

Volatility and Return Spillover Analysis from Selected ASEAN Markets with Indian Benchmark Index: A Post-Pandemic Market Study

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Abstract

The COVID-19 pandemic has been disrupting financial activities in countries, and also across the world, it creating a lot more uncertainty, and not so much stability in the wider global financial markets. This study is looking into how volatility moves around, and how returns spillover between the benchmark stock market indices for the chosen ASEAN-5 economies, plus India, specifically in the period after the pandemic. After the economic shocks from COVID-19, Asian financial markets have been getting more tightly linked together. so, studying how these markets relate to each other is becoming more important for investment evaluation and practical decision-making. The study is using daily stock market index data from 2019 to 2025 and then applying econometric models like GARCH and VAR, to grasp the scale as well as the direction of spillover effects among these markets. The results are pointing toward a higher level of mutual risk transmission between the ASEAN-5 economies and India, which seems to matter a lot for policymakers, investors and even the market regulators working in the post pandemic financial setting. On that basis, the paper is recommending diversified investment approaches, and also coordinated policy steps for boosting market steadiness while managing financial risks in a more effective way.

Keywords: Volatility Spill over, ASEAN-5, NIFTY50, Post-Pandemic, GARCH, VAR, Market Correlation.

Introduction

The COVID-19 pandemic has been sort of changing the global financial system, especially across the emerging markets of Asia. There's been this sudden rise in market volatility, strange or unexpected capital flows, and at the same time a fall in stock markets, all of which are adding more uncertainty across the ASEAN-5 countries Indonesia, Malaysia, the Philippines, Singapore, and Thailand, plus India. Because of that mix, new obstacles are showing up, when it comes to grasping how market integration works, and also how financial risks get transmitted from one market to another, in practice.

Starting from the first quarter of this year, it has been noticed that a number of significative losses have taken place all over the world just after the beginning of the novel coronavirus pandemic which made investors more uncertain. The volatility index, which is known as VIX in the USA has been showing the signs of crisis which has not been seen since the 2008 financial crisis. The basis of the VIX is the idea of how much the market is going to be in panic, which has become feasible in almost all countries. In India, too we have seen an upward trend of the volatility index to the level which makes it even more problematic. This is the reason why a great number of investors decided to withdraw from investments in the Indian stock market or to cut their participation significantly. But the situation has been complicated due to the instability of the financial markets in 2022 and 2023. Political factors such as the conflict between Russia and Ukraine are among those, which make both implied and realized volatility rise significantly.

Rising financial globalization has been letting disturbances that start in one market move out quickly into other places. This move has been getting more and more noticeable among the tightly linked economies of South and Southeast Asia. India, with solid economic ties to the ASEAN-5 through trade, investment, and migration, is now seeing larger ripple effects coming in from its neighborhood markets, while at the same time sending financial shocks back out to them. From 2020 onward, growing risk aversion, active monetary policy interventions, and the fast uptake of financial technology have been making those market links even stronger.

COVID-19 has also been impacting the banking sector worldwide. Global banks' average return on assets (ROA) has been decreasing to 1.02 per cent in 2020 from 1.84 per cent in 2019, and their average return on equity (ROE) has been declining to 7.46 per cent from 13.44 per cent over the same period. Financial risk transmission between global markets has been on the rise due to the pandemic. Developing economies have been playing an increasing role as sources of risk during the pandemic, while developed economies have been serving more as risk absorbers. This phenomenon has been slowly reversing, but high levels of financial connectedness and volatility have persisted after the shock. Average non-performing loan (NPL) coverage ratio has also been rising to 164 per cent in 2020 from 160 per cent in 2019, indicating that banks have been building larger financial cushions to absorb potential credit losses.

Capturing volatility and return spillovers vis-à-vis Indian economy is emerging as an interesting area of academic pursuit and is fast turning into an important exercise towards risk measurement, portfolio diversification, investment decisions and managing macroeconomic conditions. Volatility spillovers from one market to another is disrupting domestic economic activity by creating challenges for monetary authorities and policy makers, while increasing investors' exposure to contagion risks. On the other hand, understanding these market interdependencies is also offering avenues for better portfolio diversification and superior returns.

Empirical research has been paying growing attention to documenting the time-variation of financial spillovers. In addition, recent evidence suggests that policy responses, macroeconomic announcements, geopolitical events and investor sentiment are exerting a growing influence on market linkages, especially during times of crisis. The evolving dynamics of financial markets has led to a need for additional research to better understand these relationships, particularly between India and the ASEAN-5 markets. Thus, this study aims to offer clear empirical evidence regarding the patterns, trends, and drivers of volatility and return transmission between the ASEAN-5 markets and the Indian market. By analyzing these evolving relationships, the study seeks to fill critical gaps in current literature and offer valuable insights for investors, policymakers, regulators, and other stakeholders navigating or affected by the fast-changing Asian equity market landscape.

Review Of Literature

Year	Author(s)	Journal	Key Conclusion
2024	Lee & Tran	Asian Economic Review	Persistent volatility clusters remain in ASEAN-India post-pandemic data, suggesting contagion risk.
2024	Singh et al.	Emerging Markets Finance & Trade	Financial integration has amplified spillover channels between India and ASEAN markets.
2023	Rahman & Yu	Journal of International Finance	Bidirectional post-pandemic return spillovers; policy shocks in India affect ASEAN more.
2023	Nguyen & Suriya	Asia-Pacific Financial Markets	Negative shocks transmit more strongly than positive ones (asymmetric spillover).
2022	Banerjee & Lim	Global Economic Dynamics	Diversification benefits erode during high volatility due to increased co-movement.
2022	Chen & Kumar	Journal of Financial Markets	Volatility in one ASEAN market rapidly transmits to others and to India, confirming market integration.

Year	Author(s)	Journal	Key Conclusion
2021	Ghosh & Prasad	Review of Finance	Increased co-movement among Asian markets post-pandemic, especially after policy announcements.
2021	Liew et al.	Pacific-Basin Finance Journal	Liquidity shocks in India have long-lasting impacts on ASEAN equity returns.
2021	Jain & Abdullah	ASEAN Economic Bulletin	Heterogeneity in spillover magnitudes across ASEAN economies, with Singapore as a hub.
2021	Pham & Menon	Finance Research Letters	Recovery phases had inverse spillover with India often as a net transmitter.

NEED OF THE STUDY

With financial market linkages in Southeast Asia and India rapidly changing since the pandemic, it is essential to better understand how volatility and returns spill over between the ASEAN-5 and Indian stock markets. Having accurate knowledge of these connections helps with evaluating portfolio risk, making better-informed policy decisions, and predicting market contagion. Earlier studies frequently fail to consider the scale and direction of these relationships in the post-pandemic setting.

SCOPE OF THE STUDY

This study covers volatility and return spillovers among five key ASEAN markets Indonesia, Malaysia, the Philippines, Singapore, and Thailand as well as India. The study covers the period from January 2019 to June 2025, with special focus on the post-pandemic period starting in 2021. It employs daily stock market index returns and volatility measures, such as GARCH estimates, to assess the size and direction of spillover effects across these markets. The study is also investigating the main factors that drive these spillovers, helping to better understand the links between financial markets and how returns and volatility are passed from one to another.

OBJECTIVES OF THE STUDY

1. To determine the relationship between the volatility of India's stock market and a selected group of ASEAN-5 countries following the pandemic.
2. To examine the long-term relationship between the stock market volatility of ASEAN-5 countries and India's.
3. To analyze the link between the ASEAN-5 countries and India regarding the factors driving stock market volatility.

Research Methodology

This study employs a quantitative, descriptive, and empirical approach, and is completely dependent on secondary data sourced from dependable origins. This study aims to analyze volatility and return spillovers in the five major ASEAN Markets, Indonesia, Malaysia, the Philippines, Singapore, and Thailand, as well as, India. This study spans the years 2019 to 2025, as this segment is crucial in analyzing the five selected stock markets, and analyzing their closures and openings during and after the Covid 19 pandemic. In particular, this study aims to analyze the post-Covid 19 pandemic, in order to analyze the public and institutional market risk and how it is transmitted in the markets during and after the pandemic.

This research uses daily closing prices for benchmark stock indices for each country in the sample. Data is being obtained from stock market websites and other financial data sources. Daily stock market data helps this research compute stock market returns accurately and use sophisticated techniques of volatility modelling. This research uses measures of market returns and market volatility (so, standard deviation and conditional variance computed using GARCH). This research also uses lagged measures of returns and volatility of the interlinked markets to study cross-market relations and how changes in one market affect other markets.

To preserve methodological reliability, the study systematically employs various econometric tools. The analysis begins with the Augmented Dickey-Fuller (ADF) test to determine the presence of stationarity and the appropriateness of the given data for further analysis. This aims to mitigate the potential of producing invalid results of regressions. The correlation analysis and rolling correlation are then adopted to determine market co-movements and identify the degree of changing relationships in the given markets over time. The main analysis is based on GARCH specification. The regular GARCH specification is used to analyze the mean and persistence of volatility in the markets. The EGARCH model is applied to find out whether the impact of both positive and negative shocks to the market is asymmetric. The DCC-GARCH specification is also undertaken to analyze the time variability of the correlation between markets under observation. All of these models are helping to analyze volatility characteristics, asymmetric responses to shocks and dynamic financial integration of ASEAN-5 and Indian stock markets.

The comprehensive analysis is done in a systematic manner by starting from the collection and processing of the data. The daily closing stock exchange index values of the shares will be first converted into logarithmic returns before proceeding to the process of financial time series analysis. After the data has been processed, the econometric models will be estimated and the necessary diagnostic tests conducted for verification of the results. By applying this methodology, the research is giving a better view of how the ASEAN-5 stock markets and the Indian stock market are connected and also showing how financial shocks circulate between these stock markets. In addition, this research assists with identifying possible contagion effects and developing market relations between the two stock markets in the post-COVID-19 era.

Correlation Analysis between ASEAN Markets and India Capital Market (Post-Pandemic Year 2019-2025)

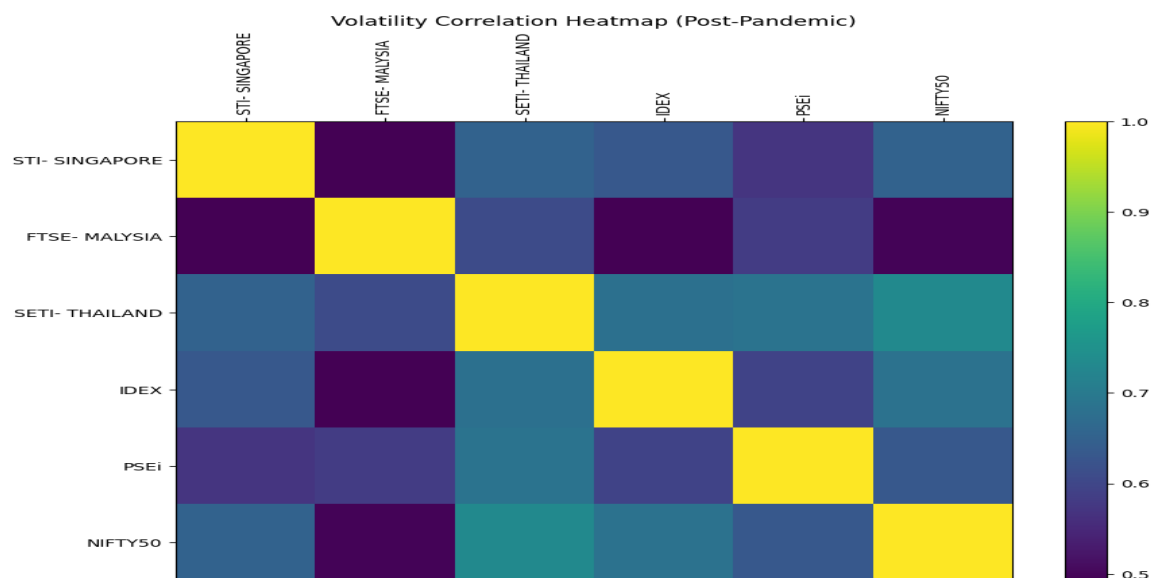
Correlation Matrix of Volatility

The table below shows the correlation coefficients between the volatility of different ASEAN markets and India Market Index (NIFTY50):

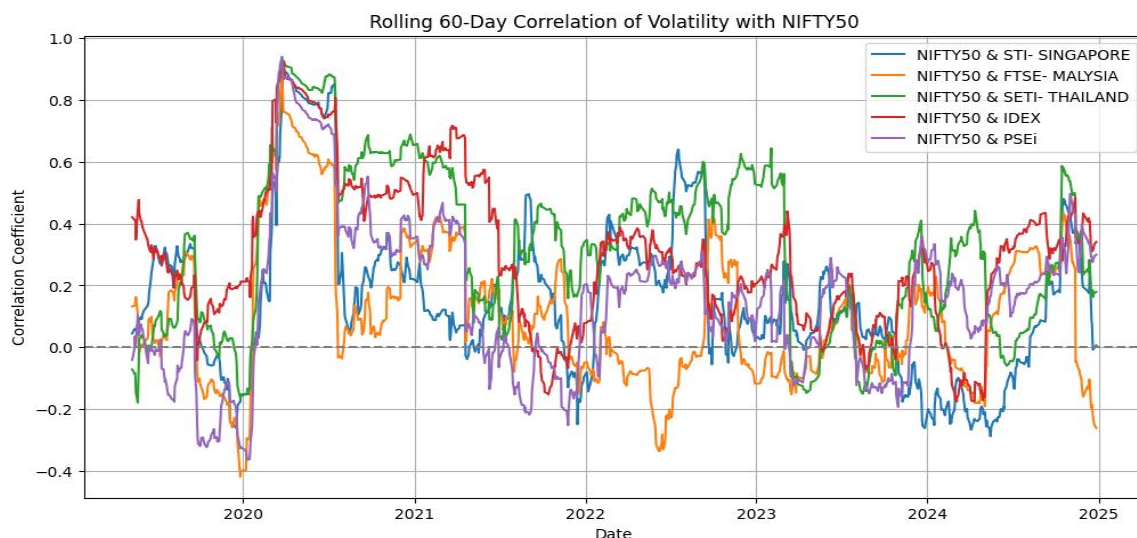
Market	STI-SINGAPORE	FTSE-MALYSIA	SETI-THAILAND	IDEX	PSEi	NIFTY50
STI-SINGAPORE	1.000	0.493	0.652	0.632	0.571	0.651
FTSE-MALYSIA	0.493	1.000	0.608	0.492	0.582	0.497
SETI-THAILAND	0.652	0.608	1.000	0.680	0.686	0.733
IDEX	0.632	0.492	0.680	1.000	0.594	0.684
PSEi	0.571	0.582	0.686	0.594	1.000	0.633
NIFTY50	0.651	0.497	0.733	0.684	0.633	1.000

The analysis reveals that the volatility of the NIFTY50 index demonstrates a strong positive correlation with several key Asian market indices. Specifically, the correlation between NIFTY50 and SETI (Thailand) volatility

stands at 0.733, indicating a significant link in their volatility patterns. Similarly, NIFTY50 shows notable correlations with IDEX at 0.684, STI (Singapore) at 0.651, and PSEi at 0.633, emphasizing a high degree of co-movement among these markets. In comparison, the correlation between NIFTY50 and FTSE (Malaysia) volatility is measured at 0.497, reflecting a modest relationship of all.



2. Long-term Correlation Between ASEAN-5 and India



The rolling correlation analysis shows how the relationship between ASEAN markets and India's NIFTY50 has evolved over time:

Average rolling correlations before and after the pandemic:

Market Pair	Pre-Pandemic Avg Correlation	Post-Pandemic Avg Correlation
NIFTY50 & STI- SINGAPORE	0.091	0.168
NIFTY50 & FTSE- MALAYSIA	-0.008	0.122

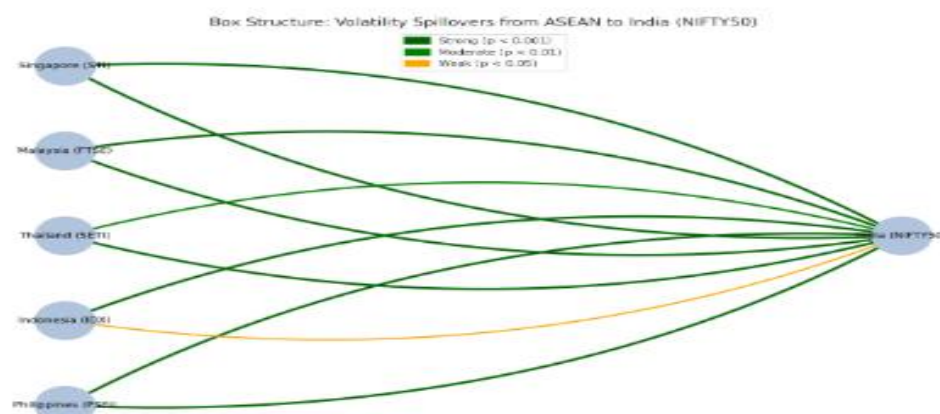
NIFTY50 & SETI- THAILAND	0.065	0.366
NIFTY50 & IDEX	0.217	0.303
NIFTY50 & PSEi	-0.120	0.204

The results indicate that volatility spillovers between ASEAN markets and India have generally increased in the post-pandemic period.

Volatility Spill over Analysis between ASEAN-5 and India: Granger Causality Tests for Volatility Spillovers

Granger causality tests examine whether one time series can predict another. Here we test for volatility spillovers:

Direction	Best Lag	Min p-value	Significant at 5%
STI- SINGAPORE → NIFTY50	1	0.0000	Yes
NIFTY50 → STI- SINGAPORE	4	0.0000	Yes
FTSE- MALYSIA → NIFTY50	2	0.0000	Yes
NIFTY50 → FTSE- MALYSIA	2	0.0000	Yes
SETI- THAILAND → NIFTY50	1	0.0000	Yes
NIFTY50 → SETI- THAILAND	1	0.0050	Yes
IDEX → NIFTY50	5	0.0230	Yes
NIFTY50 → IDEX	2	0.0000	Yes
PSEi → NIFTY50	2	0.0000	Yes
NIFTY50 → PSEi	2	0.0000	Yes



Key Findings

Significant volatility spillovers were found in the following directions:

- STI- SINGAPORE → NIFTY50 (p-value: 0.0000)
- NIFTY50 → STI- SINGAPORE (p-value: 0.0000)
- FTSE- MALYSIA → NIFTY50 (p-value: 0.0000)
- NIFTY50 → FTSE- MALYSIA (p-value: 0.0000)
- SETI- THAILAND → NIFTY50 (p-value: 0.0000)

- - NIFTY50 → SETI- THAILAND (p-value: 0.0050)
- - IDEX → NIFTY50 (p-value: 0.0230)
- - NIFTY50 → IDEX (p-value: 0.0000)
- - PSEi → NIFTY50 (p-value: 0.0000)
- - NIFTY50 → PSEi (p-value: 0.0000)

This analysis is helping to identify the direction and strength of volatility transmission between the ASEAN markets and India. The findings are showing stronger volatility linkages between NIFTY 50 and the ASEAN-5 markets, particularly with Thailand and Indonesia. The results are also indicating that the Indian stock market is having a stronger relationship with the markets of Thailand and Indonesia compared with the other selected ASEAN markets. The presence of dynamic and bidirectional spillover effects is showing that volatility is being transmitted in both directions, from India to the ASEAN markets and from the ASEAN markets to India. This mutual transmission is highlighting the growing vulnerability of these markets to regional financial contagion. As market integration is becoming stronger, traditional diversification within the region is also becoming less effective during periods of financial stress, since market shocks are increasingly spreading across the interconnected markets.

Suggestions

It stated in the paper that it has been realized that the international investors should realize the need for diversifying their portfolios beyond the Asian equity markets for diversification purposes to be achieved more effectively and successfully. It was indicated in the text that investing solely in Asia would restrict the investors from enjoying the benefits of diversification as well as set limits on growth opportunities in different regions throughout the world. It was also mentioned that keeping track of cross-border financial signals plays an increasing role for the purpose of observing and predicting sharp increases in market volatility. At the same time, policymakers have to implement policies related to the development of unified macroprudential standards, improve information sharing processes, and strengthen liquidity support mechanisms.

Conclusion

This study shows that volatility and return spillover between ASEAN-5 and Indian stock markets have become more pronounced and bidirectional after the COVID-19 pandemic. These developments suggest that financial and market disruptions will increasingly be transmitted bidirectionally, demonstrating the increasing interrelatedness of these markets. The recent developments in healthcare technology have signed the beginning of new "eras" of personalized medicine and individualized frontier patient care. For example, wearable devices can constantly evaluate and track vitals to discover and diagnose lingering conditions such as atrial fibrillation and sleep apnea, preventing them from developing in a more symptomatic and life-threatening manner. Telehealth systems have resulted in better access to medical specialists, especially for underserved rural and urban communities, and have greatly reduced the barriers of time and distance. AI-enhanced medical technology is being used as adjuncts in medical imaging to assist radiologists in the nearly perfect detection of cancers and other pathology. Medical specialists agree that you cannot solely rely on this technology.

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