

# Analysis of Rupee Depreciation's Impact on US Economy using Neural Network

UmaDevi B<sup>1</sup>, Revathi Pandian D<sup>2</sup>, Sathya Priya J<sup>2</sup>

<sup>1</sup>Alpha College of Engineering, Chennai, India.

<sup>2</sup>Velammal Engineering College, Chennai, India

\*Corresponding author's email id: baskaruma@gmail.com

## ABSTRACT

This study fills up the gap with regard to the economic effects of Indian rupee depreciation in a sector-specific manner on US trade, capital inflows and outflows, and monetary policies. Exchange rate volatility, trade balance, capital inflows/outflows, inflation, monetary policies, and sectoral competitiveness of industries relying on imported inputs for exports are some implications considered in this regard. The main problem, however, is that all these factors have to be analyzed collectively with bidirectional implications on both economies, especially during crises. To address this scenario, the present study proposes a neural network model for evaluating the interplay between the factors using historical and real-time data of currency fluctuations, trade metrics, and policy measures. The input layers to be constructed for this model intake incorporate macroeconomic indicators such as exchange rates, sectoral trade balances, inflation indices, and monetary policy variables from India and US. Then, the next hidden layers would be nonlinear relationships and interdependencies. Finally, the output layer shall predict the symptoms of differentiation of rupee depreciation effects on the US trade, sectoral benefits or losses, and even the capital market stability. This neural network analysis offers dynamic insight into currency fluctuations since it would provide predictive capability for policymakers in designing strategies for mitigating adverse economic consequences and harnessing emerging opportunities. Addressing this knowledge gap, such a study will contribute to a better understanding of globally knit trade interdependencies and usefully advance a strong analytic framework for greasing the wheels against currency-induced ramparts of economic dislocation in integrated economies.

**Keywords:** Currency, Depreciation, Volatility

