Accretion to Foreign Exchange Reserves in India:
Sources, Arbitrage and Costs

Annex

Department of Economic Anaysis and Policy
(Division of International Finance)

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1. Introduction

India's external sector has been characterized by an overall surplus in the balance of payments (BoP) since 1996-97 resulting in substantial accretions to foreign exchange reserves. During the current fiscal year (up to January 17, 2003), the foreign exchange reserves increased by US$ 18.3 billion from US$ 54.1 billion to US$ 72.4 billion. This is substantially higher than the rise of US$ 11.8 billion during the full fiscal year 2001-02 and US$ 6.9 billion during the corresponding period of that year).

The substantial increase in reserves and the security it provides in our external financial position has been widely welcomed by experts, international agencies as well as media in India and abroad. At the same time, this sharp increase in reserves has also raised some statistical and analytical questions, purely because this large improvement in India's external position is unusual in the light of India's own past history as well as the current position of many other developing countries with same experience (such as China). These issues are:

- What are the sources of accretion to reserves?
- Are there significant underlying arbitrage opportunities?
- What is the cost of these reserves?

In order to answer some of these questions, the Department of Economic Analysis and Policy of the RBI has analysed the data for the recent period April – November 2002 (for which information on major components of current and capital account of the BoP is available). The preliminary findings of study conducted by DEAP on the above-mentioned questions are set out below.

2. Major sources of Foreign Exchange inflows into Reserves

The data in foreign exchange reserves comprising foreign currency assets (FCA), gold and Special Drawing Rights (SDRs) disseminated in the Weekly Statistical Supplement (WSS) to the RBI Bulletin are inclusive of valuation changes arising out of movements in exchange rates. The flows of foreign exchange reserves in BoP statistics, however, exclude variation in gold and valuation changes in FCA and SDRs. While most of the components such as exports, imports, foreign direct investment, portfolio investment, external assistance, external commercial borrowings, etc. are self-explanatory, a few other items, i.e., investment income, banking capital and 'other capital' needs further elaboration. Banking capital comprises assets and liabilities of authorized dealers, NRI deposits and movement in balance of foreign central banks and international institutions like, World Bank, IDA, ADB, IFC, etc. maintained with RBI. 'Other Capital' is a residual item and broadly includes delayed exports receipts, funds raised and held abroad by Indian corporates, India's subscriptions to international institutions, quota payments to IMF. Delayed export receipts essentially arises

from the leads and lags between the physical shipment of goods recorded by the customs and receipt of funds through banking channel.

The analysis of major sources of accretion to reserves is set out Table 1.

Table 1: Estimates of Sources of Accretion to Foreign Exchange Reserves during April-November 2002

(US$ billion)

Items			April-November 2002	April-November 2001
I.	1.	Export	34.0	29.0
	2.	Import	41.5	38.3
	3.	Invisibles (net)	10.0	8.0
	4.	***Current Account Balance (1-2+3)***	***2.5***	**-1.3**
II.		**Capital Account (net)**	**8.0**	**6.2**
	5.	Foreign Investment	1.9	2.7
	6.	**Banking Capital, of which:**	**4.0**	**3.6**
		(a) NRI Deposits	**2.1**	**2.2**
	7.	External Commercial Borrowings	-1.8	-0.9
	8.	External Assistance	-0.4	0.1
	9.	Short term credit	0.5	-0.5
	10.	Other capital	3.8	1.2
		of which: (i) Leads and lags in export receipts	2.8	0.5
III.		Overall Balance	10.5	4.9
IV.		Accretion to Foreign Exchange Reserves (excluding valuation change)	10.5	4.9
V.		Valuation change (appreciation'+'/ depreciation '-')	+2.1	-0.4
VI.		**Accretion to Foreign Exchange Reserves (including valuation change (IV + V))**	**12.6**	**4.5**

During April-November 2002, the accretion to reserves indicated that the increase has been of the order of US$ 12.6 billion as compared with US$ 4.5 billion during the corresponding period of the previous year. The analysis shows that the current account balance which turned around from a deficit of US$ 1.3 billion to a surplus of US$ 2.5 billion has contributed about 20 per cent. This was on account of higher earnings from merchandise exports, software exports and strong private remittances. Under the capital account the major contribution stemmed from leads and lags in export receipt (US$ 2.8 billion) accounting for 22.2 per cent. Foreign investment at US$ 1.9 billion (15.1 per cent), NRI deposits at US$ 2.1 billion (16.7 per cent) and banking capital, excluding NRI deposits at US$ 1.9 billion accounted for 15.1 per cent . In view of the appreciation of rupee since June 2002, there is a possibility of exports proceeds which were held abroad were brought in during July-November 2002, resulting in higher delayed export receipts. Apart from this, valuation changes reflecting appreciation of Euro, GBP and Yen against the US dollar (since foreign exchange reserves are accounted for in terms of the US dollar) contributed to the extent of 16.6 per cent during April-November 2002, as against a depreciation of 8.9 per cent.

From the foregoing, it may be noted that a substantial part of the inflows, unlike in the previous year, have emanated from current account transactions, viz., merchandise and software exports, and private remittances which are not only non-reversible but also non-debt in character. The delayed export receipts, a resultant of leads and lags in realization of export proceeds, could be attributed to the appreciation of Rupee vis-à-vis US dollar in recent period. Furthermore, there have been normal inflows in most of the major capital account items. This development demonstrates the confidence in the strength and resilience of Indian economy. Nevertheless, on account of the widespread debate on the arbitrage opportunity, there is a need to examine the possibility of arbitrage opportunity inducing various capital flows in general and in NRI deposits in particular. While there is no scope of arbitrage in other capital inflows, the impact of arbitrage on NRI deposits' inflows has been explored in the following paragraph.

3. Arbitrage Opportunities

It is reported that there is a possibility of arbitrage opportunity arising from interest rate differential between Indian and international markets and thereby attracting higher NRI deposits. The data collected from major banks on interest rates in respect of domestic deposit and NRE deposits are set out in Table 2.

Table 2 :Interest Rates on Domestic and NRE Deposits of Scheduled Commercial Banks according to ranges

	Interest Rates on Domestic deposits		*Interest Rates on NRE deposits*	
	10-Jan-03	March-02	10-Jan-03	March-02
Public Sector Banks				
Up to 1 year	4.00-6.25	4.25-7.50	4.50-6.00	6.50-7.50
> 1year-3 years	5.50-7.00	7.25-8.50	5.00-6.50	7.50-9.50
> 3 years	5.50-7.25	8.00-8.75	5.50-7.00	8.00-9.50
Foreign Banks				
Up to 1 year	3.25-7.75	4.25-9.75	4.20-8.50	6.00-10.50
> 1year-3 years	4.25-8.00	6.25-10.00	4.20-9.00	6.75-11.00
> 3 years	4.75-8.50	6.25-10.00	4.75-9.00	7.00-11.50
Private Sector Banks				
Up to 1 year	3.50-8.00	5.00-9.00	6.00-8.00	7.00-11.50
> 1year-3 years	6.25-8.25	8.00-9.50	6.25-8.25	8.00-11.50
> 3 years	6.50-8.50	8.25-10.00	6.25-8.25	8.25-11.50

The interest rates offered on NRI rupee deposits which are convertible (NRE deposits) for a period of 6 months to one year ranged from a maximum of 6 per cent to a minimum of 4.5 per cent. For longer tenures (1- 3 years), the interest rate varied from 5.0 per cent to 6.5 per cent for public sector banks. Some foreign and private sector banks, however, offered higher rates. In the USA, on the other hand, the average bank interest rate is reported at 1 – 1.25 per cent approximately.

The relevant data on various NRI deposit schemes with the outstanding and inflow/outflow position are presented in Table 3.

Table 3 : Outstandings/Inflows/Outflows under various Non-Resident Indian Deposit Schemes

(US$ million)

	FCNR (B)		NR(E)RA		NR(NR)RD		Total	
Year	**Outstanding**	**Inflow(+)/ Outflow (-)**	**Outstanding**	**Inflow(+)/ Outflow (-)**	**Outstanding**	**Inflow(+)/ Outflow (-)**	**Outstanding**	**Inflow(+)/ Outflow (-)**
1996-97	7,496	1,773	4,983	1,244	5,604	2,246	18,083	5,263
1997-98	8,467	971	5,637	1,197	6,262	1,256	20,366	3,424
1998-99	7,835	-632	6,045	799	6,618	793	20,498	960
1999-2000	8,172	337	6,758	885	6,754	318	21,684	1,540
2000-01	9,076	904	7,147	860	6,849	553	23,072	2,317
2001-02	9,673	594	8,449	1,626	7,052	508	25,174	2,728
2002-03 (April-Nov.02)	10,213 (9,604)	540 (528)	12,696 (8,140)	4,128 (1,202)	4,496 (7,100)	-2607 (444)	27,405 (24,844)	2,061 (2,174)

Notes : (i) *Figures in parenthesis present the data for the corresponding period in previous year.*

(ii) NR(NR)RD has been discontinued effective April 1, 2002 with a provision that the existing deposits would be allowed till maturity.

(iii) Inflows/outflows have been calculated by taking the monthly variations in rupee-denominated deposits and converting those by monthly average exchange rates.

As it may be seen from Table 3, there were higher inflows in NRI deposits during the earlier periods. For example during 1996-97 inflows in NRI deposits were of the order of US$ 5.3 billion reflecting higher interest rates offered on NRI deposits resulting in arbitrage. Thereafter, there has been a deceleration in the inflows to more than US$ 3.0 billion during 1997-98 and less than one billion during 1998-99. The inflows have been hovering in the range of US$ 1.5 – 2.7 billion since 1999-2000. During April-November 2002, net accretion to NRI deposits was lower at US$ 2.1 billion than that of US$ 2.2 billion in April-November 2001. These figures do not indicate any rise above the usual trend when NRI deposit figures over a longer period are taken for comparison.

The NR(NR)R deposit and the NRSR deposit were discontinued effective April 1, 2002 with a view to providing full convertibility of deposit schemes for non-resident Indians and rationalizing the existing non-resident deposit schemes,. The existing accounts of NR(NR)RD were permitted to continue up to the date of maturity. The maturity proceeds of the NR(NR)R deposits could be credited to the account holder's NR(E)R account. Reflecting this policy decision, there was a draw-down to the extent of US$ 2.6 billion in NR(NR)RD during April –November 2002 in contrast with an inflow of US$ 0.4 billion in April – November 2001. Correspondingly, NRE deposits recorded large inflows of US$ 4.1 billion during April-November 2002 as compared with that of US$ 1.2 billion in April – November 2001. This order of increase in NRE deposits may be partly attributed to drawdown of NR(NR)R deposits on maturity and credited to NR(E)R deposits.

Since the interest rate offered at present on FCNR (B) deposit is 25 basis points lower than the LIBOR, there is hardly any scope for arbitrage. The interest rates offered on NRE

deposits are broadly similar to the rates offered to domestic deposits by residents of similar maturity. Given the lower interest rate abroad, the interest rate differential between NRE deposits and similar deposits abroad could be in the range of 3 to 4 per cent. This coupled with the rupee appreciation benefited NRE depositor considerably thus making it advantageous to shift to NRE deposits. The current inflows in NRE deposits net of the recycle of matured NRE deposits to the extent of US$ 2.6 billion recorded during April-November 2001 worked out to US$ 1.5 billion as against US$ 1.2 billion during the corresponding period of the previous year and around US$ 900 million during full fiscal of 1999-2000 and 2000-01. Hence, there is not much evidence of arbitrage.

4. Costs of Reserves

There has been an animated debate on the issues relating to cost of reserves. Conceptually, the cost of reserves may be analysed from the angle of accretion cost of reserves and maintenance cost. An analysis of the sources of reserves as explained above indicates that substantial portion of reserves generated from current account surplus (20 per cent), non-debt creating capital flows (40 per cent), debt creating capital flows, NRI deposits banking capital and loans (23 per cent) and currency valuation changes (17 per cent). In view of lower proportion of debt creating flows, it may be concluded that the cost of accretion to reserves is not very significant. As noted in the credit policy for the year 2002-03, it is important to note that in India, in the last few years, almost the whole addition to reserves has been made without increasing the overall level of external debt. The increase in reserves largely reflects higher remittances, quicker repatriation of export proceeds and non-debt inflows. Even after taking into account foreign currency denominated NRI flows (where interest rates are linked to LIBOR), the financial costs of additional reserve accretion in India in the recent period is quite low, and is likely to be more than offset by the return to additional reserves.

On the maintenance cost of reserves as noted in the Bank's Annual Report 2001-02, during the accounting year ended June 30, 2002 in percentage terms, the net earnings on foreign currency assets and gold declined from 6.0 per cent in 2000-01 to 4.5 per cent in 2001-02 due to lower interest rates prevailing in the international markets. Excluding gains/losses on account of securities transactions and depreciation, the net earnings on foreign currency assets and gold worked out to 4.1 per cent for 2001-02 as against 5.8 per cent for 2000-01.

In this context, it is interesting to note that the mid-term review of the Monetary and Credit Policy for the year 2002-03, indicated that "it is essential to keep in view the objectives of holding reserves, which, *inter alia*, cover (a) maintaining confidence in monetary and exchange rate policies, (b) enhancing the capacity to intervene in forex markets, (c) limiting external vulnerability so as to absorb shocks during times of crisis, (d) providing confidence to the markets that external obligations can always be met and (e) adding to the comfort of the market participants by demonstrating the backing of domestic currency by external assets. Sharp exchange rate movements can be highly disequilibrating and costly for the economy during periods of uncertainty and adverse expectations, whether real or imaginary. These economic costs are likely to be substantially higher than the net financial cost, if any, of holding reserves.

Available sources of information suggests that trends outlined for the period April-November 2002 are likely to continue for the period up to end-January 2003.