

**EXCHANGE RATE REGIME AND CAPITAL FLOWS:
THE INDIAN EXPERIENCE**

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**CHIEF ECONOMISTS' WORKSHOP, APRIL 4-6, 2005
BANK OF ENGLAND**

Introduction

One of the most significant developments in the world economy in the 1990s has been the spectacular surge in international capital flows. These flows emanated from greater financial liberalisation, improvement in information technology, spate of financial innovations and proliferation of institutional investors. In emerging market economies (EMEs), these flows have contributed to a significant extent towards augmenting domestic savings, reducing cost of capital, transferring technology, developing domestic financial sector and fostering human capital formation. However, capital flows, like most things in life, have not been an unmixed blessing, especially with episodes of its sudden reversals abound.

In thin and underdeveloped foreign exchange markets of the EMEs, movement in capital flows have often tended to cause excessive exchange rate pressures. In fact, the magnitude and gyrations of capital flows have become the primary determinant of exchange rate movements on a day-to-day basis for most EMEs rather than trade deficits and economic growth as in the past. Adverse expectations, especially fuelled by the uni-directional movement of currencies have often turned out to be self-fulfilling prophecies because of their adverse effect on "leads and lags" in trade transactions, remittances and inter-bank positions, reinforced by herd behavior. For the majority of emerging economies, such exchange rate movements have had significant impact on both financial and real sector of the economy seriously affecting domestic growth trajectories.

It is in this context that, in recent times, the choice of an appropriate exchange rate regime and the conduct of monetary policy have become more challenging tasks for monetary authorities. While fixed exchange rate is seen to have the advantage of a nominal anchor for "importing" credibility, providing transparency, reducing unpredictable volatility and transactions costs, floating exchange rate has the benefits of monetary independence, insulation from real shocks and a less disruptive adjustment mechanism in the face of nominal rigidities. Accordingly, the choice of exchange regime is not straightforward

and is in fact contingent on a host of factors, such as the size of the economy, degree of openness, product diversification/export structure, divergence of domestic inflation from trading partners, labour mobility, vulnerability to real/nominal shocks, fiscal policy flexibility, capital mobility, credibility of policymakers and degree of economic/financial development. This has been documented by several important studies, some of which are listed in Table 1.

**Table 1: Studies on Determinants of Exchange Rate Regimes
(Likelihood to Float)**

Studies	Sample	Time-frame and Methodology	Explanatory Variables
1	2	3	4
Heller (1978)	86 countries	1976; Discriminant analysis	Openness (-), size of economy (+), inflation differential (+), geographical trade concentration (-), international financial integration (+)
Dreyer (1978)	88 developing countries	1976; Probit	Openness (-), size of economy (+), geographical trade concentration (-), product differentiation (-)
Holden, Holden and Suss (1979)	76 countries	1974-75; OLS on a continuous measure	Openness (-), economic development (+),inflation differential (+), capital mobility (-), geographical trade concentration (-)
Melvin (1985)	64 countries	1976-78; Multinomial Logit	Size of economy (+), inflation differential (+), geographical trade concentration (-), money shocks (-), foreign price shocks (+)
Savvides (1990)	39 developing countries	1976-84; Two-stage Probit	Openness (-), economic development (+), capital mobility (-), geographical trade concentration (+), real exchange rate volatility (+), product differentiation (-)
Cuddington and Otoo (1990,1991)	66 countries	1980, 1983, 1986; Ordered/non-ordered multi/binary logit	Openness (+/-), size of economy (+), inflation differential (+),money shocks (-), foreign price shocks (+)
Honkapohja & Pikkarainen (1994)	125 countries	1991; Logit and Probit	Openness (-), economic development (-),size of economy (+),international financial integration (+/-), terms of trade volatility (+)
Collins (1996)	24 Latin American and Caribbean countries	1978-92; Probit (Panel)	Openness (+), size of economy (+),negative growth (-), moderate to high inflation (+), current account (-)
Edwards (1996)	63 countries	1980-92; Probit (Panel)	economic development (+), growth(+), inflation(+), reserves(-), capital control(+/-), variability in export growth(+), external variability*openness(-), real exchange rate volatility (+), growth of domestic credit(+), political/historical factors
Edwards (1999)	49 developing and middle-income countries	1980-92; Probit (Panel)	Economic development (-), growth(+), inflation(+), reserves(-), variability in export growth(+), external variability*openness(-), real exchange rate volatility (+), growth of domestic credit(+), political/historical factors
Rizzo (1998)	123 countries	1977-95; Probit	Openness (+), economic development (+/-),size of economy (+), geographical trade concentration (-) inflation(+), reserves(+/-),terms of trade volatility (+),current account (+/-), external debt (+)
Frieden, Ghezzi & Stein (2000)	26 Latin American countries	1960-94; Ordered Logit (Panel)	Openness (-), moderate to high inflation (-), reserves(+), capital control(+),terms of trade volatility (-), political instability (-), central bank independence (+)
Berger, Sturm & De Haan (2000)	65 developing countries	1980-94; Probit (Panel)	Openness (+),growth(+),reserves(+),external debt (+),political instability (+), central bank independence (+)
Poirson (2001)	93 countries	1990-98; Ordered Probit	Openness (-), economic development (+/-),size of economy (+), geographical trade concentration (+),negative growth (-), inflation(+), reserves(-), capital control(-),terms of trade volatility (+),product differentiation (+), political instability (+)
Levy-Yeyati and Sturzenegger (2003)	156	1974-2000; Panel data	Optimal currency area type variable (for industrial countries); balance sheet effect, capital account (for emerging countries)

+ indicates that the co-efficient of explanatory variable is positive and – that is negative; +/- indicates the coefficient to be either positive or negative depending on the specification or method used.

Source: Rogoff Kenneth S., Aasim M. Husain, Ashoka Mody, Robin Brooks, and Nienke Oomes (2003).

For the EMEs, the choice of exchange regime becomes even more critical because of a few additional constraints faced by them. First, in the case of hard pegs, currency crises may be ruled out but banking crises could still be possible and in the absence of monetary discretion, it cannot be automatically contained (Chang and Velasco, 2001). Second, is the so-called problem of ‘original sin’ (Eichengreen and Hausmann, 1999) which states that because many emerging countries are financially under-developed and have a history of high inflation and fiscal laxity, they are not able to borrow in terms of their own currencies long-term or to borrow externally except in terms of foreign currencies, thereby exposing them to the problems of currency and maturity mismatches. In the face of a currency crisis, a devaluation can, therefore, lead to serious balance sheet problems, widespread bankruptcies and debt default. Third, for emerging economies that float, devaluations may have no effect on the real economy in the face of widespread indexation or a history of high inflation. There may be very high pass-through from the exchange rate to the price level or in the case of “original sin”, devaluing may actually be contractionary.

Against this backdrop, this paper endeavors to narrate the experience of India with respect to the management of exchange regime and capital flows and draw key lessons (Section II). I would, however, start with a brief discourse on the theoretical and empirical findings in this regard so as to put my observations in proper perspective (Section I). The paper would conclude by flagging some of the challenges that lie ahead in the conduct of exchange rate policies for the EMEs (Section III).

I. THEORETICAL DEVELOPMENTS AND EMPIRICAL RESULTS

Extensive work has been done in the area of exchange rate regime- both at the theoretical and empirical level- and it still continues to attract a fair share of attention. Nevertheless, most of the issues confronting the practitioners are far from settled. It would be useful here to delve upon some of the key issues in exchange regime-capital flows dynamics that have a direct bearing on possible policy prescriptions. The questions that I intend to touch upon are:

- Is there any uniformity in exchange rate classification? How does our perception of exchange rate regimes change with use of different classification types?
- How has exchange rate regime evolved over the years? What has been the broad observation in the direction of exchange regime movement? How durable have been these regimes? What has been the main reasons for change in exchange regimes? What is the effect of different exchange regimes on economic performance?
- How far is the two-cornered solution of exchange regimes, as propounded in the aftermath of the Asian crisis, feasible for implementation in the EMEs?
- How is the exchange regime orchestrated with other related measures to counter the perils of capital reversals/surges?

A. Taxonomy of Exchange Rate Regimes

Until the late 1990s, the only comprehensive classification available was the one produced annually by the IMF, on the basis of countries' announced (or *de jure*) regimes in their "Annual Report on Exchange Rate Arrangements and Exchange Restrictions". The *de jure* exchange rate regime classification by the IMF, as on end-December 2003, is as follows: (i) exchange arrangement with no legal tender (41 countries) of which exchange rate anchored to another currency as legal tender – 9, Eastern Caribbean Currency Union (ECCU)- 6, CFA Franc zone- 14, Euro area- 12 , (ii) currency board arrangement (7 countries), (iii) conventional pegged arrangement (41 countries), (iv) pegged

exchange rate with horizontal bands (4 countries), (v) crawling peg (5 countries), (vi) crawling band (5 countries), (vii) managed float with no pre-announced path for the exchange rate (50 countries), and (viii) independently floating (34 countries).

In practice, however, exchange rate regimes often differed from those that had been declared. The IMF came out with a new *de facto* classification from 1999 (“Exchange Arrangements and Currency Convertibility: Developments and Issues”) that combined information on the exchange rate and monetary policy framework and policy intentions with data on actual exchange rate and reserves movements. Other *de facto* regime classification systems have also been proposed, including those by Ghosh, Gulde, and Wolf (2003), Levy-Yeyati and Sturzenegger (2003), and most recently the “Natural” classification scheme by Reinhart and Rogoff (2004) (Table 2).

Table 2: Main Features of Various Classifications

Studies	Annual Report on Exchange Arrangements and Exchange Restrictions, IMF	Ghosh, Gulde and Wolf (2003)	IMF (1999, 2003); Bubula and Otker-Robe (2002)	Levy-Yeyati and Sturzenegger (2003)	Reinhart and Rogoff (Natural Classification)
1	2	3	4	5	6
Type	De Jure	De Facto	De Facto	De Facto	De Facto
Period	1950 Present	1973-99	1990 Present	1974-2000	1940-2001
Frequency	Annual	Annual	Annual and monthly	Annual	Annual and monthly
Number of Countries	187	165	190	156	153
Number of Regime Types	8	25 fine, 9 course	15 fine, 8 course	4	14 fine, 5 course
Advantages	Official classification of member countries	Uses quantitative and qualitative information.	Uses quantitative and qualitative information.	Uses information on volatility of foreign exchange reserves. Systematic approach; no judgment needed.	Uses dual/parallel exchange rate information. Separates “freely falling” episodes. Systematic approach; no judgment needed.
Disadvantages	Relies on what countries say which may not necessarily be what they do. Dual. Parallel markets were ignored	Relies to large extent on stated policy intentions, which may deviate substantially from actual practice. Requires subjective judgment, which may differ across countries and over time. Not all countries are classified for all time period	Requires subjective judgment, which may differ across countries and over time.	Exchange rate stability or reserve changes may occur for reasons other than policy intervention. Reserves data may not cover derivatives. Many observations not classified.	Exchange rate stability may occur for reasons other than policy intervention. A few countries are not classified for all years.

Comparison of regime classifications across the *de jure* and Natural classifications reveals that only about one half of the observations- where each

observation corresponds to a given country's regime in a particular year—were classified the same way by both the IMF's *de jure* and the Natural classifications. Among “free floats” (as per the IMF *de jure*) only 20 per cent operated as true floats, while 60 per cent were either intermediate or pegged regimes and another 20 per cent had freely falling currencies (as per Natural classifications). It is found that for about 45 per cent of the time official pegs were better characterised as managed or freely floating arrangements, or limited flexibility. Of countries that were listed in the standard classification as managed floating, 53 per cent turned out to have *de facto* pegs, crawls or narrow bands to some anchor currency (Table 3).

Table 3: Floating Pegs and Pegged Floats: Revisiting the Past, 1970-2001

Conditional Probability	(per cent)
1	
Probability that the regime is dual, managed or independently floating according to natural classification conditional on being classified as a peg in the official standard classification	40.2
Probability that the regime is limited flexibility, managed or independently floating or freely falling according to natural classification conditional on being classified as a peg in the official standard classification	44.5
Probability that the regime is peg or limited flexibility according to natural classification conditional on being classified as managed floating by the official standard classification	53.2
Probability that the regime is peg or limited flexibility according to natural classification conditional on being classified as independently floating by the official standard classification	31.5
Pairwise correlation between the Standard and Natural classification	42.0

Source: Reinhart Carmen M. and Kenneth S Rogoff (2002)

B. Evolution and Shifts in Exchange Regimes

The “core” countries¹ of the pre-1914 era largely adhered to the classical gold standard that by 1880 had evolved from the historic specie regime based on bimetallism. The essence of the classical gold standard for the core countries was a credible commitment to maintain gold convertibility and this was embedded in their long history of financial development.² The prevalent view was that adopting a specie standard meant adherence to sound money with stable prices. Floating regime was considered to be a radical departure from monetary and fiscal probity to be tolerated only in the event of temporary emergencies such as wars or financial crises. The gold standard with free capital mobility, however, had to be jettisoned during the inter-war years, except for a brief period of gold exchange standard, because of the compelling need of the monetary authorities to pursue their domestic goals. The prevalence of capital controls during the World War II phase, set the foundation of the

¹ The core pre-1914 meant Western Europe and after 1900 the US, while the periphery was everyone else.

² An analysis of this evolution suggests the main factors to be (a) accidents in history (the Franco-Prussian War, massive silver discoveries in the USA), (b) attempt to follow the example of leading commercial nation, Great Britain (which had been in a *de facto* gold standard since 1717), (c) network externalities, and (d) the technology of coinage.

Bretton Woods system which combined pegged exchange rates with parities fixed in terms of dollars, the dollar pegged to gold, narrow bands of two-and-a-half per cent around parity and the right to change parity in the event of a fundamental misalignment. The demise of the Bretton Woods system in the early 1970s was largely precipitated by the pursuit of financial policies inconsistent with maintaining the pegged rate system by some of the key countries, and this has been followed by an era of a more flexible regime. In fact, the history of exchange regime suggests that there has been remarkable durability outside emerging market countries, with only 7 per cent of all countries changing regimes in an average year over the 1940 to 2001 period (Rogoff Kenneth *et al*, 2003).

In contrast to the "core" countries, in the pre-World War I era, fiscal and monetary institutions for the "peripheral countries" were not enough developed to allow them to follow the gold standard rule in a credible manner. Moreover, for these countries, a shock leading to an exchange rate depreciation could not be temporarily offset by lowering interest rate as this could trigger capital flight and financial distress. As a result, floating did not create much of a room for these countries to conduct active monetary policies. But going onto gold did not buy immediate credibility for them either as evidenced by the levels of their short term interest rates even when on gold regime. Similarly, the Bretton Woods collapse was much less of a watershed event for emerging markets and developing countries, at least as far as their exchange rate regimes were concerned.³

The EMEs saw a gradual decline in the share of pegs in all regimes during the 1970s and 1980s, but not an abrupt shift⁴ (Hussain, Mody and Rogoff, 2004). The uncertainties associated with fluctuations in the exchange

³ Dual or multiple rates, and/or parallel were far more commonplace than is commonly thought. Among the industrialized economies, dual or multiple rates were the norm in the 1940s and the 1950s and, in some cases, lasted until much later. Among developing countries such practices remained relatively commonplace through the 1980s. In the 1990s, the number still stood at approximately 20 per cent, including some of the largest emerging markets.

⁴ Next to pegs the most popular exchange rate regime over modern history has been the crawling peg or narrow crawling band. During 1990 to 2001, this is the most common type of arrangement in emerging Asia and Western Hemisphere (excluding Canada and the United States).

rates of the major currencies induced a number of EMEs to shift from single-currency to basket pegs. Another development that influenced the choice of regime was the rapid acceleration of inflation in many developing countries during the 1980s⁵. Yet another factor that induced shifts out of pegged exchange rate regimes in the 1980s was a series of external shocks—including the steep rise in international interest rates, slowdown of growth in the industrial countries in the early part of 1980s, adverse terms of trade movements, and the debt crisis—which warranted real exchange rate depreciations in a number of developing countries and, hence, greater flexibility in exchange rate policy. In recent years, increased capital mobility, which has enhanced the risks of the emergence of external and domestic imbalances, have played the most prominent role in determining the exchange regime and its durability in the EMEs (Table 4).

Table 4: Regime Durability (Average duration of Regime, in years)

	All Regimes	Pegs	Intermediate	Floats
1	2	3	4	5
1940-2001				
All countries	14.3	28.3	16.1	14.4
Advanced economies	14.3	19.5	18.4	89.0
Emerging markets	10.3	15.0	15.0	11.0
Developing countries	16.3	40.9	15.5	5.5
1975-2001				
All countries	11.4	23.2	18.4	14.3
Advanced economies	19.4	46.0	26.8	88.0
Emerging markets	8.6	8.4	16.5	11.0
Developing countries	10.7	27.3	16.2	5.5

Note: Regime durability is measured as the average number of years until a regime transition occurs, based on Natural Classification data. Pegs include both “soft” and “hard” pegs and transitions from one type to another are not considered regime changes for these calculations. Similarly transitions between different types of intermediate regimes (limited flexibility and managed floats) are not counted as regime changes. Estimated duration of all regimes includes duration of freely falling episodes.

Source: Husain, Mody and Rogoff (2004).

⁵ In the 1990s, freely falling accounted for 41 per cent of the observations for the transition economies. Given the distortions introduced when inflation rises to 40 per cent and beyond, any fixed versus flexible exchange rate regime comparisons that do not break out the freely falling episodes are meaningless (Rogoff and Reinhart, 2002).

The regime shift has, however, been more in the direction of intermediate regime of flexibility rather than a pure free float⁶. Similarly, there has been a marked divergence in the initial set of conditions as also the economic fallout of this transition for voluntary and crisis-driven shifts in exchange regime (Box 1). Voluntary transitions were generally associated with lower vulnerabilities and far less macroeconomic disruption than crisis-driven transitions. In addition, compared with crisis-driven transitions, voluntary shifts have been associated with higher growth, lower inflation and exchange rate volatility in the years immediately after the transition. Moreover, transitions to greater exchange rate flexibility over the past ten years have been more associated with increased central bank independence, the adoption of inflation targeting, and—for crisis-driven transitions—improved bank supervision and further securities markets development.

Box 1		
Exchange Regime Transitions of Select EMEs since the 1990s		
Transition Type	Voluntary	Crisis-Driven
1	2	3
Peg to intermediate	Czech Republic, 1996 Egypt, 1999 Hungary, 1994 India, 1995 Pakistan, 2000	Argentina, 2001 Philippines, 1997 Thailand, 1997 Venezuela, 1996
Intermediate to free float	Chile, 1999 Peru, 1999 Philippines, 2000 Poland, 2000 South Africa, 1997 Turkey, 2001	Brazil, 1999 Colombia, 1999 Indonesia, 1997 Korea, 1997 Mexico, 1994
Source: WEO, September 2004, IMF.		

Although results of empirical studies on the experiences of different exchange regimes differ, by and large, a majority of the studies infer that for relatively poor countries with little access to international capital markets, pegged exchange rate regimes had worked well, delivering both relatively low inflation and relatively high exchange rate regime durability. For emerging

⁶ The prediction of the bipolar hypothesis—that intermediate regimes would tend to give way to regimes at either polar end of flexibility—is not evident in the data, especially among the emerging markets group, where bipolar proponents had considered the hypothesis most applicable.

markets, the exchange regime did not appear to have a systematic effect on inflation or growth (Table 5), although— in line with conventional wisdom— pegs were distinctly more vulnerable to banking and exchange rate crises (Hussain, Mody and Rogoff, 2004) (Table 6). As countries developed economically and institutionally, some of them seem to have found considerable benefits in adopting a more flexible exchange rate system. In fact, the key distinction for exchange rate regime choice between core and periphery of yesteryears and advanced and emerging economies now is found to be the degree of financial maturity (Table 7).

Table 5 : Economic Performances Across Exchange Rate Regimes, 1970-99

		Natural Classification						Total
		Peg	Limited Flexibility	Managed Floating	Freely Floating	Freely Falling	Unknown	
1	2	3	4	5	6	7	8	9
1. Average Annual Inflation Rates								
IMF De Jure Classification	Pegged	17.9 (6.8)	9.6 (7.9)	14.2 (10.4)	24.5 (23.2)	391.7 (39.9)	12.4 (6.5)	33.9 (7.9)
	Intermediate	11.2 (3.5)	13.0 (9.1)	16.7 (15.1)	9.2 (3.8)	147.6 (66.1)	25.7 (15.9)	36.0 (10.8)
	Floating	20.3 (11.5)	10.1 (7.5)	11.3 (8.4)	8.1 (4.5)	408.9 (68.6)	445.6 (22.2)	138.5 (10.8)
	Total	17.1 (6.5)	11.1 (8.3)	14.2 (10.8)	9.9 (4.8)	305.3 (57.0)	55.5 (7.6)	49.7 (8.7)
2. Average Annual Per Capita GDP Growth								
IMF De Jure Classification	Pegged	2.0 (2.0)	2.6 (2.6)	1.6 (1.6)	-3.2 (0.5)	-1.1 (-0.7)	1.0 (0.6)	1.6 (1.6)
	Intermediate	2.8 (2.4)	2.6 (2.9)	1.9 (2.1)	2.7 (2.2)	0.0 (0.4)	2.7 (2.7)	2.1 (2.3)
	Floating	3.6 (2.9)	1.7 (1.8)	1.6 (2.2)	2.2 (2.3)	-3.1 (-1.2)	-1.6 (-0.3)	0.6 (1.7)
	Total	2.1 (2.2)	2.4 (2.6)	1.7 (2.0)	1.8 (2.0)	-1.3 (-0.6)	0.8 (0.6)	1.5 (1.8)
3. Average Annual Growth Volatility								
IMF De Jure Classification	Pegged	4.0 (2.7)	3.8 (2.3)	3.6 (2.6)	5.7 (3.3)	4.3 (3.4)	4.3 (2.9)	4.0 (2.7)
	Intermediate	1.6 (1.2)	2.0 (1.6)	2.6 (1.8)	3.3 (1.7)	3.8 (3.4)	6.1 (2.5)	2.6 (1.8)
	Floating	3.1 (1.8)	2.4 (1.5)	4.1 (1.9)	1.9 (1.1)	6.4 (4.6)	4.9 (2.9)	3.8 (1.9)
	Total	3.7 (2.4)	2.8 (1.8)	3.5 (2.3)	3.7 (1.3)	4.7 (2.9)	4.5 (2.9)	3.7 (2.4)
4. Real Exchange Rate Volatility								
IMF De Jure Classification	Pegged	6.3	8.9	25.1	7.0	53.6	6.6	12.7
	Intermediate	3.2	4.8	10.5	30.6	42.3	28.4	12.1
	Floating	10.5	5.2	11.6	8.4	17.3	14.8	10.4
	Total	5.3	6.1	17.9	13.7	37.0	9.2	12.0

Note: 1. Figures in parentheses are medians.

2. Real exchange rate volatility is measured as the three-year centered standard deviation of the annual real effective exchange rate.

Source: Husain, Mody and Rogoff (2004).

**Table 6: Probability of Crises during Specific Regimes
(Using Natural Classification)**

(in per cent)

	Peg	Limited Flexibility	Managed Floating	Freely Floating	Peg	Limited Flexibility	Managed Floating	Freely Floating
1	2	3	4	5	6	7	8	9
	Bank Crisis (1980-97)				Bank Crisis (1990-97)			
All	3.4	4.7	4.5	3.9	3.1	7.1	3.0	3.8
Advanced	0.0	2.7	2.3	4.1	0.0	6.5	0.0	4.2
Emerging	11.4	7.5	7.0	0.0	15.4	8.0	3.8	0.0
Developing	2.8	7.0	3.6	-	2.6	7.1	4.5	-
	Balance of Payments Crisis (1970-2000)				Balance of Payments Crisis (1990-2000)			
All	4.1	4.1	9.2	4.6	4.7	5.2	9.2	4.3
Advanced	3.3	3.9	7.1	4.9	3.6	5.8	8.6	4.9
Emerging	4.6	5.6	10.0	0.0	8.8	6.1	6.9	0.0
Developing	5.2	2.0	9.7	-	0.0	2.8	15.4	-
	Twin Crisis (1980-97)				Twin Crisis (1990-97)			
All	1.6	1.4	0.8	0.0	3.2	2.6	0.0	0.0
Advanced	0.0	0.7	0.0	0.0	0.0	2.2	0.0	0.0
Emerging	7.7	3.0	1.8	0.0	15.4	4.0	0.0	0.0
Developing	0.0	0.0	0.0	-	0.0	0.0	0.0	-

Source: Husain, Mody and Rogoff (2004).

Table 7: Results of the Empirical Studies on the effects of Exchange Rate Regimes on Macroeconomic variables

Studies	Methodology	Results
1	2	3
Baxter and Stockman (1989)	Time series behaviour of key economic aggregates during and after the Bretton Woods system using de jure classification	Apart from greater variability of real exchange rates under flexible systems, there has been little difference in the behaviour of key macroeconomic aggregates across different exchange rate arrangement
Mussa (1986)	de jure classification	Little difference in the behaviour of key macroeconomic aggregates across different exchange rate arrangement
Edison and Melvin (1990)	Review of Literature	Empirical effort to contrast economic performance across exchange rate regimes has been rather inconclusive
Ghosh, Gulde, Ostry and Wolf (1997) and Ghosh, Gulde, and Wolf (2003)	Primarily using de jure classification but also distinguishing between regimes announced and practised	Inflation under fixed exchange rate regimes is significantly lower than under intermediate or freely floating arrangements, due to greater confidence in the currency (a credibility effect) and lower money growth (a discipline effect). The benefit of pegged exchange rate regimes in terms of inflation performance is fairly robust to the endogeneity of regime choice. No evidence of a strong link between exchange rate regimes and economic growth, especially after controlling for country-specific effects and possible simultaneity bias. Fixed exchange rate regimes are associated with somewhat higher output volatility.
Levy-Yeyati and Sturzenegger (2003)	De facto regime	Flexible exchange rates are associated with higher growth in developing and emerging economies; no similar association exists among industrial countries. Fixed exchange rate regimes are associated with somewhat higher output volatility.
Reinhart-Rogoff (2004)	De facto regime, 'Natural Classifications'	

C. The Tryst with Corner Solutions

During the first half of the 1990s, a number of emerging economies, including those in Asia, had a regime of soft (and also crawling) pegs. Some of these economies faced speculative pressures from investors skeptical of the regimes' sustainability that subsequently led to financial crisis. The most prominent of such episodes was the Asian crisis of 1997. Given this experience, soon after the Asian crisis, the widely accepted theoretical position

was that a country had the choice of either giving up its monetary independence and setting up a currency board or giving up the stable currency objective and letting the exchange rate float freely so that monetary policy could then be directed to the objectives of inflation control. Only by adopting one of these two “corner” solutions, it was believed, can a country be relatively immune to speculative pressures⁷. An increasing number of developing countries and EMEs, in fact, did subsequently allow for greater exchange rate flexibility.

The regime shift witnessed during the post-Asian crisis, however, hardly transcended to a complete pure float or a super fix solution as propounded in the bi-polar hypothesis due to a number of constraints. First, a practical problem in adopting the “two-corner” solution in emerging markets has been that there have been very few historical experiences with either super-fixity or with pure floating. Among the super-fixers, Argentina, Hong Kong and Estonia have had currency boards and Panama has been dollarised. Among floaters, Mexico is one of the few countries with a somewhat longish experience with a flexible rate (1995 to date). Second, some of the emerging countries still primarily being exporters of commodities and/or light manufactures, a pure floating exchange rate could end up abetting excessive volatility. Third, it is felt that emerging countries generally do not have the institutional requirements for undertaking effective monetary policy under purely floating exchange rates (Summers 2000). More recently, a new objection to floating in emerging markets has been raised by some authors, most notably Calvo (1999) and

⁷ Eichengreen (1994) argued that countries “will be forced to choose between floating exchange rates on the one hand and monetary unification on the other”. Obstfeld and Rogoff (1995: 74) claimed that for countries with an open capital account, “there is little, if any, comfortable middle ground between floating rates and the adoption of a common currency”. More recently, Summers (2000: 8) argued that, for economies with access to international capital markets, “the choice of appropriate exchange rate regime...increasingly means a move away from the middle ground of pegged but adjustable fixed exchange rates towards the two corner regimes.” Calvo (2000) has offered one of the very few theoretical justifications for ruling out middle-of-the road exchange rate regimes. He has argued that in a world with capital mobility and poorly informed market participants, emerging countries are subject to rumors, runs and (unjustified) panics. This is because these uninformed participants may – and usually will – misinterpret events in the global market. This situation may be remedied, or at least minimized, by adopting a very transparent and credible policy stance. Fischer (2001) concluded on the basis of the IMF de facto classification that “In the last decade, there has been a hollowing out of the middle of the distribution of exchange rate regimes in a bipolar direction, with the share of both hard pegs and floating gaining at the expense of soft pegs.”

Reinhart (2000). They have argued that in a world with high capital mobility, incomplete information, fads, rumors and presence of large dollar-denominated liabilities, monetary authorities may be severely affected by a “fear to float.” However, the recent episodes of Brazilian and Argentinian crisis have given rise to an added “dread to peg”. Even strong currency board type arrangements of a fixed peg *vis-a-vis* dollar were found to be unviable. Therefore, as of now, the possibility of having a viable fixed rate mechanism is more or less out of favour of the practitioners and the dominant view, at present, is that, for most countries “constrained” floating or flexible rates may be the only sustainable way of having a less crisis-prone exchange rate regime.

D. Measures to Counter Capital Flow Reversals

In the light of volatility induced by capital flows and the self-fulfilling expectations that this can generate, there is now a growing consensus that emerging market countries should, as a matter of policy, maintain “adequate” reserves to smoothen the impact of capital reversals as also to retain confidence in the system. A corollary to this stance of official intervention and reserve build-up is the concern to keep inflation at check. To avoid such consequences, central banks generally sterilise the reserve inflows through open market operations of domestic securities. It is widely recognised that though sterilisation provides some breathing space to formulate a longer term response, given the relatively small size of the domestic financial market in some of the EMEs, compared with the size of international capital flows, sterilisation efforts tend to become less effective over time. Moreover, as sterilisation prevents domestic interest rates from falling, capital inflows may, in fact, grow if investors’ expectations strengthen as the pressures and intervention persists thereby defeating the very purpose of sterilisation. Also the quasi-fiscal losses of intervention, arising from the differential between the

interest earned on foreign reserves and that paid on debt denominated in domestic currency, are bound to mount with greater sterilisation efforts.⁸

As a result, besides making use of sterilisation, a number of countries also adopted a variety of supplementary market and non-market based measures, including, increase in statutory reserve requirements on domestic/foreign deposits (on remunerated/non-remunerated basis) to absorb liquidity (China and Taiwan), unremunerated reserve requirements (Chile and Colombia), prudential regulations, such as limits on open foreign currency positions, use of forward exchange swaps by the central banks to create an artificial offsetting capital outflow to limit domestic money creation, widening of exchange rate bands (thus allowing some exchange rate appreciation), provision for remunerated/uncollateralised deposit facilities for financial intermediaries with central banks (*viz.*, China, Taiwan and Malaysia), issuance by the central bank of money stabilisation bonds/central bank bills (*viz.*, Korea, China, Malaysia, Indonesia, Thailand, Sri Lanka, Poland and Peru), and government/public sector deposits with the central bank (*viz.*, Indonesia, Malaysia, Singapore, Thailand and Peru), liberalisation of capital outflows (China and Taiwan), variants of “Tobin” taxes on capital inflows (Brazil and Chile) and introduction of selective capital controls on short term capital inflows (Thailand, China, Taiwan and Malaysia).

⁸ As signs of overheating and of the tension between the authorities’ desire, on the one hand, to contain inflation and, on the other, to maintain a stable exchange rate become increasingly apparent, investors are likely to begin to doubt whether the situation is sustainable. A turnaround in market sentiment can then bring about a sudden reversal in capital flows and an external financing crunch that could result in significant losses in international reserves (if the central bank continues to support the nominal rate) or a large adjustment in the exchange rate.

II. THE INDIAN EXPERIENCE

A. Evolution of India's Exchange Rate Regime and Capital Flows

Against this backdrop of international experience, it would be useful to begin the analysis of the Indian experience with a review of the historical developments of its exchange rate regime. Uniform currency was introduced in India in 1835, exactly 100 years before the institution of our central bank *i.e.*, the Reserve Bank of India, wherein the silver rupee of 180 grains troy, 11/12ths fine was instituted as the sole legal tender throughout British India. The country remained on a silver standard for a period of almost sixty years until the closure of Indian mints to the free coinage of silver in 1893. During this interregnum, there was also the introduction of paper currency in 1862. From 1893 onwards, although efforts were made towards the establishment of a gold standard, none of the systems that were adopted in practice fulfilled the essential requirement of a gold standard. In 1893, the Government notified that Indian mints would be accepting gold in exchange for rupees at the rate of 7.53344 grains of fine gold, corresponding to an exchange rate of 1s 4d per rupee; but even though it was binding on the Government to accept gold and give rupee/notes in exchange, there was no obligation on them to provide gold against rupee notes. With sterling on a gold basis and maintenance of the rupee at 1s 4d for a fairly long period, the system, which emerged in due course, operated as a gold exchange standard until September 1931. However, the price of silver continued to be the dominant factor in determining the external value of the rupee even during the early part of the last century. With the departure of sterling from gold in 1931, only the link with sterling remained and the currency system came to be on a sterling exchange standard.

India's exchange rate regime since 1931 has evolved broadly in tandem with international and domestic developments (Table 8). The period after Independence in 1947 was followed by a fixed exchange rate regime where the Indian rupee was pegged to the pound sterling on account of her historic links with Britain and this was in line with the Bretton Woods System prevailing at

that time. A major event was the devaluation of the Indian rupee by 36.5 per cent on June 6, 1966. With the breakdown of Bretton Woods system in the early 1970s and the consequent switch towards a system of managed exchange rates, and with the declining share of the UK in India's trade, the Indian rupee, effective September 1975, was delinked from the pound sterling in order to overcome the weaknesses of pegging to a single currency. Even after the rupee was delinked from the pound sterling, the role of the exchange rate remained muted for quite sometime given the widespread rationing of foreign exchange through an elaborate system of licensing, other quantitative restrictions and exchange control. During the period of 1975 to 1992, the exchange rate of rupee was officially determined by the Reserve Bank within a nominal band of +/- 5 per cent of the weighted basket of currencies of India's major trading partners. The Reserve Bank performed a market-clearing role on a day-to-day basis which introduced high variability in the size of reserves. The periodic adjustments in the exchange rate were, however, not enough to maintain external competitiveness as competitor countries had undertaken significant adjustments in their exchange rates despite their lower inflation than in India. As Rangarajan has noted,

“The exchange rate regime of this period can be best characterised as an adjustable nominal peg with a band, with the nominal exchange rate being the operating variable to achieve the intermediate target of a medium-term equilibrium path of the real effective exchange rate (REER)” (Rangarajan, 1993).

Table 8: Historical Perspective of India's Exchange Rate Regime

Year	Type of change
1	2
1931	The Indian Rupee was formally pegged to the Pound Sterling at the prevailing rate of Re. 1= 1sh 6d (or £ 1 = Rs. 13.33). A de facto sterling standard for the rupee was established.
1946	India intimated the International Monetary Fund the par value of the rupee at Re. 1= 0.0086357 ounce of fine gold, retaining the rupee sterling peg at Re. 1= 1sh 6d.
1949	Following Sterling devalued from \$ 4.03 to \$ 2.80 (30.5 per cent) in September, rupee was devalued to the same extent as Sterling thereby retaining the rupee-sterling rate at Re. 1= 1sh 6d, but the gold value of the rupee was reduced to Re. 1 = 0.186621 gm and the rupee-dollar rate devalued to \$ 1= Rs. 4.7619.
1961	Full current account convertibility was restored to sterling in February. The dollar pool arrangement within the sterling area began and this weakened the sterling area link.
1966	The rupee was devalued by 36.5 per cent on June 6 against the sterling <i>i.e.</i> £ 1 = Rs. 13.33 to Rs. 21.00. The corresponding devaluation with respect to the US dollar was from \$ 1= Rs. 4.7619 to Rs. 7.50 and the gold parity from Re. 1= 0.186621 gm to 0.118489 gm.
1967	Sterling was devalued in November from \$ 2.80 to \$ 2.40 (14.3 per cent) and consequently the rupee-sterling parity changed to £ 1 = Rs. 18.00, with the US dollar and gold parity remaining unchanged since 1966.
1971	The Bretton Woods system broke down in August. The rupee was pegged to the US dollar at \$ 1= Rs. 7.50 but re-pegged to the pound sterling at £ 1 = Rs. 18.9677 in December, with a margin of 2.25 per cent on either side.
1972	The pound sterling was floated on June 23. India's pound-rupee parity was revalued on June 26 to £ 1 = Rs. 18.95. The Reserve Bank temporarily suspended the purchase of US dollars between June 24 and October 9. Rupee was revalued to £ 1 = Rs. 18.80 on July 4 due to the depreciation of the pound against US dollar.
1975	The rupee was pegged to an undisclosed currency basket on September 25 with the prevailing margin of 2.25 per cent on either side. The rupee sterling rate served as the intervention fixed at the time at £ 1 = Rs. 18.3084.
1979	The margin around the basket related parity was broadened to 5 per cent on January 30, thus giving a 10 per cent band.
1991	The rupee was devalued by 17-18 per cent through rupee-sterling rate, from £ 1 = Rs 34.36 to Rs. 37.19 on July 1 and further to Rs. 41.56 on July 3. The rupee depreciated against the US dollar from \$ 1= Rs. 21.2 to Rs. 25.8.
1992	The Liberalised Exchange Rate Management System (LERMS) was introduced under which 40 per cent of the proceeds under exports and inward remittances are purchased at the official rate of exchange by the Reserve Bank for official use. The remainder of the receipts and other payments are converted at the market rate of exchange. Permissible receipts and payments on capital account are transacted at market rates (except in the case of official transactions like the IMF). The US dollar became the intervention currency with effect from March 4.
1993	Market related exchange rate introduced from March 1.

Source: RBI Annual Reports, EXIM Bank, 1993.

India's approach towards external capital flows up to the 1990s can be divided into two distinct phases. In the first-phase, starting at the time of Independence and spanning up to the early 1980s, India's reliance on external flows was mainly restricted to multilateral and bilateral concessional finance. Until the 1980s, India's development strategy was focused on self-reliance and import-substitution with general reluctance to allow foreign investment and other private commercial flows. Financing of investments was undertaken almost wholly through domestic savings supplemented by foreign flows only at the margin.

In the 1980s, India embarked on a path of high growth. There was a pick-up in India's growth rate from around 3 per cent per annum during 1950-80 to more than 5 per cent per annum. However, with domestic savings not rising proportionately and productivity remaining more or less stagnant, this off-take to higher growth meant accentuated pressure on the fiscal account which had its mirror image on the current account. During this period, international developments in cross-border flows, particularly the decline in the availability of official concessional finance in relation to the external financing needs of the country, altered the external financing pattern. With the widening of the current account deficit during the 1980s, India supplemented the traditional external sources of financing with recourse to commercial debt including short-term borrowings and deposits from the non-resident Indians (NRIs). As a result, the proportion of short-term debt in India's total external debt increased significantly by the late 1980s.

C. Policy Overhaul in the 1990s

(a) External Sector

India entered into the 1990s with a baggage of high current account deficit (about 3.2 per cent of GDP in 1990-91) mainly emanating from fiscal excesses. This was mostly financed by debt creating flows, a substantial part of which was of a short-term nature. This was supported by an official exchange rate regime out of alignment with the market fundamentals that gave scope for

the operation of parallel markets. The whole edifice was based on a "repressed" financial system debilitated arguably by public sector monopoly and *license-permit raj*. This weakness of the economy was brutally exposed at the beginning of the 1990s by a spate of international events. The significant rise in oil prices, suspension of remittances from the Gulf region in the wake of the Gulf crisis, disruption of trade with the break-up of erstwhile Eastern Bloc, recessionary conditions in industrialised countries *etc.* led to severe problems in the balance of payments in India. The Gulf crisis had several effects: it led to a rise in PoL import bill, partial loss of exports market in West Asia compounded by the drying-up of private remittances coming from that region. With the tightening of access to commercial banks and short-term credit, financing of the current account deficit became unsustainable leading to a crisis situation. India's foreign currency assets depleted rapidly from US \$ 3.1 billion in August 1990 to US \$ 975 million (equivalent to less than one month of imports) on July 12, 1991.

While a conscious decision was taken to honour all debt without seeking rescheduling, several steps were taken to tide over the crisis: (i) a part of gold reserves was sent abroad to get some immediate liquidity; (ii) non-essential imports were restricted by a variety of price based and quantitative measures; (iii) the IMF, multilateral and bilateral donors were approached; (iv) macroeconomic stabilisation programme was put in place; (v) India Development Bonds (IDBs) were floated in October 1991 to mobilise medium-term funds from non-resident Indians that yielded US \$ 1.6 billion; and (vi) credible commitments were made to bring about structural reforms.

The broad approach to reform in the external sector was laid out in the Report of the High Level Committee on Balance of Payments, 1993 (Chairman: C. Rangarajan). It recommended, *inter alia*, liberalisation of current account transactions leading to current account convertibility; compositional shift in capital flows away from debt to non-debt creating flows; move towards a market related exchange rate regime; strict regulation of external commercial borrowings, especially short-term debt; discouraging

volatile elements of flows from non-resident Indians and gradual liberalisation of outflows.

With a view to placing India's exchange rate at an appropriate level in line with the inflation differential with major trading partners so as to maintain the competitiveness of exports, a two-step downward adjustment of 18-19 per cent in the exchange rate of the Indian rupee was made on July 1 and 3, 1991. This provided the necessary impetus for a move towards greater exchange rate flexibility. Consequently, the Liberalised Exchange Rate Management System (LERMS) involving dual exchange rate system was instituted in March 1992 in conjunction with other measures of liberalisation in the areas of trade, industry and foreign investment. Under the LERMS, 40 per cent of foreign exchange earnings had to be surrendered at an official rate determined by the Reserve Bank, which in turn was obliged to sell foreign exchange only for import of essential commodities and the Government's debt servicing. The balance 60 per cent of exchange earnings were to be converted at rates determined by the market. The LERMS was essentially a transitional mechanism and a downward adjustment in the official exchange rate took place in early December 1992 and ultimate convergence of the dual exchange rates was made effective from March 1, 1993. On unification, the exchange rate of the Indian rupee became market related and its downward adjustment both against the US dollar and also against the trade-weighted basket neutralised the impact of the prevailing inflation differential.

Apart from a move-over to a market determined exchange rate in 1993, a series of concurrent external and domestic policy measures were undertaken since the early 1990s aimed at enhancing the efficiency, competitiveness and productivity of the Indian economy. In managing the external account, measures were taken to ensure a sustainable level of current account deficit, limited reliance on external debt, especially short-term external debt and an adequate level of international reserves. A liberalised trade regime was put in place, characterised by a short negative list of exports and imports, lowering of the level and dispersion of nominal tariffs, withdrawal of quantitative

restrictions on imports, reduction in non-tariff barriers to external trade and phasing out of the system of import licensing. The trade policy reforms also encompassed significant changes in the system of export incentives, moving away from direct subsidies to indirect export promotional measures.

The unification of the exchange rate of the Indian rupee was also an important step towards current account convertibility, which was achieved in August 1994 by accepting Article VIII of the Articles of Agreement of the IMF. Subsequently legal framework was put in to effect *i.e.*, Foreign Exchange Management Act, FEMA, 1999 into effect with an objective of redefining regulation as a facilitator for orderly and stable foreign exchange market in India. Over time, both inflows and outflows under capital account have been substantially liberalised and deregulated and for most transactions which are required for business or personal convenience, the rupee is, for all practical purposes convertible. In cases, where specific permissions were required for transactions above a high monetary ceiling, they were also generally forthcoming.⁹

Regarding capital inflows, non-debt creating liabilities, especially in the form of foreign direct investment were encouraged. First, foreign direct investment norms has been periodically liberalised through extension of equity cap, relaxation of current account restrictions, expansion of eligible sectors and rationalisation of administrative procedures. Similarly, foreign direct investment by non-resident Indians (NRIs) under the Reserve Bank's automatic route has been substantially expanded to include almost all items/ activities. Second, Indian companies were allowed to access ADR/GDR markets. They could also invest abroad the funds raised through ADRs/GDRs in bank deposits/certificates of deposit (CDs), Treasury Bills and other monetary instruments pending repatriation/utilisation of such funds. Resident shareholders of Indian companies were permitted to offer their shares for conversion to ADRs/ GDRs. Third, investments by Foreign Institutional

⁹ A committee on Capital Account Convertibility (Chairman: S.S. Tarapore) was set up for this purpose which submitted its report in 1997.

Investors (FIIs) were allowed both in equity and debt markets and the limits to equity investment were periodically increased. Besides, they are allowed to hedge the exchange risk of their investment through a variety of instruments in sequence with the developments in the foreign exchange market (Box 2).

Box 2
Developments in Foreign Exchange Market in India

Besides the adoption of a market determined uniform exchange rate in 1993, a host of measures were undertaken since the 1990s to broaden and deepen the foreign exchange market involving institutional changes, relaxation of operating limits and introduction of hedging instruments.

The Expert Group on Foreign Exchange Markets in India, 1996 (Chairman: Shri O.P. Sodhani) laid the roadmap for foreign exchange markets reforms in India. With a view to minimising the influence on the process of rate formation, the Reserve Bank discontinued quoting its buying and selling rate. In order to ensure that the exchange rate of the rupee reflected fully the demand supply situation and in furtherance of the move towards eliminating transactions through reserves, it was decided to route government debt service payment (civil) through the market. Cash reserve requirements on inter-bank borrowings were removed.

With an aim towards providing greater operational flexibility, banks were given freedom to fix their own open exchange position limit. Depending upon the asset liability profile, dealing expertise and other relevant factors, authorised dealers in foreign exchange (ADs) were accorded freedom to fix their own gap limits for more efficient management of their assets and liabilities. The banks which had put in place adequate risk management systems were permitted to freely trade in the overseas markets, within the overall position/gap limit. Banks were permitted to provide foreign currency denominated loans to their customers out of the pool of foreign currency non-resident (FCNR(B)) deposits. Banks were permitted to borrow and invest in the overseas markets. At present, banks are permitted to borrow up to 25 per cent of their Tier I capital and invest up to any amount. Similarly, exchange earners in select categories are permitted to retain 100 per cent of foreign exchange receipts in foreign currency accounts (EEFC), while all others are permitted to retain up to 50 per cent.

In order to provide hedging facilities to residents involved in foreign exchange transactions, they were permitted to enter into a forward contract, foreign currency option contract, foreign currency-rupee swap, interest rate swap/ currency swap/ coupon swap/ foreign currency option/ interest rate cap/

collar (purchases)/ forward rate agreement (FRA) contract with an AD. Residents in India, engaged in imports and exports, have been allowed to hedge the price risk of all commodities in the international commodity exchanges/markets. Residents having overseas direct investments are also permitted to hedge the exposure through foreign currency-rupee options.

Similarly, ADs have been permitted to use certain instruments like interest rate swaps, currency swaps, and forward rate agreements to hedge their assets-liability portfolio. A beginning for rupee based derivatives was made in India and banks were permitted to offer dollar-rupee swaps to corporates. ADs were subsequently allowed to purchase call or put options to hedge their cross currency proprietary trading positions and also enter into forward contracts with their constituents in respect of the underlying sale, purchase and loan transactions in gold. Subsequently, they were permitted to enter into forward contracts with residents in respect of transactions denominated in foreign currency but settled in Indian rupees. Finally, foreign banks were allowed to hedge the entire Tier I capital held by them in Indian books.

With an aim to provide hedging facilities to non-residents, ADs have been allowed to enter into forward/option contracts with (a) NRIs to hedge the amount of dividend due on shares held in an Indian company, the amount of investment made under portfolio scheme as well as balances held in their special non-resident deposits account; (b) FIIs with rupee as one of the currencies to such customers on the basis of their declaration of the market value of their entire investment in equity and/or debt in India as on a particular date, (c) residents outside India to hedge the foreign direct investments made in India.

A key aspect of the external sector management has been the control over external debt since the 1990s. As regards bilateral and multilateral external assistance, while keeping in mind the gradual drying-up of supply of such funds, the broad approach has been towards longer-term concessional flows. The approach to external commercial borrowings has been one of prudence, with self imposed ceilings on approvals and a careful monitoring of the cost of raising funds as well as their end use. External commercial borrowings were made subject to a 'dual route'; these can be accessed without any discretionary approvals up to a limit, beyond which specific approvals were needed. Moreover, special deposit schemes were designed for NRIs and these were regularly modulated by elongating its maturity profile, bringing interest rate at par with international rates, changing the reserve requirements

and pruning the number of schemes. Similarly, India adopted a cautious policy stance with regard to short-term debt flows. Short-term credits were monitored and the overall limit, at any given point of time, was confined within a prudential level.

Regarding capital outflows, the approach has been to facilitate direct overseas investment through joint ventures and wholly owned subsidiaries and provision of financial support to promote exports, especially project exports from India. Resident individuals and listed Indian companies were also gradually permitted to invest in overseas companies. Similarly, limits on banks' investment in overseas markets were periodically raised upwards. Indian companies were permitted to prepay existing Foreign Currency Convertible Bonds (FCCBs) subject to certain conditions. Next, companies incorporated outside India were permitted to issue Indian Depository Receipts (IDRs). Exporters and exchange earners were also given permission to maintain foreign currency accounts and use them for permitted purposes to facilitate their overseas business promotion and growth. Moreover, residents were gradually allowed to open accounts denominated in foreign currency as also to remit freely for any current and capital account transactions up to a certain limit.

With the switching over to a more flexible market related exchange rate mechanism and the gradual opening up of the external sector, sufficient care was taken to ensure that foreign exchange reserves remained "adequate". The magnitude of reserves were regularly measured against a variety of indices, such as the number of months of imports, trade lags, short term debt, extent of cumulative portfolio investment, *etc.* In fact, the policy thrust in this regard was to ensure that reserves were at least sufficient to cover any likely variations in capital flows at a given point of time or the "liquidity-at-risk".

(b) Financial Sector

The Indian financial system of the pre-reform period essentially catered to the needs of planned development in a mixed-economy framework where the Government sector had a predominant role in economic activity. The sector

was characterised, *inter alia*, by administered interest rates, large pre-emption of resources by the authorities and extensive micro-regulations directing the major portion of the flow of funds to and from financial intermediaries. While the true health of financial intermediaries, most of them Public Sector entities, was masked by relatively opaque accounting norms and limited disclosure, there were general concerns about their viability. In the securities market, new equity issues were governed by a plethora of complex regulations and extensive restrictions. There was very little transparency and depth in the secondary market trading of such securities. Interest rates on Government securities, the predominant segment of fixed-income securities, were decided through administered fiat. The market for such securities was a captive one where the players were mainly financial intermediaries, who had to invest in Government securities to fulfill high statutory reserve requirements. Insurance companies – both life and non-life - were all publicly owned and offered very little product choice. There was little depth in the foreign exchange market as most such transactions were governed by inflexible and low limits and also prior approval requirements.

Against this backdrop, a set of reforms were instituted in the 1990s to remove the “financial repression” existing hitherto and to impart operational flexibility, functional autonomy, systemic stability and accountability in India’s financial sector so as to be able to withstand the pressures and challenges following the opening up of the economy to cross-border capital flows in a more flexible exchange rate environment. The overall aim was to set up a productive and profitable financial sector industry and at the same time enable price discovery for efficient allocation of resources. As pointed out by Governor Reddy (Reddy, 2002 a), the approach towards financial sector reforms in India has been based on *panchasutra* or five principles (i) cautious and appropriate sequencing of reform measures, (ii) introduction of norms that are mutually reinforcing, (iii) introduction of complementary reforms across sectors (most importantly, monetary, fiscal and external sector), (iv) development of financial institutions and (v) development of financial markets.

A Committee on the Financial System (Chairman M. Narasimham) was set up in 1991 for this purpose to suggest the roadmap for financial sector reforms in India. Policies were designed aimed at rationalising the organisational forms, ownership pattern and domain of operations of banks, financial institutions (FIs) and NBFCs on both the asset and liability fronts. Steps were initiated to infuse competition into the financial system by permitting new banks in the private sector, reduction in government ownership of public sector banks, permission and enhancement of equity cap of foreign investment in banks in India, and instituting more liberal entry norms for foreign banks and providing them with a level-playing field *vis-a-vis* their domestic counterparts. Another element of financial sector reforms in India was to put in place a set of prudential measures aimed at imparting strength to the banking system as well as ensuring safety and soundness through greater transparency, accountability and public credibility. There was a concerted move towards risk-based supervision, with greater emphasis to off-site surveillance using the best international practices. Automatic monetisation of deficits was discontinued in phases following the agreement between the Government and the Reserve Bank of India on the abolition of the *ad hoc* treasury bills. Besides preemption of funds by the Government through high statutory requirements of maintaining Government and other approved securities in the banks were systematically pruned and market determined pricing mechanism of Government securities was instituted. In the 1990s, capital market reform measures were initiated which, *inter alia*, included, market determined allocation of resources, scripless/online trading, rolling settlement, dematerialised accounts, sophisticated risk management and derivatives trading, thereby greatly improving the framework and efficiency of trading and settlement. Similarly, necessary legislative measures were undertaken for appropriate changes in law wherever necessary aimed at harmonising the elements of economic reform and underlying legislative framework. Concurrently, a slew of measures were undertaken for the development and strengthening of necessary institutions, deepening and

broadening of financial market and their integration, and fine-tuning of operating instruments (Box 3). At the same time, with gradual opening up of the economy and development of domestic financial markets, the operational framework of the Reserve Bank was modified considerably with clearer articulation of policy goals and greater public dissemination of information relating to its operations.

Box 3
**Developments in Institutions, Markets and Instruments in India's
Financial Sector since the 1990s**

Institutions	Purpose/Function
1	2
Institutional Measures	
Clearing Corporation of India Limited (CCIL)	Central counter party for facilitating payments and settlement system relating to fixed income securities (incl. Government securities) and money market instruments.
INFINET	Communication network for the financial sector
Negotiated Dealing System (NDS)	Screen-based trading in government securities
Real Time Gross Settlement (RTGS) System.	Speedy settlement of transactions
Securitisation and Reconstruction of Financial Assets and Enforcement of Securities Interest (SARFAESI), Act	Creditor rights
Debt recovery tribunals, corporate debt restructuring, lok adalats, asset reconstruction companies, etc.	Quicker recovery/ restructuring
Credit Information Bureau	Information sharing on defaulters as also other borrowers
Delivery <i>versus</i> Payment (DvP) settlement system	Transparency in the trading of government securities
Negotiated Dealing System (NDS)	Automated screen-based trading in government securities
Foreign Exchange Management Act, 1999	Delegation of powers to Authorised Dealers with an aim to shift from control regime to management guidelines
Board for Financial Supervision (BFS)	Apex supervisory authority for commercial banks, financial institutions and non-banking financial companies
Market Development	
Inter-bank call money market	Market for short term liquidity
Primary Dealers (PD)	Market makers in the government securities and money market
Rupee-foreign currency swap market	Hedging market for foreign exchange buyers and sellers
Auction of government securities	Development of a risk-free credible yield curve in the government securities market as a benchmark for related markets
Operating Instruments¹⁰	
Liquidity Adjustment Facility (LAF) (Auction-based fixed/variable repos/reverse repos)	Short-term liquidity management, enable orderly movements in short-term interest rate, signaling device for interest rates in the overnight market
Market Stabilisation Scheme (MSS)	Managing the surplus liquidity in the system and providing greater leverage for sterilisation
Bank Rate	Signaling device for interest rates by linking rates in various standing facilities to the same
Cash Reserve Ratio (CRR)	Reserve requirement of the banks at the Reserve Bank
Statutory Liquidity Ratio (SLR)	Minimum holding of government and other approved securities by the commercial banks
Deposit Rate	Only savings deposits rate and ceiling on NRI deposits are, at present, regulated
OTC interest rate derivatives like Interest Rate Swaps (IRS)/ Floating Rate Agreements (FRAs)	To provide a variety of hedging instruments
91-day Treasury bill, Zero Coupon Bonds, Floating Rate Bonds, Capital Indexed Bonds, Separate Trading for Registered Interest and Principal of Securities (STRIPS), Collateralised Borrowing and Lending Obligations (CBLO)	To provide greater choice to the investors/ financial entities and to mitigate risks

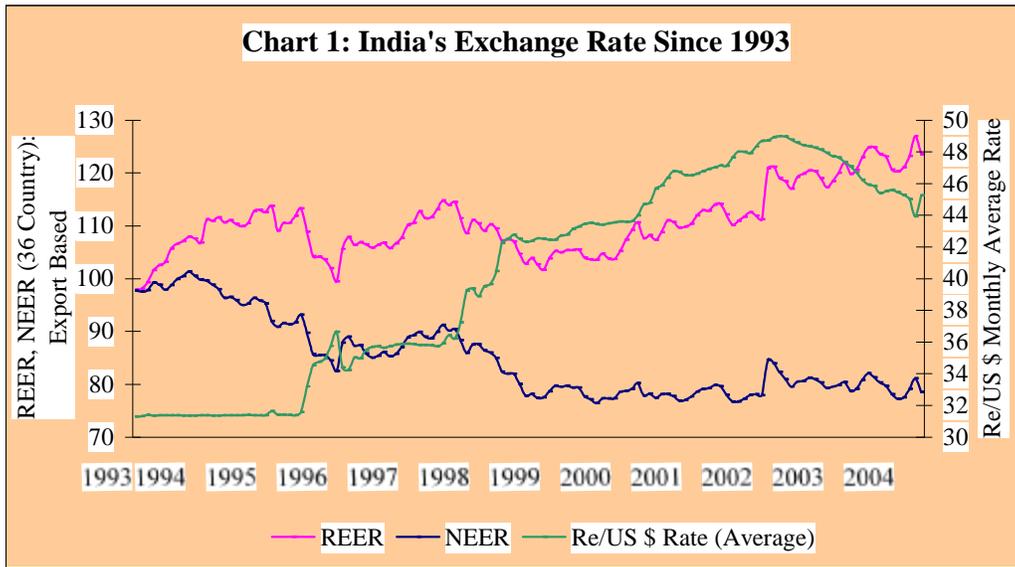
¹⁰ From direct instruments such as, administered interest rates, reserve requirements, selective credit control, to indirect instruments such as, open market operations, purchase and repurchase of government securities.

C. India's Exchange Rate Regime since 1993

Since the introduction of reforms in the early 1990s, India has witnessed significant increases in cross-border capital flows. The net capital inflows have more than doubled from an average of US \$ 4 billion during the 1980s to an average of about US \$ 9 billion during 1993-2004. The proportion of non-debt flows in total capital flows has increased from about 3.5 per cent in the 1980s to about 44 per cent during 1990s (Table 9). However, the post reform period have also experienced periodic surges and ebb of capital flows that had its repercussions on exchange rate movements (Chart 1). A variety of management tools were used to smoothen these swings and moderate their impact on exchange rate volatility, inflationary pressures, and monetary expansion/contraction so as to ensure financial stability and real sector growth in line with the overall macroeconomic objectives. Recourse was taken to sterilisation through open market operations, changes in reserve requirements, foreign currency swaps, direct purchase and sales of foreign currencies in spot market, management of short term liquidity through repos/LAF, signaling through interest rate changes *i.e.* bank rate, reporting requirements for larger forex operations and open position by banks, interest rate changes applicable to export finance, relaxation of end use specification, liberalisation of capital outflows, and moral suasion. From the viewpoint of examining the impact of external transactions on the exchange rate stability, the period starting from March 1993 could be divided into several sub-phases (Chart 2) as detailed below:

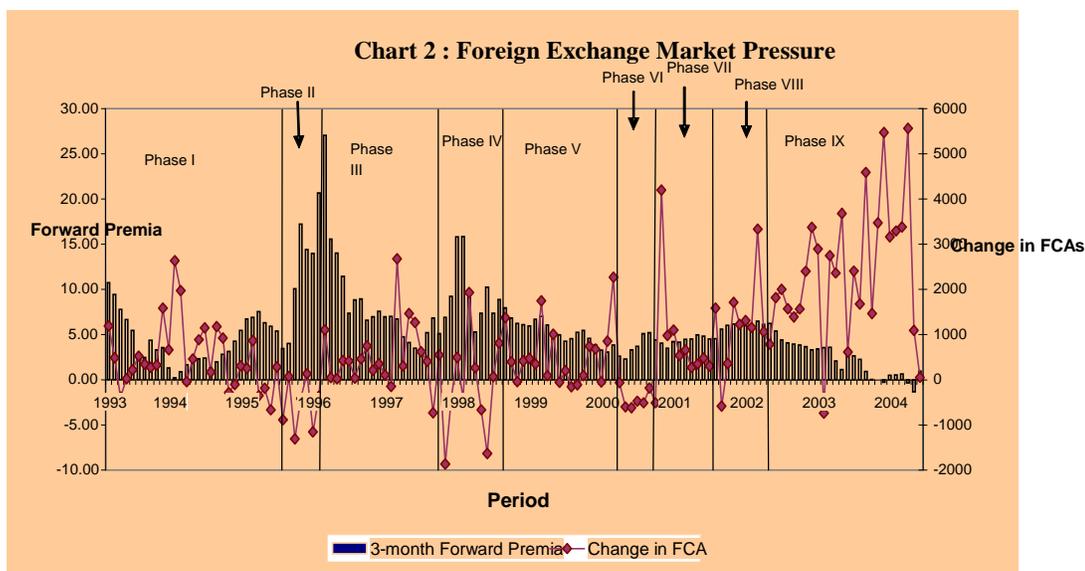
Table 9: Share of Different Components in India's Capital Flows

	1950-51 to 1959-60	1960-61 to 1969-70	1970-71 to 1979-80	1980-81 to 1989-90	1990-91 to 1999-00	2000-01 to 2003-04
1	2	3	4	5	6	7
Foreign investment	21.93	5.71	6.24	3.48	44.26	65.48
External assistance, net	85.07	100.79	107.87	38.99	17.66	-6.21
Commercial borrowings, net	0.00	0.00	19.37	26.05	23.21	-3.68
Rupee debt service	0.00	0.00	0.00	0.00	-12.15	-3.55
NRI deposits, net	0.00	0.00	14.56	28.32	17.34	20.87
Other capital	-7.01	-6.51	-48.05	3.15	9.68	27.08



i) March 1993-August 1995: Initial Phase of Inertia

Reflecting the positive investor confidence, the Indian economy experienced surges in capital inflows during 1993-94, 1994-95 and the first half of 1995-96, which, coupled with robust export growth, exerted upward pressures on the exchange rate. Large capital flows were sterilised through timely interventions by the Reserve Bank. In the process, the nominal exchange rate of the Indian rupee *vis-a-vis* the US dollar remained virtually unchanged at around Rs.31.37 per US dollar over an extended period from March 1993 to August 1995.



ii) August 1995-February 1996: The First Taste of Turbulence

The rupee came under pressure for the first time in August 1995 and the trend continued in phases till February 1996. The pressure on the rupee in August 1995 was brought about by a sudden and sharp reversal of market sentiments and expectations. Slowing down of the capital inflows in the wake of the Mexican crisis, a widening of the current account deficit on account of resurgence of growth in the real sector and the rise of US dollar against other major currencies were the main factors contributing to this phenomenon. The exchange rate of the Indian rupee depreciated by nine per cent during the period August 1995 to October 1995 before stabilising in February 1996. In response to the upheavals, the Reserve Bank intervened in the market to signal that the fundamentals were in place and to ensure that market correction of the overvalued exchange rate was orderly and calibrated. The interventions in the foreign exchange market were supported by monetary tightening to prevent speculative attacks. These decisive and timely measures brought stability to the market lasting till mid-January 1996. In the first week of February 1996, another bout of uncertainty led the rupee to shoot up to Rs.37.95 per US dollar.

iii) March 1996- Mid September 1997: Overcoming the Pressure

Interventions by the Reserve Bank along with measures to encourage faster realisation of export proceeds and to prevent an acceleration of import payments¹¹, however, succeeded in restoring orderly conditions and the rupee traded around Rs.34-35 per US dollar over the period March-June 1996. During the second half of 1996, as well as the first quarter of 1997, the rupee remained range bound. During April-August 1997, excess supply conditions, in fact, prevailed in the market with the rupee rate at around Rs. 35.7 per US dollar and the Reserve Bank had to undertake large net purchases of foreign currency.

iv) End-September 1997- mid August 1998: The Specter of Contagion

The foreign exchange market again had to cope with a number of adverse external as well as internal developments from end September 1997 to August 1998. External developments included, *inter alia*, the contagion due to the Asian financial crisis, the Russian crisis, fear of Chinese renminbi devaluation as also the movements in interest rates in the industrialised countries as well as the cross-currency movements of the US dollar *vis-a-vis* other major international currencies. Important internal developments included the imposition of economic sanctions in the aftermath of nuclear tests during May 1998. These developments created considerable degree of uncertainty in the foreign exchange market leading to excess foreign exchange demand with the rupee rate plummeting a low of Rs. 43.42 per US dollar on August 19, 1998. The Reserve Bank responded through monetary and other measures like variations in the Bank Rate, the repo rate, cash reserve requirements, refinance to banks, surcharge on import finance and minimum interest rates on overdue export bills to curb destabilising speculative activities during these episodes of volatility while allowing an orderly correction in the value of the rupee. Foreign Institutional Investors (FIIs) were allowed to hedge the “exchange

¹¹ The interest rate surcharge on import finance was raised, the scheme of post-shipment export credit in foreign currency was withdrawn and the Reserve Bank continuously intervened in the spot, forward and swap/money markets.

risk” of their incremental investment in June 1998 which was extended further in August 1998 to assuage the negative sentiments in the forex market.

v) End-August 1998- April 2000: Successfully Restoring Market Sentiments

An amount of US \$ 4.23 billion was raised at a moderate cost through a special issue, the Resurgent India Bonds (RIBs) in August 1998 with an aim to (a) compensate for the extraordinary events in 1998-99 which may have resulted in some shortfall in the normally expected levels of capital flows and (b) offset the adverse market sentiment created in the international capital markets due to downgrading of India’s sovereign rating to non-investment grade by some credit rating agencies. The result of all these measures was the restoration of normalcy in the foreign exchange market. The rupee strengthened to Rs. 42.55 per US dollar by end-August 1998. The foreign exchange market remained relatively calm during the second half of 1998-99 with excess supply conditions prevailing in the last quarter of the financial year. The Reserve Bank intervened in the market through spot and forward purchases and rupee traded within a narrow range of Rs. 42.40-42.99 per US dollar during this phase. Barring the brief period between June -October 1999, when there was sudden excess demand pressure following the border conflict during June 1999 (the rupee reaching a low of Rs. 43.6 in October 1999), the forex market in India remained more or less orderly up to April 2000.

vi) May 2000-October 2000: Overcoming Cross-Border Tensions

Uncertainty in the foreign exchange market surfaced again in May 2000 reflecting hardening of international oil prices, successive interest rate increases in industrial countries and the sharp reversals of portfolio flows. This resulted in widening of the excess demand gap in the spot segment of merchant transactions and compensating activity built up in the inter-bank segment with the rupee trading within a wide range of Rs. 43.65-Rs.46.85 per US dollar during May-October 2000. Tight monetary measures adopted during May-June

2000 coupled with inflows of US \$ 5.5 billion through India Millennium Deposits (IMDs) during October 2000 eased the market pressures thereafter.

vii) November 2000-August 2001: Restoring Orderly Conditions

The orderly conditions witnessed in the foreign exchange market from November 2000 continued up to August 2001. Accordingly, punitive measures undertaken earlier such as the stipulation of minimum interest rate of 25 per cent on overdue export bills and interest rate surcharge of 50 per cent on import finance were withdrawn in January 2001. The rupee traded at around Rs. 47.1 per US dollar during August 2001.

viii) September 2001- May 2002: The 9/11 Effect

In the aftermath of September 11, 2001 incident in the US, pressure was again felt in the foreign exchange market as the Indian rupee depreciated against the leading international currencies. The Reserve Bank tackled the situation through quick responses in terms of a package of measures and liquidity operations that, *inter alia*, included (i) a reiteration to keep interest rates stable with adequate liquidity; (ii) assurance to sell foreign exchange to meet any unusual supply-demand gap; (iii) opening a purchase window for select Government securities on an auction basis; (iv) relaxation in FII investment limits up to the sectoral cap/statutory ceiling; (v) a special financial package for large value exports of select products; and, (vi) reduction in interest rates on export credit. The instability on account of border tensions in May 2002 renewed excess foreign exchange demand but only for a brief period.

ix) June 2002- February 2005: The Phase of Opulence

The rupee generally exhibited appreciating trend against the US dollar since June 2002 reflecting excess supply condition. In fact, since 2001, most of the currencies worldwide, except for Chinese yuan, Mexican peso and Philippines peso have been appreciating against the US dollar. The weakness of the US dollar was widespread against all the major as well as emerging market

currencies. However, reflecting cross-currency movements, the Indian rupee depreciated against other key currencies such as euro, yen and pound sterling. In April 2004, rupee reached a high at Rs. 43.6 per US dollar. Since May 2004, the excess supply position in the foreign exchange market was somewhat moderated by the rising global oil prices and a rise in interest rate in the US. The rupee ended at Rs.43.64 per US dollar in February 2005.

During this phase since June 2002, the Reserve Bank has been absorbing excess supplies in the market on the back of sustained expansion of the current account surplus in the balance of payments coupled with surges in capital flows following downward interest rate movement in advanced countries. In the process, the foreign exchange reserves of the Reserve Bank, which increased over a ten-year period by about US \$ 47 billion from US \$ 9.8 billion at end-June 1992 to US \$ 56.8 billion at end-May 2002, witnessed a rise about US \$ 84.1 billion in just three years to reach US \$ 140.9 billion by March 25, 2005.

D. Present Policy Stance on Exchange Rate and Capital Flows

Governor Reddy has recently observed:

“.... from the days of Buddha, India has followed the philosophy of preferring the middle-path. We have imbibed it in our policies as well, and have done reasonably well in managing the economy since 1991”- Reddy (2004a)

India's present policy stance is to approach liberalisation on capital account cautiously, gradually, in a well sequenced manner, treating it as a process and responding to domestic monetary and financial sector developments as also the evolving international financial architecture (Reddy, 2000a). While managing capital flows, clear distinction is made between debt and non-debt creating flows, private and official flows and short-term and long-term capital flows. There is a revealed preference for non-debt creating flows and long-term debt flows while de-emphasising short-term flows. The overall policy on capital flows is calibrated through cap on external commercial borrowings with restrictions on end-use, a near unrestricted entry of capital in the form of foreign direct investment, periodic upward revision of ceilings on

portfolio investment by the FIIs, low exposure of banks to real estates and stock markets, limited access to short-term borrowings for meeting working capital and other domestic requirements, close monitoring of off-balance sheet items of the banking sector, regulatory and prudential control over non-bank entities and restrictions on domestic residents to convert their domestic bank deposits and idle assets (such as, real estate) in response to market developments or exchange rate expectations.

India's exchange rate policy essentially focuses on managing volatility with no fixed rate target while allowing the underlying demand and supply conditions to determine the exchange rate movements over a period in an orderly way. The Reserve Bank continues to follow the approach of watchfulness, caution and flexibility in regard to foreign exchange market. It co-ordinates its market operations carefully, particularly in regard to the foreign exchange market with appropriate monetary, regulatory and other measures as considered necessary from time to time. The conduct of exchange rate policy in India is currently guided by three major purposes. First, to maintain orderly conditions in the foreign exchange market by providing foreign exchange as considered necessary from time to time, and to prevent the emergence of destabilising and self-fulfilling speculative activities. Second, to help maintain an adequate level of foreign exchange reserves. Third, to help eliminate market constraints with a view to facilitating the development of a healthy foreign exchange market.

The overall approach to foreign exchange reserve management is judiciously built upon a host of identifiable factors and other contingencies, which, *inter alia*, include: the size of the current account deficit; the magnitude of short-term liabilities (including current repayment obligations on long-term loans); the possible variability in portfolio investments and other types of capital flows; the unanticipated pressures on the balance of payments arising out of external shocks; and movements in the repatriable foreign currency deposits of non-resident Indians. Leaving aside short-term variations in reserve levels, the quantum of reserves is calibrated in a way to ensure that in the long-

run it is in line with the growth in the economy and the size of risk-adjusted capital flows.

E. Lessons from Reforms

India has followed a multi-pronged approach in dealing with the gyrations of capital flows and consequent pressure on exchange rate. The following broad lessons could, nonetheless, be drawn:

- It appears that there is considerable merit in careful calibration of the pace and sequencing of external sector reforms. It should be recognised that reversal of any step in liberalisation is very difficult since markets tend to react very negatively to reversals.
- Operationally, management of capital account involves a distinction not only between residents and non residents or between inflows and outflows but also between individuals, corporates and financial intermediaries. The financial intermediaries are usually a greater source of volatility amongst these. Therefore, a necessary condition for capital account liberalisation is the presence of a well-regulated and mature financial sector with strong supervisory framework. Only after the financial sector has attained some degree of credibility and resilience, could it improve and strengthen further through other symbiotic gains from capital flows emanating from better accounting procedures, transparency norms, corporate governance *etc.*
- A fair degree of trade and current account liberalisation should accompany/precede the process of capital account liberalisation. This not only enables the economy to absorb higher capital inflows but also prevents current account outflows in the guise of capital flows and vice-versa.
- There should be clear hierarchy in the nature of capital flows with equity flows getting more preference to short-term debt flows. Within equity investments, direct investment should be given precedence over portfolio investment.

- External liabilities should be kept under constant watch and any eventuality of reverse movement should be factored in. For this purpose (a) external debt should be calculated not only in terms of its original maturity but also residual maturity, (b) there should a clear understanding of the quality and magnitude of contingent liabilities and derivatives, (c) maturity profile of external borrowings should be carefully modulated so as to prevent payments in a lump, (d) short term debt/trade credits need to be constantly monitored, (e) there should be flexibility of retirement/prepayment of costly debt at times of benign international interest rate regime.
- Exchange guarantees, both direct and indirect, should be eschewed to the extent possible. The risks emanating from exchange rate movements should be borne by the parties concerned and they should be encouraged to use hedging products for their risk-management.
- Foreign currency denominated assets within the country and trading of domestic currency outside the country could have destabilising effects on the balance sheets and currencies for reasons essentially external to the domestic economic factors.
- Management of the capital account involves management of control, regulation and liberalisation. As liberalisation advances, the administrative measures would get reduced and price-based regulations would naturally increase, but the freedom and flexibility to change the mix and reimpose controls should always be demonstrably available. Such freedom to exercise the policy of controls adds comfort to the markets at times of grave uncertainty (Reddy, 2004).
- Foreign exchange reserves should at least be sufficient to cover likely variations in capital flows or the “liquidity-at-risk”. Furthermore, adequate reserves, keeping in view the national balance sheet considerations, which include public and private sectors, also provide comfort and confidence to market participants.

- In the context of sterilisation operations, the key issue is the ability of the monetary authority to sterilise the capital inflows and yet retain control over money supply so as to pursue its stated objectives. It is, therefore, important to examine whether it is the reduction in net domestic assets that caused subsequent capital inflows or whether the reduction in NDA offset the previous capital inflows.¹²
- Next, constant improvements in information base needs to be made to ensure the appropriateness, timeliness and quality of data dissemination.¹³ It is important to communicate to the public, in a transparent a way as possible, the type of policy that is being followed.
- The message that comes out from the experience of various episodes of volatility of exchange rate of the rupee and the policy responses thereto is clear: flexibility and pragmatism are the order of the day in exchange rate policy in developing countries, rather than adherence to strict theoretical rules (Jalan, 2003). It also underscores the need for central banks to keep instruments/policies in hand for use in difficult situations.
- In the final analysis, the basic issue in any policy context is whether capital controls lead to distortions in exchange rate or the liberalised capital flows that lead to distortions in exchange rate. In respect of emerging economies, the conduct of market participants shows that automatic self-correcting mechanisms do not operate in the forex markets. Hence, the need to manage capital account – which may or may not include special prudential regulations and capital controls. There are many subtleties and nuances in such a management of capital account which encompasses several macro issues and micro structures.

¹² The “offset” coefficient – the response of net foreign assets to net domestic assets – measures the degree to which capital inflows offset the effect of a change in NDA on money supply. The extent of sterilisation can be examined by estimating the central bank reaction function which studies the behaviour of central bank’s net domestic assets in response to variations in its net foreign assets.

¹³ To the extent that there are poorly informed participants in the market, the lack of transparency will leave the EMEs open to speculation based on rumors and herd instinct (Calvo, 1999). These, in turn, can easily result in major attacks on the currency. Frankel and Schmukler (2000) have recently discussed the issue of exchange rate and monetary policy verifiability. According to them, under most circumstances it is difficult and costly for analysts – and even for very sophisticated ones – to actually verify whether a particular country is, in fact, following the policies that it has announced.

III. THE CHALLENGES AHEAD

“No single currency regime is best for all countries, and that even for a given country it may be that no single currency regime is best for all times,” -

Jeffrey Frankel

Although this famous adage retains its merit, “the debate on appropriate policies relating to foreign exchange markets has now converged around some generally accepted views: (i) exchange rates should be flexible and not fixed or pegged; (ii) countries should be able to intervene or manage exchange rates - to at least some degree - if movements are believed to be destabilising in the short run; and (iii) reserves should at least be sufficient to take care of fluctuations in capital flows and liquidity at risk” (Jalan, 2003). However, the actual or perceived costs of exchange rate volatility may make some policymakers in emerging market countries feel that the room to pursue an independent monetary policy and increase exchange rate flexibility is, in practice, limited at best. So, what are the challenges that the EMEs are likely to face in near future in their pursuit towards a more flexible exchange rate regime?

First, the authorities in the EMEs themselves need to learn how to conduct a monetary policy appropriate to a flexible exchange rate. It may take time, for example, for the central bank to refine the new internal procedures and communication strategies involved in inflation targeting. Moreover, the authorities may need time and experience to build trust in their own framework and become comfortable with allowing substantial exchange rate flexibility.

Second, private agents may adjust their behavior as they observe flexible exchange rates in action and come to appreciate the risks involved in unhedged foreign exchange positions. This adjustment in behavior would, in turn, reduce banking system dollarisation as lenders and borrowers appreciate and price the risks involved in currency mismatch. Similarly, expectations that the central bank will in fact allow exchange rate flexibility may diminish incentives to accept excessive foreign-currency-denominated capital inflows (Caballero and

Krishnamurthy, 2002). Finally, as private agents observe that the authorities can keep inflation low in the context of a floating exchange rate regime, their inflation expectations may respond less to movements in the exchange rate, thus reducing the pass-through from exchange rates to inflation.

Third, contemporaneous to shift towards a more flexible regime, it becomes all the more essential for EMEs to (i) improve the flexibility of their product and factor markets in order to cope and adjust to shocks arising from the volatility of currency markets and swings in the terms of trade in world product markets, (ii) develop a resilient and robust financial sector which could appropriately intermediate large capital flows, (iii) build regulatory and supervisory capabilities to keep pace with financial innovations and (iv) maintain fiscal prudence. The recent experience has highlighted the need for central banks in EMEs to keep a continuous vigil on market developments, and the importance of building adequate safety nets that can withstand the effects of unexpected shocks and market uncertainties.

In this context, the balance sheet approach, which identifies financial inter-linkages, imbalances, vulnerabilities and risks in the economy may be useful. Another arrangement suggested for emerging economies on way towards greater flexibility has been the “Managed Floating Plus Scheme” by Goldstein (2002). It supplements the inflation targeting cum independent central bank approach that several advanced countries follow, with market intervention to offset temporary shocks, a comprehensive reporting system to maintain the level and foreign currency exposures of external debt, and also a sequential strategy to the opening up of domestic financial markets to external capital flows.

The global imbalances witnessed in the recent times on account of huge current account deficit of the US coupled with surges in capital flows, has greatly contributed towards substantial reserve accumulation, especially for countries in East Asia and to some extent also in India. As a result, management of asset portfolio, which for most EME central banks has till now been at best “passive”, acquires immense significance. Second, innovative

institutional measures for deployment of foreign exchange reserves, beyond liberalisation of capital outflows or selective capital control, become necessary. The Asian Bond Fund initiative is one such example for pooling of a portion of foreign exchange reserves of few East Asian and Pacific countries and the Fund portfolio is invested in the liquid US dollar denominated bonds of major Asian economies.

The size of eligible domestic securities often sets a limit to the extent of sterilisation for the EMEs. With the move towards the *de facto* “constrained” floating supported by official intervention, this limit to sterilisation can exert pressure on monetary aggregates on account of a surge in capital flows. Even though countries like India have attempted to address this constraint through new instruments¹⁴, a concerted regional/multilateral effort to issue “secure instruments” for sterilisation purpose may not be an idea far ahead of its time.

Another impediment for the EMEs to move towards more flexible regime is the associated risk of a sharp depreciation could depress investment activity since (unhedged) foreign currency borrowing will always be significant. This handicap cannot be overcome without coordinated international action to facilitate countries’ borrowing in their own currency. Recent initiative at constituting the Asian Bond Fund 2 (ABF 2), which would issue local currency, denominated bonds marks a step in this direction. The ABF 2, which could also qualify for investment from the ABF portfolio would ensure not only a wider participation in Asian Bond markets but also promote channelisation of official forex reserves for investment within the region. However, ABF can prove to be a fruitful effort in developing regional bond

¹⁴ Market Stabilisation Scheme (MSS) was introduced in India in 2004. Under the MSS, Treasury Bills and dated securities of the Central Government are issued for conducting sterilisation operations. Treasury Bills/dated securities issued under the MSS by way of auctions have the same features as the existing Treasury Bills/ dated securities. Money raised under the MSS is held by the Government in a separate identifiable cash account maintained and operated by the Reserve Bank. The amount held in this account is appropriated only for the purpose of redemption and/or buyback of the Treasury Bills and/or dated securities issued under the MSS. Any increase in the Reserve Bank’s net foreign assets (NFA) would, thus, be matched by an accretion in Government balances under the MSS driving down the net Reserve Bank credit to the Government. The consequent decline in reserve money nullifies the monetary impact of the increase in the Reserve Bank’s NFA. The impact on the revenue/fiscal balance of the Government would only be to the extent of the discount on Treasury Bills and coupons on dated securities (net of premium/discount and accrued interest) issued under the MSS.

market in Asia, provided the sovereign ratings of the Asian countries improves. In this context, concerted efforts are required for the development of necessary infrastructure, securitisation and credit guarantee mechanisms to enhance the quality of bonds in terms of liquidity.

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