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Chinese Belt and Road Initiative and Exchange Rate Volatility Spillovers in Emerging Asia

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Abstract

In this study, we tried to examine the exchange rate volatility spillovers dynamics among Asian emerging economies by comparing the pre and post BRI samples. Using the Generalized Forecast Error Variance Decomposition based Diebold and Yilmaz (2012) Spillover Index method; results revealed that volatility spillovers remained high indicating persistent cross market risk transmission. Volatility spillover were marginally higher during the pre BRI period, however, a slight decline is noticed in the post BRI period suggesting gradual market segmentation as a result of improved exchange rate and macroeconomic policies. Turkish Lira appeared as major transmitter in the pre BRI period, while Thai baht in the post BRI period. The findings are equally important for investors and policymakers in order to make portfolio management strategies and financial stability during economic uncertainties.

Keywords: Belt and Road Initiative, Diebold and Yilmaz (2012), Emerging and Developing Countries, Generalized Forecast Error Variance Decomposition, Volatility Spillovers

1. Introduction

Over the past 20 years, research on volatility spillovers between the financial markets of Emerging and Developing Countries (EDCs) has grown in importance. The number of foreign exchange activities rose as a result of the implementation of floating exchange rate systems and economic liberties. The aforementioned innovations have facilitated international trade and capital flows on the one hand, but they have also raised exposure to foreign exchange risk and created financial market volatility on the other. Because Emerging and Developing Economies (EDEs) are more resilient to shocks from around the world, investors have pulled their money out of developed capital markets, as seen by the recent crises. EDEs are now more susceptible to financial volatility due to their diversification. It is unrelated to the market in which it originates, but it causes volatility spillover by upsetting the volatility of other markets.

The currency market, which dominates the stock and bond markets, is regarded as one of the biggest and most liquid financial markets. Although different nations have distinct exchange rate policies, it was discovered that these markets exhibit interdependence and connectivity because of economic linkages. The World Trade Organization (WTO), the European Union (EU), the Association of Southeast Asian Nations (ASEAN), the South Asian Association for Regional Cooperation (SAARC), and the North Atlantic Free Trade Agreement (NAFTA) are examples of regional integrations that have further reinforced these associations. During the 1997 Asian financial crisis, Forbes and Rigobon (2000) demonstrate how uncertainty in one currency extended to other currencies and generated contagion in global Forex markets.

The currency is utilized as an investment instrument, just like other asset classes, and investors diversify their portfolios by adding different currencies. Understanding the interconnectedness and movement of one currency with others is crucial as a result of this treatment. Furthermore, the degree of fluctuation between various currency pairs is strongly correlated with the volume of trade. Importing and exporting nations will bear more risk if currency prices are highly volatile. Since each nation's stocks are valued in its own currency, changes in the global market will have an impact on returns for foreign investors even if they have no currency in their portfolios. Examining currency market dependence is just as crucial as studying stock market dependence (Rajhans & Jain, 2015) and requires more research (Liao *et al*., 2019).

In order to promote regional economic cooperation, China started the Belt and Road Initiative (BRI) in 2013. Promoting the free flow of different macroeconomic forces was the program's primary goal (Wei, 2020). The BRI's main goal is to advance regional economies via collaboration and shared prosperity. According to the BRI's official document, the program's goal is to enhance friendship links and communication channels among the region's member nations while fostering and expanding mutual trust and understanding. Four key elements will be used to achieve these goals: market-based operations, cooperation and openness to one another, inclusivity and harmony among member nations, and the creation of win-win and mutually advantageous scenarios.

BRI is another term for an emerging market, according to Morgan Stanley Capital International's (MSCI) Emerging Market Index. All nations are welcome to participate in the initiative, though, including Korea and Japan. In addition to providing infrastructure and physical facilities, BRI has a significant impact on policy coordination, reducing trade barriers, integrating regional financial markets, and, most importantly, opening doors for member nations to interact with one another (Huang, 2016). Tian *et al*. (2019) claim that the Belt and Road Initiative (BRI), which consists of low-income developing nations, is a model for finding new economic partners. To boost their economies, these nations need assistance and collaboration. Furthermore, if opportunities are given and appropriate circumstances are established, they have a significant potential to expand quickly. They can open the door for greater organic collaboration and partnership with China since they are the main consumer of Chinese exports. With the potential to become a new growth pillar in the global economy, this growing region is positioned between developed East Asian nations and West European nations.

Furthermore, Huang (2016) declared that the Belt and Road Initiative (BRI) is the biggest economic project ever initiated and has expanded to 123 countries (Liao et al., 2019), encompassing a vast community that includes 64% of the world's population, 33% of the global GDP, ¾ of the world's total energy resources, and ¼ of the global trade of goods and services. This developing region touches the boundaries of three major continents: Asia, Africa and Europe. These three continents are geographically connected to China via three major pathways. The first route travels through central Asia to link China with Europe (the Baltic Sea).

The third way takes China into the Indian Ocean via Southeast and South Asia, while the second route takes China to the Persian Gulf and Mediterranean via Central and West Asia. The Bangladesh-China-India-Myanmar Economic Corridor and the China-Pakistan Economic Corridor (CEPEC), two of the Belt and Road Initiative's major projects, would closely coordinate the member nations with the Belt and Road economies. Major cities with a variety of commerce and special economic zones are included in the "Belt." The main ports, roads, and cooperatively constructed logistical routes that link partner nations will be represented by the "Road." BRI is committed to constructing infrastructure that will enhance the socioeconomic aspects of its member nations. The infrastructure projects included transmission lines for telecommunications, power, oil and gas pipelines,

and high-speed railroads. The stock market and currency rates have fluctuated as a result of the quick rise in capital flows and construction investments, which has an impact on trade and economic relationships between member nations.

In addition to facilitating regional financial development and economic integration, Wang (2019) and Wang *et al*. (2020) contended that the Belt and Road Initiative (BRI) has sought to replace the US dollar with the Renminbi (RMB) as an international currency (Li & Zhang, 2017). Liang (2020) contends that the RMB's internationalization effort was negatively impacted by the US dollar's hegemonic position in trade settlement. Numerous aspects of the domestic economy are impacted by this increase in volatility. It has significant ramifications for both foreign investors who choose these markets for portfolio diversification and investors in member nations.

Furthermore, hedgers, investors, and politicians faced dire consequences from the potential for systematic risk resulting from the diverse economic development status of member nations. To add important insights to the literature, it is recommended to look into return and volatility spillover dynamics among rising Asian stock and foreign exchange markets that are active participants of the BRI platform.

2. Literature Review

The return and volatility spillover of six main currencies—Australian, Cable, Euro, Gropher, Lonnie, and Swissie—that are the most traded currency pairs in international foreign exchange markets were measured and examined in the study by Salisu *et al.* (2018). There was evidence of substantial interconnectedness between the main currency pairs. While volatility spillover revealed notable bursts but no signs of trends, return spillover showed both minor trends and bursts. Crisis episodes have an impact on volatility spillover and return fluctuations.

On the other hand, Zhou and Cheng (2024*)* looked at the time-varying intensities of the spillover among the Chinese Renminbi, major currencies related to G20 countries, and countries along the BRI initiative. They found that since China switched from a rigid to a floating exchange rate system, the influence of the RMB has significantly increased. Additionally, countries along the BRI project have seen a steady increase in the influence of RMB. Furthermore, under uncertainty in trade policy, Huynh *et al*. (2023) investigated the relationship and directional spillover effects for return and volatility of nine of the most traded global currencies against the US dollar exchange rate. The findings indicated that under trade policy uncertainty, sample exchange rates' spillover and connectivity were asymmetric.

Wei *et al.* (2020) investigated the relationship between the global foreign exchange market and the BRI exchange market prior to and during the COVID-19 epidemic. The findings show that there is significant internal connection between the two groups of nations, specifically between the BRI market and global foreign exchange. Furthermore, changes in the currency rate regime and worldwide political and economic developments will unavoidably affect Chinese RMB spillover. Lastly, the time-varying spillover index results show that the BRI nations' trade links and some unexpected events are strongly correlated with the exchange rate contagion impact.

Wen and Wang (2021), for example, used the spillover index and variance decomposition approach to create a volatility connectedness network that included 65 of the world's main currencies. The US dollar and the euro were the main transmitters of volatility spillover, while the British pound and the Japanese yen were the main recipients. Additionally, the volatility connectivity network suggests that various currencies tend to group together based on where they are located. The dynamics of interdependencies between realized variances and semi-variances of six major currencies over time scales and frequency were also investigated by Shahzad *et al*. (2021). In general, it was discovered that during global financial crises, the realized volatilities of various currencies and their cross-currency implications rose. Significant countercyclical co-movements were also noted across both short and long time horizons.

Geng and Guo (2022) looked at how oil prices affected the volatility of BRI countries' exchange rates and discovered that these fluctuations were not only influenced by one another but also by oil prices. Furthermore, Li *et al*. (2025) discovered that BRI countries' currency rate volatility responds favorably to geopolitical risk and economic policy uncertainty. In a different research, Geng and Guo (2022) examined the exchange rate volatility of 15 BRI nations and discovered that once the BRI was started, the significance of the Chinese Yuan and the interconnectivity of currency rate volatility increased. Boakye *et al*. (2023) used the Diebold and Yilmaz (2012) connectivity paradigm to examine static and time-varying return spillovers in the foreign exchange markets of African nations over the course of four crisis events. The study's conclusions showed a modest average system-wide spillover. However, during times of crisis, spillover increased, demonstrating its contagious character. The currencies of Botswana and Kenya appeared to be net receivers, while those of South Africa and Morocco appeared to be large contributors. Huynh *et al.* (2023) examined the return and volatility spillover effects between the exchange rates of nine of the world's most traded currencies and the US dollar over a long period of time, from 1993 to 2019. The results demonstrate that there is an asymmetric spillover effect among the markets under consideration, with volatility spillovers being more noticeable than return spillovers.

Singh *et al*. (2024), on the other hand, examined the volatility spillovers between the stock and foreign exchange markets of the BRICS rising nations as well as Japan, the developed nation. Their results point to two-way spillovers between specific markets, with stronger spillover from stocks to foreign exchange markets. In a similar vein, Baba (2024) examined the global and regional spillover dynamics of positive and negative volatility in developing Asian markets. The results showed that global volatility spillovers are dominated by intraregional spillovers. Additionally, Rubaszek *et al*. (2025) assessed the intraday volatility connectivity between major currencies by integrating the spillover index approach with the TVP-VAR model. The findings showed that GB was the net receiver while Euro remained the principal emitter at high frequencies.

The financial markets of member nations have become more integrated as a result of massive economic undertakings, particularly the Belt and Road Initiative. Numerous studies have shown large spillovers of volatility with higher integration. As a result, this study examined volatility spillover across the BRI region's foreign exchange markets and contributed fresh perspectives to existing literature.

3. Data and Methodology

The dataset includes daily exchange rate returns computed using log changes of 10 Asian emerging market currencies against the US dollar for 2 sample periods i.e from May 2005 to August 2013 and September 2013 to December 2023. Prominent pairs are USD/TRY, USD/INR, USD/LKR, USD/MYR, USD/IDR, USD/PKR, USD/PHP, USD/CNY and USD/VND. Turkey's Lira, India's Rupee, Sri Lanka's Rupee, Malaysia's Ringgit, Indonesia's Rupiah, Pakistan's Rupee, the Philippines' Peso, Thailand's Baht, China's Yuan, and Vietnam's Dong are examples of the currencies used. Returns are calculated using the daily log differences of the currency rate published on the Wall Street Journal, Yahoo-finance, and Investing.com websites. The sample period includes the Pre BRI and Post BRI periods. The dynamic volatility spillover profile may represent a number of regional and worldwide shock events during this period. The study used Diebold and Yilmaz's (2012) Spillover Index technique, which is based on the Generalized Forecast Error Variance Decomposition (GFEVD) of KPPS to an estimated VAR system of the returns, to quantify several measures of volatility spillovers. Data preparation, model estimate, and spillover index computation are the three main components of the Spillover Index system. R, which is utilized for all estimations, is the suggested software for carrying out the previously indicated process.

A stationary N-variable Vector-autoregressive (VAR) model that employs variance decompositions across several assets is broken down by the early work of Diebold and Yilmaz (2009) Spillover index. Volatility spillover shocks can be separated into individual or idiosyncratic shocks and cross-market shocks using variance decomposition. While the suggested innovations are contemporaneously associated, the variance decomposition calculation relies on orthogonal innovation. The forecast error variance was broken down using Cholesky Factor Identification in order to orthogonalize the shocks. Because of this technique, the fraction of variance shocks is reliant on arbitrary variable ordering. Additionally, it ignores directional measures and just offers information on total spillovers. Diebold and Yilmaz (2012) followed Koop, Pesaran and Potter (1996) and Pesaran and Shin (1998) and substituted Generalized Identification for Cholesky Factor Identification in order to circumvent the methodological fault of their general spillover paradigm. Instead of trying to orthogonalize the shocks, the Generalized Forecasted Error Variance Decomposition (GFEVD) paradigm permits generalizing correlated shocks. To generate different estimates of volatility spillovers, GFEVD uses four primary processes.

First, a Vector Auto-regressive (VAR) model of nth order is calculated;

$$\mathbf{R}_t = \sum_{i=1}^{p} \mathbf{A}_i \mathbf{R}_{t-i} + \varepsilon_t$$

AI describes parameter matrices, εt is a vector of innovations, and Rt is the N×1 vector of volatility series at time t. It is possible to express the GFEVD independent of variable ordering as:

$$\theta_{ij}(H) = \frac{\sigma_{jj}^{-1} \sum_{h=0}^{H-1} \left(e_i' \Psi_h \Sigma e_j\right)^2}{\sum_{h=0}^{H-1} \left(e_i' \Psi_h \Sigma \Psi_h' e_i\right)}$$

where σjj is the standard deviation (SD) of the error term for variable j, Σ is the variance-covariance matrix of errors, and Ψh stands for the moving average coefficients. In order for the total of all sources of volatility spillovers to equal 100% for each market, the variance decompositions must be normal:

$$\tilde{\theta}_{ij}(H) = \frac{\theta_{ij}(H)}{\sum_{j=1}^{N} \theta_{ij}(H)} \times 100$$

The formula for calculating the Total Spillover Index is:

$$TSI = \frac{\sum_{i,j=1,i\neq j}^{N} \tilde{\theta}_{ij}(H)}{N} \times 100$$

The volatility spillovers that are sent from stock market I to every other market indicated by "TO" and received by market I from every other market indicated by "FROM":

$$TO_i = \sum_{j=1,j\neq i}^{N} \tilde{\theta}_{ji}(H)$$

$$FROM_i = \sum_{j=1,j\neq i}^{N} \tilde{\theta}_{ij}(H)$$

The following represents the distinction between transmitted and received volatility spillovers:

$$NET_i = TO_i - FROM_i$$

4. Results and Discussion

4.1 Volatility Spillovers during Pre BRI Sample

Table 1 provide results of the volatility spillovers estimated for the Pre-BRI period i.e May 2005 to August 2013 based on 10 variables VARs with 10-step-ahead forecasts. Based on the results derived, 5 main spillovers are discussed.

4.1.1 Total Spillover Index

The value of Total Spillover Index is 44.78% which implies that almost 45% percent of the forecast error variance in the considered exchange rate system is due to cross market interactions while more than half is due to own/idiosyncratic shocks. These results corroborate the findings of Demiralay and Bayraci (2015), Fasanya *et al.* (2021) and Karim and Naeem (2022). The figure signals the presence of cross-border transmission of shock however not totally integrated and a moderate level of interdependence among considered markets during pre-BRI period.

4.1.2 Directional Spillovers (TO)

Directional spillover measure how influential a variable is towards other in terms of shock transmission. Turkish, Philippine and Indonesian currencies appeared as the major volatility spillover transmitters during pre-BRI period. They respectively send 56.92%, 53.20% and 51.89% shock to other regional markets in the considered spillover system. India, Vietnam and Malaysian currencies also followed the same pattern.

4.1.3 Directional Spillovers (FROM)

Malaysia and Indonesia respectively received 55.98% and 51.77% shocks from regional spillover system and thus entitled as the major spillover recipients in the considered sample. Indian Rupee and Chinese Yuan also fell in same line. Pakistani Rupee and Sri Lankan Rupee were least affected and remained relatively isolated from the system.

4.1.4 Net Spillovers

Turkish Lira appeared as top net transmitter with a value of +14.05 followed by Philippine currency and Vietnamese Dong. Malaysian currency with a net spillover value of -10.55% appeared as top net receiver. Chinese and Thailand currencies also followed the same pattern.

4.1.5 Net Pairwise Spillovers (NPT > 0)

The net pairwise spillover between Philippine and Malaysian currencies is the highest i.e 12.02% followed by Indonesian and Malaysian currencies. However Turkish market send shock to more markets than it receives from with a NPT value of 8.00, followed by India and Vietnam markets of value 6.00 each. Chinese and Thailand markets each have an NPT value of 1 and appeared to be nearly isolated from the regional spillover system. In the Network Plot shown in Figure 1 it can be seen that Turkish and Indonesian currency markets are major volatility transmitter across the region while Malaysian currency is major receivers.

4.2 Volatility Spillovers during Post BRI Sample

Table 2 provides results of the Volatility spillovers estimated for the Post-BRI period i.e September 2013 to December 2023 based on 10 variables VARs with 10-step-ahead forecasts. 5 main spillovers are discussed below.

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4.2.1 Total Spillover Index

The total spillover index value of 40.43% suggests a moderate level of Interdependence and signals that less than half of the forecast error variance in foreign exchange rate system for the post-BRI period is due to cross market shocks. Major portion of spillover is due to own market shocks. Our findings support the results of Bajo *et al.* (2017) and Agarwal *et al*. (2024).

4.2.2 Directional Spillovers (TO)

Indonesian and Indian currencies respectively transmit 53.88% and 50.53% of volatility spillover to other markets in the system and appear to be the top volatility transmitters. Chinese Yuan and Thai Baht also followed the same pattern.

4.2.3 Directional Spillovers (FROM)

Indonesian and Indian currencies appeared to be on the top of spillover receivers receiving volatility spillovers of 47.10% and 44.40% from the system. Malaysian and Vietnamese currencies also followed their fore steps and are among the major recipients of shocks.

4.2.4 Net Spillovers

Thai Baht is the net volatility spillover transmitter with a value of +8.58%, while Chinese Yuan and Indonesian Ringgits also transmitted net spillovers. Sri Lankan Rupee with a net spillover value of -14.41 appeared to be the net volatility spillover receiver during post-BRI period. Vietnamese Dong and Turkish Lira also received net spillovers.

4.2.5 Net Pairwise Spillovers (NPT > 0)

Malaysia and Indonesian pair shares the highest net pairwise spillover i.e 9.85%. However the NPT values for Chinese and Thailand currencies is same i.e 8.00 which make them at the top of markets transmitting spillover to more markets than they receive from. Malaysia and India appears at place two with an NPT value of 6.00. Figure 2 shows volatility spillover network plot for considered foreign exchange markets during post-BRI Period. It is evident that Indonesia, India and Thailand currencies are major transmitters of volatility spillover shocks while Vietnam receives most of the spillovers shocks.

Table 1: ***Volatility Spillovers among Emerging Asian Foreign Exchange Markets along BRI during pre-BRI period i.e 2008-2013***

	USD_ TRY	**USD_ INR**	**USD_ LKR**	**USD_ MYR**	**USD_ IDR**	**USD_ PKR**	**USD_ PHP**	**USD_ THB**	**USD_ CNY**	**USD_ VND**	**FROM**
USD_TRY	57.13	4.94	4.08	4.29	5.23	3.86	5.46	3.04	4.40	7.57	42.87
USD_INR	7.30	50.01	6.16	6.83	6.12	3.11	4.76	3.96	4.60	7.15	49.99
USD_LKR	5.69	7.50	59.80	2.41	5.49	5.01	3.34	4.07	3.56	3.14	40.20
USD_MYR	6.52	5.64	3.28	44.02	11.50	3.66	12.02	4.81	3.59	4.96	55.98
USD_IDR	8.25	7.87	3.10	8.21	48.23	2.93	6.99	3.75	4.80	5.88	51.77
USD_PKR	4.12	3.35	4.81	4.99	3.65	63.74	5.78	3.16	3.49	2.92	36.26
USD_PHD	6.36	5.08	4.00	5.67	6.01	3.88	55.55	3.63	4.85	4.98	44.45
USD_THB	5.28	4.26	4.50	5.03	4.63	3.67	5.19	57.60	4.25	5.59	42.40
USD_CNY	7.95	4.72	5.14	3.76	5.11	4.98	4.61	5.54	54.18	4.02	45.82
USD_VND	5.46	4.74	3.80	4.24	4.16	3.86	5.06	3.53	3.23	61.92	38.08
TO	56.92	48.10	38.86	45.43	51.89	34.96	53.20	35.48	36.78	46.20	447.82
Including Own	114.05	98.11	98.67	89.45	100.12	98.70	108.74	93.08	90.96	108.12	CTCI/**TCI**
NET	14.05	-1.89	-1.33	-10.55	0.12	-1.30	8.74	-6.92	-9.04	8.12	49.76/**44.78**
NPT	8.00	6.00	5.00	4.00	5.00	4.00	5.00	1.00	1.00	6.00	

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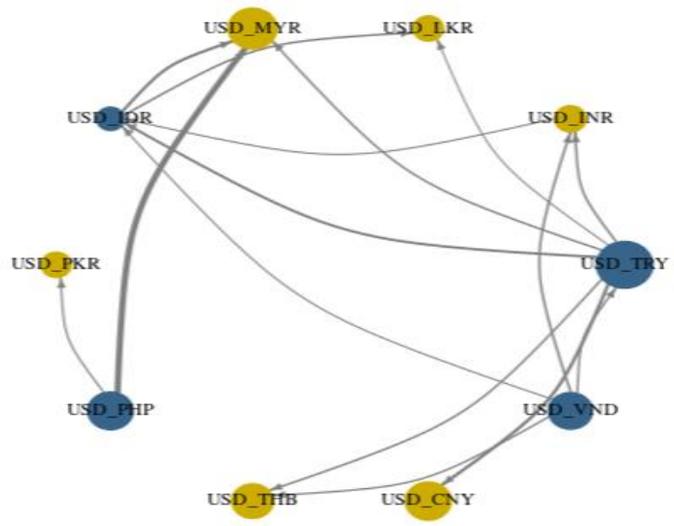

Figure 1: Network Plot for Foreign Exchange Markets Volatility Spillovers during pre-BRI Period

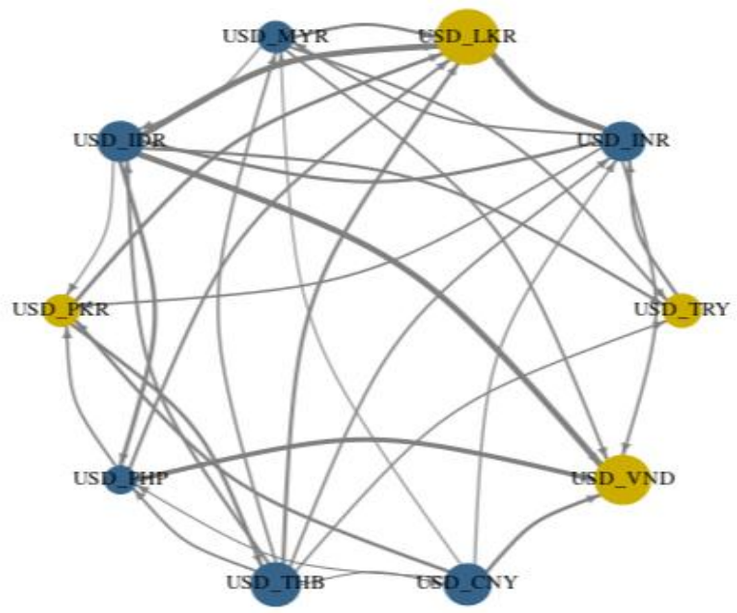

Figure 2: Network Plot for Foreign Exchange Markets Volatility Spillovers during Post-BRI Period

Table 2: *Volatility Spillovers among Emerging Asian Foreign Exchange Markets along BRI during Post-BRI period i.e 2013-2023*

	USD_ TRY	USD_ INR	USD_ LKR	USD_ MYR	USD_ IDR	USD_ PKR	USD_ PHP	USD_ THB	USD_ CNY	USD_ VND	FROM
USD_TRY	65.47	4.49	2.98	4.38	5.04	3.23	3.12	4.49	3.64	3.18	34.53
USD_INR	6.22	55.60	2.44	3.15	6.92	3.27	5.22	5.49	8.28	3.40	44.40
USD_LKR	3.04	5.80	60.64	3.89	5.99	4.71	4.56	4.49	3.04	3.86	39.36
USD_MYR	2.81	4.65	2.09	56.49	8.87	3.84	4.92	6.91	5.78	3.64	43.51
USD_IDR	3.28	8.95	2.50	9.85	52.90	2.51	4.40	6.50	6.74	2.38	47.10
USD_PKR	3.39	4.63	2.65	3.88	3.53	64.27	5.16	2.77	5.05	4.67	35.73
USD_PHD	3.17	6.06	2.87	5.03	6.57	3.74	60.61	5.07	4.67	2.22	39.39
USD_THB	3.26	4.08	2.57	5.51	4.81	4.77	3.63	62.79	4.40	4.18	37.21

USD_CNY	3.39	7.14	2.26	4.83	6.37	3.13	3.72	5.35	59.85	3.96	40.15
USD_VND	2.73	4.84	4.60	5.13	5.77	4.21	4.99	4.71	5.93	57.08	42.92
TO	31.29	50.63	24.95	45.65	53.88	33.41	39.71	45.79	47.51	31.48	404.31
Including Own	96.76	106.23	85.59	102.14	106.78	97.68	100.32	108.58	107.37	88.56	CTCI/**TCI**
NET	-3.24	6.23	-14.1	2.14	6.78	-2.32	0.32	8.58	7.37	-11.4	44.92/**40.43**
NPT	4.00	6.00	1.00	6.00	5.00	2.00	3.00	8.00	8.00	2.00	

5. Conclusion and Recommendations

The comparison of volatility spillovers during pre and post BRI have shown a subtle picture of regional stock market dynamics. While return spillovers slightly decreased in post BRI period as evident from our our previous paper (Ali *et al.*, 2025) implying limited and slightly weak return-based linkages, volatility spillovers still remain high reflecting persistent and high risk transmission. This suggests that investors must consider the cross-market risk exposure in addition to return correlations particularly in crises episodes. During Pre-BRI period, volatility spillovers are slightly higher implying a greater tendency for volatility spillover shocks to transmit across borders than return spillover shocks. In the post-BRI period, volatility spillovers also slightly decreased. The consistent decline in volatility spillovers point towards increased market segmentation, attributable to each country's stronger exchange rate and macroeconomic policies. During pre-BRI period, Turkish Lira appeared again as top net transmitter, while Malaysian Ringgit is found as top net receiver. Thai Baht and Sri Lankan Rupee appeared as top volatility transmitter and receiver respectively during post-BRI period. Long term investors should take position in Turkish Lira in order to earn stable returns. While portfolio managers are advised to take positions in relatively isolated and less integrated currencies like Pakistan Rupee, Vietnamese Dong and Sri Lankan Rupee for hedging and portfolio diversification.

Both individual investors and institutional portfolio managers can use these findings to make effective portfolio management choices during pandemic events. Policymakers in developing Asian economies might use these insights to address the increased interdependence of stock and foreign exchange markets during times of crisis. The findings of this study will be proactively taken into account by policymakers in order to develop successful plans for financial and economic stability. Additionally, they are able to anticipate how volatility spillovers from one market may affect their own and react appropriately.

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