

Are Indian and Chinese Stock Markets Interlinked? An Application of Cointegration and Causality Approaches¹

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Abstract

This study aims to analyze the international linkage of the Indian stock market with the fastest emerging market i.e. Chinese stock market using monthly data points of the last fifteen years. In this regard, this study employs Johansen's Cointegration, TY Granger Causality, Granger Causality, Impulse Response Function (IRF) and Forecasting Error Variance Decomposition (FEVD) to study cointegration and causality between BSE and SSE. The data has been taken from the official website of the Bombay Stock Exchange (BSE) while data on the Shanghai Stock Exchange (SSE) has been taken from yahoo finance dot com. The results of the Johansen cointegration test reveals there is no cointegration between Sensex and SSE. Moreover, Granger causality test results reveal no lead-lag relationship Indian and Chinese markets. The results of FEVD and IRF reveal that both the indices are majorly impacted by shocks in their own market. The results of this study may prove very significant for retail investors, portfolio managers, foreign institutional investors etc. in diversifying their investment and designing optimal portfolio.

I. Introduction

DURING THE PAST few years, the Indian stock market has undergone major economic reforms especially after the economic slow-down of 2008 and the reforms are still in process. It is also believed that with the advent of globalization, technology up-gradation, development of stock markets and improved transparency in the processes, integration of Indian stock market. It has become even stronger with other major Asian emerging economies namely China, Taiwan, Indonesia, Korea and developed economies such as US, UK and Japan (Aggarwal and Raja, 2019). Also, there can be major impacts of financial integration. These are risk diversification via investments in equity markets of different countries,

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more than the SSE. Furthermore, the results of Jarquebera test indicate that both the stock markets are not normally distributed whereas the returns series of both indices are normally distributed. Also, the empirical results show that the BSE has a higher median value in comparison to the SSE. Similarly, the median returns of the Bombay stock exchange are higher than the Shanghai stock exchange. The results show the presence of unit root in both the indices. However, the series were made stationary after taking their first difference. Further, the cointegration test was employed and the results confirm the absence of no cointegrating vectors as there does not exist long run equilibrium between Indian and Chinese stock markets. Therefore, the null hypothesis of no cointegration cannot be rejected at the significance level. The results of Granger causality and TY Granger causality test indicate no significant short causality running between the BSE and SSE. Therefore, the null hypothesis of BSE Granger cause SSE and vice versa cannot be rejected at 5 percent significant level. Furthermore, these results are confirmed by forecasting error variance decomposition which reports Sensex is majorly affected by shocks in their own market. On the contrary, 13.50 of the variation in the RSSE is explained by the BSE returns. The IRF plot reveals the positive response to one standard deviation shock given to another variable of both the indices is positive. However, the effect vanishes completely till 7th and 8th period. The present study has implications for the portfolio managers, investment houses, high networth individuals, foreign institutional investors, brokers, and researchers. Due to the absence of cointegrating equations, there does not exist a long run equilibrium between the two markets. It implies that investors can be benefitted by diversifying their investments in these markets. The absence of cointegration means the series will not return to equilibrium if they drift apart in the short run.

The present study has future scope for more comprehensive results as it can be extended to other emerging and developed economies particularly the US and Japan and also by adding country specific variables to have better insights on the cointegration and causality. Furthermore, it can be extended over a longer period of time by studying the interlinkages across different regimes.

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