility are not significantly impacted by changes in the GPR index as shown in Table 4.6.

Additionally, there is a substantial positive correlation between FPI/GDP and SETI alone, indicating that higher foreign portfolio investment relative to GDP raises the volatility of the general stock market. As an example, the SETI will increase by 1.1951%, ceteris paribus, for every percentage point increase in FPI/GDP. Furthermore, there is a strong and positive connection between the market portfolio and each of Thailand's sectoral indices, suggesting that shifts in the overall market have a big effect on every sector. For example, ceteris paribus, a 1% rise in the SETI corresponds to a 0.9016% increase in the services sector (THSERVICE). Lastly, the only sector that was found to be adversely significant to the lagged sectoral volatility was Thailand's resources sector (THRESOURC), meaning that for every 1% rise in volatility from the previous quarter, the sector will experience a 0.1216% decrease in volatility. This suggests that historically high volatility tends to reduce volatility in this quarter, and vice versa.

4.2.1.3 Philippines

Table 4.7 shown that overall and sectoral stock markets of the Philippines are similar to Thailand where none of them are significant to the changes in the GPR index.

However, FPI/GDP has shown to have significant positive and negative impacts on Philippines' overall market (PSEi) and mining and oil sector (PSMO) respectively. The negative coefficient suggests that higher FPI/GDP lower the sectoral stock market volatility. For every 1 percentage-point increase in FPI/GDP will reduce the PSMO by 3.3705%, holding other variables constant. Similarly to Thailand, the Philippines market portfolio is significant and shown positive effects towards all sectors, meaning the market movement will bring an impact of same direction towards the sectoral indices in the Philippines stock market. This can be shown as a 1% increase in the PSEi is associated with a 0.8963% increase in the PSIN, ceteris paribus. Lastly, PSEi and PSHO are negatively significant in relation to the lagged volatility. The negative coefficients indicate that a rise in

volatility in the previous quarter tends to decrease volatility in the current quarter, with PSEi and PSHO declining by 0.3058% and 0.0944% respectively this quarter for every 1% rise in the previous quarter, ceteris paribus.

4.2.2 Sub-GPR Indexes

Table 4.8: Generalized Regression Table Visualization for Malaysia

	GPT	GPRA	FPI/GDP	MARKET PORTFOLIO	LAG	INTERCEPT
KLCI	0.0109	-0.0005	0.3812**		-0.2048	0.0070
KLFI	-0.0044	0.0079	0.1285	1.1557***	0.2450***	0.0059
KLPL	-0.0052	0.0408***	-0.2021	0.9265***	-0.1256	-0.0107
KLPR	0.0098	-0.0079	-0.1586	1.4334***	-0.0198	0.0015
KLCT	-0.0040	0.0001	0.0991	1.5627***	0.0763	0.0083
KLCM	-0.0055	0.0014	-0.0227	0.7774***	-0.0277	0.0020
KLIP	-0.0198	0.0074	-0.1265	1.3917***	-0.0463	0.0088
KLTE	-0.0619	-0.0096	-1.0512**	1.8902***	0.0134	0.0227
KLEN	-0.1150	0.0192	-0.2060	1.7030***	-0.1931	0.0182
KLHC	0.0053	-0.0221	0.4464	1.3942	0.3593	0.0363
KLRE	-0.0245	0.0055	-0.0238	0.2091	-0.3281**	-0.0021
KLTC	-0.0285	0.0105	0.1596	0.8170***	-0.0193	0.0028
KLTP	-0.0745	0.0078	0.5007	1.3125***	-0.0948	0.0365**
KLUT	-0.0843*	0.0214	0.2447	0.8308***	0.3450*	0.0275*

Table 4.9: Generalized Regression Table Visualization for Thailand

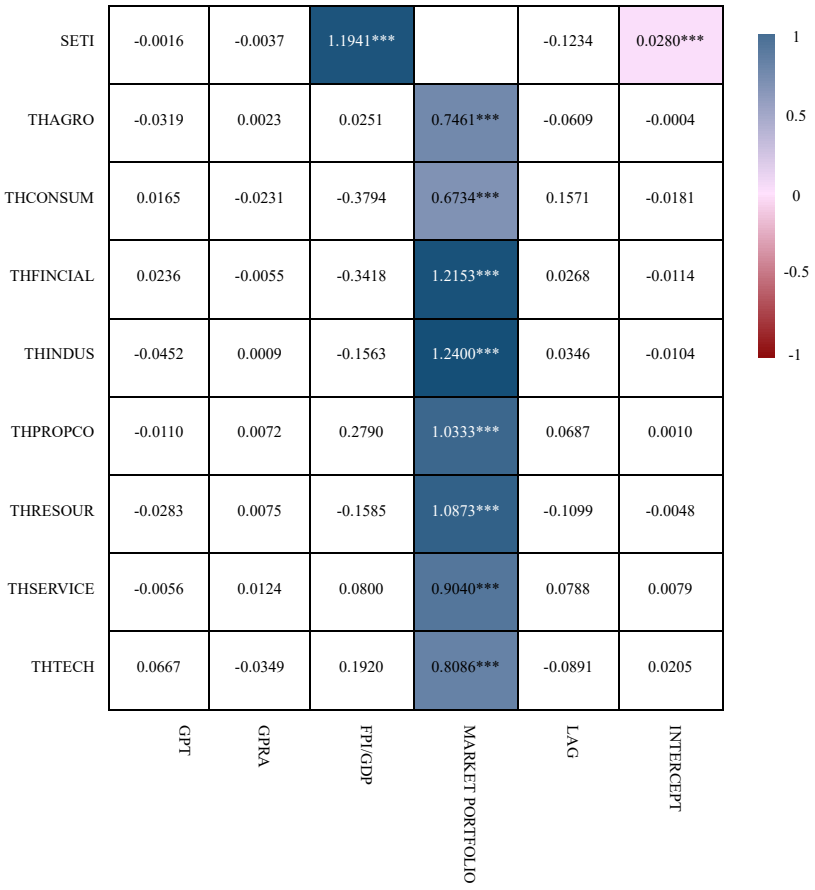
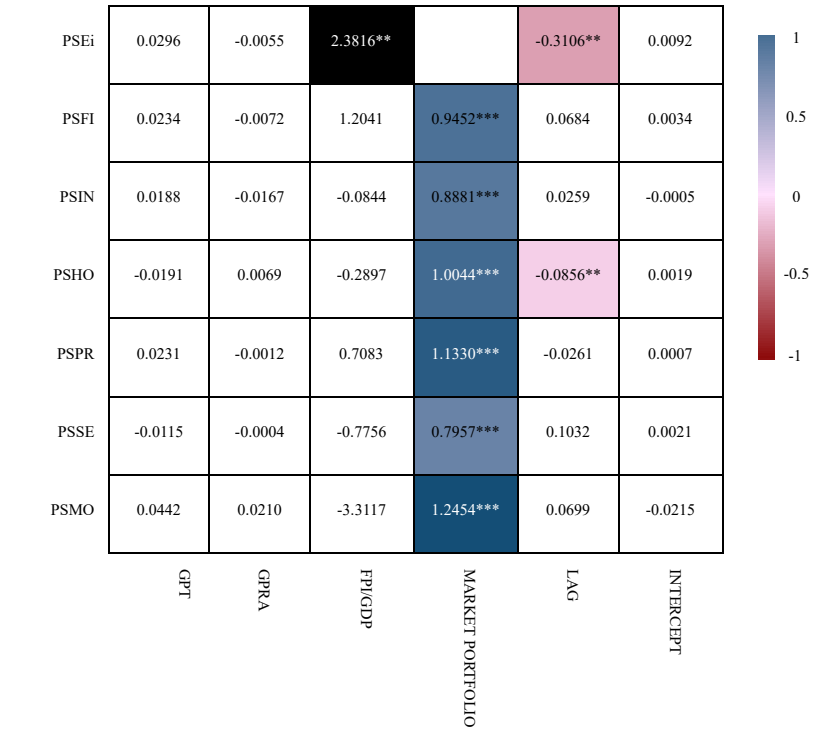


Table 4.10: Generalized Regression Table Visualization for Philippines



4.2.2.1 Malaysia

The regression outcomes in Table 4.8 indicate that both GPRT and GPRA influence several sectoral market indices in Malaysia. KLPL is positively associated with GPRA, suggesting that increases in geopolitical risks are linked to higher volatility in that sector. The positive coefficients imply that as geopolitical risks rise, sectoral volatility tends to increase accordingly. For instance, if the GPA increases by 1%, the KLPL increases by 0.0408%, holding other variables constant. On the other hand, negative relationships are observed between KLUT and GPRT, showing that higher levels of these risks correspond to reduced sectoral volatility. For example, if the GPRT increases by 1%, the KLUT decreases by 0.0843%, holding other variables constant.

With regard to foreign portfolio investment relative to GDP, the findings show opposing effects for KLCI and KLTE. KLCI has a positive coefficient, which means that increases in FPI/GDP amplify market volatility. For instance, for every 1 percentage-point rise in FPI/GDP, KLCI increases by 0.3812%, ceteris paribus. In contrast, KLTE is negatively related to FPI/GDP. For example, every 1 percentage-point increase in FPI/GDP will decrease KLTE by 1.0512%, ceteris paribus. Moreover, the market portfolio variable is found to be significant and positively correlated with almost all sectoral indices, except KLHC and KLRE. This co-movement indicates that higher overall market volatility generally translates into greater sectoral volatility. A 1% increase in KLCI is associated with a 1.8902% rise in the technology sector index (KLTE), ceteris paribus. In addition, lagged volatility contributes to current volatility patterns. KLFI and KLUT display positive coefficients, pointing to volatility persistence, while KLRE shows a negative coefficient, suggesting tendencies toward mean reversion.

4.2.2.2 Thailand

Table 4.9 shows that none of the sectoral indices in Thailand are significantly affected by either GPRT or GPRA. This finding suggests that geopolitical risks do not have a notable influence on sectoral volatility in Thailand. In other words, changes in geopolitical tensions, whether measured by GPRT or GPRA, appear unrelated to the performance or volatility of the sectoral indices during this study period. These results imply that sectoral market behavior in Thailand may be more strongly shaped by domestic or global economic factors than by geopolitical risks.

Additionally, FPI/GDP demonstrates a significant positive association with the SETI, indicating that greater foreign portfolio investment relative to GDP is linked to increased volatility in the overall market. As an illustration, for every 1 percentage-point increase in FPI/GDP, the SETI rises by 1.1941%, ceteris paribus. The market portfolio is also significant and positively related to all sectoral indices, underscoring that broad market movements strongly affect sectoral performance. For example, a 1% increase in the SETI corresponds to a 1.2400% increase in the industrials sector index (THINDUS), ceteris paribus. Meanwhile, lagged volatility is not significant across Thailand's sectoral indices, meaning that previous volatility levels do not carry over to current volatility. This absence of persistence or mean reversion suggests that sectoral volatility in Thailand is independent of past volatility patterns.

4.2.2.3 Philippines

As shown in Table 4.10, the sectoral indices of the Philippines are not significantly affected by either GPRT or GPRA. This indicates that geopolitical risk factors have little measurable impact on sectoral volatility. In other words, sectors such as financials, industrials, and others appear largely unaffected by fluctuations in geopolitical tensions during the period under this study. This result suggests that domestic economic or broader global conditions are more important in shaping sectoral stock market behavior in the Philippines.

On the other hand, FPI/GDP is significant only in relation to the main market index, not the sectoral indices. The positive coefficient demonstrates that greater foreign portfolio investment relative to GDP contributes to an increase in the main index. For every 1 percentage-point increase in FPI/GDP, the PSEi rises by 2.3816%, holding other variables constant. Additionally, the market portfolio has a significant and positive impact on all sectoral indices, showing that broader market performance plays a strong role in sectoral movements. For example, a 1% rise in PSEi is associated with a 1.2452% increase in the mining & oil sector index (PSMO), ceteris paribus. Lastly, lagged volatility is significant only for PSEi and PSHO, both of which carry negative coefficients. This suggests mean reversion, where past increases in volatility tend to reduce current volatility. Specifically, PSEi falls by -0.3106% in the current quarter for every 1% increase in volatility from the previous quarter, ceteris paribus.

4.2.3 GPR Categories

Table 4.11: Generalized Regression Table Visualization for Malaysia

	WAR	PEACE	MILITARY	NUCLEAR	TERROR	BEGINNING OF WAR	ESCALATION OF WAR	TERROR ACTS	FPI/GDP	MARKET PORTFOLIO	LAG	INTERCEPT
KLCI	-0.0003	-0.0029	-0.0168	0.0105	-0.0060	0.0006	-0.0051	0.0020	0.3860**		-0.0981	0.0105
KLFI	-0.0050	-0.0010	-0.0126	0.0089	0.0022	0.0083	0.0043	-0.0058	0.1621	1.1301***	0.2435***	0.0050
KLPL	0.0124	0.0011	-0.0318	0.0015	-0.0016	0.0272***	-0.0020	0.0004	-0.1210	0.9054***	-0.1067	-0.0083
KLPR	-0.0264	0.0090	-0.0398	0.0165	-0.0023	0.0134	-0.0438**	-0.0056	-0.1676	1.3627***	0.0964	0.0050
KLCT	-0.0142	0.0015	-0.0340	0.0177	-0.0087	0.0102	-0.0309	0.0096	0.1344	1.4059***	0.1224	0.0125
KLCM	-0.0171	0.0068	-0.0232	0.0120	-0.0011	0.0042	0.0020	-0.0036	-0.0032	0.7334***	0.0110	0.0002
KLIP	-0.0336*	0.0068	-0.0358	0.0150	0.0005	0.0158	-0.0253	0.0052	-0.1517	1.3615***	0.0469	0.0069
KLTE	-0.0757*	0.0220	-0.0106	0.0182	-0.0184	-0.0170	-0.0419	0.0374	-1.1157**	1.6851***	0.0796	0.0204
KLEN	0.1747**	-0.0473*	-0.5027***	0.0102	-0.0310	0.0252	-0.0789	0.0404	-0.7885	-0.0709	-0.6655**	0.0269
KLHC	0.0232	-0.0254	0.2614	-0.2173**	-0.0006	0.0213	-0.0965	0.0999	1.7219	1.9757	0.5096*	0.0892
KLRE	0.0247	0.0026	-0.0858**	0.0096	0.0040	-0.0009	0.0193	-0.0116	0.0136	0.0905	-0.4642**	-0.0087
KLTC	-0.0186	0.0019	-0.0678	0.0301	-0.0162	0.0046	0.0122	0.0005	-0.0547	0.5783	-0.0454	-0.0012
KLTP	-0.0040	0.0025	-0.1171	0.0255	-0.0005	0.0026	0.0166	-0.0162	0.2535	1.0285**	-0.2157	0.0295
KLUT	0.0020	-0.0175	-0.0644	-0.0164	-0.0057	0.0214	-0.0773**	0.0547**	0.3919	0.5648*	0.3089	0.0408**

Table 4.12: Generalized Regression Table Visualization for Thailand

	WAR	PEACE	MILITARY	NUCLEAR	TERROR	BEGINNING OF WAR	ESCALATION OF WAR	TERROR ACTS	FPI/GDP	MARKET PORTFOLIO	LAG	INTERCEPT
SETI	-0.0155	-0.0001	-0.0517	0.0151	-0.0121	0.0042	0.0039	-0.0046	1.1906**		-0.0608	0.0349**
THAGRO	0.0040	0.0055	-0.0207	-0.0091	0.0022	0.0018	-0.0043	-0.0042	-0.0935	0.7515***	-0.1143	-0.0028
THCONSUM	-0.0116	0.0042	0.0018	-0.0141	-0.0041	-0.0106	0.0034	-0.0006	-0.0793	0.6458***	0.2113	-0.0071
THFINCIAL	0.0220	0.0007	-0.0036	0.0094	0.0064	-0.0104	-0.0119	-0.0019	-0.5291*	1.2512***	0.0374	-0.0188*
THINDUS	-0.0170	0.0008	-0.0157	0.0091	0.0009	0.0015	-0.0120	-0.0017	-0.2544	1.2165***	0.0393	-0.0127
THPROPCO	-0.0115	-0.0069	0.0221	-0.0036	-0.0020	-0.0039	-0.0020	0.0170**	0.5454**	1.0544***	0.1124	0.0074
THRESOUR	-0.0114	0.0063	-0.0253	0.0041	0.0009	0.0102	0.0171	-0.0106	-0.3020	1.0432***	-0.1633*	-0.0103
THSERVICE	-0.0011	-0.0044	0.0080	-0.0059	0.0033	0.0069	-0.0101	0.0018	0.0877	0.9377***	0.0825	0.0102
THTECH	0.0230	0.0021	0.0168	-0.0020	-0.0133	-0.0121	0.0149	-0.0046	0.3403	0.7422***	-0.0851	0.0259

Table 4.13: Generalized Regression Table Visualization for Philippines

	WAR	PEACE	MILITARY	NUCLEAR	TERROR	BEGINNING OF WAR	ESCALATION OF WAR	TERROR ACTS	FPI/GDP	MARKET PORTFOLIO	LAG	INTERCEPT
PSEi	-0.0115	0.0008	-0.0318	0.0201	-0.0054	0.0091	-0.0275	-0.0006	1.9651		-0.2583	0.0140
PSFI	0.0266	-0.0151**	-0.0064	0.0030	0.0044	-0.0088	0.0054	-0.0074	0.7727	1.0119***	0.0935	0.0066
PSIN	-0.0012	0.0130***	-0.0032	-0.0013	0.0054	-0.0108	0.0123	-0.0052	-0.2738	0.9192***	8.05E-0.5	-0.0075
PSHO	0.0049	-0.0008	-0.0085	0.0031	0.0006	-7.57E-05	-0.0011	-0.0006	-0.1815	0.9907***	-0.0978**	0.0009
PSPR	0.0077	-0.0009	0.0228	-0.0029	-0.0039	-0.0008	-0.0041	0.0122	0.7880	1.1480***	-0.0152	0.0001
PSSE	-0.0343	0.0130	0.0051	-0.0142	-0.0084	0.0078	0.0058	0.0016	-0.4408	0.7930***	0.1353	0.0050
PSMO	-0.0223	0.0033	-0.0502	0.0226	0.0070	0.0362	0.0557	-0.0337	-4.5805**	1.2542***	0.0243	-0.0252

4.2.3.1 Malaysia

From Table 4.11, several sectoral market indices in Malaysia are influenced by various geopolitical risk categories. Positive effects are observed for KLPL and Beginning of War, KLEN and War Threats, KLUT and Terror Acts, indicating that these factors are linked to index rise. The positive coefficients implied that the higher the respective geopolitical risks, the higher the sectoral volatility. It can also be interpreted as if the GPR category increases by 1%, the sectoral stock market volatility also increases by the size of coefficient. For instance, if the beginning of war increases by 1%, the KLPL increases by 0.0272%, holding other variables constant. Conversely, negative coefficients are seen in KLPR and Escalation of War, KLIP and War Threats, KLTE and War Threats, KLEN and Peace Threats, KLEN and Military Buildups, KLHC and Nuclear Threats, KLRE and Military Buildups, KLUT and Escalation of War, suggesting that the higher the respective geopolitical risks, the lower the sectoral volatility. For example, if the peace threats increase by 1%, the KLEN decreases by 0.0473%, holding other variables constant.

When it comes to foreign portfolio investment relative to GDP, KLCI and KLTE exhibit contrasting patterns. There is a positive coefficient for KLCI in relation to the FPI/GDP, indicating higher FPI/GDP increases market volatility. For instance, for every 1 percentage-point rise in FPI/GDP will increase KLCI by 0.3860%, ceteris paribus. In contrast, KLTE has a negative coefficient in relation to the FPI/GDP. For example, every 1 percentage-point increase in FPI/GDP will decrease KLTE by 1.1157%, ceteris paribus. Moreover, the result shows that the market portfolio variable is significant and positively related to almost all sectoral stock market in Malaysia, except for KLEN, KLHC, KLRE and KLTC. The positive comovement implies that the higher the market portfolio volatility, the higher the sectoral stock market volatility. A 1% increase in the KLCI is associated with a 1.1301% increase in the financial sector index (KLFI), ceteris paribus. Further contributing to current volatility is lagged sectoral volatility. Positive coefficients for KLFI and KLHC signify volatility

persistence, whereas negative coefficients for KLEN and KLRE signify mean reversion tendencies.

4.2.3.2 Thailand

From Table 4.12, only the property and construction sector (THPROPCO) report a positive impact from geopolitical risk. It has been discovered that terror acts cause this sector to increase volatility, which reflects rising market uncertainty. It can be interpreted as 1% increases in terror acts will increase the THPROPCO by 0.0170%, ceteris paribus. Unlike Malaysia, where many sectors react to geopolitical events, Thailand's impact is confined to the property and construction industry.

Furthermore, FPI/GDP has a positive relationship with SETI and THPROPCO, suggesting higher foreign portfolio investment in relation to GDP increase the overall and sector stock market volatility. As an illustration, for every 1 percentage-point increase in FPI/GDP will raise the THPROPCO by 0.5454%, ceteris paribus. On the contrary, THFINCIAL shows a negative relationship with FPI/GDP, suggesting higher foreign portfolio investment in relation to GDP reduce the financial sector volatility. Additionally, the market portfolio shows a significant and positive correlation with all Thailand's sectoral indexes, indicating that changes in the market as a whole have a considerable impact on the sectors. For example, a 1% increase in the SETI is associated with a 0.7515% increase in the agro & food sector sector (THAGRO), ceteris paribus. Finally, lagged sectoral volatility is only shown to be significant in the Thailand's resources sector (THRESOUR). It shows mean reversion with a negative coefficient. THRESOUR decreased by 0.1633% this quarter for every 1% increase in the previous quarter. This implies that rising volatility in the past tends to lower volatility in the present and vice versa.

4.2.3.3 Philippines

Table 4.13 reveals that sectoral stock markets of the Philippines are positively and negatively influenced by the geopolitical risks categories. Philippines industrial sector (PSIN) illustrates a positive relationship with peace threats, meaning that sectoral volatility rises in response to growing peace-related concerns. For instance, if the peace threats increase by 1%, the PSIN increases by 0.0130%, holding other variables constant. Conversely, a negative relationship is observed in its financial sector (PSFI) in relation with peace threats. If the peace threats increase by 1%, the PSFI decreases by 0.0151%, holding other variables constant.

On the other hand, FPI/GDP is proven to be significant only for the Philippines' mining and oil sector (PSMO). The negative coefficient suggests that higher FPI/GDP lower the sectoral stock market volatility. For every 1 percentage-point increase in FPI/GDP will reduce the PSMO by 4.5805%, holding other variables constant. Similarly, the Philippines market portfolio is significant and shows a positive effect towards all sectors, meaning the market movement will bring an impact towards the sectoral indexes in the Philippines stock market. This can be shown as a 1% increase in the PSEi is associated with a 1.1480 % increase in the PSPR, ceteris paribus. Lastly, only PSHO is significant in relation to the lagged volatility. The negative coefficient indicates that a rise in volatility in the prior quarter tends to decrease volatility in the current quarter, with PSHO declining by 0.0978% this quarter for every 1% rise in the previous quarter, ceteris paribus.

4.3 Diagnostic Checking

4.3.1 Normality Test

4.3.1.1 Main GPR Index

Table 4.14: Normality Test Output

Malaysian Stock Market Indices	Jarque-Bera Statistic (p-value)	Thailand Stock Market Indices	Jarque-Bera Statistic (p-value)	Philippines Stock Market Indices	Jarque-Bera Statistic (p-value)
KLCI	0.0741	SETI	5.5464*	PSEi	1.7581
	(0.9636)		(0.0625)		(0.1461)
KLFI	2.8969	THAGRO	1.4185	PSFI	0.7159
	(0.2567)		(0.4920)		(0.6991)
KLPL	3.1999	THCONSUM	1.9588	PSIN	0.3404
	(0.4538)		(0.2942)		(0.8435)
KLPR	1.2564	THFINCIAL	2.3292	PSHO	0.8412
	(0.5334)		(0.4696)		(0.6566)
KLCT	1.6174	THINDUS	0.8723	PSPR	0.3006
	(0.3658)		(0.6465)		(0.8604)
KLCM	5.8731*	THPROPCO	1.3165	PSSE	0.7357
	(0.0530)		(0.5176)		(0.6922)
KLIP	2.9159	THRESOUR	3.6963	PSMO	2.7548
	(0.2327)		(0.3129)		(0.2522)
KLTE	0.5709	THSERVICE	4.3546		
	(0.7517)		(0.4156)		
KLEN	0.2936	THTECH	0.2849		
	(0.8635)		(0.8672)		
KLHC	2.2955				
	(0.1587)				
KLRE	1.7196				
	(0.4232)				
KLTC	2.5430				
	(0.2804)				
KLTP	0.1783				
	(0.9147)				
KLUT	0.4741				
	(0.7890)				

To determine if the residuals follow a normal distribution, a normality test was conducted. The results show that two indices deviate from the assumption. KLCM in Malaysia, with a p-value of 0.0530 indicates significant deviation from normality, leading to rejection of the null hypothesis of normality. Similarly, SETI in Thailand, with a p-value of 0.0625, also fails the normality assumption, suggesting its residuals are not normally distributed. However, for the remaining sectoral stock indices in Malaysia, Thailand, and Philippines, all p-values are above 0.1. This means the null hypothesis cannot be rejected, and thus there is no evidence against normality for these indices. Consequently, the standard errors, t-tests, and p-values for these indices can be considered valid and reliable.

4.3.1.2 Sub-GPR Indexes

Table 4.15: Normality Test Output

Malaysian Stock Market Indices	**Jarque-Bera Statistic (p-value)**	**Thailand Stock Market Indices**	**Jarque-Bera Statistic (p-value)**	**Philippines Stock Market Indices**	**Jarque-Bera Statistic (p-value)**
KLCI	0.0712	SETI	3.7749	PSEi	1.3442
	(0.9650)		(0.6557)		(0.2087)
KLFI	3.6444	THAGRO	1.8307	PSFI	1.2335
	(0.7298)		(0.4003)		(0.5397)
KLPL	2.9875	THCONSUM	3.7890	PSIN	1.117 0
	(0.2743)		(0.7123)		(0.5721)
KLPR	1.1490	THFINCIAL	4.2798	PSHO	0.8518
	(0.5630)		(0.1177)		(0.6532)
KLCT	1.7321	THINDUS	0.6514	PSPR	0.1704
	(0.4128)		(0.7220)		(0.9184)
KLCM	5.4916*	THPROPCO	1.7352	PSSE	0.6951
	(0.0642)		(0.4199)		(0.7064)
KLIP	2.8394	THRESOUR	2.6272	PSMO	3.2834
	(0.2418)		(0.6364)		(0.1937)
KLTE	0.7202	THSERVICE	0.1993		
	(0.6976)		(0.4361)		
KLEN	0.3112	THTECH	0.8529		
	(0.8559)		(0.6528)		

KLHC	2.2623
	(0.1597)
KLRE	1.0627
	(0.5878)
KLTC	2.2908
	(0.3181)
KLTP	0.0105
	(0.9947)
KLUT	0.5799
	(0.7483)

All sectoral stock indices in Malaysia, Thailand, and the Philippines satisfy the normality assumption, except for the manufacturing sector (KLCM) in Malaysia (p-value = 0.0642). Its p-value falls below 0.1, showing a rejection of the null hypothesis and implying that there may be potential bias in its standard error, t-test and p-value. Meanwhile, results for other sectors remain reliable.

4.3.1.3 GPR Categories

Table 4.16: Normality Test Output

Malaysian Stock Market Indices	**Jarque-Bera Statistic (p-value)**	**Thailand Stock Market Indices**	**Jarque-Bera Statistic (p-value)**	**Philippines Stock Market Indices**	**Jarque-Bera Statistic (p-value)**
KLCI	1.1230	SETI	0.1457	PSEi	4.0821
	(0.5704)		(0.9297)		(0.1299)
KLFI	3.6531	THAGRO	1.9677	PSFI	0.6556
	(0.7399)		(0.3739)		(0.7205)
KLPL	3.5436	THCONSUM	3.0622	PSIN	0.3113
	(0.8911)		(0.4826)		(0.8558)
KLPR	0.7845	THFINCIAL	3.8853	PSHO	1.4702
	(0.6755)		(0.8693)		(0.4794)
KLCT	1.9651	THINDUS	0.9695	PSPR	0.0525
	(0.4159)		(0.6159)		(0.9741)
KLCM	0.7712	THPROPCO	1.7617	PSSE	0.1607
	(0.6800)		(0.4144)		(0.9228)
KLIP	2.5067	THRESOUR	3.5799	PSMO	2.4756
	(0.2855)		(0.1670)		(0.2900)

KLTE	0.5136	THSERVICE	4.3976
	(0.7735)		(0.3766)
KLEN	4.5361	THTECH	1.8974
	(0.1035)		(0.3872)
KLHC	0.5380		
	(0.7641)		
KLRE	1.1338		
	(0.5673)		
KLTC	1.2055		
	(0.5473)		
KLTP	0.0649		
	(0.9681)		
KLUT	0.7747		
	(0.6789)		

All sectoral stock indices in Malaysia, Thailand and Philippines satisfy the normality assumption. All the p-values are well above 0.1, indicating that the null hypothesis cannot be rejected. There is no evidence against normality, which implies that the standard errors, t-tests and p-values are reliable in this study.

4.3.2 Heteroscedasticity Test

4.3.2.1 Main GPR Index

Table 4.17: Heteroscedasticity Test (ARCH Test) Output

Malaysian Stock Market Indices	Test Statistic (p-value)	Thailand Stock Market Indices	Test Statistic (p-value)	Philippines Stock Market Indices	Test Statistic (p-value)
KLCI	0.1871	SETI	0.6855	PSEi	0.0000
	(0.6653)		(0.4077)		(0.9948)
KLFI	0.0420	THAGRO	0.1405	PSFI	0.1359
	(0.8376)		(0.7078)		(0.7124)
KLPL	0.1475	THCONSUM	1.8281	PSIN	0.4955
	(0.7009)		(0.1763)		(0.4815)
KLPR	0.4285	THFINCIAL	0.0355	PSHO	0.4333
	(0.5127)		(0.8506)		(0.5104)

KLCT	1.7385	THINDUS	1.1191	PSPR	0.4066
	(0.4713)		(0.2901)		(0.5237)
KLCM	1.2676	THPROPCO	1.7722	PSSE	0.4874
	(0.2602)		(0.4305)		(0.4851)
KLIP	1.4239	THRESOUR	0.0251	PSMO	0.0579
	(0.2328)		(0.8741)		(0.8092)
KLTE	0.6874	THSERVICE	0.0058		
	(0.4071)		(0.9392)		
KLEN	0.2603	THTECH	0.0986		
	(0.6099)		(0.7535)		
KLHC	1.8258				
	(0.1928)				
KLRE	0.1195				
	(0.7296)				
KLTC	0.1795				
	(0.6718)				
KLTP	1.0180				
	(0.3130)				
KLUT	0.3986				
	(0.5278)				

To assess whether the variance of residuals is constant across observations, a heteroscedasticity test was performed. For all sectoral stock indices in Malaysia, Thailand, and Philippines, the results show that the p-values are well above 0.1, indicating that the null hypothesis of homoscedasticity cannot be rejected. This suggests that there is no evidence of heteroscedasticity in the models, and therefore the estimated statistics remain valid and reliable for interpretation.

4.3.2.2 Sub-GPR Indexes

Table 4.18: Heteroscedasticity Test (ARCH Test) Output

Malaysian Stock Market Indices	**Test Statistic (p-value)**	**Thailand Stock Market Indices**	**Test Statistic (p-value)**	**Philippines Stock Market Indices**	**Test Statistic (p-value)**
KLCI	0.2018	SETI	0.6793	PSEi	0.0005
	(0.6533)		(0.4098)		(0.9826)

KLFI	0.0453	THAGRO	0.0669	PSFI	0.4313
	(0.8314)		(0.7959)		(0.5114)
KLPL	0.1729	THCONSUM	2.8496*	PSIN	1.9235
	(0.6776)		(0.0914)		(0.1655)
KLPR	0.5205	THFINCIAL	0.0485	PSHO	0.7850
	(0.4706)		(0.8258)		(0.3756)
KLCT	2.7647*	THINDUS	1.1014	PSPR	0.1545
	(0.0964)		(0.2940)		(0.6943)
KLCM	1.5159	THPROPCO	1.5420	PSSE	0.4539
	(0.2182)		(0.1891)		(0.5005)
KLIP	1.2645	THRESOUR	0.0019	PSMO	0.0353
	(0.2608)		(0.9648)		(0.8510)
KLTE	0.6731	THSERVICE	0.0103		
	(0.4120)		(0.9191)		
KLEN	0.6251	THTECH	0.0968		
	(0.4292)		(0.7557)		
KLHC	2.5716				
	(0.1088)				
KLRE	0.0091				
	(0.9239)				
KLTC	0.0527				
	(0.8185)				
KLTP	0.1622				
	(0.6872)				
KLUT	1.8079				
	(0.4938)				

The presence of heteroscedasticity and the rejection of the null hypothesis can be seen by KLCT in Malaysia that records a p-value below the 10% significance level. The rest of the sectors in Malaysia passes the test. While in Thailand, all sectoral indices also meet the prerequisite, but one does not. P-value of the Thailand's consumption sector (THCONSUM) is below 0.1, resulting in heteroscedasticity issue. The heteroscedasticity test is successfully passed by all sectoral indicators in the Philippines.

4.3.2.3 GPR Categories

Table 4.19: Heteroscedasticity Test (ARCH Test) Output

Malaysian Stock Market Indices	Test Statistic (p-value)	Thailand Stock Market Indices	Test Statistic (p-value)	Philippines Stock Market Indices	Test Statistic (p-value)
KLCI	0.0144	SETI	2.9624*	PSEi	0.0595
	(0.9045)		(0.0852)		(0.8074)
KLFI	0.0078	THAGRO	0.04840	PSFI	2.4035
	(0.9296)		(0.8260)		(0.1211)
KLPL	0.2970	THCONSUM	0.4750	PSIN	2.0676
	(0.5858)		(0.4907)		(0.1505)
KLPR	0.3433	THFINCIAL	0.3093	PSHO	0.4035
	(0.5579)		(0.5781)		(0.5253)
KLCT	0.2332	THINDUS	1.4096	PSPR	1.2527
	(0.6291)		(0.6048)		(0.2630)
KLCM	4.7754*	THPROPCO	1.8104	PSSE	0.3166
	(0.0289)		(0.9100)		(0.5737)
KLIP	0.6488	THRESOUR	0.1970	PSMO	0.0007
	(0.4206)		(0.6571)		(0.9795)
KLTE	0.5083	THSERVICE	0.0003		
	(0.4759)		(0.9859)		
KLEN	0.0099	THTECH	0.5666		
	(0.9208)		(0.4516)		
KLHC	0.0012				
	(0.9724)				
KLRE	0.2335				
	(0.6290)				
KLTC	0.2515				
	(0.6160)				
KLTP	0.3067				
	(0.5797)				
KLUT	2.2647				
	(0.1324)				

In the case of Malaysia, KLCM with a p-value of 0.0289 shows a sign of heteroscedasticity. The p-value is lower than the 10% significance level, leading to a rejection in null hypothesis. However, this test is passed by all the other Malaysia stock indices. Similarly, SETI in Thailand shows a p-

value of 0.0852 that is below the 10% significance level, while the remaining indices are greater than 0.1. In Philippines, all stock indices successfully passed the heteroscedasticity test.

4.3.3 Serial Correlation Test

4.3.3.1 Main GPR Index

Table 4.20: Serial Correlation (Breusch-Godfrey LM Test) Output

Malaysian Stock Market Indices	Test Statistic (p-value)	Thailand Stock Market Indices	Test Statistic (p-value)	Philippines Stock Market Indices	Test Statistic (p-value)
KLCI	1.1879	SETI	0.8351	PSEi	2.6552
	(0.5522)		(0.6586)		(0.2651)
KLFI	3.0351	THAGRO	0.7940	PSFI	1.8267
	(0.2193)		(0.6723)		(0.4012)
KLPL	1.9119	THCONSUM	1.4181	PSIN	1.5342
	(0.3844)		(0.4291)		(0.4644)
KLPR	0.9456	THFINCIAL	0.2397	PSHO	3.9992
	(0.6233)		(0.3160)		(0.7067)
KLCT	1.5555	THINDUS	2.1032	PSPR	4.1647
	(0.4594)		(0.6780)		(0.1246)
KLCM	1.7163	THPROPCO	0.3443	PSSE	0.1637
	(0.4239)		(0.8419)		(0.9214)
KLIP	2.6844	THRESOUR	2.0308	PSMO	1.1540
	(0.2613)		(0.3623)		(0.5616)
KLTE	2.3250	THSERVICE	0.0857		
	(0.3127)		(0.9581)		
KLEN	1.8224	THTECH	2.5996		
	(0.4020)		(0.2726)		
KLHC	3.4020				
	(0.3247)				
KLRE	2.7810				
	(0.2416)				
KLTC	1.6363				
	(0.4412)				
KLTP	1.3321				
	(0.5137)				

KLUT	1.3857
	(0.2249)

To determine the existence of autocorrelation problems in residuals, a serial correlation test was conducted. The results reveal that all sectoral stock indices in Malaysia, Thailand, and Philippines have p-values above 0.1. This indicates that the null hypothesis of no serial correlation cannot be rejected for any of the indices. Therefore, there is no evidence of autocorrelation in the residuals, suggesting that the models are well specified and the inference based on standard errors, t-tests, and p-values is reliable.

4.3.3.2 Sub-GPR Indexes

Table 4.21: Serial Correlation (Breusch-Godfrey LM Test) Output

Malaysian Stock Market Indices	**Test Statistic (p-value)**	**Thailand Stock Market Indices**	**Test Statistic (p-value)**	**Philippines Stock Market Indices**	**Test Statistic (p-value)**
KLCI	1.2869	SETI	0.7161	PSEi	2.1239
	(0.5255)		(0.6990)		(0.3458)
KLFI	2.9629	THAGRO	1.0486	PSFI	1.2296
	(0.2273)		(0.5920)		(0.5408)
KLPL	1.5450	THCONSUM	1.1532	PSIN	3.5854
	(0.4619)		(0.5618)		(0.1665)
KLPR	0.7639	THFINCIAL	0.7316	PSHO	3.4644
	(0.6825)		(0.1347)		(0.1088)
KLCT	1.4968	THINDUS	2.8873	PSPR	3.9580
	(0.4731)		(0.2527)		(0.1382)
KLCM	1.6824	THPROPCO	0.4053	PSSE	0.1946
	(0.4312)		(0.8166)		(0.9073)
KLIP	2.7423	THRESOUR	2.5100	PSMO	1.1154
	(0.2538)		(0.2851)		(0.5725)
KLTE	2.1322	THSERVICE	0.0029		
	(0.3444)		(0.9986)		
KLEN	1.2449	THTECH	2.7603		
	(0.5366)		(0.2515)		
KLHC	2.3408				
	(0.2255)				

KLRE	1.3109
	(0.3703)
KLTC	2.4127
	(0.2993)
KLTP	0.9891
	(0.6098)
KLUT	1.3036
	(0.3705)

All sectoral stock indices across Malaysia, Thailand and Philippines passed the serial correlation test. All of the p-values in the Breusch-Godfrey LM test are above 10% significance level, suggesting that the null hypothesis cannot be rejected. This ensures that the ordinary least squares (OLS) estimators are unbiased and consistent in the study.

4.3.3.3 GPR Categories

Table 4.22: Serial Correlation (Breusch-Godfrey LM Test) Output

Malaysian Stock Market Indices	**Test Statistic (p-value)**	**Thailand Stock Market Indices**	**Test Statistic (p-value)**	**Philippines Stock Market Indices**	**Test Statistic (p-value)**
KLCI	1.1741	SETI	1.2160	PSEi	6.3099*
	(0.5560)		(0.5445)		(0.0426)
KLFI	2.7664	THAGRO	0.6510	PSFI	4.0653
	(0.3039)		(0.7222)		(0.1310)
KLPL	1.6954	THCONSUM	0.8185	PSIN	1.9236
	(0.5906)		(0.6641)		(0.3822)
KLPR	0.5444	THFINCIAL	2.7617	PSHO	2.0555
	(0.7620)		(0.1700)		(0.2400)
KLCT	2.8846	THINDUS	4.2443	PSPR	3.2753
	(0.2364)		(0.1198)		(0.1944)
KLCM	2.4708	THPROPCO	0.9629	PSSE	1.0627
	(0.2907)		(0.6179)		(0.5878)
KLIP	1.9993	THRESOUR	2.0658	PSMO	2.7481
	(0.3680)		(0.3560)		(0.2531)
KLTE	0.7549	THSERVICE	0.0010		
	(0.6856)		(0.9995)		

KLEN	2.7109	THTECH	0.4147
	(0.2578)		(0.8128)
KLHC	4.9236*		
	(0.0853)		
KLRE	2.1226		
	(0.7072)		
KLTC	2.8541		
	(0.3025)		
KLTP	0.3302		
	(0.8478)		
KLUT	2.5300		
	(0.2822)		

In Malaysia, KLHC with a p-value of 0.0853, reflects the serial correlation issue exists. The p-value is below the 10% significance level, resulting in a rejection of null hypothesis. The other Malaysia stock indices perform well with their p-value above 0.1. With no signals of serial correlation in any of its stock indices, Thailand is performing nicely. Likewise in the Philippines, all indices pass without any issues, but PSEi is the only one stock index with serial correlation problem (p-value = 0.0426).

4.4 Implication of the Study

The findings from this study offer implications for several stakeholders including those in the context of the emerging ASEAN markets, such as Malaysia, Thailand and Philippines. By disaggregating the categories of geopolitical risk into eight different types, such as war threats, military buildup, peace threats and terror acts, this analysis able to reveal the varying effect of stock volatility with responses not only across countries but also across the sectors within each of them. The differentiated impacts shown in the results marked the importance of sectoral level as well as the country specified geopolitical risk management strategies in the emerging markets, for their volatile responses to the geopolitical incidents. The practical insights from these findings could imply how different types of sectors have different vulnerabilities across the countries to the geopolitical events which

underscore the heterogeneous impacts of GPR categories, offering perspectives that are different as compared to those from analysis on the aggregated market. The implications extend to various stakeholders and beyond theoretical understanding, including market participants and researchers from academics.

4.4.1 Investors and Traders

For investors and traders, these results show that geopolitical risks are affecting sectors in a different way, which indicates the possible opportunities for them to develop tactical strategies and manage their portfolio allocation accordingly (Niu et al., 2023). The danger of looking solely at the overall market indicators is being illustrated rather than beyond the country-wide with focus on the responses given from sectors to the geopolitical risks in this study. Investors and traders should apply the insights and knowledge from these findings in refining their strategies including the hedging strategies and the timing of entering and exiting the market. For instance, in Malaysian stock market, the volatility of industrial products and energy sectors are having significant relationships with certain GPR categories such as war threats, providing indication on the protective hedging or alternative investment approaches such as sector rotation to be implemented during such periods. In Thailand, the sensitivity to terror acts of the property and construction sector makes it suitable for investors or traders to implement risk management that is driven by the happening of relevant events. For example, positions and options contracts can be adjusted or used around major events related to security or that are negatively affecting the people's safety around the world. Aligning investment strategies with these empirical sensitivities could improve returns given the adjusted risks and thereby can reduce exposure to adverse geopolitical shocks (Fendoglu et al., 2025). While in Philippines, investors should keep an eye on geopolitical events relating to peace threats when holding stocks in sectors of financial or industrial, as there are significant volatility impacts shown from the results. Their strategies could involve reducing exposure, increasing cash on hand for better entry conditions,

investing in other sectors that appear to be more stable, or making good use of financial instruments like financial derivatives to hedge on the risks. Hence, by understanding the insights from this study, market participants could reduce the risk and enhance the returns, possibly outperforming the market rather than just avoiding action.

4.4.2 Academic Researchers

This study provides more detailed insights into identification of the significant relationships between sectoral volatility and GPR categories, which could act as a new reference point for researchers attempting to study the emerging markets' volatility. The results from Malaysia, Thailand, and Philippines demonstrate and confirm that not all sectors react to geopolitical risk in a uniform way, and that disaggregating GPR into eight categories is able to reveal the sensitivities hidden in aggregate measures. This study offers an updated empirical research with framework that focuses on sectoral level when analyzing geopolitical risk in emerging ASEAN market, which is being relatively scarce in the current world. Future study could extend this framework to other ASEAN or emerging economies and incorporating with additional factors such as behavioural finance to further enhance the predictive power of the modes. In addition, this study can serve as a benchmark when comparing with other similar work in the other regions, thereby a broader and more holistic understanding of the linkages between geopolitical and financial performance in an economy can be fostered. By filling the important research gap on the influence of the disaggregated geopolitical risk on the sectoral stock indices volatility in the emerging markets, this study lays the foundation for evidence-based recommendations that benefit various stakeholders including market participants and the academic communities.

4.5 Conclusion

Ordinary least squares methodology suggests that GPR shocks are uncommon but significant in Malaysia, Thailand and Philippines. Different sectors will be affected differently by various GPR categories, with some being more sensitive than others. However, there are a few problems in normalcy, heteroscedasticity and serial correlation in this study. Outliers and fat-tailed distributions that result in non-normality, volatility clustering that causes heteroscedasticity, and missed lag effects that result in serial correlation are probably the causes of diagnostic test problems. Overall, the study confirms that understanding the differentiated responses of sectors to various GPR categories is crucial for market participants including investors and the academic researchers especially in emerging ASEAN economies.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Summary

This study aimed to examine the impact of disaggregated geopolitical risk (GPR) categories on sectoral and overall stock market volatility in three emerging ASEAN economies which covered Malaysia, Thailand, and the Philippines. Specifically, the objectives were sixfold which are to investigate the effect of disaggregated geopolitical risk categories on Malaysian sectoral stock indices and the overall market index, study the same effects in Thailand and Philippines. While this study also includes relevant control variables such as Foreign Portfolio Investment (FPI), lagged stock market volatility, and the market index.

The key findings from this study reveal that most of the disaggregated geopolitical risk categories are statistically insignificant in explaining both sectoral and overall stock market volatility in Malaysia, Thailand, and the Philippines, while the geopolitical risk categories are highly sector specific, leading to heterogeneously occur in this study. However, some categories were found to be having significant effects, suggesting that the influence of geopolitical risk is not consistent across all markets. In Malaysia, war threats were found to negatively affect the industrial and technology sectors but positively affect the energy sector, while peace threats and military buildups negatively influenced the energy and real estate sectors. In Thailand, terrorist acts were found to significantly increase volatility in the property and construction sector. In the Philippines, peace threats had mixed effects, reducing volatility in the financial sector but raising volatility in the industrial sector.

In conclusion, this study highlights that the impact of disaggregated geopolitical risks, GPR threats and acts, and the global GPR index on sectoral and overall stock market volatility in emerging ASEAN economies is weaker than

expected, and it is contrary to previous literature that reports strong global effects of geopolitical risk on financial markets. This may reflect the unique structural features of ASEAN markets, different levels of integration with regard to global capital flows and some regional investors may respond relatively strongly to domestic or global economic factors, rather than responding to disaggregated geopolitical risks. Therefore, various factors can make the results different in different markets.

5.1 Discussions of Major Findings

Thoroughly, this study examines the relationship between eight geopolitical risk categories and sectoral stock market volatility, with controls variables foreign portfolio investment, market portfolio and lagged sectoral stock volatility. The results are discussed with the journals reviewed in Chapter 2 in the following parts.

5.1.1 Geopolitical Risk

Based on the results shown, the impact of geopolitical risk categories is highly sector-specific, which aligned the findings of Chatziantoniou et al. (2025). But the eight geopolitical risk categories are mostly insignificantly affecting the volatility of the sectoral stock market in Malaysia, Thailand as well as Philippines. Compared to the empirical results of this study, they are opposite with some journals such as Chatziantoniou et al. (2025); Eissa et al. (2024); Yang et al. (2021) that indicated significant relationships.

The findings from Chatziantoniou et al. (2025) are notable. Firstly, every geopolitical risk category increased will impact on volatility of the US sectoral stock market, regardless positive or negative. It means that geopolitical has significant predictive power for the sectoral stock market. However, it shows a contradiction in the result of this study due to geographical area studied by Chatziantoniou et al. (2025) was focused on US, a developed country that has different sensitive levels from the

emerging countries. While compared to the Eissa et al. (2024), the journal also indicated that the effects of geopolitical risk categories on stock market are depending on different market conditions and dynamics, but the results still contradict with this study. Generally, differences in geopolitical exposure between two studies will be the key reason because middle eastern countries are always at the center of geopolitical events such as Arab Spring and Iraq War, while the ASEAN countries have stable geopolitical environments, especially Malaysia, Thailand and Philippines. As a result, geopolitical shock produced less responses to three of the ASEAN countries compared to the Middle East and the US.

On the other hand, Yang et al. (2021) concluded a positively significant relationship between the geopolitical risk categories and volatility of the China sectoral stock market. This is because China as a most globally integrated country, often implicated in geopolitical events such as US-China trade war, so it will have direct impact on China's economy, especially in energy and manufacturing sectors. Besides, large-scale capital flow of different country involves in China's sectoral stock market led to more sensitive to geopolitical shock. While referring to the example of Saudi Arabia, the China's stock market still having a negative relationship with specific regional GPR index due to action taken by Saudi Arabia when geopolitical event occurs. Therefore, most of the geopolitical risk are indirectly affecting and less relevant to the stock market in these three ASEAN countries.

In conclusion, the empirical result of this study is different with other past journals that conducted in different countries, led to geopolitical risk categories have less significant predictive power for the sectoral stock market in Malaysia, Thailand and Philippines.

5.1.2 Foreign Portfolio Investment

From the empirical results of this study, it revealed that foreign portfolio investment is mostly statistical insignificantly affecting sectoral stock market, except for KLTE and market portfolio (KLCI) of Malaysia, THFINCIAL, THPROPCO and market portfolio (SETI) of Thailand as well as PSMO and market portfolio (PSEi) of Philippines. From these remaining sectors and market portfolio index, which indicated that the market portfolio of three ASEAN countries, KLCI, SETI and PSEi are having statistical positive relationship significantly with capital flow of FPI. Therefore, this study concluded the similar results with the journals such as Chhimwal and Bapat (2020); Naik et al. (2021) and Prabheesh et al. (2022) that indicated a positive significant relationship. However, KLTE, THFINCIAL and PSMO are negatively significant in relationship with capital flow of FPI per GDP, which are opposite with past journal that reviewed for this study.

Based on the findings from Chhimwal and Bapat (2020), Naik et al. (2021) and Prabheesh et al. (2022), these journals revealed a positive significant relationship between the foreign portfolio investment and volatility of the stock market in India and other emerging countries, which shows a contradiction with the result of this study. This is due to those markets are reliant on foreign portfolio investments, therefore when capital flow of FPI per GDP increases, the confidence of the investor in the specific sector of the market will increase because of the higher FPI per GDP indicates a more stabilized capital inflow. This led the investors to prefer more confidence-driven investment in the specific sector rather than speculative investment and thus reduce the volatility of the sectoral stock market. For example, the largest monthly FPI around $491million dollar flow into Malaysia's stock market since March 2022 was because of the optimism about AI and technology sector of Malaysia (Malay Mail, 2024). Therefore, investors' stabilized expectations in the technology sector will reduce the volatility of the KLTE stock index.

In conclusion, this study reveals a similar result with other studies, but only for market portfolio of these 3 ASEAN countries. For the sectoral stock indices, almost all sectors' indices are insignificant with FPI, except

KLTE, THFINCIAL and PSMO. Therefore, FPI has significant power in influencing the stock market in Malaysia, Thailand and Philippines, but not in specific sectors indices.

5.1.3 Market Portfolio

The market portfolio of the three ASEAN countries, KLCI, SETI and PSEi are positive and statistically significant relative to sectoral stock market volatility of their own countries, except for Malaysia's Healthcare (KLHC) and Real Estate (KLRE). This is consistent with the prior studies from Chatziantoniou et al. (2025), Mahat et al. (2020), Poshakwale and Theobald (2004) as well as Dong et al. (2019), showing evidence that market-wide shocks spill over into sectoral volatility in ASEAN markets. These authors can also support the reliability of positive lead-lag effect in some of the ASEAN stock markets with similar characteristics. Due to the volatility of the market portfolio transmits into sector levels, it implies that sectoral stock market volatility is less significantly affected by sectoral risk rather than the market factors. This strong correlation between broader market and the sectors amplifies overall market risk (Wang et al., 2023). Therefore, from the investor's perspective, this condition makes portfolios more sensitive to market swings when overall market is having fluctuations.

5.1.4 Lagged Sectoral Stock Market Volatility

Almost all lagged sectoral stock market volatility exerts an insignificant relationship with current sectoral stock market volatility based on the results summarized from the empirical analysis of this study. Just a few sectors are correlated, so no strong effect was found, regardless positive or negative. Therefore, this empirical analysis is different with journal of Oredegbe and Abioye (2022); Torun (2007) and Gyamfi et al. (2016).

Compared to the reveals from the journal of Oredegbe and Abioye (2022); Torun (2007) and Gyamfi et al. (2016). These journals concluded

that the irrational behaviour of investor will lead to persistence of previous stock market, so it will arise the carry over effects when investors keep active in market. Together with long memory effect of past performance, the future performance can be affected by the past. These journals have shown the positive significant relationship between both variables, but contradiction with the result of this study. One of the reasons is that the influence of other variables is far greater than lagged sectoral stock market volatility. The empirical data of this study show that the market portfolio is the greatest factor that impacts on sectoral stock market volatility. Sometimes, these weak factors will be masked by strong factors such as market index and others macroeconomics variables. Besides, differences in market characteristics will also affect the persistence of volatility. For example, short-term volatility shock may fade speedily in thin markets, making lagged volatility less relevant. The concept can be proven by the statement from Laiboni (2020) about the persistence is dependent on sectors.

In conclusion, due to almost all sectors being insignificant with lagged sectoral stock market volatility, there is not enough evidence to prove that the current sectoral stock market volatility will be influenced by the previous quarter's sectoral stock market volatility.

5.2 Limitations of the Study

While this study provides valuable insights into the influence of geopolitical risk on emerging market stock performance, several limitations should be acknowledged to ensure a balanced interpretation of the findings.

In terms of scope, the study focused on selected emerging markets to enable the effects of geopolitical risks on these economies to be closely examined. Emerging markets are known to be characterized by higher political vulnerability, less mature financial systems, greater dependence on foreign investment, and heightened exposure to global shocks. These features make them particularly

sensitive to geopolitical tensions, amplifying volatility and influencing investor sentiment more sharply than in developed markets. Nevertheless, this narrow focus also means that the findings should not be interpreted to hold across economies with fundamentally different economic structures, political systems, or levels of market maturity, where investor behaviour might alter the impact of geopolitical risks significantly.

Overall, these scope limitations do not diminish the value of findings from this study, but they define the boundaries within which the results should be interpreted. This highlights the importance of interpreting conclusions that account for the specific conditions under which this study was performed.

5.3 Recommendation for Future Research

Building on the limitations identified in this study, several steps can be taken to improve future study and make the results more applicable in different situations. These recommendations aim to address this study's boundaries while helping researchers to better capture the complex way geopolitical risks influence financial markets.

Expanding the geographic scope of research would broaden the utility of the findings. Including countries with different political systems, economic maturity levels, and exposure to global trade would be necessary in order to establish whether certain market responses to geopolitical risks are universal or dependent on local factors. For instance, comparing developed economies such as the United States or the Eurozone with frontier and developing markets of Africa, Latin America, or Southeast Asia could highlight the differences in market depth and investor behaviour. Emerging markets often face liquidity constraints and heightened currency risks, while developed markets may demonstrate stronger institutional buffers and diversified capital markets. Similarly, by comparing resource-dependent economies like the Middle East economies to more industrialized economies in Asia, economic structures that cause one to be exposed to geopolitical

shocks might be highlighted. This kind of comparison could identify whether features like strong regulation or openness to foreign investment can reduce the impact of political risks on market performance.

By combining these scope improvements, future study can generate more advanced and precise insights into the connection between geopolitical events and market performance. These improvements would not only enhance academic understanding but also enhance the practical applicability of research findings for investment strategy formulation and risk management.

5.4 Conclusion

This study examines how geopolitical risk influences sectoral stock market performance in selected emerging markets. The findings reveal that geopolitical risk with foreign portfolio investment, market portfolio, and lagged market volatility has a notable effect on certain sectors, impacting investor behaviour and market dynamics. While some sectors show stronger sensitivity, others are less affected, highlighting the varied nature of these relationships. These insights offer valuable guidance for investors and academic researchers seeking to understand and navigate the complexities of emerging markets. Overall, this study contributes important knowledge that can support better decision-making and inspire further investigation in this evolving area.

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