DOES GEOPOLITICAL RISK MATTER FOR ASEAN5 ECONOMIES? EVIDENCE ON CONVENTIONAL AND ISLAMIC COMPLIANT INDICES

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ABSTRACT

We assess the interlinkage of geopolitical risk and returns of conventional and Shariah Compliant indices from five ASEAN economies for the period Jan 2019 – Mar 2023 using daily data. We assess this phenomenon through the lens of the Efficient Market Hypothesis (EMH) and Risk and Return Theory. The sampled indices belong to Morgan Stanely Capital International (MSCI) and Standard and Poor (S&P). We employ Quantile Regression and Wavelet Coherence approaches. The results reveal that geopolitical risk does not significantly affect ASEAN5 indices for both conventional and Shariah Compliant categories. Moreover, there is very little dynamic co-movement between geopolitical risk and sampled indices. Malaysia and Indonesia emerge as the countries exhibiting the least co-movement and offer safe haven properties against geopolitical risk. The findings carry important implications for investors and policymakers.

I. INTRODUCTION

In the post-World War II world, the ASEAN region remains less exposed to geopolitical tensions owing to non-interventionist and cooperative approaches adopted by most of its member countries (Hui, 2022). Nevertheless, in the last three decades, there have been several geopolitical events that caused unrest in ASEAN like the East Timor issue, the Bali bombings, and disputes arising due to Chinese presence in the South China Sea to name a few (Bouraoui & Hammami, 2017). Furthermore, ASEAN is integrated into the global financial system and susceptible to external shocks stemming from geopolitical events such as conflicts, trade disputes, and policy changes among major global powers. Since ASEAN is the fifth-largest economy in the world with a combined GDP of over $3 trillion, home to more than 650 million people, and situated at the crossroads of major global trade routes between the Indian and Pacific Oceans, it is extremely important for investors, policymakers, and financial institutions to understand how these geopolitical risks impact market returns for ASEAN countries. The comprehensive assessment of this linkage can assist stakeholders in better navigation of uncertainties, making informed investment decisions, and developing strategies to enhance market resilience and stability amidst geopolitical turbulence in Southeast Asia.

While several studies have explored the impact of GPR on developed markets (Caldara & Iacoviello, 2022; Antonakakis et al., 2017) the sensitivity of emerging economies like ASEAN remains underexplored, particularly with respect to Islamic finance indices. Furthermore, this study addresses a dual gap, examining both conventional and Islamic indices and the dynamic responses during global crises. We have at least two reasons motivating the assessment of the issue not only for conventional equity markets but also for Shariah Compliant (SC) or Islamic markets. First, around 41% of the ASEAN population comprises Muslims, and Indonesia and Malaysia are among very fast-growing Muslim economies hosting SC indices and other instruments.[1] Second, as Islamic equities discard impermissible sectors for investments and put restrictions on capital structure (Ashraf & Khawaja, 2016), they may exhibit a linkage with geopolitical risk different in essence from the conventional firms.

In line with these motivations, we explore the linkage between geopolitical risk and two families of indices from five ASEAN economies (ASEAN5), namely Singapore, Thailand, Philippines, Malaysia, and Indonesia, during two important crises, i.e., COVID-19 and the Russian invasion of Ukraine. We first perform an assessment of this linkage using quantile regression. The intention is to observe any possible relationship across market conditions. We also utilize Wavelet Coherence to investigate the dynamic co-movement of geopolitical risk and ASEAN5 conventional and Islamic indices. The quantile regression results suggest that ASEAN5 indices are not influenced by geopolitical risk. The Wavelet results reveal that both Malaysia and Indonesia exhibit least dynamic co-movements with geopolitical risk.

We come across several studies exploring the influences of geopolitical risk on financial markets and real economies covering oil price volatility (Antonakakis et

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1. https://www.pewresearch.org/religion/2011/01/27/the-future-of-the-global-muslim-population/

al., 2017; Liu et al., 2019; Mei et al., 2020; Mignon & Saadaoui, 2024; Nonejad, 2022b; Zhang et al., 2022), corporate investments (Wang et al., 2024), tail dependence of global stock markets (Lee, 2019), gold volatility (Lee, 2019), equity returns (Nonejad, 2022a; Smales, 2021), bank loans (Nguyen & Thuy, 2023), bank stability (Phan et al., 2022), insurance (Hemrit & Nakhli, 2021), green markets (Sohag et al., 2022), Shariah-compliant stocks of Indonesia, Malaysia and GCC with respect to monetary and fiscal policies (Loang, 2024) and emerging economies (Behera & Mahakud, 2025). Nevertheless, the linkage of ASEAN5 conventional and SC indices is yet to be explored, and this study fills this important gap in the literature.

The rest of the paper is as follows: Section 2 outlines the relevant literature, and section 3 provides the details of the research methodology. Section 4 discusses the results. Section 5 concludes the study.

II. LITERATURE REVIEW

This study is grounded in the Efficient Market Hypothesis (EMH) (Fama, 1970), which posits that asset prices reflect all available information, including geopolitical risk. EMH serve as the best fit because we are analyzing the GPR (a form of public information) and its impact on both conventional and Islamic indices. This allows us to interpret the findings in terms of market efficiency and whether ASEAN5 economies are efficient enough to absorb such risk without significant disruption. Additionally, the Risk and Return Theory provides a framework to assess how uncertainties such as geopolitical events influence investment decisions and market stability (Pastor & Veronesi, 2013). The risk and return theory will help to explain investor behavior under varying levels of geopolitical uncertainty by linking risk perception to return distributions and helps in contextualizing the quantile regression findings, like the significant effect of GPR suggesting lower perceived risk in ASEAN5 economies.

2.1. Geopolitical Risk

Geopolitical risk refers to the potential impact of global political instability on financial and economic institutions. The implications of the risk are of utmost importance for companies operating in an interconnected global economy, as well as for governments and investors. Bremmer & Keat (2009) define Geopolitical risk as the probability and impact of political choices made in one country on the economic outcomes of another. Their emphasis lies in highlighting the impact of political instability and unpredictability on decisions about foreign investments. Caldara & Iacoviello (2022) develop a Geopolitical Risk Index to measure the impact of geopolitical risk on global economic indicators and find a significant negative relationship between geopolitical risk and regional economic growth.

Friedrich & Guérin (2020) analyze the ways in which geopolitical risk impacts economies and highlight the importance of trade interruptions, resource allocation, and shifts in consumer confidence as transmission channels. Specifically, geopolitical tensions significantly deter investment by increasing uncertainty, a factor that firms often seek to avoid. The increase in geopolitical risk significantly influences the overall interconnection effect of commodity markets. However, the

influence of geopolitical risk differs depending on the type of commodity market. It exerts a positive influence on the energy, livestock, and agriculture commodities markets while having an adverse effect on the precious metals and industrial metals sectors (Gong & Xu, 2022).

Research on the impact of geopolitical uncertainty on financial markets has also demonstrated its significance. Antonakakis & Darby (2013) analyze the impact of terrorist attacks, which are a specific type of geopolitical risk, on stock market volatility. These situations often elicit unfavourable reactions from markets due to investor aversion and increased uncertainty. Management strategies that companies and governments employ to mitigate the effect of geopolitical risk include insurance, diversification of portfolios and strategic associations, as per the suggestions of Ongena et al. (2015). Paster & Veronesi (2013) investigate the correlation between geopolitical risk and worldwide financial markets and conclude that geopolitical risk could impact many aspects, such as foreign direct investment and exchange rate, and they can also lead to substantial market impact.

2.2. Geopolitical Risk and Capital Markets

Geopolitical uncertainty and market instability and declines emphasize the sophisticated and significant connection between geopolitical risk and capital markets. Caldara & Iacoviello (2022) provide convincing evidence of a negative correlation between increases in geopolitical threats and market performance. They specifically highlight a decrease in stock market returns and a deceleration in US economic growth. Kaiser & Stöckl (2020) find that there is a more evident relationship between geopolitical risks and decreasing stock market returns in emerging markets. These findings indicate that emerging markets exhibit greater sensitivity compared to developed markets due to the nature of the diversity of economic structures and market conditions.

Suleman (2012) finds that geopolitical tensions have a significant impact on investor behavior. Explicitly, He observes that during such periods, investments tend to shift towards safer assets such as government bonds and gold. Additionally, market volatility tends to increase as a result. This move reflects a broader tendency for investors to become more cautious and risk-averse in international financial markets during periods of heightened geopolitical instability. The studies listed above emphasize the significant impact of geopolitical uncertainty on capital markets in different regions, underscoring the need for investors and governments to closely monitor this risk and incorporate it into their risk management and investing strategies. Iwanicz-Drozdowska et al. (2021) suggest that geopolitical risk can exert a substantial influence on asset markets and provide a threat to financial stability. Das et al. (2019) and Mansour-Ichrakieh & Zeaiter (2019) find that the inclination is particularly prominent in developing economies. According to the European Central Bank (2020), policymakers consider geopolitical uncertainty as a crucial factor in assessing financial stability.

2.3. Geopolitical Risk and Cryptocurrencies

Corbet et al. (2020) point out that the interconnection between geopolitical risk and cryptocurrency is a part of research that has risen fast in recent times. Sometimes, the issue of cryptocurrencies is tackled as a new asset class that is said to be relatively insulated from external burdens and could be used possibly as insurance. This is because political events tend to have a direct influence on the actions of the majority of the financial institutions. Given what has been established for the separating asset market theory of cryptocurrencies, it has been noted that virtual currencies such as bitcoin have some unique features that make them quite resilient to political climate troubles. The structural relief of these organizations can be attributed to the decentralisation of their structure and the ability to manage the organization overseas as well, which can insulate them from specific country shocks (Gkillas & Katsiampa, 2018).

For example, Demir et al. (2018) argue that safe havens/cryptocurrencies are available because of geopolitical concerns. However, they also possess more volatility and more risk characteristics than ordinary speculative assets. It is reasonable to argue that the role of cryptocurrency will most likely become multifaceted in bringing about certain changes in the world political situation as market sentiment, governmental actions, and increased usage of digital currencies will play an active role (Bouri et al., 2017). Corbet et al. (2020) highlight that the captivating subject of the correlation between geopolitical risk and cryptocurrency has harvested significant interest in recent research. Cryptocurrencies are sometimes portrayed as an alternative asset class that is less influenced by external factors and might potentially serve as a safeguard against hazards. This is because traditional financial institutions tend to react strongly to geopolitical disruptions. Based on the decoupling theory of cryptocurrencies, which has been extensively researched, it is observed that digital currencies such as Bitcoin demonstrate a unique ability to withstand geopolitical crises. The resilience of these entities can be ascribed to their decentralized organization and global reach, which can protect them from country-specific shocks (Gkillas & Katsiampa, 2018).

The current data, however, presents an intricate depiction. Demir et al. (2018) find that cryptocurrencies can sometimes benefit from safe-haven flows when geopolitical risk is high. However, they also exhibit higher volatility and risk characteristics than conventional speculative assets. Cryptocurrencies have the potential to have a complex impact on geopolitics, influenced by factors such as market sentiment, government responses, and the increasing use of digital currencies (Bouri et al., 2017). Consequently, there remains a significant divergence of opinion within the scholarly community regarding the security and reliability of cryptocurrencies as a secure refuge, notwithstanding their potential as an alternative investment during periods of volatility.

2.4. Shariah Compliant Assets and Geopolitical Risk

Islamic finance, characterized by its adherence to Shari'ah law, has demonstrated resilience and continued to grow despite geopolitical risks and other global economic uncertainties. Eissa et al. (2024) assert that Islamic financial institutions inherently mitigate certain risks associated with geopolitical conflicts by opting for

investments in tangible assets rather than engaging in interest-based transactions (riba). Their analysis highlights the resilience of Islamic banks in the face of political crises, as they adhere to strict asset-backed funding practices, which makes them less susceptible to volatility compared to conventional banks. Amidst geopolitical turmoil, the stability of Islamic finance attracts investors who are looking for safer options during turbulent periods. This also leads to a greater integration of Islamic finance with the global financial markets.

Raza Rabbani et al. (2024) provide a comprehensive analysis of the influence of geopolitical changes on Islamic financial instruments, specifically Sukuk (Islamic bonds), particularly in regions prone to political instability. The research indicates that the performance of the Sukuk market is often closely linked to geopolitical stability. When there is tension in a given political environment, people regard these instruments as riskier than ordinary bonds. From this relationship it can be assumed how important geopolitical analysis is for the management and comprehension of the risks associated with Islamic financial instruments. This is especially important for investors and governments in Muslim-majority countries and other countries. The relationship of geopolitical risk to the development of Islamic assets is a direct relationship with both the amount of funds injected and the strategies adopted by the Islamic finance industry.

Geopolitical risk remains a topical issue among many scholars and practitioners, manifested by increasing number of studies on the effects of geopolitical risk in the literature. However, little has been known about how it affects the ASEAN5 economy, especially in relation to finance and investment, looking at both conventional and Islamic indexes. Many previous works focus only on mature finance markets and countries, neglecting the distinctive economic and financial environments in developing Southeast Asia. Likewise, while many studies have focused on the effects of geopolitical risk on traditional stock market indices, few studies have focused on Sharia-compliant indices that are expected to perform differently amid geopolitical risks (Arouri et al., 2011; Kang et al., 2019). Without stating the obvious regarding the current global neo-capitalism, the tyranny of interest finance is definitely growing within the context of economic globalization owing to the increasing integration.

Furthermore, the potential differential effects of this risk arising from the differing degrees of political stability, economic integration, and development of financial markets among these countries have received relatively less attention (Aluko & Ajayi, 2018; Mensi et al., 2014). Consequently, this study aims to provide empirical evidence on the sensitivity of both conventional and Shariah compliant indices to geopolitical risks in the ASEAN5, with the goal of concluding this knowledge gap and advancing a more nuanced understanding of the market dynamics in these nations.

Recent studies including Caldara & Iacoviello (2022), highlight the importance of geopolitical risks in shaping market outcomes by influencing investor sentiment and decisions making. Smales (2021) emphasizes that geopolitical risks trigger varying degrees of market instability contingent on factors like economic policy and investor sentiments. The findings of the study particularly the resilience of the indices of ASEAN5 economies align with Bouri et al. (2020), who emphasize the role of market specific structure in mitigating external shocks.

III. METHODOLOGY
3.1. Data

Our research objective is assessment of sensitivity of ASEAN markets to geopolitical risk. For this purpose, we intend to study its influence on representative ASEAN indices for divergent market conditions. In addition, we also seek to explore dynamic co-movement across both time and frequency domains. Finally, we also want to see how geopolitical risk affects Shariah Compliant (SC) firms. In line with these research objectives, we have selected indices for our estimations from two index families namely Standards and Poor (S&P) and Morgan Stanely Capital International (MSCI). The sample includes five ASEAN countries, namely Indonesia, Malaysia, Philippines, Singapore, and Thailand. This selection is influenced by data availability of both categories of indices. As both the index families follow different methodologies, we can be confident that our findings are not influenced by index construction bias.

To proxy geopolitical risk, we utilize Caldara & Iacoviello (2022) Geopolitical Risk Index (GPRD) that tracks adverse geopolitical events through newspaper article counts. It is based on automated text-search of results of the electronic archives of 10 US newspapers for eight categories including wars, threats, and acts of terrorism. We also use an alternative measure of geopolitical risk for robustness namely 30 days (GPRD_MA30) moving averages of GPR. The data is of daily frequency and sourced from Thomson Reuters Refinitiv Database. The sample period is from 01 Jan 2019 to 31 Mar 2023. This sample period covers before and after two recent crisis situations / geopolitical events, including COVID-19 (January 2020) and the Russian Invasion of Ukraine (March 2022), and provides us with the required settings to investigate the vulnerability of ASEAN5 conventional and Islamic markets. While we have utilized robust methods, it is important to acknowledge certain limitations. The daily data, while it is comprehensive, may overlook long-term dynamics. Quantile regression assumes linearity within quantiles which might not fully capture nonlinearities in financial markets.

We report the details of indices and summary statistics in Table 1. We observe very little change +/- 10% in the returns. The variability of returns also follows a close range i.e. between 0.99 to 1.6. We also notice that data series from MSCI indices demonstrate lesser skewness compared to S&P indices. Therefore, our sampled index families appear to be heterogenous.

From the trend charts of the indices (Figures 1 and 2), we notice an abrupt decrease in index movements at the initiation of COVID19. There is, however, visible difference between the recovery between conventional and SC indices for Singapore. With respect to Ukraine crisis in March 2022, we notice market collapse for all the indices. Malaysian SC indices seem to be most affected whereas Indonesian SC indices are least affected by this crisis. Nevertheless, there is immediate recovery across both the categories of ASEAN5 indices after crises situations.

Table 1.
Descriptive Statistics

| Index	Symbol	Mean	p50	SD	p25	p75	Max	Min	Skew	Kurt
MSCI Singapore	MSING	-0.01	0.01	1.16	-0.57	0.58	7.32	-7.93	-0.25	9.58
MSCI Thailand	MTHAI	-0.01	0.00	1.33	-0.58	0.58	8.26	-11.88	-1.40	21.38
MSCI Philippines	MPHIL	-0.01	0.00	1.52	-0.73	0.74	7.99	-14.51	-1.28	15.47
MSCI Malaysia	MMAL	-0.01	0.00	0.99	-0.46	0.46	7.12	-7.49	-0.61	13.59
MSCI Indonesia	MIND	-0.01	0.00	1.58	-0.73	0.70	14.38	-11.22	-0.29	17.28
MSCI Singapore Islamic	MSING_I	-0.02	0.00	1.24	-0.66	0.61	7.91	-8.12	-0.06	8.35
MSCI Indonesia Islamic	MIND_I	-0.01	0.00	1.57	-0.80	0.75	14.28	-11.06	-0.08	15.75
MSCI Thailand Islamic	MTHAI_I	-0.01	0.00	1.46	-0.66	0.65	9.70	-15.34	-1.75	26.35
MSCI Philippines Islamic	MPHIL_I	-0.02	0.00	1.55	-0.76	0.81	6.27	-17.53	-2.06	23.83
MSCI Malaysia Islamic	MMAL_I	-0.02	0.00	1.03	-0.54	0.46	5.88	-5.82	0.18	7.77
S&P Indonesia BMI	SPIND	-0.01	0.00	1.52	-0.70	0.69	14.45	-11.17	-0.23	18.85
S&P Malaysia BMI	SPMAL	-0.02	0.00	0.92	-0.44	0.44	7.13	-6.50	-0.37	13.43
S&P Philippines BMI	SPPHIL	-0.01	0.00	1.40	-0.67	0.67	7.34	-14.46	-1.56	18.87
S&P Singapore BMI	SPSING	0.01	0.01	1.18	-0.58	0.62	7.83	-7.33	-0.29	9.84
S&P Thailand BMI	SPTHAI	0.00	0.00	1.29	-0.54	0.61	7.93	-12.24	-1.67	22.52
S&P Indonesia BMI Shariah	SPIND_S	-0.03	0.00	1.47	-0.76	0.66	12.73	-10.85	-0.25	16.46
S&P Malaysia BMI Shariah	SPMAL_S	-0.01	0.00	1.02	-0.53	0.52	6.09	-6.16	-0.21	8.06
S&P Philippines BMI Shariah	SPPHIL_S	-0.03	0.00	1.48	-0.69	0.72	7.26	-20.42	-3.06	41.11
S&P Singapore BMI Shariah	SPSING_S	-0.01	0.00	1.07	-0.54	0.58	7.79	-7.34	-0.35	10.60
S&P Thailand BMI Shariah	SPTHAI_S	0.02	0.00	1.40	-0.59	0.65	8.46	-12.93	-1.28	20.94
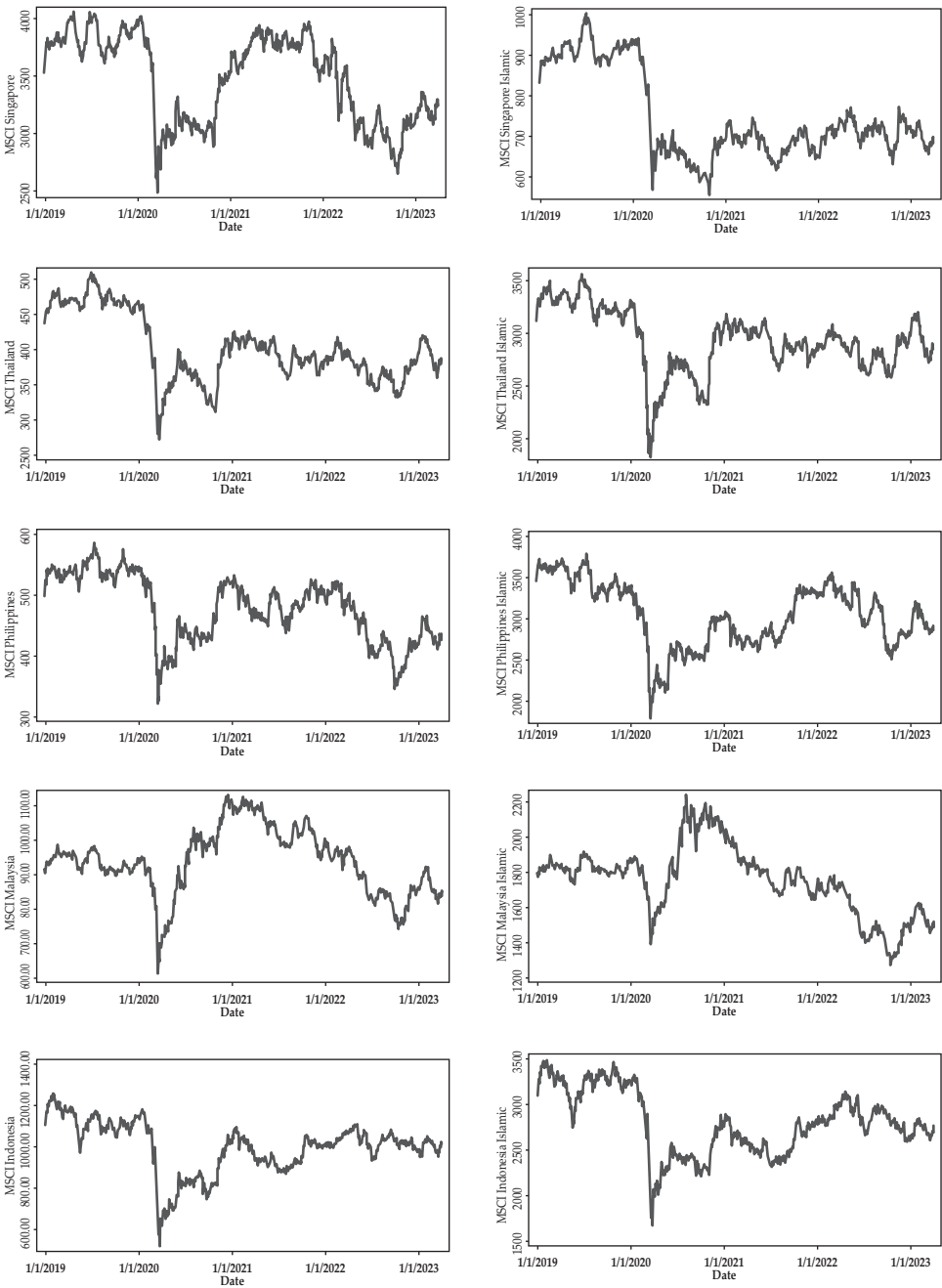
Figure 1.
Historical Trend - MSCI ASEAN5 Indices
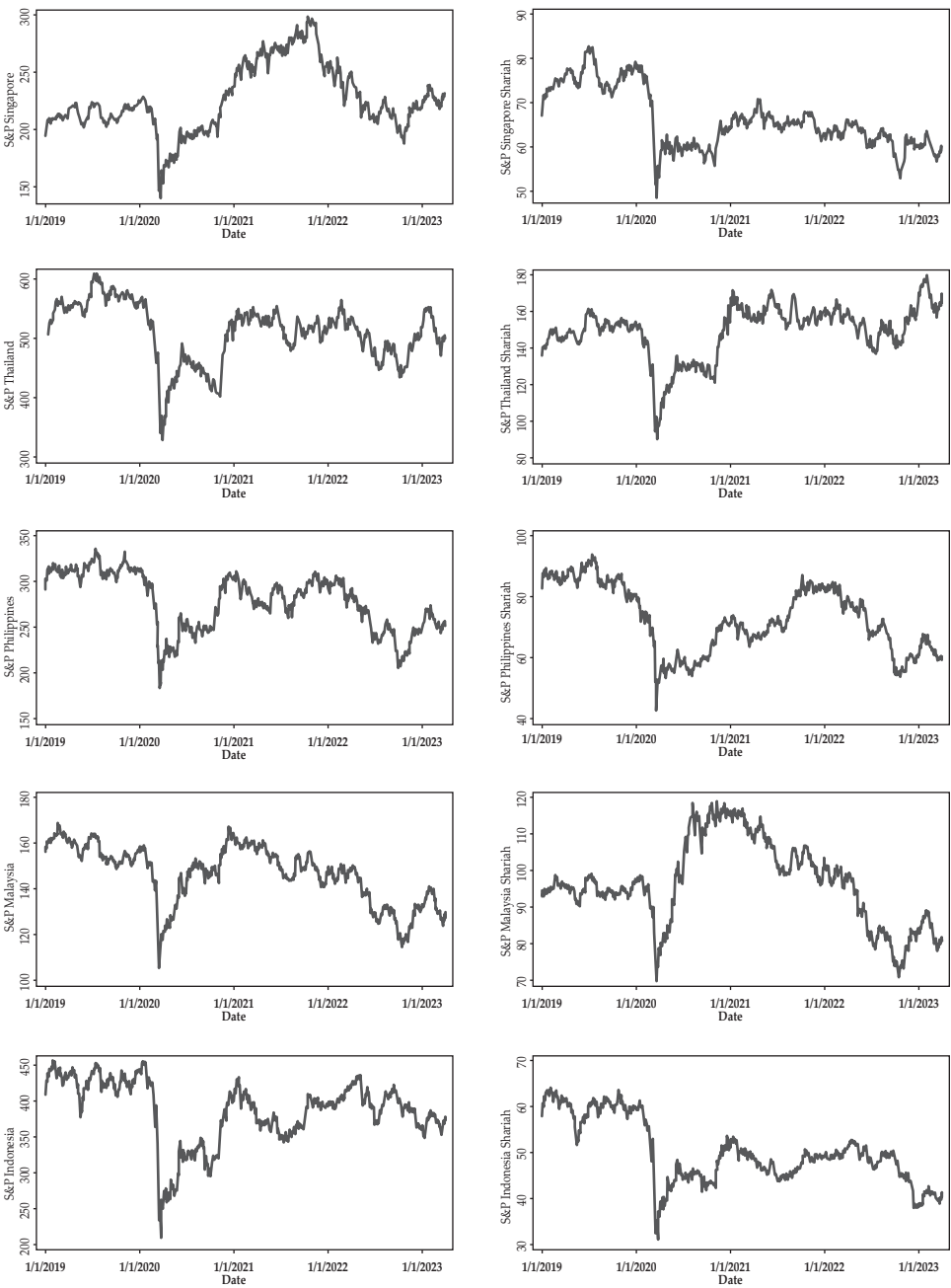
Figure 2.
Historical Trend – S&P ASEAN5 Indices

Table 2.
Correlations with Geopolitical Risk

Index	GPRD	GPRD_MA30
MSCI Singapore	-0.049	-0.00491
MSCI Thailand	-0.0106	0.0568
MSCI Philippines	-0.00263	0.00925
MSCI Malaysia	-0.0297	0.0146
MSCI Indonesia	-0.0169	-0.00493
MSCI Singapore Islamic	-0.0465	-0.00274
MSCI Indonesia Islamic	-0.0251	-0.00984
MSCI Thailand Islamic	0.00376	0.0519
MSCI Philippines Islamic	0.0244	0.0226
MSCI Malaysia Islamic	-0.0307	0.0119
S&P Indonesia BMI	-0.0189	0.00353
S&P Malaysia BMI	-0.0335	0.0273
S&P Philippines BMI	-0.00666	0.00863
S&P Singapore BMI	-0.0336	0.0292
S&P Thailand BMI	-0.0139	0.0506
S&P Indonesia BMI Shariah	-0.027	0.00199
S&P Malaysia BMI Shariah	-0.0263	0.0225
S&P Philippines BMI Shariah	0.0326	-0.00274
S&P Singapore BMI Shariah	-0.0366	0.00447
S&P Thailand BMI Shariah	-0.00449	0.0649*

Note: GPRD: Geopolitical Risk Index; GPRD_MA30: Geopolitical Risk Index 30 Days

We now move towards the initial assessment of the linkage of ASEAN5 market movements and geopolitical risk. We estimate correlation of index returns with GPRD and GPRD_MA30 (Table 2). Evidently, there is no significant correlation between sampled indices and both the proxies of geopolitical risk (except SPTHAI_S). This finding suggests that geopolitical risk does not hold correlation with ASEAN5 equity indices. Nevertheless, we need a more comprehensive and formal analysis, which we perform next.

3.2. Method
3.2.1. Quantile Regression

Quantile regression as proposed by Koenker & Bassett (1978) is employed to examine the conditional distribution of returns at various quantiles offering insights into tail behavior under different market conditions. To assess the impact of geopolitical index at different return levels (quantiles) of ASEAN5 conventional and SC indices, we utilize Quantile Regression (Koenker & Bassett Jr, 1978, 1982). Through this approach, we can estimate quantiles of our dependent variables (index returns). Since our intuition is that returns have a tendency of changes in the values (levels) conditional to geopolitical index (predictor variable), this technique can offer comprehensive picture of the conditional distribution of Y given that X=x.

We define our empirical model as

$$q_r(R_t) = \alpha_\omega + \beta_\omega \ Geopolitical \ Risk_t \ where \ \omega \ \varepsilon \ (0,1) \tag{1}$$

Here, R_t is daily return of each stock index calculated as $R_t = LN\left(P_t/P_{t-1}\right)$. We use two proxies of geopolitical risk namely GPRD and GPRD_MA30.

For our analysis, quantile regression will assist in exploring the effect of geopolitical risk on ASEAN5 conventional and SC indices during different market situations (bullish versus bearish). For our estimations, we have used five quantiles (0.20, 0.40, 0.60, 0.80, and 0.95) to depict bearish, median and bullish market conditions. Also, for the estimation of the variance-covariance matrix of the estimators (standard errors), 100 bootstrap replications are applied.

3.2.2. Wavelet Coherence

To identify co-movements in time-frequency domain, we perform wavelet decomposition estimation (Grinsted et al., 2004) and Torrence & Webster (1999) by applying wavelet coherency in shape of the continuous wavelet transform (CWT) on the return series. Following In & Kim (2013), we define CWT as

$$H(scale, position) = \int_{-\infty}^{\infty} x_t \lambda(\text{scale}, \text{position}, \text{time}) \text{dt} \tag{2}$$

We need a bivariate framework known as wavelet coherence to examine the interaction of CPU and stock returns. We define the squared wavelet coefficient (Torrence & Webster, 1999) as

$$R^2(u,s) = \frac{\left|S\left(s^{-1}W_{xy}(u,s)\right)\right|^2}{S(s^{-1}|W_x(u,s)|^2)S\left(s^{-1}|W_y(u,s)|^2\right)} \tag{3}$$

The contour plot of the above specification can help in spotting i) the regions in time–frequency space where the two-time series move together and evaluate the features of their co-movement.

For our Wavelet plots, the crisis periods on horizontal time component can be located at following time scales: 300 corresponds to initiation of COVID19 period whereas 826-850 are the starting points for Russia-Ukraine war.

IV. RESULTS AND DISCUSSIONS
4.1. Quantile Regression Results

We assess how ASEAN5 markets embraced the influence of geopolitical risk at various market situations during the occurrence of two major crises at various levels of returns distribution. Our baseline estimations (Table 3) are performed using GPRD as the key independent variable. We observe that for most of the indices, the coefficients of GPRD are insignificant. This finding reveals that for ASEAN5 region, geopolitical risk does not affect the conventional as well as

Islamic markets. There are some rare exceptions including MTHAI_I (Q40) having positive and significant coefficient and MSING (Q40), MMAL (Q95) and MMAL_I (Q95) having negative and significant coefficients. We will accept these exceptions with a pinch of salt as they might have been an outcome of bootstrap replications.

To validate our earlier findings and ensure credibility of our findings, we perform a battery of robustness tests. We first replace MSCI indices with S&P indices (Table 4). We also perform estimations using alternate proxy of geopolitical risk, i.e., GPRD_MA30 for MSCI (Table 5) as well as S&P (Table 6) indices.

Our baseline estimation of GPRD and ASEAN5 (Table 3) portrays that GPRD is negatively significant with conventional indices of Singapore at Q40 and Malaysia at Q95; the rest of the conventional indices are insignificant. On the other hand, in Islamic indices, Thailand is positively significant at Q40, and Malaysia is negatively significant at Q95. The rest of the Islamic indices are insignificant. Our robustness results from (Table 4) using the thirty-day moving average of GPRD show that except conventional indices of Singapore at Q40, the rest of the conventional indices are insignificant. The impact of GPRD 30 is positively significant with S&P Philippines Islamic at Q40, and the rest of the Islamic indices are insignificant. Table 5 shows positive significance with Thailand's conventional indices at Q60 and Q80; the rest of the conventional indices are insignificant. On the other hand, Islamic indices in Thailand are positively significant at Q20 and Q40, the Philippines at Q95 and Malaysia at Q80. The rest of the Islamic indices are insignificant. Table 6 shows positive significance results with conventional indices of Singapore at Q95, Thailand at Q60 and Malaysia at Q80; the rest of the conventional indices are insignificant. On the other hand, Islamic indices in Thailand are positively significant at Q60 and Q80. The rest of the Islamic indices are insignificant. Geopolitical risk has a quantile-dependent impact on these indices, reflecting a complex interaction between geopolitical uncertainties and market behavior. We observe that predominantly, the coefficients of sampled indices are insignificant. The rarely occurring significant coefficients are not robust, and we may ignore them. This limited and quantile-dependent impact reflects the varying levels of market sensitivity to geopolitical events which may be influenced by factors such as local market structure, investor base and economic conditions (Bouri et al., 2020). The limited significance of GPR on ASEAN5 indices may stem from the relatively resilient economic policies of these nations, as supported by the findings from Hui (2022). This contrasts to the findings of Das et al. (2019) documenting higher sensitivity in other emerging markets and perhaps emphasizes the contextual difference across regions. Furthermore, Bouri et al. (2020) observe the weak co-movements of indices, specifically in Malaysia and Indonesia, that are evident with their stable macroeconomic indicators.

Table 3.
Geopolitical Risk and ASEAN5 Indices - Baseline Estimations

GPRD	(1) MSCI Singapore	(2) MSCI Thailand	(3) MSCI Philippines	(4) MSCI Malaysia	(5) MSCI Indonesia	(6) MSCI Singapore Islamic	(7) MSCI Thailand Islamic	(8) MSCI Philippines Islamic	(9) MSCI Malaysia Islamic	(10) MSCI Indonesia Islamic
Q20	-0.000418	0.000546	0.00150	0.000172	-0.000871	-0.000573	0.000685	0.00139	0.000674	-0.000529
	(0.683)	(0.609)	(0.284)	(0.817)	(0.370)	(0.556)	(0.464)	(0.150)	(0.471)	(0.583)
Constant	-0.732***	-0.778***	-0.974***	-0.594***	-0.943***	-0.831***	-0.860***	-1.009***	-0.669***	-0.982***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q40	-0.00168**	0.000116	0.0000545	0.000268	-0.000990	-0.00110	0.00134**	0.000587	-0.000118	-0.00128
	(0.028)	(0.885)	(0.949)	(0.616)	(0.363)	(0.301)	(0.041)	(0.537)	(0.863)	(0.123)
Constant	-0.207***	-0.135***	-0.198***	-0.108***	-0.169***	-0.236***	-0.172***	-0.200***	-0.161***	-0.230***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q60	-0.000295	-0.000124	-0.000571	0.000159	0.000369	-0.000377	0.000106	0.000345	-0.000294	0.0000850
	(0.647)	(0.901)	(0.542)	(0.800)	(0.743)	(0.609)	(0.892)	(0.691)	(0.679)	(0.943)
Constant	0.220***	0.177***	0.258***	0.160***	0.242***	0.218***	0.185***	0.263***	0.120***	0.197***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q80	-0.000360	0.000517	-0.00180	-0.000201	-0.000258	-0.000582	0.000527	0.0000503	-0.000271	0.000185
	(0.733)	(0.670)	(0.297)	(0.827)	(0.867)	(0.637)	(0.679)	(0.973)	(0.780)	(0.898)
Constant	0.755***	0.807***	1.009***	0.623***	0.898***	0.797***	0.828***	0.996***	0.644***	1.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q95	-0.000121	-0.000777	-0.00215	-0.00326**	0.000223	-0.000331	-0.00189	0.000336	-0.00375**	-0.00268
	(0.929)	(0.744)	(0.361)	(0.037)	(0.893)	(0.884)	(0.384)	(0.901)	(0.043)	(0.134)
Constant	1.659***	1.704***	2.070***	1.415***	2.177***	1.888***	1.950***	2.217***	1.568***	2.179***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	1108	1108	1108	1108	1108	1108	1108	1108	1108	1108

p-values in parentheses
$^{*}\ p < 0.10$, $^{**}\ p < 0.05$, $^{***}\ p < 0.01$

Table 4.
Geopolitical Risk and ASEAN5 Indices - Robustness Using S&P Indices

	(1) S&P Singapore	(2) S&P Thailand	(3) S&P Philippines	(4) S&P Malaysia	(5) S&P Indonesia	(6) S&P Singapore Islamic	(7) S&P Thailand Islamic	(8) S&P Philippines Islamic	(9) S&P Malaysia Islamic	(10) S&P Indonesia Islamic
Q20	-0.000722	0.000495	0.00156	-0.000141	-0.000769	-0.000325	0.00115	0.000312	-0.000716	-0.000836
	(0.368)	(0.542)	(0.219)	(0.865)	(0.393)	(0.802)	(0.266)	(0.826)	(0.400)	(0.326)
Constant	-0.734***	-0.740***	-0.897***	-0.599***	-0.863***	-0.748***	-0.772***	-0.908***	-0.699***	-0.933***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q40	-0.00135**	0.000264	-0.000279	-0.000157	-0.000545	-0.000866	0.000120	0.00150**	0.000405	-0.000588
	(0.037)	(0.750)	(0.790)	(0.751)	(0.643)	(0.229)	(0.882)	(0.023)	(0.664)	(0.604)
Constant	-0.194***	-0.124***	-0.177***	-0.144***	-0.185***	-0.195***	-0.162***	-0.221***	-0.164***	-0.228***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q60	-0.0000310	-0.000243	-0.000291	0.00000184	-0.0000268	-0.000726	-0.000750	0.000101	0.000309	0.000641
	(0.974)	(0.765)	(0.705)	(0.997)	(0.980)	(0.317)	(0.413)	(0.909)	(0.967)	(0.524)
Constant	0.242***	0.184***	0.235***	0.130***	0.222***	0.210***	0.190***	0.159***	0.149***	0.165***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Q80	0.000124	-0.0000779	-0.000913	-0.000501	0.000120	-0.000372	0.000202	0.00202	0.000313	-0.000156
	(0.913)	(0.936)	(0.578)	(0.656)	(0.914)	(0.671)	(0.859)	(0.201)	(0.713)	(0.914)
Constant	0.819***	0.780***	0.898***	0.610***	0.878***	0.715***	0.876***	0.926***	0.659***	0.874***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q95	-0.000955	-0.000226	-0.00289	-0.00175	0.000861	-0.000707	-0.00156	-0.0000598	-0.00281	-0.00115
	(0.604)	(0.900)	(0.120)	(0.298)	(0.634)	(0.652)	(0.462)	(0.978)	(0.129)	(0.520)
Constant	1.779***	1.688***	1.964***	1.263***	2.112***	1.501***	1.837***	2.179***	1.512***	1.974***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	1108	1108	1108	1108	1108	1108	1108	1108	1108	1108

p-values in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5.
Geopolitical Risk and ASEAN5 Indices - Robustness Using 30Days Moving Average of GPRD

GPRD_MA30	(1) MSCI Singapore	(2) MSCI Thailand	(3) MSCI Philippines	(4) MSCI Malaysia	(5) MSCI Indonesia	(6) MSCI Singapore Islamic	(7) MSCI Thailand Islamic	(8) MSCI Philippines Islamic	(9) MSCI Malaysia Islamic	(10) MSCI Indonesia Islamic
q20	-0.00587	0.0303	0.00645	0.00741	-0.0197	-0.00870	0.0397**	-0.00857	-0.00231	-0.00380
	(0.680)	(0.191)	(0.712)	(0.492)	(0.270)	(0.500)	(0.012)	(0.731)	(0.832)	(0.773)
Constant	-0.732***	-0.764***	-0.969***	-0.595***	-0.920***	-0.835***	-0.864***	-1.003***	-0.667***	-0.995***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q40	-0.0215	0.0162	0.0282	0.00622	-0.00874	-0.0156	0.0229*	0.00996	-0.00142	-0.0211
	(0.121)	(0.248)	(0.130)	(0.542)	(0.640)	(0.291)	(0.094)	(0.521)	(0.902)	(0.166)
Constant	-0.187***	-0.141***	-0.193***	-0.118***	-0.160***	-0.246***	-0.171***	-0.204***	-0.163***	-0.225***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q60	-0.0181	0.0175*	0.0174	0.0132	0.00963	-0.0117	0.0109	0.0155	0.0108	0.00570
	(0.176)	(0.084)	(0.315)	(0.254)	(0.569)	(0.352)	(0.314)	(0.368)	(0.220)	(0.759)
Constant	0.212***	0.178***	0.260***	0.159***	0.229***	0.223***	0.188***	0.260***	0.129***	0.189***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q80	-0.00819	0.0398**	-0.00249	0.0148	-0.000116	-0.000326	0.0205	0.0246	0.0242*	0.00184
	(0.667)	(0.029)	(0.912)	(0.230)	(0.995)	(0.984)	(0.213)	(0.341)	(0.075)	(0.935)
Constant	0.749***	0.785***	1.004***	0.629***	0.901***	0.802***	0.850***	1.000***	0.652***	1.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q95	0.0354	0.0284	-0.00939	-0.00195	-0.00638	0.0465	0.000280	0.0785*	-0.0304	-0.0363
	(0.230)	(0.399)	(0.828)	(0.952)	(0.867)	(0.162)	(0.995)	(0.077)	(0.243)	(0.402)
Constant	1.680***	1.748***	2.065***	1.390***	2.182***	1.976***	1.954***	2.224***	1.528***	2.208***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	1108	1108	1108	1108	1108	1108	1108	1108	1108	1108

p-values in parentheses
$^{*}\ p < 0.10,\ ^{**}\ p < 0.05,\ ^{***}\ p < 0.01$

Table 6.
Geopolitical Risk and ASEAN5 Indices - Robustness Using S&P Indices and 30Days Moving Average of GPRD"

| GPRD_MA30	(1) S&P Singapore	(2) S&P Thailand	(3) S&P Philippines	(4) S&P Malaysia	(5) S&P Indonesia	(6) S&P Singapore Islamic	(7) S&P Thailand Islamic	(8) S&P Philippines Islamic	(9) S&P Malaysia Islamic	(10) S&P Indonesia Islamic
Q20	-0.00325	0.0189	0.00934	0.00313	-0.00455	-0.0113	0.00939	-0.000421	-0.00547	0.00740
	(0.798)	(0.403)	(0.564)	(0.800)	(0.746)	(0.337)	(0.633)	(0.982)	(0.684)	(0.606)
Constant	-0.745***	-0.735***	-0.871***	-0.590***	-0.869***	-0.730***	-0.783***	-0.906***	-0.699***	-0.926***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q40	-0.0155	0.0155	0.0195	-0.00198	-0.00438	-0.0171	0.0194	-0.0146	0.00643	0.00316
	(0.174)	(0.164)	(0.239)	(0.865)	(0.825)	(0.184)	(0.126)	(0.323)	(0.487)	(0.830)
Constant	-0.198***	-0.130***	-0.176***	-0.143***	-0.177***	-0.191***	-0.167***	-0.208***	-0.151***	-0.217***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q60	-0.00912	0.0177*	0.0113	0.00710	0.0223	-0.00523	0.0343*	-0.000283	0.0127	0.00132
	(0.525)	(0.100)	(0.468)	(0.367)	(0.217)	(0.703)	(0.030)	(0.988)	(0.279)	(0.930)
Constant	0.246***	0.177***	0.235***	0.137***	0.221***	0.206***	0.206***	0.162***	0.143***	0.167***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q80	0.0131	0.0238	-0.00469	0.0224**	0.00593	-0.000655	0.0434***	0.0204	0.0182	0.0153
	(0.461)	(0.103)	(0.810)	(0.015)	(0.704)	(0.969)	(0.007)	(0.298)	(0.180)	(0.434)
Constant	0.818***	0.805***	0.916***	0.591***	0.873***	0.710***	0.856***	0.941***	0.644***	0.872***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Q95	0.0681*	0.0250	0.00411	0.0180	0.00937	0.00657	0.0106	0.0141	0.0121	-0.00187
	(0.084)	(0.342)	(0.910)	(0.550)	(0.817)	(0.825)	(0.795)	(0.681)	(0.634)	(0.945)
Constant	1.747***	1.710***	1.924***	1.286***	2.205***	1.494***	1.860***	2.173***	1.532***	1.980***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Obs	1108	1108	1108	1108	1108	1108	1108	1108	1108	1108

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

4.2. Wavelet Results

It should be noted that quantile regressions, like other regression techniques, show the aggregate results and may suffer from aggregation bias (Zellner, 1962). Moreover, the static nature of regression coefficients may not be a suitable representation of dynamic equity markets. We, therefore, utilize Wavelet Coherence to understand the dynamic nature of co-movement between geopolitical risk and ASEAN5 equities. The estimations are performed in both the families of indices as well as conventional and SC indices. The findings are reported jointly for each country.

For Singapore (Figure 3) and Thailand (Figure 4), we observe that GPRD is consistently co-moving with all four categories of indices. Nevertheless, this co-movement is mostly from frequency bands 4-32, i.e., transient. Interestingly, compared to a pandemic, the Russian invasion of Ukraine resulted in more frequent co-movement of the indices and GPRD. For the Philippines, the co-movement with GPRD is more consistent for all the categories of indices (Figure 5). Finally, the conventional and SC markets of Malaysia (Figure 6) and Indonesia (Figure 7) appear to be more immune to geopolitical risk events. We also performed robustness using GPRD_MA30. The results are not reported due to brevity and may be provided upon request. Our results are partially in line with the findings of Das et al. (2019), Kannadhasan & Das (2020), Hidayah & Swastika (2022) and Hachicha (2023) which measures the performance of Islamic and Conventional and Social responsible investment indices during covid-19 in Indonesia stocks. The study not only builds on existing literature such as Hui (2022) which highlights the role of geopolitical risk in ASEAN financial markets but also extends it by focusing on shariah compliant indices. The findings contrast with the studies like Caldara & Iacoviello (2022) which predominantly focus on developed markets, underscoring the unique resilience of ASEAN region.
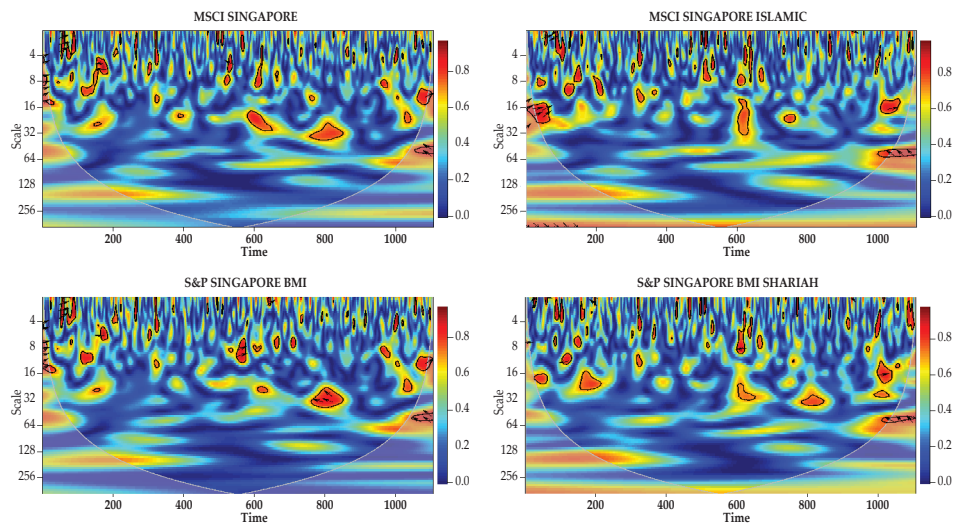
0	100	200	300	400	500	600	700	800	900	1000	End
2-Jan-19	21-May-19	8-Oct-19	25-Feb-20	14-Jul-20	1-Dec-20	20-Apr-21	7-Sep-21	25-Jan-22	14-Jun-22	1-Nov-22	31-Mar-23

Figure 3.
Wavelet Coherence – Singapore Vs GPRD

0	100	200	300	400	500	600	700	800	900	1000	End
2-Jan-19	21-May-19	8-Oct-19	25-Feb-20	14-Jul-20	1-Dec-20	20-Apr-21	7-Sep-21	25-Jan-22	14-Jun-22	1-Nov-22	31-Mar-23
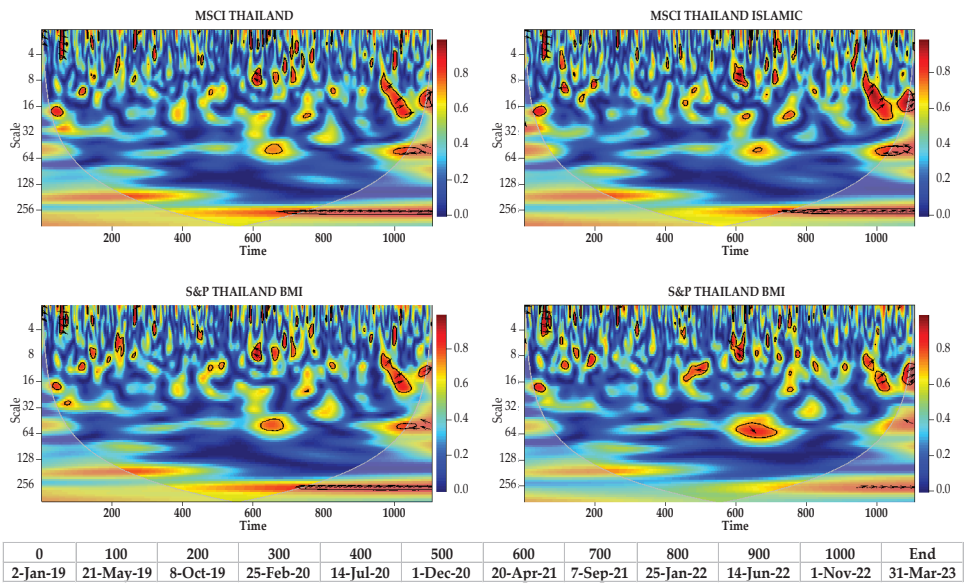
Figure 4.
Wavelet Coherence – Thailand Vs GPRD

0	100	200	300	400	500	600	700	800	900	1000	End
2-Jan-19	21-May-19	8-Oct-19	25-Feb-20	14-Jul-20	1-Dec-20	20-Apr-21	7-Sep-21	25-Jan-22	14-Jun-22	1-Nov-22	31-Mar-23
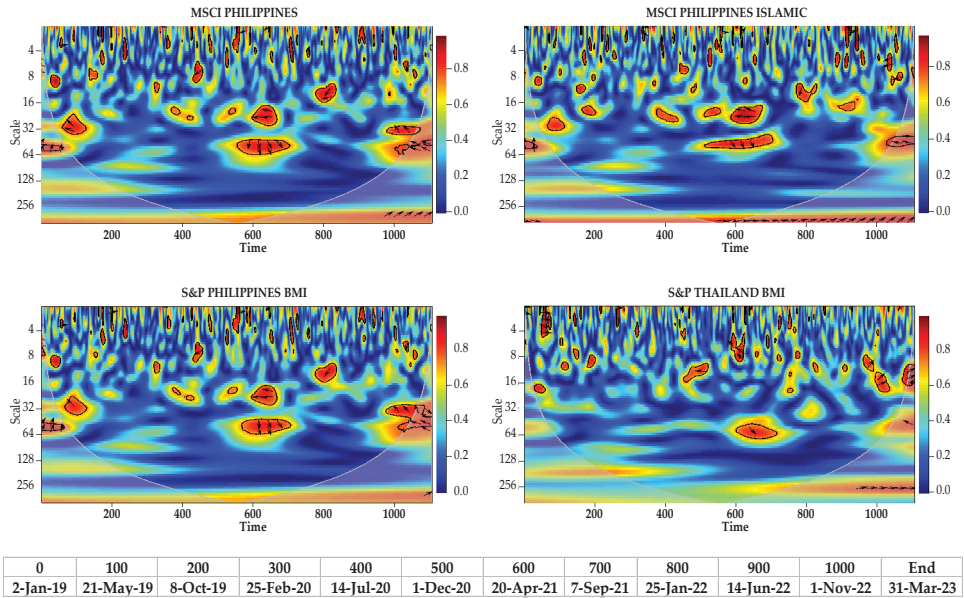
Figure 5.
Wavelet Coherence - Philippines Vs GPRD

0	100	200	300	400	500	600	700	800	900	1000	End
2-Jan-19	21-May-19	8-Oct-19	25-Feb-20	14-Jul-20	1-Dec-20	20-Apr-21	7-Sep-21	25-Jan-22	14-Jun-22	1-Nov-22	31-Mar-23
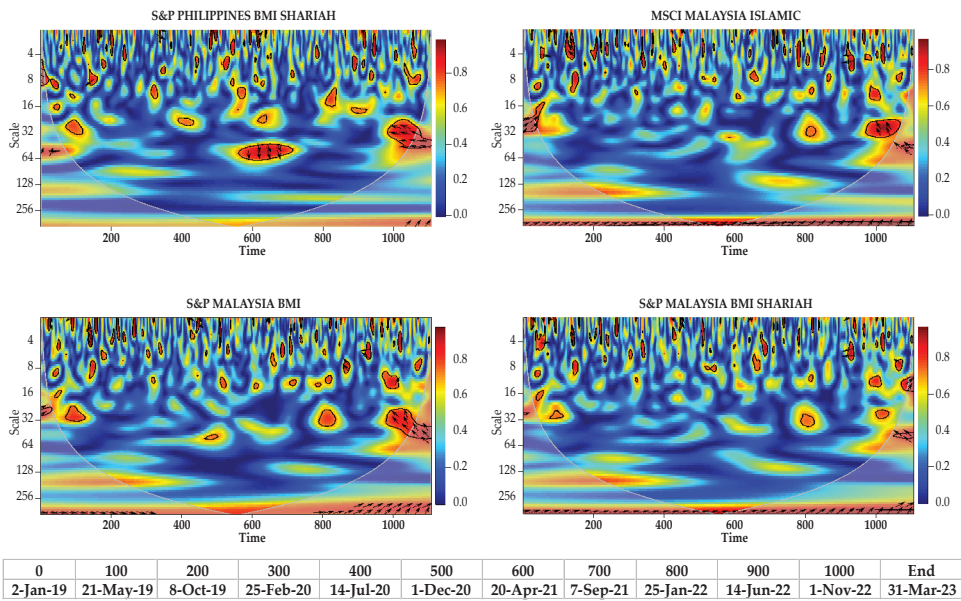
Figure 6.
Wavelet Coherence – Malaysia Vs GPRD

0	100	200	300	400	500	600	700	800	900	1000	End
2-Jan-19	21-May-19	8-Oct-19	25-Feb-20	14-Jul-20	1-Dec-20	20-Apr-21	7-Sep-21	25-Jan-22	14-Jun-22	1-Nov-22	31-Mar-23
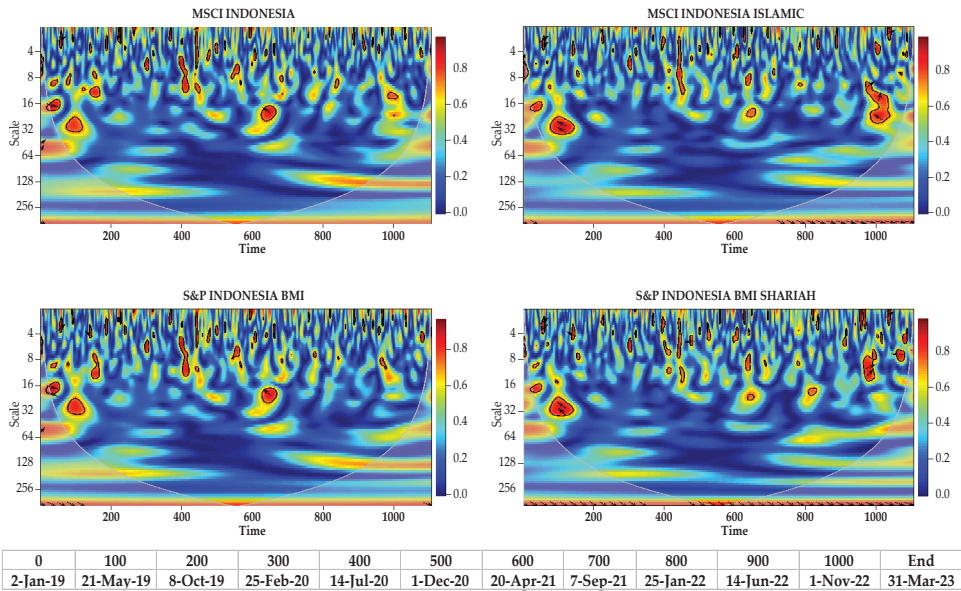
Figure 7.
Wavelet Coherence – Indonesia Vs GPRD

V. CONCLUSION

In view of the recurring geopolitical crisis events, we assess the linkage of ASEAN5 conventional and SC equity markets using two MSCI and S&P indices. Our research objectives are twofold: we first observe how geopolitical risk is linked to ASEAN5 during divergent market conditions (Bull versus Bear). To assess this, we utilize quantile regressions. The quantile regression results show that the coefficients are mostly insignificant across different quantiles, stating that geopolitical risk does not systematically affect market behaviour in the case of ASEAN5. Even though there are some instances of significant coefficients, such as in the case of Thailand and Malaysia, these instances are rare and not robust across different robustness tests or quantile levels. We also investigate dynamic relationships through time and frequency domains. To achieve this, we employ Wavelet coherence. The results reveal that ASEAN5 conventional and SC indices are not significantly influenced by geopolitical risk. For our sample period, both Indonesia and Malaysia possess the least co-movement with geopolitical risk. They suggest that co-movement is more prominent in certain countries like the Philippines and during specific geopolitical events like the Russian and Ukraine wars. On the other hand, markets like Malaysia and Indonesia portray greater resilience to geopolitical risk, which can be linked to the respective economic policies and market structures.

There are important implications of our results: From the results of our baseline analysis, robustness and wavelet coherence, we can say that ASEAN5 may be considered a safe haven by international investors. Second, SC investors can consider investing in Indonesia and Malaysia owing to their weak association with geopolitical risk. Practitioners can leverage the findings to diversify portfolios by including assets from Malaysia and Indonesia, considering their resilience to GPR. Regulators in ASEAN5 countries should enhance mechanisms to mitigate spillover effects during GPR. Future studies can extend this analysis by adding other emerging economies or another geopolitical divide like OIC. This method can be further applied to firm-level data to get the microeconomic perspective of GPR based on firm-specific variables.

Overall, the study contributes to the literature on geopolitical risk and financial markets by highlighting the quantile-dependent and dynamic nature of its impact on ASEAN5 economies. The results imply that while geopolitical events can induce short-term fluctuations in market behavior, their influence is neither extensive nor permanent across all the indices and countries. Policymakers and investors in the ASEAN5 region will benefit from these findings while developing risk management strategies within these markets or examining the role of macroeconomic variables in moderating the impact of geopolitical risks. While we have utilized robust methods, it is important to acknowledge certain limitations. The daily data, while it is comprehensive, may overlook long-term dynamics. Quantile regression assumes linearity within quantiles which might not fully capture nonlinearities in financial markets. Future studies may address these limitations by incorporating intraday data or nonlinear models such as Generalized Additive Models (GAMs).

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