

The Non-Deliverable Forward (NDF) Market for the Indian Rupee

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The Instrument

- Betting device on the rupee
- A forward contract that is settled in USD in accordance with the RBI reference rate on maturity date
- Understanding the deal: An example:
 - Re-\$ NDF for 38 million Rupees with a price of Rs.38
 - On maturity spot rate (RBI) turns out to be 39
 - Party short on \$ loses Re 1 per \$ or Rs 1m = \$ 25,600
 - Contract settled by the buyer of Re paying the seller \$ 25,600



The Clientele

- Players who cannot hedge Re exposure legitimately in India
 - E.g. PN holders
- Arbitrageurs who have dollars offshore and access to Indian currency markets
 - Indian exporters
- Currency hedge funds speculating on the INR



The Market

- Primarily in *Singapore* and Hong Kong with Dubai and Bahrain showing some activity
- Genesis in the 90's: currency hedging avenue for foreign investors in India
- Over the counter (OTC) market
- Major global banks
 - Deutsche Bank, UBS AG, Standard Chartered Bank, Citibank, JP Morgan Chase, ABN Amro, Barclays, ANZ Investment bank, BNP
 - Indian banks not allowed by RBI
- Estimated volumes (daily average):
 - 2003: ~\$100 m
 - 2007: ~\$750 m
 - 2007 "bidding volume": ~ \$4.6 b
 - 2007 onshore forex market: ~ 34 b

Relative volume

Daily average turnover on Indian spot, forward and NDF market during 2007

(US \$ million)

Spot	16,381
Forward/Swap	15,378
NDF	4,649
<i>Of which</i> 1 Month	993
2 Month	735
3 Month	990
6 Month	913
1 Year	1,018

Note : Turnover for NDF is the average daily volume of NDF bidding for the period January 5 to April 20, 2007. Turnover of spot, forward and swap is for January-April, 2007.

Source : Reuters and Reserve Bank of India.

Liquidity

Bid-ask spread (Re-USD) in Foreign Exchange market

(in per cent)

	Spot	Forward	1M NDF	3M NDF	6M NDF
1	2	3	4	5	6
Average	0.03	0.09	0.11	0.21	0.29
Min	0.01	0.02	0.05	0.11	0.15
Max	0.17	0.38	0.28	0.29	0.34

Source: Reuters, Authors' calculation.

Bid-Ask Spreads in NDF market for select Asian currencies

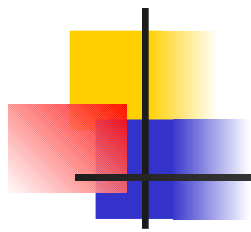
(in per cent)

	1M NDF	3M NDF	6M NDF
1	2	3	4
Chinese Yuan			
Average	0.06	0.06	0.09
Min	0.01	0.01	0.01
Max	0.76	0.13	0.61
Korean Won			
Average	0.09	0.10	0.14
Min	0.01	0.02	0.02
Max	0.34	0.24	0.29
Indonesian Rupiah			
Average	0.51	0.73	1.09
Min	0.22	0.22	0.28
Max	1.92	2.73	3.13
Philippine Peso			
Average	0.22	0.23	0.39
Min	0.09	0.09	0.14
Max	0.51	0.51	0.75

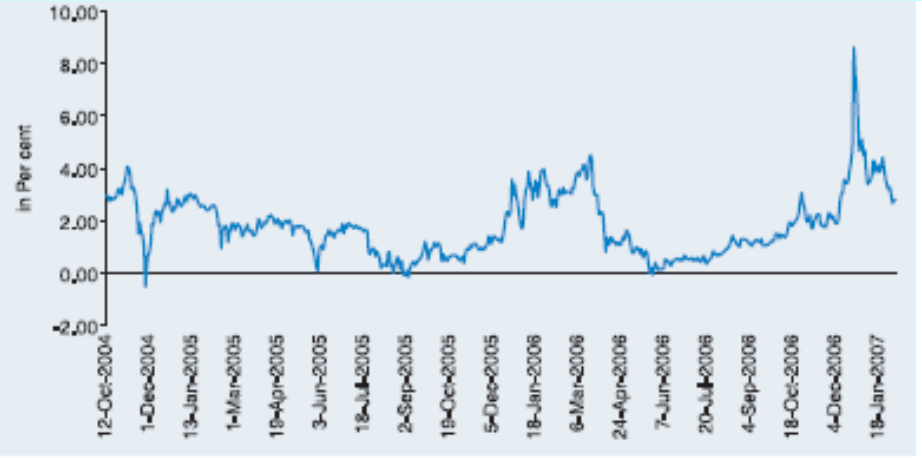
Source: Reuters, Authors' calculation.

Source: Mishra and Behera 2006

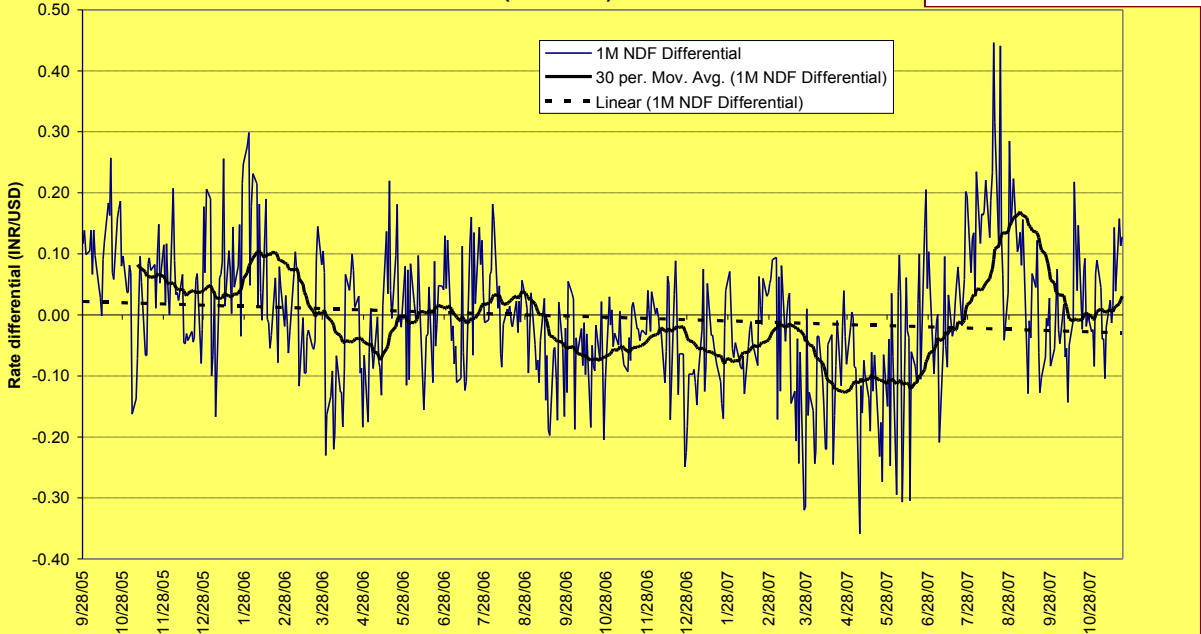
Onshore-offshore Spreads



Spread between offshore & onshore implied yields



The NDF Differential:
NDF 1-month rate (INR/USD) -- Onshore forward rate



Source: Mishra and Behera 2006



Observations

- Evidence of significant arbitrage across markets
- May affect rupee flows at the margin
 - Conversion decisions of forex earners
- Discovery of market expectations
 - Helps fix the opening price onshore
- Raison d'être: Capital controls
- Aids “de facto convertibility”
- Expected to disappear with full convertibility
 - The Rupee future at Dubai is a competition as well



Policy issues

- Implications for participation and position restrictions in the onshore currency derivative markets
- Participation of Indian banks in the NDF market