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**RBI Working Paper Series 11:
Non Deliverable Forwards and Onshore Indian Rupee Market:
A Study on Inter-linkages**

The Reserve Bank of India, today placed on its website, a Working Paper titled "[Non Deliverable Forward \(NDF\) and Onshore Indian Rupee Market: A Study on Inter-linkages](#)" under the Reserve Bank of India Working Paper Series. The paper has been authored by Rajan Goyal, Rajeev Jain and Soumasree Tewari.

In this paper, the authors have examined the inter-linkages of onshore segments of India's foreign exchange market with NDF market for Indian rupee (INR). Sample period of the study from June 6, 2006 to April 3, 2013, has been divided into four sub-periods based on appreciating/depreciating trend in INR. To examine the direction of transmission between onshore and NDF markets, vector error correction model and ARCH/GARCH models are used.

Major findings of the paper are:

- A long term relationship exists between onshore and NDF markets and the relationship is bidirectional as both markets adjust to any deviation from equilibrium state. However, bidirectional relationship turns unidirectional from NDF to onshore during the period when rupee comes under downward pressure.
- ARCH/GARCH models also confirm broadly the same dynamics of inter-relationship through cross-mean and volatility spillover between NDF and onshore markets.
- While both mean and volatility spillover from NDF market to onshore market and from onshore to NDF market are found to be statistically significant during the period of rupee appreciation, the volatility spillover turns unidirectional from NDF to onshore market during the period of rupee depreciation.
- Even though both onshore and offshore segments follow an equilibrium relationship in the long-run, movements in NDF market seem to drive adjustment in onshore market when rupee faces downward pressure.

**The Reserve Bank of India introduced the RBI Working Papers series in March 2011. These papers present research in progress of the staff members of the Reserve Bank and are disseminated to elicit comments and further debate. The views expressed in these papers are those of authors and not those of the Reserve Bank of India. Comments and observations may kindly be forwarded to authors. Citation and use of such papers should take into account its provisional character.*