Offshore Betting on the Indian Rupee – The Non-Deliverable Forward (NDF) Market

By Professor Rajesh Chakrabarti[1]

It has been exciting times for the Indian Rupee lately. Its exchange rate dynamics has experienced quite a reversal from the time-honored trend. The familiar regime of the declining rupee has been replaced by swelling foreign exchange reserves and government efforts to control an appreciating rupee. Trading volumes in the Indian Rupee have risen close to four times in the last 3 years and the Indian Rupee's share of world currency transactions has more than doubled from about 1.5% of total currency transactions in the world in 2004 to about 3.5% in 2007.

A large part of this is driven by foreign investors' discovery of India. There has been a surge of foreign investment flows into the country in recent years. In the last five years foreign investment inflows have grown at a compounded annual growth rate (CAGR) of over 26% (see Figure 1). The sources of these funds have been numerous. Foreign Institutional Investors seeking pure portfolio investments, private equity firms picking up large blocks of shares and all-out foreign direct investment have all contributed to the surge of capital inflows, aided by external commercial borrowings (ECBs) by Indian companies. Indeed, monetary authorities as well as industry are concerned that this deluge of inflows may inundate the system and is already causing an appreciation of the rupee, casuing an erosion of India's competitiveness in key export markets like textiles and software.

Amidst all these excitements in India's external sector, the offshore non-deliverable forward (NDF) market for the Indian Rupee is often completely forgotten. The growth in activity in this market, has however, surpassed both the impressive rise in rupee denominated forex transactions as well as investment inflows. In 2007-08 so far, transaction volumes in the NDF market for the Rupee has reportedly soared to over $750 million a day from about $100 million a day in 2003-04.

From a foreign investor's point of view, fluctuations in the Indian Rupee clearly present a risk that needs to be managed, as the value of their investments and cash flows directly hinge upon the value of the rupee in their home currencies. The non-deliverable forwards (NDF) provides foreign investors with a method to hedge their currency risk associated with movements in the rupee. Before the launch of the Indian Rupee Futures Contract in Dubai earlier this year, the NDF provided foreign players with the only offshore hedging tool to manage Indian Rupee risks. A clearer understanding of the NDF market, therefore, provides insights into the currency risk management practices as well as speculative activities involving the Indian Rupee, occurring outside India's borders.

How does an NDF contract work? The NDF market is essentially a forward market for the Indian Rupee, where forward contracts on the Rupee are written against typically the

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[1] I am grateful to Ajay Shah for introducing me to this subject and to an anonymous market participant who helped me get a better understanding of this market.

US Dollar or the Euro with the difference that, on maturity, the contract is settled not by delivery of the Indian Rupee against that of the counterpart currency, as is the norm in the usual forward market, but rather through the exchange of Dollars or Euros depending upon the spot price on the settlement date. Let us take an example of the Rupee-Dollar NDF for 38 million Rupees with a price of Rs.38 per USD maturing on, i.e. with a "settlement date" of, December 31, 2007. The "fixing" date for this contract is one business day before settlement, i.e. December 30, 2007. The "fixing rate" is the RBI reference USD-INR rate on the "fixing" day. Now let us say this rate turns out to be Rs. 39 per USD. Since the rupee is weaker in the spot market as opposed to the NDF contract, the seller of the NDF contract on the Rupee makes a profit, in the sense that he can notionally purchase Rupee in the spot market at the rate of Rs 39 per USD and settle the NDF at the higher (Rs 38) rate. The buyer has made a corresponding loss. If the buyer had taken delivery he would have had to pay USD 1 million for the contract. Selling the 38 million Rupees in the market would have fetched him USD 38/39 million or USD 0.9744 million, indicating a difference of USD 0.0256 million or USD 25,600. Instead of actually settling the NDF contract on December 31, with the buyer taking delivery of Indian Rupees as in the usual forward market, here the buyer pays the seller the loss (gain for the seller) and the contract is settled. In our example, therefore, the buyer pays the seller approximately USD 25,600 and the contract is considered settled. Of course, if the Rupee had strengthened in the spot market relative to the NDF rate, the direction of cash flow would have been reverse, i.e. from the seller to the buyer. Therefore the actual cash transactions in the NDF market are a small fraction of the notional values of the contracts transacted.

The NDF market is typically an offshore market, free from regulatory control of the currency's home monetary authority. New York, Singapore, and London are major centers with the first two specialising in Latin American and Asian currencies respectively and the third spanning both sets. Hong Kong is an important trading centre for Asian currency NDFs as well. In 2003, six Asian Currencies – the Korean Won, Chinese Renminbi, New Taiwan Dollar, Indonesian Rupiah, Philippine Peso, and the Indian Rupee – constituted a majority of global NDF markets with the remaining volume coming largely from Latin American currencies and the Russian Rouble. For the Indian Rupee, NDFs are traded primarily in Singapore and Hong Kong with Dubai and Bahrain showing some activity as well.

The NDF market for the Indian Rupee started back in the 1990's when it provided the foreign investors in India the only avenue of hedging currency risk in the presence of severe exchange restrictions in a scenario where the Rupee was expected to have a secular decline. Foreign investors would generally sell the NDF Rupee contracts to hedge their underlying positions. The opposite side would typically be taken by Indian trading companies and exporters who could make arbitrage profits as they had access to both the onshore currency markets as well as Dollar flows outside the country.

The NDF market typically flourishes when capital controls prohibit foreign players from having unlimited access to the onshore forward market. In India, RBI rules now allow importers and exporters to buy forward contracts up to their previous year's turnover or

previous 3 years' average import or export, whichever is higher, but at least 80% of their forward cover should be in the form of deliverables. FIIs are allowed to hedge their equity and debt exposures. FDI investors can have forward cover not exceeding six months. Non residents can buy but not issue currency derivatives.

Though the size of the Indian Rupee NDF market is small compared to both those in other Asian currencies like the Korean Won, Chinese Renminbi and the Taiwan Dollar, and other Rupee exchange markets (it is less than a quarter of the Spot market as well as the onshore forward/swap market), it has witnessed a phenomenal rise in recent years. Accurate numbers are hard to come by as NDFs are over the counter (OTC) instruments. However in 2003 the outside estimate for daily volumes in the Indian Rupee NDF market was $100 million. In 2007 it is estimated to be over $750 million. The "bidding volume" on NDFs (essentially quote enquiries and expressions of interest without necessarily resulting in deals, including multiple quote seeking) is over $4.6 billion[2] (Mishra and Behera (2007)). Bidding volume is spread almost evenly across the different maturities ranging from 1 month to 1 year with the latter end showing slightly higher volume.

All derivative markets serve two constituents – hedgers and speculators – and the Indian Rupee NDF market is no exception. Hedging of the Indian Rupee risks by foreign investors is clearly one major activity for the NDF market. With the gradual relaxation of exchange restrictions in India over the years, however, the NDF market now primarily serves non-residents like currency hedge funds interested in speculating on India. Multinationals also use the Indian Rupee NDF market to hedge their exposure. There is also a demand from arbitrageurs playing the two forward markets. Onshore financial institutions are prohibited from participating in the NDF market. Several major global banks like Deutsche Bank, UBS, and Citibank are active traders in the Rupee NDF market. The activity here has risen by over 7.5 times in the last few years while total foreign investment in India has roughly trebled during the period and with easing currency restrictions.

As compared to the onshore spot and forward markets, however, the relative liquidity in the NDF market mirrors these lower relative volumes. The average bid-ask spread in the 1-month NDF is estimated to be about 11 basis points (of the mid-quote value), close to four times that in the spot market and over 20% higher than in the onshore forward market[3]. These spreads are worse than those for NDFs in the Chinese Yuan and the Korean Won but better than those for the Philippine Peso and considerably better than those for the Indonesian Rupiah. Liquidity falls sharply for longer term contracts – for the Indian Rupee NDFs, average spreads almost double as one goes from the 1-month to the 3-month horizon and rises to 29 basis points for the 6-month contracts.

These higher spreads appear to be justified by the higher volatility. The 1-month Rupee NDF rates are about 50% more volatile than the spot rates, and almost 25% more unstable than the onshore forward rates, with volatility rising for longer-term contracts. It

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[2] *Sangita Misra and Harendra Behera, Non Deliverable Foreign Exchange Forward Market: An Overview, Reserve Bank of India Occasional Papers, Vol. 27, No. 3, Winter 2006*
[3] *ibid*

is conjectured that RBI involvement in domestic currency markets is a reason behind these volatility differences.

Finally, the difference between the onshore forward rates and the NDF rates reflect the effectiveness of capital controls in India, given that RBI is active in both the onshore spot and forward markets. Between 2004 and 2007 this difference appears to reveal a pressure for appreciation of the Rupee that has been resisted by monetary interventions[4]. The extent of the gap is, however, about a third of what it used to be around the turn of the century. Clearly the Rupee has become significantly more convertible during this period. Data from late 2005 to now shows the extent to which these markets have become integrated through arbitrage activities (figure 2). The average differential is nil, though there are moderately long-lived swings on either side of the zero line.

As the Rupee moves towards full convertibility (anticipated in 2009) and new instruments for hedging currency risk (and speculating on them) emerge – the first Rupee future is trading in Dubai, and RBI is considering introducing exchange-traded Rupee futures in India as well – the NDF market is expected to wither away. The Rupee futures is likely to become the venue for betting on the Rupee (or hedging underlying exposures) for all parties, domestic and foreign, and substitute the NDF market. Till that time, the NDF market would continue to serve as an important currency risk management tool for many foreign investors as well as for speculators betting on the Indian Rupee away from the regulator's gaze.

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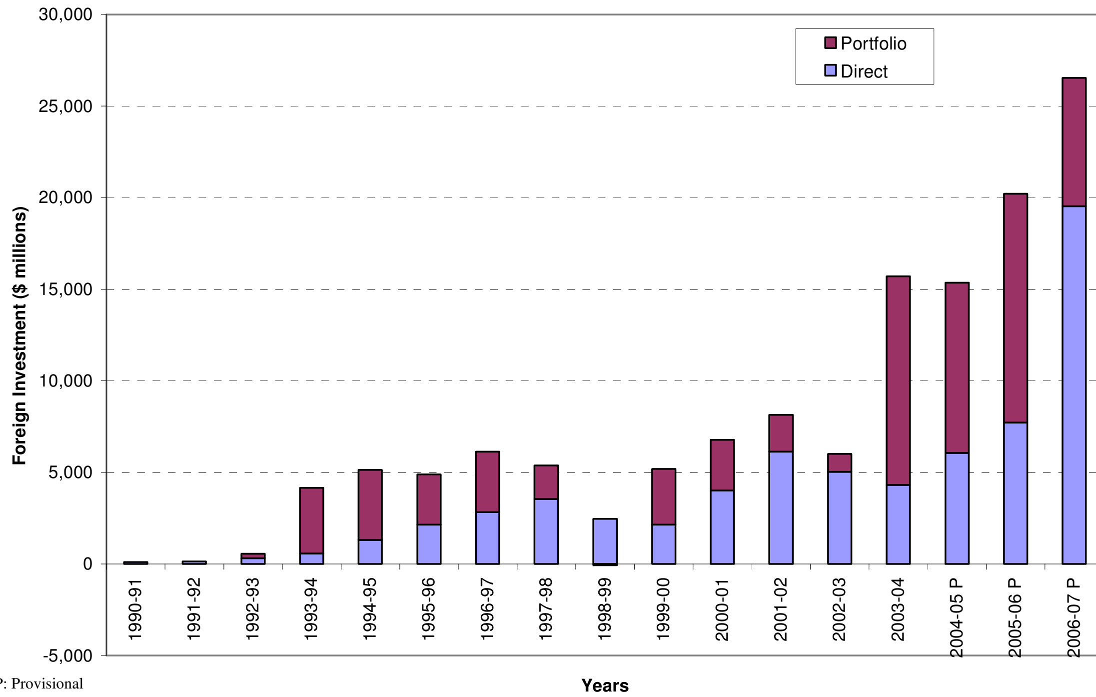
[4] *ibid*

Figure 1



P: Provisional
Source: Handbook of Statistics on the Indian Economy, Reserve Bank of India

Figure 2