

CONSTRUCTION AND ANALYSIS OF A LIQUIDITY STRESS INDEX (LSI) FOR INDIAN BANKS

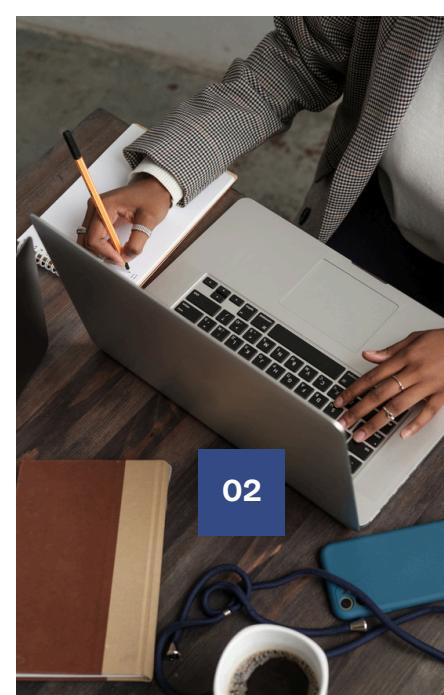
CREATED BY
VISHWAJEET K. MAHORE

OVERVIEW

- Developed a Liquidity Stress Index (LSI) to assess systemic liquidity risk in the Indian banking sector.
- Used publicly available RBI financial indicators to construct and analyze the index.
- Focused on deriving meaningful financial insights through structured Data Analytics techniques.
- Strengthened knowledge in Data Analytics, Financial Analysis, and Risk Assessment.

DATA SOURCES & METHODOLOGY

- Data Source: RBI monthly time-series datasets.
- Key Indicators Used: Credit-Deposit Ratio, Deposit Stability, and Liquidity Measures.
- Data Preprocessing: Missing value treatment, outlier handling using statistical capping.
- Normalization: Applied z-score standardization to ensure comparability across variables.
- Index Construction Methods: Weighted Aggregation Method (Equal Weights). PCA-Based Index using Principal Component Analysis. Time-Series Alignment performed using a monthly calendar structure.





KEY FINDINGS

- LSI successfully highlighted periods of elevated liquidity stress in the Indian banking system.
- Weighted and PCA-based indices showed similar movement, confirming robustness.
- Individual indicator trends helped understand their contribution to systemic liquidity.
- Peaks in the index aligned with known macroeconomic stress phases.
- Deposit Stability showed strong correlation with aggregate liquidity trends.

ANALYTICAL VALIDATION

- ADF Test: Showed LSI as non-stationary, indicating persistent liquidity risk trends.
- Correlation Analysis: Moderate relationship between indicators ensured dimensional relevance.
- PCA Alignment: Strong similarity with weighted index validated reliability of methodology.

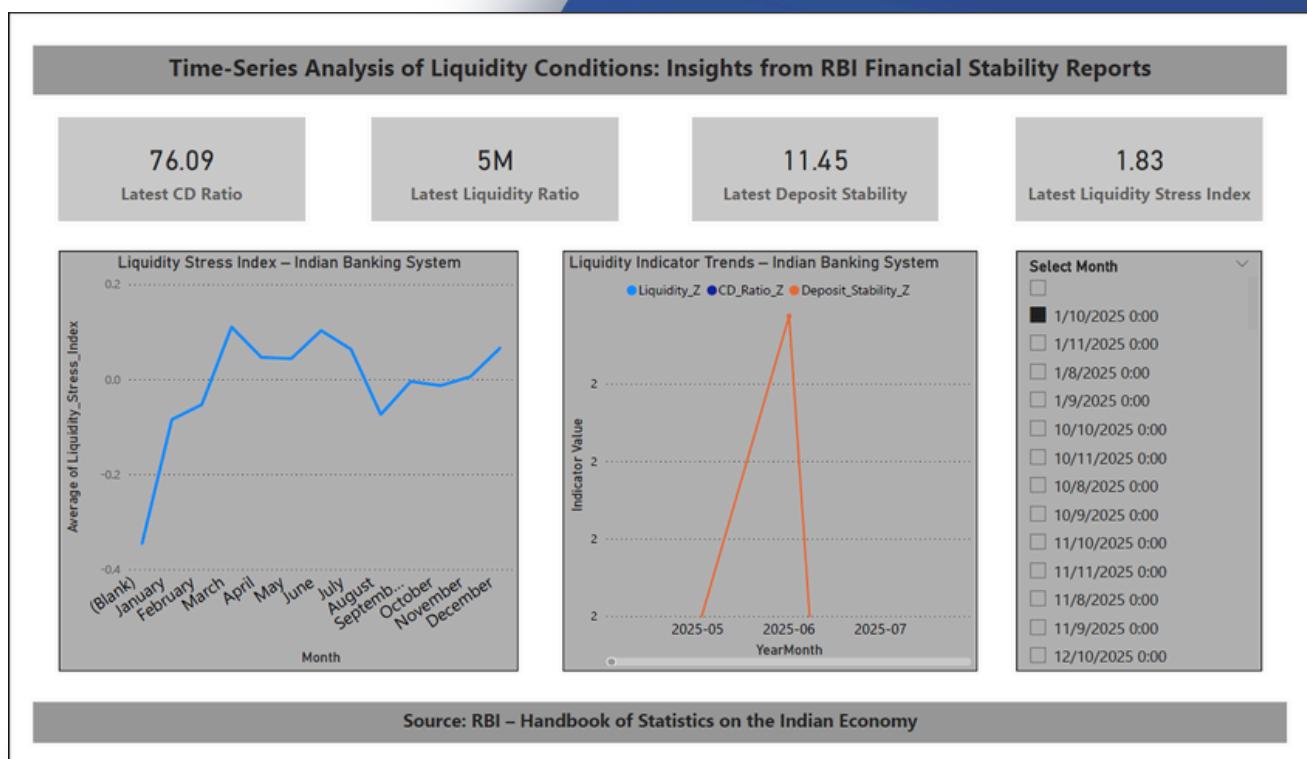
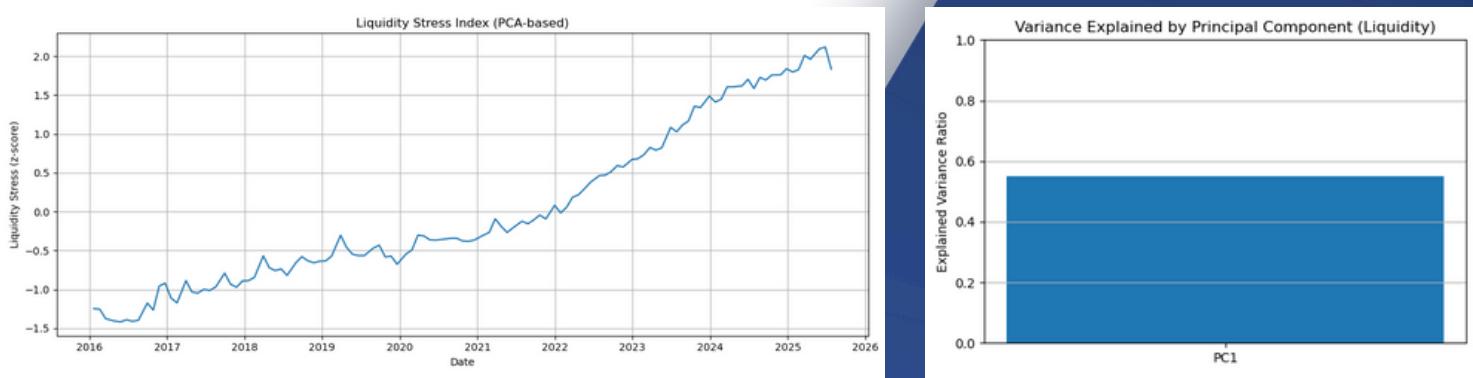
POLICY & PRACTICAL IMPLICATIONS

- Acts as an early warning indicator for systemic liquidity stress.
- Supports regulators in planning timely liquidity interventions.
- Helps banks in strategic Asset-Liability Management (ALM).
- Encourages data-backed financial decision making.

LIMITATIONS

- Focused only on liquidity indicators; profitability and capital adequacy not included.
- Monthly frequency may smooth out short-term financial shocks.
- Dependent on availability and quality of RBI indicators.

DASHBOARD & GRAPHS



LEARNING OUTCOMES

- Enhanced Data Cleaning, Preprocessing, and Exploratory Data Analysis (EDA) skills.
- Gained experience in Statistical Modelling and PCA.
- Strengthened Time-Series Analysis and Interpretation abilities.
- Improved ability to derive actionable insights from financial datasets.
- Built confidence in handling real-world Data Analytics projects.

CONCLUSION

This project provided a strong foundation in Data Analytics, Financial Risk Analysis, and Insight Generation. It helped develop a reliable Liquidity Stress Index that can support regulatory monitoring and banking risk management while contributing to informed, data-driven decision making.

THANKYOU

CONTACT US



vishwajeetmahorevm@gmail.com



Vishwajeet K. Mahore



Vishwajeet1503