

# Exponential Analysis for Net Operational Balance Forecasting

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The Basel III framework, particularly through its Liquidity Coverage Ratio (LCR) requirement, obliges banks to hold a minimum amount of high-quality liquid assets based on an estimate of how much is expected to be withdrawn or "run off" during a specified period of stress.

Forecasting this minimum level (net operational deposit balances) is critical for effective liquidity management and strategic financial planning. Traditional time series forecasting methods often rely on assumptions of linearity, stationarity, and the continuation of past patterns. While useful for stable environments, they frequently fall short when dealing with the complex, multi-modal, and often non-linear dynamics of financial data such as net operational deposit balances.

Matrix Pencil and ESPRIT can directly uncover and quantify the fundamental, often complex and noisy, exponential dynamics that drive these critical financial time series. This leads to more robust forecasts and a deeper understanding of balance behaviour than what traditional, simpler methods typically offer.