

**भारतीय रिज़र्व बैंक**
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RBI Working Paper No. 01/2023: Measuring Contagion Effects of Crude Oil Prices on Sectoral Stock Price Indices in India

Today the Reserve Bank of India placed on its website a Working Paper titled, "[Measuring Contagion Effects of Crude Oil Prices on Sectoral Stock Price Indices in India](#)" under the Reserve Bank of India Working Paper Series¹. The paper is co-authored by Madhuchhanda Sahoo, Arvind Kumar Shrivastava, Jessica Maria Anthony and Thangzason Sonna.

The need for a deeper understanding of the contagion effects of extreme changes in global crude oil prices on sectoral stock indices for an oil import-dependent economy like India cannot be overstated. Since studies on global crude oil price contagion at sectoral stock levels for India are rare, the paper is expected to contribute both to literature and understanding of the subject. The paper uses the generalised Pareto distribution (GPD) for estimating excess returns or exceedances, defined as deviations – above and below, thresholds. The multinomial logit model (MNL) framework is then used for determining the probability of contemporaneous exceedances or co-exceedances, occurring the same day for 10 sectoral Indian stocks and global crude oil returns during the period from January 2007 to December 2020. The literature defines this probability of co-exceedances as contagion effect. The following are the major conclusions from the paper:

- (i) There exists a significant likelihood of a contagion effect or simultaneous exceedances for the 10 sectoral stock returns when faced with extreme changes in global crude oil returns;
- (ii) The evidence of positive co-exceedances is stronger;
- (iii) The results are found more robust when relevant control variables are introduced – exchange rate returns (INR-USD), 10-year G-sec yield, and differential stock returns, (*i.e.*, small firms minus big firms); and
- (iv) The contagion effect on all sectoral indices, irrespective of their direct and indirect exposure to oil price dynamics, highlights the need for hedging by investors as mere diversification of portfolios may not be sufficient to protect their assets from an adverse oil price shock.

Press Release: 2022-2023/1538**(Yogesh Dayal)**
Chief General Manager

¹ The Reserve Bank of India (RBI) introduced the RBI Working Papers series in March 2011. These papers present research in progress of the staff members of the RBI and at times also those of external co-authors, when the research is jointly undertaken. They are disseminated to elicit comments and further debate. The views expressed in these papers are those of the authors and not necessarily those of the institution(s) to which they belong. Comments and observations may please be forwarded to the authors. Citation and use of such papers should take into account its provisional character.