## Abstract

Since the global financial crisis, the architecture of the financial system has significantly changed. Post-crisis, financial stability has been recognised as an integral element of macroeconomic policy framework globally. It is evident that institute-specific risk spillover led to the global financial crisis. Interconnectedness among banks and financial institutions leads to the transmission of idiosyncratic risks, resulting in systemic risk spillover, which in turn triggers an economic crisis. The impact of systemic risk on the safety and stability of banks has deeply intrigued academicians and policymakers alike. The subject has gained further momentum during the post-2007 financial crisis, with academicians and policymakers contemplating over the impact of excessive risk-taking behavior for higher margins that possibly led to the widespread crisis.

A major issue faced by the Indian banking sector in the early 1990s was its fragile health, low profitability, and weak capital base. Accordingly, financial sector reforms were initiated as a part of overall structural reforms to impart efficiency and dynamism to the financial sector. The banking sector was aligned with the internationally accepted Basel prudential norms relating to income recognition, asset classification and provisioning, and capital adequacy. However, in early 2013, the Indian banking system suffered from a huge Non-Performing Loans (NPL) crisis. There were a large number of corporate defaults during the period of 2013-16. Thus, the question was raised on the stability of the banking system in India. It becomes essential to examine the build-up systemic risk in the Indian banking system.

The study measures the build-up of systemic risk of the Indian banking system through the Conditional VaR model. Besides quantifying systemic risk and exploring its determinants, the study developed a novel method of determining nodal (bank) weights. It has assessed the time-varying Capital Shortfall during the stressed environment using CSRISK and identified the determinants of capital shortfall and its speed of adjustment as per Basel capital adequacy norms. It has developed a prompt corrective action (PCA) framework for the adjustment of the capital shortfall within the regulatory requirements. The study has constructed a network topology and identified the good (non-contagious) and bad (contagious) links by developing a profit-adjusted normalized systemic index. It assessed the systemic tolerance value for individual banks and the banking system, constructed 'two-layer systemic tolerance networks', and estimated its properties. Finally, the thesis has examined the impact of board characteristics on systemic risk and developed a "Board Characteristics adjusted Systemic Risk (BCSR) index", to analyse the capability of bank's board in tackling the systemic crisis.

The empirical findings revealed that systemic risk build-up is higher during the downcycle indicating the vulnerability during a distressing phase. Bank Size, asset quality, income, and asset diversification are significant bank-specific determinants influencing systemic risk. The probability of a node being bad is higher than good highlighting systemic instability. The findings highlight that banks experience more capital shortfall during down-turn than during economic boom, with an average of four months required for the shortfall adjustment.

The study also found a drastic increase in interconnections during the down-cycle with a significant number of bad connections. The study highlighted that banks have a high tolerance value showing their withstanding ability against systemic shocks. High values of network properties, namely density, average degree, path length, diameter, during the down-cycle, highlight the robustness of the Indian Banking system. It is also found that maturity leverage positively influences systemic tolerance, but asset quality, reverse repo, and loan growth negatively influences systemic tolerance. The empirical findings revealed that bank directors, through their monitoring process, contribute to reducing systemic risk, and the stability of Indian banks improved with the increase in the number of independent directors.

As a policy measure, the banking system regulator should control excessive loan creation by imposing extra prudential provisioning and higher risk weight during economic up-cycle. The regulator should control the interbank money market and interbank asset-liability transfer to reduce interbank risk spillover. As a policy framework, the banking regulator should encourage the merge of small banks to create larger banks that can bear systemic risk. The regulator should improve the liquidity support in the repo market during the economic down-cycle to enhance the systemic tolerance of the banking system. Since the banking business is very complex and requires a specialized skill-set, the regulator should fix professional qualifications for the appointment of the board of directors, including independent directors. The thesis concludes that regulatory supervision is essential to reduce systemic risk for the overall stability of the banking system.

**Keywords:** Systemic risk; Banking crisis; Interconnectedness; Capital shortfall; Systemic tolerance; Systemic network; Board characteristics; Prompt Corrective Action; SIFI; Systemic contagion