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The Transition from Official Aid to Private Capital Flows

Implications for a Developing Country

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Abstract

India's capital account displays a sharp swing in external financing from official assistance to private capital transfers in the 1990s. This paper examines the implications of this transition for the country. An analysis of the private resource transfer reveals that unlike official flows, private capital flows are associated with real exchange rate appreciation, expansion in domestic money supply and stock market growth, liquidity and volatility. The paper concludes with a discussion on the implications of the transition for economic policy.

Keywords: capital flows, capital account, real exchange rate, foreign exchange reserves, intervention, money supply, sterilization, capital controls, banking sector, stock market

JEL classification: E50, E60, F30, F21

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Introduction

The last decade has witnessed a tremendous increase in the mobility of international capital. Cross-country trends in capital flows reveal that private capital flows now dominate with official capital flows reduced to a trickle. Until the early 1990s, the main source of external financing across the developing world was official development assistance (ODA) provided by the governments of high-income countries. Consisting mainly of grants, concessional loans and contributions from multilateral institutions, dissatisfaction with some of ODA's attributes led to a questioning of 'aid' by both recipients and donors. Amongst the most important of these have been the 'tying' of aid whereby conditionalities were imposed upon recipient countries; these ranged from mandatory purchases from the donor country to provision of market access and sometimes surrender of ownership of national economic policies. Other factors precipitating the disillusionment with 'aid' have been the misappropriation of aid receipts, corruption at various points and lack of visible, positive relationship between 'aid' and poverty or economic growth.

This process was complemented by the simultaneous evolution of factors encouraging the flow of private capital across the globe. Briefly, these were: the industrialized countries' shift to floating exchange rate regimes following collapse of the Bretton Woods arrangement, the dismantling of capital controls to further facilitate free trade in goods amongst these countries, the development of financial markets in these countries as a consequence, the rise of the institutional investor with an appetite to diversify across the globe in search of higher returns and last but not the least, the push of the World Bank-IMF combine to facilitate payments and settlements in foreign exchange in an effort to encourage free trade in goods. Concurrent with these trends has been the move towards globalization beginning late twentieth century, and the market-oriented reforms instituted in many countries, which have liberalized access to financial markets. These trends suggest that the shift towards private capital transfers as a means of financing development is perhaps permanent and irreversible.

Irreversible though it may seem, this transition is also accompanied by heightened risks, which may require countries to adopt more dynamic and responsible policies. To elaborate, countries have now to compete with each other to attract private capital flows, a feature that requires putting in place elements and policies that serve to attract the right levels and type of private capital. The latter is critical; in the 1990s the rise in portfolio capital has tilted the composition of international capital flows towards short-term investments, exposing individual countries to enhanced volatility and sudden withdrawal risks.

These developments have stimulated a keen interest in understanding the nature and economic effects of capital flows as well as the appropriate policy responses to safeguard against financial instability that appears to be associated with the global movement of private capital. While the impact of 'aid' flows has been relatively well researched and understood, the impact of private capital flows is still ambiguous and controversial. For instance, the type of capital inflows, direct or portfolio investment, appears to make a critical difference in impact. Foreign direct investment is proven to have well-known positive effects through technology spillovers and stable investments tied to plant and equipment, but portfolio capital is associated more closely with volatility and its capacity to be triggered by both domestic as well as exogenous factors, making it extremely difficult to manage and control. Moreover, the impact of private

capital flows varies vastly across countries, time, the stage of financial and economic development as well as economic policies, underlining the need for individual country studies to enable comparisons and stylized representations.

Capital flows affect a wide range of economic variables such as exchange rates, interest rates, foreign exchange reserves, domestic monetary conditions and the financial system. Some commonly observed effects of capital inflows that have been documented in recent studies[1] include real exchange rate appreciation, stock market and real estate boom, reserve accumulation, monetary expansion as well as effects on production and consumption.[2]

These issues are significant for India, which has witnessed a swing from official aid flows towards private capital flows in the early 1990s. Both the international trend towards private resource transfers and the changing profile of India's capital account merit a close examination of implications of this transition. This context motivates the aim of this paper. It attempts three things. First, it documents trends in movement and composition of capital flows into India in an international perspective, using the countries in the Asia and Pacific regions as comparators. Two, it examines the impact of these flows upon the key macroeconomic variables and the domestic financial sector. Finally, it dwells on implications of the transition for economic policy.

Section 2 briefly characterizes the changes in India's capital account from the mid-1980s; section 3 assesses the macroeconomic impact of these flows while section 4 examines the impact upon the financial sector. Section 5 discusses the policy implications and concludes.

2 Changing profile of India's capital account

World capital flows in the 1990s have displayed a steep decline in official (aid) flows and a rise in private capital movements; India, as part of the developing world, has not been immune to this change. From the late 1980s, official transfers into the country reveal a steady decline, while private transfers show a rise. The reasons for this shift are manifold. Apart from being part of the worldwide trend in declining official assistance following disillusionment with aid, India also embarked upon an economic reform programme aimed at transforming the controlled economy into a market-driven one.

Following its balance of payments crisis in 1991, it gradually began dismantling capital controls as part of its broader financial liberalization strategy. Changes in exchange rate regime as well as trade and investment policies' reform prompted a spurt in capital flows into the country between 1992/3-97/8. Though the magnitude of these flows is

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1 See Calvo, Leiderman and Reinhart (1992); Corbo and Hernandez (1994); Khan and Reinhart (1995) and Koenig (1996), among others.

2 Empirical studies that have begun to appear on the subject assess the impact of capital inflows upon output growth (Gruben and McLeod 1996), differential macroeconomic effects of portfolio and foreign direct investment (Gunther, Moore and Short 1996), effects upon monetary conditions, savings and investment (Kamin and Wood 1998) and the domestic financial sector (Henry 1999; Tesar 1999; Folkerts-Landau *et al.* 1995 and many others).

relatively insignificant in a cross-country perspective, the pattern and composition of these flows conform to trends observed in other emerging markets. India also shares some attributes with these emerging economies, a fact that enables comparative assessment. For example, like many Asian and Latin American countries, which were at various stages of macroeconomic stabilization and/or financial liberalization when capital started flowing into these economies, India is a liberalizing economy too. Notable differences persist. For instance, India exhibits far lower openness than these countries and still retains strict capital controls, specifically on outflows.

These trends are clearly visible in Table 1, which profiles the changing composition of India's capital account. The substantial contribution of aid towards the capital account in the 1980s dwindles steadily by the 1990s and is replaced by private flows. The two spikes in 1991 and 1992 are explained by the IMF loan for stabilization, adjustment and restructuring. A sharp increase in foreign investment, direct and portfolio, can be observed after 1992. Commercial borrowing abroad drops during the crisis years, resuming thereafter. Migrants' remittances, a major source of capital transfers from abroad, continue to be buoyant after a short dip in 1993-94.

Portfolio investment flows exceed direct investment (FDI) in the early years of liberalization. FDI catches up later, peaking in 1995, falling thereafter and recovering only in 2001. A departure from the APEC region's experience is the excess of portfolio over FDI inflows in the initial years after liberalization. In the former region, foreign capital was dominated by FDI after the opening of markets. This is partly explained by global trends in the early 1990s when portfolio capital flows registered a sharp increase.

Table 1
The changing composition of India's capital account
(percentage to total [net] capital flows)

	Foreign investment		NRI deposits	External assistance	Commercial borrowings	Net capital account (% GDP)
	FDI	Portfolio				
1986	4.3	0	16.3	30.3	21.1	1.85
1989	5.9	0	34.4	26.5	25.4	2.39
1990	1.3	0.1	21.4	30.7	31.3	2.27
1991	3.4	0.1	10.6	77.7	40.0	1.46
1992	8.1	6.3	51.3	48.4	-9.2	1.59
1993	6.0	36.8	12.4	19.6	6.3	3.54
1994	14.4	41.8	1.9	16.7	11.3	2.84
1995	46.0	58.9	24.5	21.5	29.2	1.31
1996	24.7	29.0	29.4	9.9	24.7	2.96
1997	35.1	18.0	11.5	9.2	38.9	2.47
1998	29.0	-0.6	11.3	9.9	51.8	2.04
1999	20.7	28.9	14.8	8.6	3.2	2.32
2000	25.7	30.3	25.4	5.8	45.3	1.91
2001	40.8	21.0	28.7	11.8	-11.8	-

Source: Author's calculations based on figures from Reserve Bank of India (*Report on Currency and Finance*, various issues) and Reserve Bank of India (*RBI Bulletin*, July 2001).

The process of liberalization in India also explains this, as most FDI approvals remained discretionary; comparatively, a one time, entry-point registration for portfolio investments in financial markets made it faster and simpler.[1] This might have tilted the composition of flows in favour of portfolio investments.

How do these features relate to other countries in the Asian and Pacific regions? Figure 1 plots the trends in net capital inflows (sum of FDI, portfolio, loans and resident Indian deposits) into India between 1985-2001. The plot shows a recovery of net capital inflows that had begun to decline in the late 1980s and bottomed out in the 1991 crisis.

As mentioned earlier, following liberalization of direct investment and portfolio flows there was a spurt of capital inflows between 1992-95 and 1996-97, an experience similar to the Asian and Latin American economies (Figure 2). The magnitude of capital flows into India is much smaller though. The peak level for India is 3.5 per cent of GDP in 1993-94, whereas the peak levels are above 20 per cent for Malaysia, 13 per cent for Thailand, 10 per cent for the Philippines and almost 10 per cent for Singapore between 1990-93 (Glick 1998: 4-5). The swing in the capital account observed in the case of other emerging economies is not visible for India though. Khan and Reinhart (1995) estimate a change in the capital account from -2.4 per cent (GDP) on an average between 1984-89 to 1.6 per cent (1990-93) for ten Latin American countries and from 1.6 (1984-88) to 3.2 (1989-93) per cent (GDP) for eight Asian ones. Comparative figures for India are 2.3 (1985-89) and 2.6 (1993-2001)[3] per cent of GDP, indicating only a marginal increase. This is explained by India's relatively late start in financial liberalization, by which time the competition for international capital had already stiffened. Over the next two sections, we examine the impact of these flows.

Figure 1
Private net resource flows to India, 1985-2001

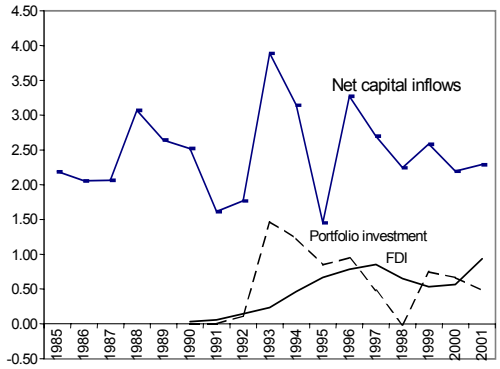
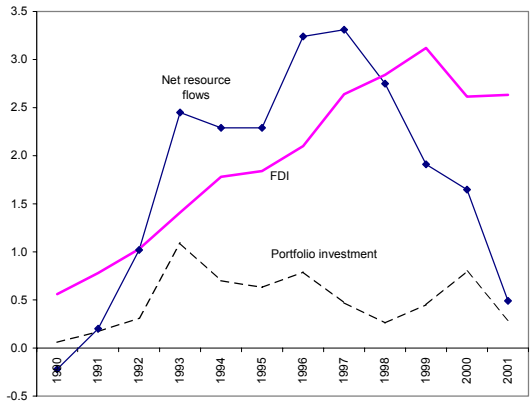


Figure 2
Private net resource flows to Asia and Pacific region, 1990-2001



Source: World Bank (*Global Development Finance*, various issues).

3 These figures exclude years 1990-91 due to the balance of payments crisis as a result of which there was extensive capital flight of non-resident Indian capital from India (see Government of India).

3 Capital flows and effects upon macroeconomic aggregates

How has this transition impacted the Indian economy? Capital inflows impact on a range of economic variables and unlike aid flows, these also have an immediate macroeconomic impact, with possible adverse implications if not tackled properly. The considerations surrounding these flows, therefore, are different with greater emphasis upon economic management and policy response.

Several authors (Corbo and Hernandez 1994; Calvo, Leiderman and Reinhart 1992, and Khan and Reinhart 1995, amongst others) have documented the effects of capital inflows for Latin America and East Asia and this section draws upon these studies in analysing India's experience. Some commonly observed effects of capital inflows are exchange rate appreciation, monetary expansion, rise in bank lending if the flows are intermediated through the banking system and effects upon savings and investment. This section considers the effects of capital flows upon the exchange rate, foreign exchange reserves and money supply.

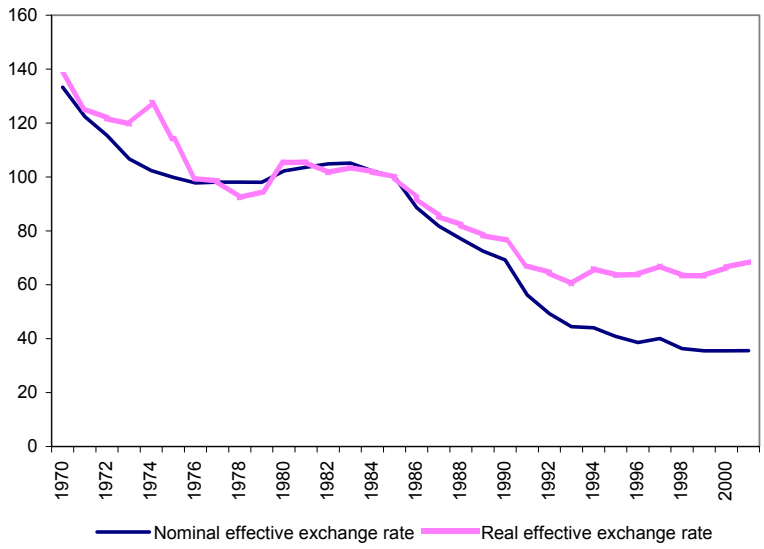
3.1 Exchange rate appreciation

In theory, an inflow of foreign capital will raise the level of domestic expenditure in the economy, raising the demand for non-tradable goods that results in an appreciation of the real exchange rate. The price-adjustment process then leads to a reallocation of resources from tradable to non-tradable goods and a switching of expenditures in favour of non-tradables. The rise in aggregate expenditure also increases the demand for tradables, leading to a rise in imports and a widening of the trade deficit. The transmission channel of the real exchange rate appreciation will, however, depend on the exchange rate regime. With a floating exchange rate and no central bank intervention, the appreciation will take place through a nominal appreciation, but in a fixed exchange rate regime, the appreciation will work through an expansion in the domestic money supply, aggregate demand and the prices of non-tradables. How has this process worked for India?

The real and nominal, effective exchange rates (bilateral, rupee-dollar) over three decades are plotted in Figure 3. While both series depreciate after 1985, the nominal depreciation persists at the time of regime switch in 1993 but the real exchange rate becomes mean reverting. Two real appreciation episodes are visible after 1993, coinciding with the capital surge in 1992-95 and 1996-97, when the real exchange rate appreciated by 10.7 (August 1995) and 14 (August 1997) per cent, respectively, over its March 1993 level.

The policy response of the authorities was to avert a nominal appreciation (Acharya 1999), preferring an adjustment through gradual increases in domestic inflation. Part of the policy response was directed towards encouraging capital outflows through early servicing of external debt. The timing of these inflows also facilitated India's external adjustment as they coincided with trade reform, convertibility of the current account and liberalization of overseas investments by Indian firms, measures that were partly financed by the net increase in capital assets during this period.

Figure 3
Nominal and real effective exchange rates (1985=100)



Source: Reserve Bank of India (*Handbook of Statistics* 2001).

Figure 4
REER versus capital inflows

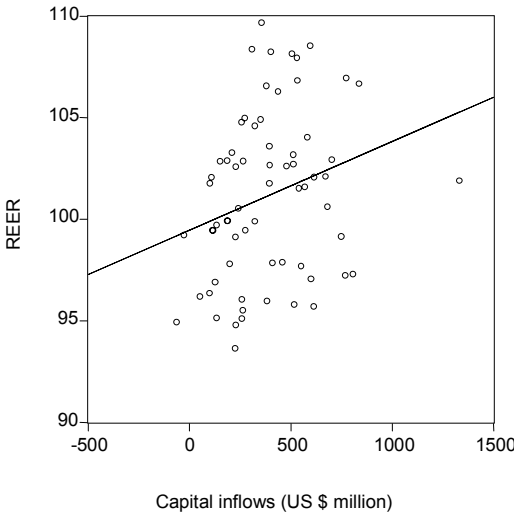
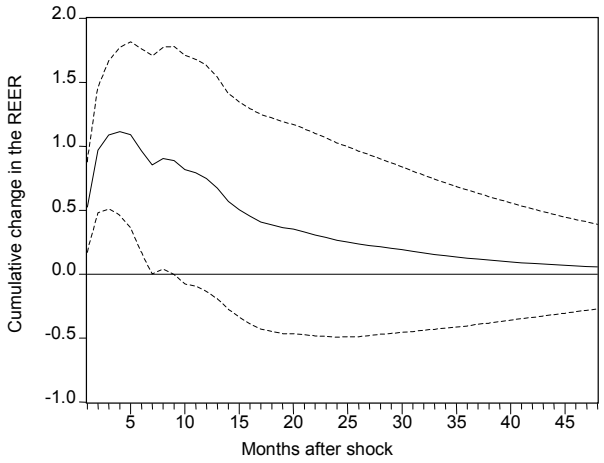


Figure 5
Response of REER to innovations in net capital inflows



Both real exchange rate behaviour and policy response in India bear a closer similarity with East Asian economies than the Latin American ones. The former mostly limited adjustment of their currencies vis-à-vis the US dollar, while the latter allowed much more exchange rate flexibility. The extent of real exchange rate appreciation in the Asian region was far less than the Latin American countries due to differences in policy

response.[4] Circumstances indicate that policy response was undoubtedly a major factor in thwarting appreciation pressures upon the real exchange rate.[5]

The behaviour of the real exchange rate in response to capital inflows has been an important area of concern for researchers. Calvo, Leiderman and Reinhart (1992) and Edwards (1999) have explored the association between capital inflows and real exchange rates for a set of Latin American countries. They find substantial evidence that capital inflows contributed both to real exchange rate appreciation and reserves' accumulation in these countries. Is there any such evidence for India? We attempt a tentative exploration of this hypothesis in this paper.

The time-series properties of the two series show both net capital account and the real effective exchange rate (REER) to be stationary, I (0), processes at monthly frequency between 1993-2001.[6, 7] Both series are also cointegrated.[8] The simple correlation coefficient between the two series is 0.24, which is comparable to estimates for seven Latin American economies that which range between 0.14-0.72 (Edwards 1999). The bivariate relationship between net capital inflows and the real effective exchange rate is plotted in Figure 4. Granger causality tests show that the hypothesis that net capital inflows do not cause real exchange rates can be rejected 96 per cent of the time. Reverse causality, i.e., real exchange rates do not Granger cause net capital inflows, is, however, accepted.

An impulse response function from the vector error-correction estimation between the two series in Figure 5 is constructed to illustrate the impact of capital inflows upon real

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4 Khan and Reinhart (1995) have pointed out that differences in composition of aggregate demand might account for this varied exchange rate response across the two regions as investment rose in APEC region but consumption rose in Latin America. A similar investigation for India shows that the investment to GDP ratio increased by 3.5 per cent during the capital inflow boom in 1993-95. Private savings rose by an approximately similar amount and consumption, private and public, declined. In the second episode (1996-97) when the inflows resumed, investment remained sluggish, showing only a marginal increase in 1997-98. Public consumption retained its upward trend; private consumption rose too, declining slowly thereafter. No clear-cut pattern is thus visible in the macroeconomic statistics, except a steady increase in public consumption and an investment boom between 1993-95. The role of composition of aggregate demand in curtailing a real appreciation is thus indeterminate during this time span.

5 For example, when the flows abated by mid-1995, the central bank effected an adjustment in the nominal exchange rate in late 1995, bringing back the real exchange rate closer to the March 1993 level. A similar policy response prevailed when the real exchange rate appreciated in response to capital inflows in 1996-97; the appreciation was reduced by 9 per cent in December 1997. These adjustments can be distinguished in Figure 3.

6 The ADF and Phillips-Perron statistics for net capital account and the real effective exchange rate are -4.00, -5.80 and -2.87 and -6.24, respectively. Critical ADF values are -3.68 (1 per cent), -2.97 (5 per cent), -2.62 (10 per cent) while Phillips-Perron values are -3.67 (1 per cent), -2.96 (5 per cent) and -2.62 (10 per cent), respectively. The REER is non-stationary according to ADF test.

7 The stationarity of the real exchange rate is interesting; it follows the change in exchange rate regime in 1993 and validates purchasing power parity for the period. The mean-reverting nature of the real exchange rate in the 'managed float' period might however, be associated with the PPP rule by which the float is managed rather than a market determined movement of the REER. See Kohli (2002).

8 The λ_{trace} statistic is 23.1, which exceeds the critical value of 20 at one per cent, suggesting that the null hypothesis of no cointegrating vector be rejected.

exchange rates. The response function indicates that a one standard deviation surprise shock to net capital inflows, i.e., a net inflow of US$246 million in the first period causes the real exchange rate to appreciate by 1.0 per cent in the third month, followed by oscillations around this value for the next six months and then a dissipation to its original value. This is then accompanied by a cumulative appreciation of 0.9 per cent, which then wears out over 24 months, i.e., two years.

The impulse response simulations reveal a permanent effect of unanticipated capital account shocks upon the real effective exchange rate. The VECM representation also shows a significant adjustment response of the real exchange rate to past disequilibrium, the size of the adjustment coefficient being 0.007.[9] Finally, the net capital account does not move significantly to restore equilibrium as indicated by the insignificant adjustment coefficient on the capital account equation in the system.

Preliminary evidence for India, therefore, corresponds to individual as well as cross-country evidence on this issue. However, this needs to be examined within a well-specified context as fluctuations in real exchange rates can also be affected by changes in the terms of trade, government spending and monetary as well as exchange rate policies. This is an importance area of research for future work as a significant implication of this result is that a rise in inward capital flows into the economy may lead to losses in international competitiveness via real exchange rate appreciation, which has implications for exchange rate policy.

3.2 Reserve accumulation

Depending upon the exchange rate regime, capital inflows can be traced to either international reserves' accumulation or a current account deficit. If there is no intervention by the central bank, i.e., the exchange rate regime is a pure float, then the net increase in capital assets via capital inflows would be associated with a similar increase in imports and therefore a widening current account deficit. Alternately, if the exchange rate regime is fixed and the central bank intervenes to counter appreciation pressures, then capital inflows would be visible in increases in foreign exchange reserves. Since the two extremes are rarely observed in practice, the choice of intervention, or its size, narrows down to the degree of exchange rate flexibility desirable by the authorities and is, in essence, a policy choice.

Figures 6 and 7 plot foreign exchange reserves and the current account deficit (per cent GDP) for India over 1970-2001. The current account deficit is seen to be narrowing after touching 3.2 per cent in 1991, the year of crisis and recently turning into a surplus in 2000-01. The steep increase in foreign exchange reserves (Figure 6) is concomitant with this decline, indicating absorption of foreign currency inflows by the central bank. In 1993, the first year of the capital surge, almost the entire net capital inflows were absorbed as foreign exchange reserves. In 1994, almost one-third of net capital inflows were utilized so; from 1996 onwards, the Reserve Bank has typically absorbed fifty per cent of net capital inflows into international reserves (Kohli 2000a, 2000b). The stock of international reserves in 2001-02 (US$54.1 billion) represents an increase of nearly 486.83 per cent over the 1991 level. Between 1991-2001, the rate of growth of foreign

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9 The detailed VECM results are not reported here but are obtainable from the author upon request.

exchange reserves in India averaged 25.2 per cent against a negative average of 7.06 per cent for 1985-90.[10]

The buildup of reserves following a surge in capital inflows mirrors the reserve accumulation patterns of countries in the Asian and Latin American regions, all of which augmented their foreign exchange reserves similarly. In fact, Figure 6 mimics the trend in international reserves observed for a group of Asian and Latin American countries in Figures 8-9.

Figure 6
Foreign exchange reserves
(excluding SDRs and gold)

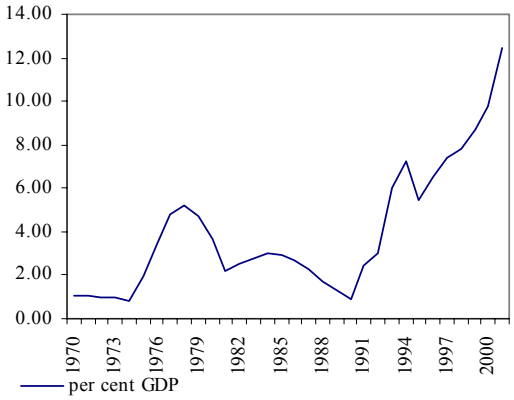
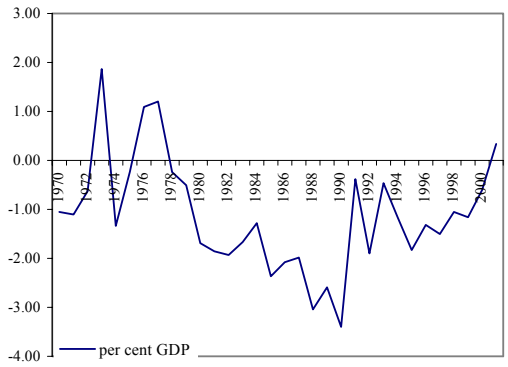


Figure 7
Current account balance



Source: Reserve Bank of India (*Handbook of Statistics* 2000).

Figure 8
Official reserves, East Asia and Pacific

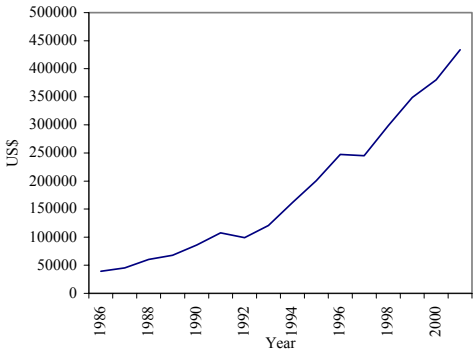
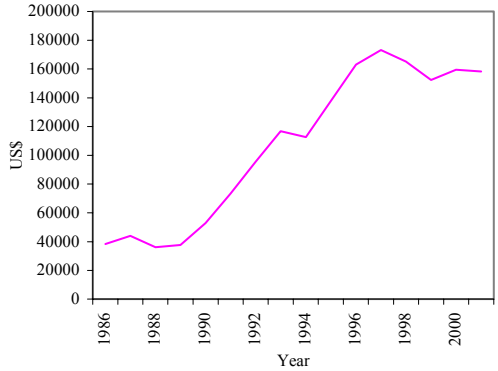


Figure 9
Official reserves, Latin America and Caribbean



Source: Reserve Bank of India (*Handbook of Statistics* 2000).

10 Conscious efforts made by the authorities to boost foreign exchange reserves through mobilization of funds from non-resident Indians, viz. the Resurgent India Bonds (1998) and the Indian Millennium Deposit Bonds (2000) are also to be noted at this point. These were targeted exclusively at NRIs and overseas corporate bodies predominantly owned by NRIs.

3.3 Impact upon monetary conditions and sterilization

Capital inflows affect domestic money supply through accumulation of net foreign currency assets with the central bank. If the central bank intervenes to maintain a fixed exchange rate, then an accumulation of international reserves represents an increase in the net foreign exchange assets of the central bank and directly affects the monetary base. In contrast, if the exchange rate is allowed to float without intervention, there is no impact on domestic money supply. What has been the impact of capital inflows upon domestic money supply in India and how has monetary policy responded to these inflows?

Table 2 presents a profile of monetary indicators and offers a perspective via movements in the monetary base. Some stylized facts can be established about changes in the movements of monetary aggregates after the shift to private capital flows. First, net foreign exchange assets of the central bank account for most of the increase in the monetary base (reserve money) in the 1990s. As a percentage share of M3, the monetary aggregate targeted by the central bank, net foreign exchange assets have grown from an average of 3.7 per cent in the 1980s to 12.1 per cent in 1990s. Second, while the fiscal policy-induced increases in money supply have declined somewhat in the post-liberalization period, it still remains an important exogenous source of monetary expansion. Third, private sector credit appears to be the only policy variable that is manipulated by the central bank via interest rate and reserve requirement changes to adhere to monetary targets. Offsetting squeezes on private domestic credit closely correspond to accretions in net foreign currency assets. Private sector absorption thus adjusts during heavy capital inflow.

Table 2
Movements in the monetary base (reserve money)
(Percentage to change in reserve money):

	ΔRBICG	ΔRBICC	ΔNFA	ΔGCL	ΔNMLL	ΔRM
1984/85-89/90*	105.5	13.6	7.6	2.0	28.7	100
1991-92	44.0	-34.0	92.5	0.7	3.4	100
1992-93	38.8	32.7	33.3	0.8	5.6	100
1993-94	3.1	-14.9	103.9	0.5	-7.3	100
1994-95	7.1	26.3	76.1	1.4	10.8	100
1995-96	79.3	34.9	-2.5	0.03	11.7	100
1996-97	50.1	-275.4	366.9	9.4	51.0	100
1997-98	41.8	7.7	80.3	0.8	30.6	100
1998-99	52.4	30.8	66.6	2.2	52.0	100
1999-2000	-20.2	31.0	131.8	3.5	46.1	100
2000-01	24.7	-25.5	137.5	3.4	40.1	100
2001-02	1.7	-27.7	193.5	2.5	70.0	100

Note: RBICG: RBI credit to government; RBICC: RBI credit to commercial sector, including commercial banks;
NFA: RBI's net foreign exchange assets; GCL: Government currency liabilities to the public
NMLL: Net non-monetary liabilities of the RBI; RM: Reserve money
(RM=RBICG+RBICC+NFA+GCL-NMLL)

Source: *Pre-90 figures from Joshi and Little (1994: 253). Author's calculations for the rest of the table.

The monetary impact of reserves' accumulation cannot only be inflationary, but also affects the domestic financial sector. This impact will be determined by the channels through which the inflows are intermediated within the domestic economy as well as the policy response of the monetary authorities to expansion in monetary base as a result of accumulation of foreign currency assets. The following section discusses the process of financial intermediation and its impact on the domestic financial sector.

4 Capital flows and the financial sector

There are two channels through which inward capital can be intermediated – the stock market or the banking system. The level of intermediation through either channel will depend on the relative size of the two sectors, the pattern of liberalization and the policy response. For instance, if restrictions on inflows and outflows of the banks remain, then the impact on banking sector will be limited. Similarly, if policy is targeted towards insulating intermediation through the banks, then the expansionary effects on their balance sheets will be limited.

The structure of intermediation within the Indian financial system reveals that the banking sector occupies a central place with a 52 per cent share in the total financial assets of the economy. The capital market, with a steadily rising share in intermediation (31 per cent) is also an important segment of the financial system. Both components are, therefore, important as far as intermediation of capital inflows is concerned.

4.1 Impact upon the banking sector

In theory, if there is no policy intervention, a capital inflow will impact the banks' balance sheets through an expansion in foreign liabilities, exposing the banks to new risks linked to interest rates, currency, country, maturity as well as asset-liability mismatches. Secondary effects of inflows could impact the banking system through a rise in the growth of private domestic credit, lending boom and risky loans. However, policy intervention could either offset or limit the extent of intermediation through the banking system. One, a net inflow could be offset by running a matching current account deficit, in which case capital outflow would balance the inflow, resulting in no permanent effect on the banks' balance sheets. Alternately, the central bank could sterilize the inflows deposited within the banking system, which would curb the exposure of banks and limit their risks. Both these interventions will prevent an expansion of domestic credit and related effects mentioned earlier.

A commonly observed effect of rise in net capital inflows is a rapid expansion of the commercial bank sector. This has been true of Thailand and Indonesia, where bank assets expanded rapidly from 73 and 45 per cent of GDP in 1988 to 102 per cent and 74 per cent of GDP, respectively, in 1993 (Folkerts-Landau *et al.* 1995). Table 3 gives some indicators of banking activity before and after capital account liberalization in India. Column 2 reveals that total assets of banks in India do not display an extraordinary expansion but a modest 3 per cent increase between 1990 and 2000. Private domestic credit in relation to GDP (column 3) does not show a rapid expansion either, though some co-movement with a surge in net capital inflow can be detected during the boom periods, 1993-95 and 1999-2000. In reverse, investments of banks in

government securities are observed to be steadily increasing, almost doubling between 1990 and 2001. Standing at 15.6 per cent of GDP in 2001, they represent an increasing transfer of risk to the public sector, i.e., the central bank.

The share of NRI deposits in relation to GDP remains constant at 0.5 per cent, the level obtaining in 1990, mainly because foreign currency deposits still remain restricted to non-resident Indians only. Statistics regarding foreign currency assets and liabilities of the banking system, available only from 1998-99 onwards, show that foreign currency liabilities of the banks have more than doubled between 1998-99 and 2000-2001. At 1.65 per cent of GDP in March 2001, these are fairly modest in comparison to the levels in some East Asian countries during the capital inflow boom of early 1990s. For instance, foreign liabilities rose from 7 to 19 per cent in Malaysia between 1990 and 1993 and from 3 to 11.2 per cent in Thailand between 1987 and 1993. Both the cautious pace of reform and its sequencing have ensured that the increase in foreign liabilities is kept within limits.

Several factors account for this muted impact upon the commercial banks. For one, the magnitude of net capital inflows in India is small in comparison to the Asia-Pacific region, as shown in section 2. Two, the sequencing of capital account liberalization has been ordered such that liberalization of capital account items directly concerning the banking sector followed relatively late in the process, with many important items still partially or completely restricted, for e.g., foreign currency deposits.

Last, but not the least, is the insulation offered by the policy response of the monetary authorities. As analysed in section 3, much of the net capital inflow into the country has been absorbed as foreign currency reserves. This would potentially represent an increase in domestic credit, were it not to be sterilized. While it is difficult to collect evidence on the magnitude of sterilization in India during the capital inflow surge,

Table 3
Banking Activity Indicators, 1990-2000 (per cent GDP)

Year	Total assets	Bank credit to commercial sector	Investment in govt. securities	Net capital account	Net foreign currency assets of the banking sector	Foreign currency assets	Non-resident fixed deposits	Overseas foreign currency borrowing
1990-91	56.3	30.2	8.8	2.3				
1991-92	51.6	28.8	9.6	1.5				
1992-93	50.3	29.4	10.1	1.6				
1993-94	50.7	27.7	11.8	3.5				
1994-95	50.4	28.9	11.6	2.8				
1995-96	50.4	29.0	11.1	1.3				
1996-97	49.1	27.5	11.6	3.0				
1997-98	52.3	28.5	12.3	2.5				
1998-99	54.1	28.2	12.7	2.0	-0.75	2.25	2.91	0.08
1999-2000	56.7	30.0	14.2	2.3	-1.20	1.63	2.74	0.09
2000-01	59.4	30.9	15.6	1.9	-1.65	2.37	3.95	0.07

Source: Reserve Bank of India (*Handbook of Statistics* 2001) and Reserve Bank of India (*RBI Bulletin*, various issues).

various sources suggest that the magnitude is quite high. Kletzer and Kohli (2001) note that for the period August 1995-December 2000, correlation between monthly increases in commercial bank credit to government and reserve inflow for the previous month is 0.48, while correlation between contemporaneous changes is -0.29. This indicates sterilization of reserve inflows by the Reserve Bank through increase in public debt held by the financial sector. As shown in Table 3, investments by banks in government securities have risen steadily. This evidence suggests that the central bank used domestic credit policy to attain internal policy objectives while engaging in sterilized intervention to influence/maintain the exchange rate. Sterilization has several controversial implications, which we dwell upon later.

4.2 Impact of portfolio capital flows on the capital market

This section examines the impact of portfolio capital flows upon the equity market. To recall, equity inflows were liberalized at an early stage of reform. When capital started to flow into India, portfolio flows played an important role, exceeding FDI inflows for several years (Table 1). As share of net capital account, portfolio flows contributed as much as 58.9 per cent in 1995 in a span of four years. As a share of GDP, net investments of foreign investors in the equity market hovered in the range of 0.5-0.7 per cent during the 1993-96 boom period, slackening thereafter. What has been the impact of portfolio equity flows upon the capital market in India following liberalization?

In theory, capital market integration will result in a lower cost of funds due to diversification and an increase in the supply of capital. Other benefits of liberalization of trade in financial assets include expansion in the size of the market as the number of potential investors' increase, improved liquidity and market depth and increased efficiency in allocation of investments. As the link between local and foreign markets strengthens, the progressive integration of financial markets can potentially increase the risk of volatility spillovers. Even if spillover effects are excluded, market volatility can increase as the frequency of inflows and outflows out of the country increases. A rise in volatility can have a potentially destabilizing effect especially if financial markets are thin, which is very often the case in developing countries. This can also lead to large variations in market liquidity, which can lead to higher volatility. Subsequent real effects of capital market liberalization documented in the literature relate to lending and investment booms.

Are any of the above effects visible in the case of Indian financial markets? As documented earlier, the opening of financial markets to foreign investors attracted significant amounts of private portfolio capital, which exceeded FDI in the early years. Figs. 10 and 11 track movements in equity prices and net equity inflows. The stock market index shows a sharp increase vis-à-vis 1990 levels, and the peaks in price-earnings ratio display a co-movement with the high inflow period of 1992-95 and 1999-2000. This suggests that entry of foreign investors possibly led to sharp increases in equity prices through a rise in demand for domestic equities. This is similar to the liberalization experience of other emerging markets. For instance, the price-earnings ratio for Mexico rose five times between 1988 and 1993 and doubled in Hong Kong and Thailand between 1990-93 (Folkerts-Landau *et al.* 1995) following liberalization of equity flows.

Figure 10
BSE share price index and P/E ratio

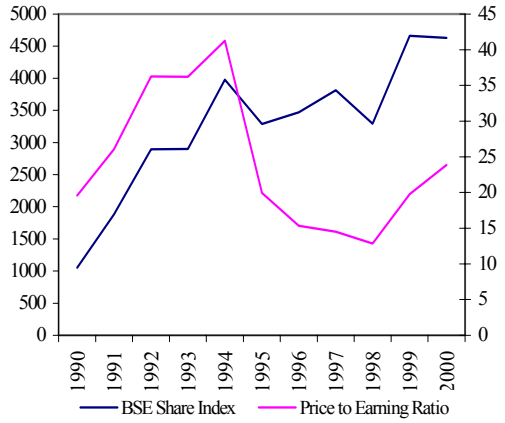
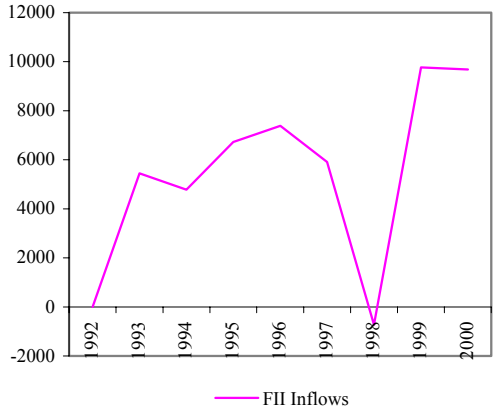


Figure 11
FII inflows, 1992-2000



Source: Reserve Bank of India (*Handbook of Statistics* 2000).

Table 4 shows indicators of stock market growth, liquidity, turnover and prices in the stock market from 1990. Market capitalization measures the size of the capital market in relation to GDP whereas the volume of domestic equities traded on the domestic exchange divided by GDP is a measure of market liquidity (Levine and Zervos 1998).

Some apparent associations revealed by the time-series are noteworthy. One, the growth of the stock market as measured by the market capitalization to GDP ratio reveals a positive correspondence with net equity flows, indicating an expansion in the size of the equity market during periods of high inflows, as in 1993-95 and 1999-2000. The price-earning ratio also displays a similar co-movement in these two periods, indicating that a surge in foreign capital inflow leads to a rise in equity prices. For instance, the price-earning ratio jumps to 22.7 in 1999-2000 from a low of 14.7 in 1998-99, which is also a period when there is a net capital outflow from the country. Sharp swings in price movements can also cause large variations in market liquidity, though the volume of equities traded on the exchange in relation to GDP does not move with these price swings. Market liquidity, in fact, increases steadily over the 1992-2001 time span indicating no adverse effects of booms and reversals in capital inflows.

How has liberalization affected market prices, volatility and spillovers? Table 5 shows the unconditional correlations between monthly stock prices and returns over the 1992-2001 time-horizon to provide some indication of how the correlation structure has changed over time. These movements indicate that opening of the capital account has made the stock markets more vulnerable to the vagaries of cross-border movements of capital. The table also shows that correlation between markets (Indian and US) has risen over time and tends to be higher during periods of higher volatility. Increased correlation across markets is consistent with, though not definitive, evidence of greater integration of financial markets.

Absolute volatility, as measured by the standard deviation of total returns on the monthly BSE index, rises during periods of high inflows, viz. 1993-94 and 1999-2000,

indicating an association with excessive price fluctuations. Volatility of stock prices also increases relative to that of the US when portfolio flows are excessively volatile, which is consistent with the view that volatility of portfolio flows into a country magnifies the sensitivity of stock prices to fluctuations in stock prices of larger equity markets. This reflects that the vulnerability of the local stock market to surges and reversals has increased after liberalization.

Table 4
Liquidity and Growth indicators

Year	Net FII investment in the Indian capital market [a]	Growth of the stock market [b]	Liquidity in the stock market [c]	Price/earnings ratio	No. of listed companies
1990-91	-	16.0	6.3	19.7	2245
1991-92		49.5	11.0	44.3	2514
1992-93	-	25.1	6.1	29.3	2861
1993-94	0.6	42.8	9.8	46.8	3585
1994-95	0.5	43.0	6.7	30.4	4702
1995-96	0.6	44.3	4.2	17.3	5603
1996-97	0.5	33.9	9.1	14.6	5382
1997-98	0.4	36.8	13.7	15.2	5853
1998-99	-0.04	31.0	17.7	14.6	5848
1999-2000	0.5	46.7	35.0	22.7	5889
2000-01	0.4	26.2	45.9	19.7	5955

Notes: [a] Net equity investments (per cent GDP);
[b] Market capitalization (per cent GDP);
[c] Turnover (per cent GDP)

Source: Reserve Bank of India (*Handbook of Statistics* 2001; *RBI Bulletin*) and The Stock Exchange, Mumbai.

Table 5
Volatility, spillover and effects on prices

Year	Equity flows and price/earnings ratio	BSE Sensex and lag of Dow Jones industrial Average	Absolute volatility of the returns on the BSE Sensex	Relative volatility
1992-93	-	-0.43	10.6	1.8
1993-94	0.77	0.95	9.6	3.1
1994-95	0.72	-0.36	5.4	1.8
1995-96	-0.44	-0.19	7.2	2.9
1996-97	0.82	-0.19	7.7	2.1
1997-98	0.69	0.15	8.9	1.9
1998-99	0.05	0.33	7.8	1.2
1999-2000	0.08	0.49	8.6	1.6
2000-01	-0.38	0.17	8.0	1.8
2001-02 [a]	0.67	0.53	6.8	1.2

Note: [a] Period is April 2001 to December 2001.

Source: Reserve Bank of India (*Handbook of Statistics* 2001; *RBI Bulletins*), Dow Jones website-www.dowjones.com and author's calculations.

5 Policy implications and conclusion

The experience with transition to private capital flows in India shows that the key economic variables are greatly affected by these flows. Its experience also conforms to the stylized representational impact faced by economies of the Asian and Latin American region. As the Indian economy gets increasingly integrated with the rest of the world, a reasonable expectation would be that official external assistance will completely halt and private inflows would increase, perhaps even to match levels reached by other emerging markets. In such a scenario, what are the implications for economic policy?

As this paper shows, the response of the exchange rate, the domestic monetary base and the domestic financial sector reveals the Indian economy's heightened vulnerability to exogenous factors, which may well be outside the country's control. For instance, a negative capital account shock through changes in interest rates outside the country or sudden shift of investors to locations offering higher returns could impact the economy with severity. These features, combined with the new dependency on private capital flows, imply that economic policies have to be more responsible and geared towards not only attracting these inflows, but also the right type of private foreign capital. Further, policies have to be oriented towards sustaining and managing these transfers so as to utilize them for productive absorption.

A disturbing feature in the Indian context is the distinct tilt towards portfolio rather than direct investment flows. It is well known that the composition of flows makes a significant difference, both in terms of impact[11] and smooth management. Portfolio flows are more volatile than direct investment flows and because of their short-term, uneven nature, more difficult to intermediate.[12] Thus they have a greater impact upon stock markets and domestic money supply and can lead to consumption, stock market and real estate booms via sudden expansions in liquidity in financial markets. FDI, on the other hand, is long-term in nature; being embedded in plant and equipment investment, it is less susceptible to sudden withdrawals and leads to productive uses of capital and economic growth. Short-term flows therefore, need to be matched by foreign capital inflows of a longer duration. But FDI does not reveal a stable, dominating trend in India so far. Therefore, this is a critical area for economic policy to concentrate upon. The focus should be to revamp economic policies so as to attract private capital flows of the stable, productive variety that raises the productive capacity of the economy.

Preliminary evidence for India on the relationship between portfolio flows and some stock market indicators suggests that market prices are not unaffected by capital inflows. Correlation between domestic and foreign financial markets highlights India's vulnerability to external financial shocks, exposing the economy to sudden withdrawals of foreign investors from the financial market, which will affect liquidity and market volatility. India's financial markets, which are still relatively thin and underdeveloped,

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11 Some studies have shown both categories to hold equivalent time-series properties though. See Claessens, Dooley and Warner (1995).

12 Tentative evidence for India supports this hypothesis. Portfolio flows are more volatile than FDI, as measured by the standard deviation of the two series.

could pose a severe constraint on intermediating heavy volumes of volatile, short-term capital, necessitating excessive intermediation through the domestic banking sector.

Banks account for 64 per cent of the total financial assets of the Indian economy. Heavy inflows in many countries have been associated with sudden expansion in banks' liabilities, domestic monetary expansion, unscrupulous loans and real estate and/or consumption booms. Moral hazard risks thus increase the likelihood of financial instability, as transpired during the Asian crisis. In such a scenario, a sound banking system is an essential prerequisite. The state of the Indian banking system, particularly the public sector banks, is fragile. Many of them are undercapitalized, with large levels of non-performing loans on their balance sheets. Though India's financial reforms have consistently emphasized strengthening of prudential regulation and supervisory standards, sector as well as borrower-specific exposure limits exist, and liquidity requirements are in place. The capacity of these institutions to assess, price and manage risks is doubtful. Moreover, regulatory reforms need to be supplemented with an appropriate incentive environment, which does not at present exist. These capacities can be created through structural changes and institutional reform of these institutions, progress on which is still to gain momentum. For instance, privatization and operational autonomy to public banks are two spheres of financial sector reform that would address these features but where progress has been very limited.

Policy issues also relate to real exchange rate appreciation and policy responses to manage private capital inflow. This paper shows that capital inflows are associated with real appreciation, an area where conflicting policy choices are bound to arise. The option of a more flexible exchange rate policy, which has the advantages of insulating domestic money supply and discouraging speculation through increased exchange risk, carries with it the risk of appreciation. An implication of real appreciation is the loss in external competitiveness, which hurts exports. This could lower the profitability of the trading sectors of the economy and disrupt the process of trade liberalization that India is currently implementing. Moreover, there are real adjustment costs associated with exchange rate changes, which, if the inflows are temporary, can severely disrupt economic processes within the economy.[13] The policy option of protecting exports through subsidies, as a safeguard against adverse exchange rate movements, is also now constrained by the current environment of globalization and trade agreements.

The major policy issue here is how much should the exchange rate be allowed to fluctuate or adjust vis-à-vis the tradeoff between the real economic costs of exchange rate fluctuations and inflation. However, a stable exchange rate is difficult to reconcile with simultaneous control of domestic money supply along with capital mobility. This is the familiar *macroeconomic policy trilemma* (Obstfeld and Taylor 2001) where the conflict facing policymakers is the choice between a fixed exchange rate, capital mobility and an activist monetary policy, when only two of the three objectives can be chosen. While the popular policy response prescribed in this context is to float the exchange rate, it is an option that is presently not feasible for reasons considered above.

A more realistic response could be the continued use of capital controls, particularly on short-term inflows. There is no doubt, particularly in the aftermath of the currency

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13 See Calvo and Reinhart (2000) who provide evidence as to why developing countries fear floating exchange rates.

crises, that capital controls have reemerged as a self-protection device to safeguard against heavy capital surge pressures. These can be effective in managing the external position, particularly in the short run, with some degree of success. In this regard, both Chile (1991) and Malaysia (1998) serve as useful case studies. Chile's unremunerated reserve requirements on short-term flows of less than one-year's maturity have been found to have tilted the composition of its inflows towards longer maturity. Similarly, Malaysia's capital controls in 1998 provided it useful time to restore and revive its domestic economy by enabling it to gear its monetary policy towards domestic objectives.[14]

Finally, in managing capital inflows so far, sterilization has been regularly used to limit the impact upon domestic money supply. Preliminary evidence in this paper shows a high degree of sterilization of capital inflows by the central bank. To sterilize or not to sterilize is a controversial issue and many academics have noted the pitfalls associated with sterilization policies (Spiegel 1995; Calvo 1991). Since it involves an exchange of foreign currency assets for domestic currency assets, the interest rate on the latter has to be kept high to limit central bank losses arising out of interest differentials. This, however, would serve to attract further capital inflows, which could be potentially destabilizing in some situations. A more pertinent argument against sterilization is that it leads to an increase in public debt. These costs, termed as quasi-fiscal costs in the literature, due to a favourable interest differential for domestic bonds, can be substantial.[15] The substantial rise in commercial banks' holdings of government securities by the banking system in the 1990s, mentioned earlier in the paper, suggests that the burden of quasi-fiscal costs in India could be quite high. In conjunction with the existing levels of public debt, as well as the mounting burden of interest payments, the costs of using the sterilization option are likely to be severe.

The analysis in this paper shows that though the shift in external financing from aid transfers to private capital flows has raised the availability of external resources to the Indian economy, it has also imposed greater discipline through the increased vulnerability of the economy to negative capital account shocks, volatility and other risks. The presence of integrated financial markets also exposes the economy to correlated risks, which makes it necessary to distinguish between different types of private inflows, and develop sound and efficient domestic financial institutions with the capacity to intermediate such inflows. This transition points out the importance of self-protection policies that countries must evolve in order to mitigate the risks to themselves, while seeking to extract the static and dynamic gains from private capital flows.

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[14] Some authors (e.g., Khan and Reinhart 1995) have argued that taxation of short-term flows is subvertible through over-invoicing and under-invoicing of imports and exports in the long run. On the other hand, there is some empirical evidence to suggest that capital controls had a persistent and sizeable effect upon the composition of capital inflows in Chile, tilting them towards longer maturity (Gregorio, Edwards and Valdes 2000).

[15] Calvo, Leiderman and Reinhart (1992) have estimated quasi-fiscal costs for Colombia at 0.5 per cent of GDP while Khan and Reinhart estimate them between 0.25-0.5 per cent of GDP for Latin American countries. Kletzer and Spiegel (1998) have extended the analysis further to incorporate the role quasi-fiscal costs might play in monetary policy for a group of APEC countries. Though they find these to be small in their influence upon central bank behaviour, they do find they might play a role in abandonment of a sterilization programme in the midst of a capital surge.

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