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Analyzing the Impact of Global Financial Crisis on Interconnectedness of Asian Stock Markets Using Network Science

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Abstract : In the first section of this study, impact of Global Financial Crisis (GFC) on the synchronization of fourteen Asian Stock Markets (ASM's) of countries like Hong Kong, India, Thailand, Singapore, Taiwan, Pakistan, Bangladesh, South Korea, Malaysia, Indonesia, Japan, China, Philippines and Sri Lanka, has been analysed using the network science and its metrics like degree of node, clustering coefficient and network density. Then in the second section of this study by introducing the US stock market in existing network and developing a Minimum Spanning Tree (MST) spread of crisis from the US stock market to Asian Stock Markets (ASM) has been explained. Data used for this study is adjusted the closing price of these indices from 6th January, 2000 to 15th September, 2013 which further divided into three sub-periods: Pre, during and post-crisis. Using network analysis, it is found that Asian stock markets become more interdependent during the crisis than pre and post crisis, and also Hong Kong, India, South Korea and Japan are systemic important stock markets in the Asian region. Therefore, failure or shock to any of these systemic important stock markets can cause contagion to another stock market of this region. This study is useful for global investors' in portfolio management especially during the crisis period and also for policy makers in formulating the financial regulation norms by knowing the connections between the stock markets and how the system of these stock markets changes in crisis period and after that.

Keywords : global financial crisis, Asian stock markets, network science, Kruskal algorithm
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