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India: Selected Issues and Statistical Appendix

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INDIA

Selected Issues and Statistical Appendix

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Approved by the Asia and Pacific Department

July 2, 2003

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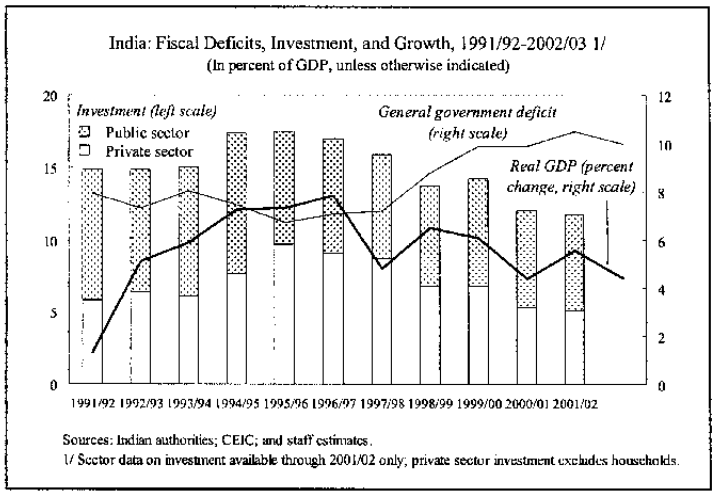
A. Introduction

1. **India has yet to reap the full benefit of financial sector reforms undertaken during the past decade due to the continued preemption of private saving by the public sector**. Large fiscal imbalances have required a readily available source of funds, facilitated by statutory preemptions of financial flows and public ownership of commercial banks. Captive savings schemes, directed credit programs, and government-guaranteed loans put a further squeeze on available resources for the private sector. Real-financial linkages in India have taken on greater relevance in recent years, in view of the slowdown in growth since the late 1990s. The slowdown, which has been attributed to cyclical and exogenous as well as structural factors,[2] has been accompanied by stagnation in domestic saving and weakening of investment demand.

2. **This paper looks at the intermediation of financial saving in India and the implications for growth**. Section B presents a brief review of recent studies linking financial sector development and growth in India. Section C gives an overview of financial sector reforms and then outlines ways the government preempts savings. Section D looks at trends in saving and uses a flow of funds approach to summarize the behavior of sector financial flows since the early 1990s.



B. Financial Development and Economic Growth

3. **Recent studies suggest a strong link between the level of saving and the efficiency of financial intermediation and economic growth in India**. In general, the studies lend support to the view that the government's large preemption of saving and intervention in the financial sector act to constrain efficient intermediation, and in turn dampen growth.

- Bhattacharya and Patel (2002 and 2003) argue that (i) the density of government ownership in India's financial sector reduces the profit-maximizing incentive for

[1] Prepared by David Cowen.

[2] See Chapter II on recent trends in growth and investment in *India—Selected Issues and Statistical Appendix* (IMF Country Report No. 02/193).

lenders to require optimal co-financing from borrowers, and (ii) the absence of effective bankruptcy procedures forces intermediaries to rollover substandard debt or convert it to equity. Combined with financial bailouts and regulatory forbearance for public intermediaries, these policies give rise to "aggravated moral hazard." Under these circumstances, financial intermediaries continue to lend to loss-making firms to limit nonperforming assets (NPAs), which constrains available funds for profit-making firms. They attempt to link a rise in the density of government involvement in the financial sector starting in the mid–1990s with a fall in an index of effective co-financing (as measured by the ratio of equity to total debt).

- Banerjee and Duflo (2002) consider whether firms are credit constrained in India, based on how they react to changes in directed lending programs. They posit that credit constrained firms would tend to use their new ability to access directed credits to expand production, while unconstrained firm would simply use them to substitute for other sources of credit. In examining small borrower-level data from public sector banks (PSBs) during the late 1990s, they indeed find evidence of credit constraints among small firms, suggesting that firms are willing but unable to borrow more at the market rate of interest.

- Bell and Rousseau (2001) examine whether financial intermediaries played a key role in influencing India's economic performance since independence. Their findings suggest that credit availability is critical to changes in economic structure and to growth, reinforcing the view that preemption of resources by the government can have serious detrimental effects on growth.

- Related studies suggest a positive relationship between growth and saving in India.[3] Higher (per capita) growth and income are found to lead to increased domestic saving, which in turn is largely used to finance domestic investment.[4] Athukorala and Sen (2002) determine that the level of investment and its efficiency have been important factors in determining growth in post-independence India up to the mid–1990s. A noteworthy finding in the context of recent budget developments and increasing fiscal imbalances is that public dissaving is found to be only partially offset by private saving, thus rejecting full Ricardian equivalence.

C. Financial Intermediation and Savings Preemption in India

4. **India has made considerable progress in strengthening and deepening its financial system since the early 1990s**, when policymakers began to open the financial sector to greater competition and reduce the system of controls in place since the 1960s. Among the early achievements were the re-entry of private and foreign banks (following

[3] See Mühleisen (1997) and Athukorala and Sen (2002).

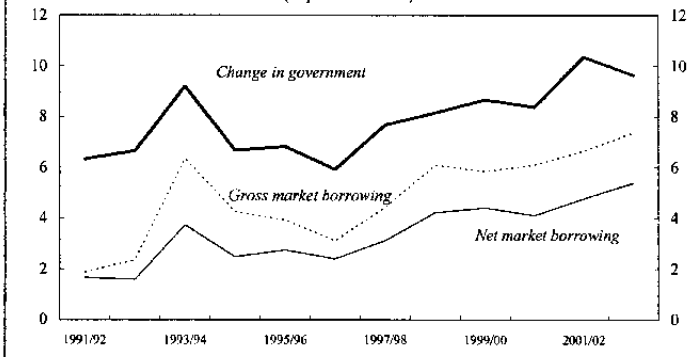
[4] Other factors found to influence the level of saving in India include real interest rates (+), financial deepening (+), and the terms of trade (-).

bank nationalization in 1969), capital market development, and interest rate liberalization. Statutory preemption of banks' resources has been eased through large reductions in the cash reserve ratio (CRR) and statutory liquidity ratio (SLR).[5] Progress has also been made in shifting the regulatory and supervisory framework away from administrative to market-based controls, most notably for commercial banks. Banks and other financial institutions (FIs) are still hindered by large NPAs, but recent moves by the government aimed at introducing a securitization and reconstruction framework for impaired assets and streamlining the bankruptcy procedures are expected to gradually allow these institutions to free up resources and better manage risk. Regulatory oversight of the equity market has also been strengthened in recent years following several major market scandals, but the debt market remains comparatively unregulated, despite a surge in private placements in the mid–to–late 1990s.

5. **As a result, by most measures, India has witnessed a steady rise in the level financial intermediation, but the efficiency of intermediation remains constrained by government intervention in the financial sector.** While the government has eased substantially many direct controls over the financial sector in the past decade, policies remain in place to directly influence the allocation of financial resources. With rising budget deficits, government market borrowing also began to increase substantially, from 3 percent of GDP in 1996/97 (on a gross annual basis) to an estimated 7½ percent of GDP in 2002/03. The government's preemption of saving is facilitated by the following:

- **The commercial banking sector remains concentrated in the hands of PSBs, with these banks tending to play a larger role in financing the public sector than their private counterparts.** The share of PSB assets in total commercial bank assets has fallen moderately—from 89 percent at end–1991/92 to 81 percent at end–2001/02 (Table I.1). However, this does not factor government's ownership (either direct or indirect) in other FIs,[6] or PSBs' stake in some private banks. In addition, compared with private (domestic and foreign) banks, PSBs hold a

India: Change in Government Domestic Liabilities and Government Market Borrowing, 1991/92-2002/03
(In percent of GDP) 1/



Sources: Data provided by Reserve Bank of India; and Fund staff estimates.
1/ For fiscal year beginning April 1.

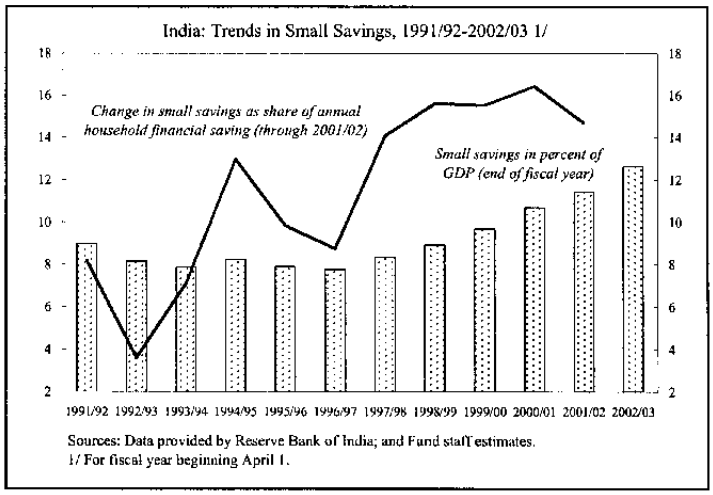
[5] The Reserve Bank of India has reduced the CRR steadily from 15 percent of a bank's net demand and time liabilities (NDTL) as late as April 1997 to 4½ percent since June 2003. The SLR has stayed at 25 percent of NDTL since October 1997, but is down from a peak of 38½ percent in the early 1990s.

[6] These institutions include all-India development banks and specialized financial institutions; the Life Insurance Corporation, Unit Trust of India (mutual fund), National Bank

(continued)

larger share of total assets in government securities and have more than three times the concentration of loans to public sector undertakings (PSUs) in their portfolios than private banks. Bhattacharya and Patel (2002) argue that these public institutions have failed to intermediate efficiently owing to a lack of proper incentives, evidenced by portfolio cross-contamination and reinforced by greater regulatory forbearance (than private institutions).[7] Aside from this, the ability of banks and other FIs to effectively lend is also constrained by comparatively large NPAs as a share of outstanding loans—at 11 percent at PSBs (and considerably higher at the term-lending public FIs), compared with 8¾ percent at private banks at end–2001/02, but down from 16 percent at end–1997/98. The Narasimham Committee II (1998) on financial sector reforms recommended a reduction in the government's minimum ownership stake in PSBs (currently 51 percent), but no progress has been made in this area.

- **Small savings schemes, which offer savers administered (and relatively high) interest rates and favorable tax treatment, are used to meet the government's financing needs.**[8] Given the size and attractiveness of the schemes, they tend to limit banks' flexibility to change their deposit and lending rates, which potentially distorts financial flows and lowers risk tolerance. Small saving schemes (mainly post office deposits, national saving certificates, and the public provident fund) had an outstanding balance equivalent to 12½ percent of GDP at end March 2003, up from 8¼ percent of GDP just five years earlier.



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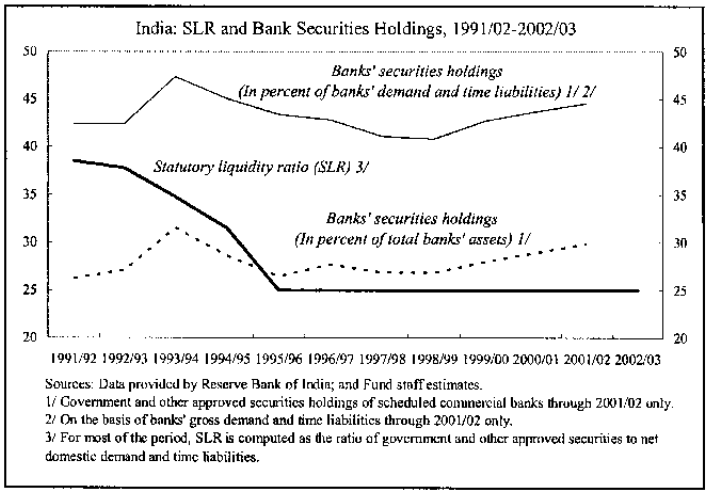
for Agriculture and Rural Development, and National Housing Bank; and state-level finance and development corporations

[7] Cross-contamination is identified by Bhattacharya and Patel (2002) as having two main sources: (i) development finance institutions (DFIs) mobilizing funds through the sale of bonds to other public intermediaries and onlending them to public undertakings, and (ii) PSBs and DFIs subscribing in each other's paper, which is counted as part of Tier II capital.

[8] Around 60 percent of the current balances in small savings schemes enjoy some form of favorable tax treatment (the exceptions being the Indira Vikas Patra and Kisan Vikas Patra schemes).

- **The SLR for banks is relatively high among the small number of countries that still use this type of liquidity requirement.** Banks currently hold about 40 percent of prescribed liabilities as central and state government securities and other SLR-approved investments, well about the 25 percent statutory minimum. More generally, government and other approved securities comprise around 30 percent of total commercial bank assets (highest among the PSBs) and rising.[9] In view of declines in treasury yields since mid–2001 (by approximately 500 basis points), banks have realized large gains from their government securities holdings (which were equivalent to 21 percent of GDP at end–2002/03, up from 12 percent of GDP at end–1997/98). However, interest rate risk looms large for a number of banks (especially PSBs) in the event of a sizeable rate backup, which could dampen future profits and further constrain lending.[10]



- **Other government preemptions take the form of directed credit programs and government guaranteed loans.** Directed credits in the form of priority sector loans accounted for more than one-third of total outstanding advances of scheduled commercial banks (SCBs)[11] at end–2001/02, down only slightly from a decade earlier. In part, this reflects an expansion of the official definition of the priority sector intended to make this a less binding requirement. However, it remains true that a much larger share of priority advances (15½ percent) were considered nonperforming compared with nonpriority advances (10 percent) as of end–March 2001. The Narasimham Committee II also recommended reducing priority sector loans from 40 percent of net bank credit to 10 percent, and simultaneously narrowing the focus of these loans to small farmers and other targeted low-income groups (Table I.2). Banks and development finance institutions (DFIs) also accounted for roughly 40 percent of government guaranteed lending (total state government were guarantees equivalent to 8 percent of GDP at end–March 2001), with loans

[9] Other approved investments include bonds, debentures, or commercial paper of government banks, FIs, and corporations established or constituted under the Companies Act.

[10] See Patnaik and Shah, 2002, "Interest-Rate Risk in the Indian Banking System," ICRIER Working Paper No. 92 (December).

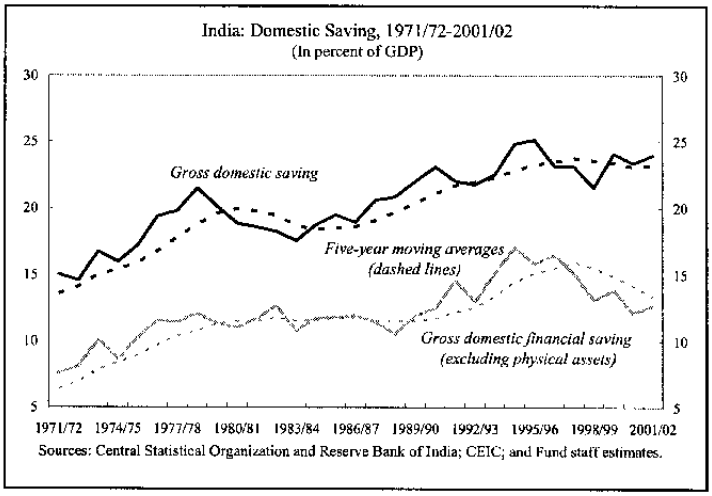
[11] Comprising public sector banks, private sector banks, and foreign banks (branches and subsidiaries), as well as regional rural banks.

concentrated in the power and agricultural infrastructure sectors.[12] While the default rate is currently low, the combination of government guarantees and reported NPAs at PSBs and DFIs (equivalent to around 3 percent of GDP at end–March 2002) creates a large quasi-fiscal liability, which could have implications for future public saving.

- **Prescribed investment patterns typically require nonbank FIs also to maintain large holdings of central and state government securities and other approved investments** (Table I.3).The Life Insurance Corporation (LIC)—India's large and dominant term life insurer—held an estimated 21 percent of government securities issued as of end March 2002, representing 76 percent of the LIC's total investments.[13] Other approved investments have concentrated in public securities issued to fund heavy industry and infrastructure projects, a number of which have had low overall rates of return.

D. Trends in Saving and Financial Flows

6. **While household saving continued to rise during the 1990s, domestic saving remained stagnant largely because of widening fiscal deficits** (Table I.4). From a cross-country perspective, the overall saving rate in India still compares reasonably well with other low-income countries in the region, but it has not kept pace with those countries experiencing more rapid growth, because of low public saving (Table I.5). In fact, domestic saving (both total and financial) began to show signs of a trend decline in the late 1990s—the first in more than two decades.[14]

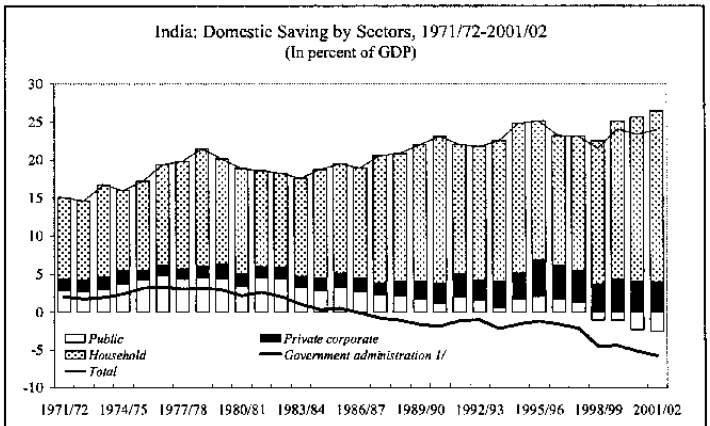


[12] See "Report of the Group to Assess the Fiscal Risk of State Government Guarantees," Reserve Bank of India, July 2002.

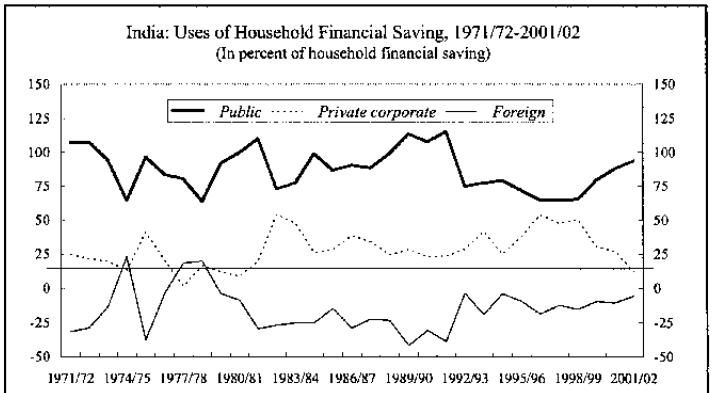
[13] Central, state, and other approved securities, as well as state electricity boards' bonds, comprised nearly 85 percent of LIC's total investments at end–March 2002.

[14] Gross domestic financial saving is defined as gross domestic saving less household saving in physical assets. Total saving by households (which largely comprise individual households and nongovernment noncorporate firms) is divided into saving in financial assets and in physical assets (i.e., household investment).

7. **As a result, a greater burden has been placed on household financial saving to finance investment**. Focusing on 2001/02 (the latest available data), an estimated 87 percent of household financial saving was used to finance the gap between public sector investment and saving by 2001/02, up from 65–70 percent in the mid–1990s. Another 10 percent of household saving was used to finance the private corporate saving-investment gap, but down from 50 percent in the mid–1990s. Reflecting a small current account surplus (the first since the late 1970s), the remaining 3 percent of household financial saving was net saving abroad. Looking at trends over the past decade, the following is also observed:



Sources: Central Statistical Organization and Reserve Bank of India; CEIC; and Fund staff estimates.
1/ Public saving less saving by departmental and non-departmental enterprises.



Sources: Central Statistical Organization and Reserve Bank of India; CEIC; and Fund staff estimates.
1/ Household financial saving includes statistical discrepancy. Private corporate and public are net investment (investment less saving), and foreign is the current account balance.

- **Public sector dissaving** was 2½ percent of GDP by 2001/02, compared with saving of 1½ percent of GDP in the early and mid 1990s. Of this, general government dissaving was even larger (at 5¾ percent of GDP in 2001/02).

- **Private corporate saving** (as well as private corporate investment) peaked at nearly 5 percent of GDP in 1995/96—nearly double the rate in the early 1990s. Since then, it has declined somewhat to 4 percent of GDP in 2001/02. However, during the same period, private investment decreased by 4 percentage points of GDP to 5 percent of GDP in 2001/02. Some of the pullback in private investment reflects adjustment to boom years in the mid–1990s, but it is clear that there has been a trend decline in investment since the late 1990s. This coupled with reduced financial flows to the corporate sector suggests that crowding out is occurring in India despite recent declines in interest rates

8. **Looking ahead, the saving rate would also appear to be insufficient to meeting the government's growth targets**. Under the Ninth Five-Year Plan (FYP) (1997/98–2001/02), real GDP growth averaged 5½ percent a year. While this compares reasonably well with the growth performance in the 1980s and first half of the 1990s, it fell well short of the plan target of 6½ percent. Both saving and investment stagnated during the Ninth FYP, with gross domestic saving (excluding saving in physical assets) averaging 13½ percent of GDP a

year. Under the Tenth FYP, real GDP growth is targeted at 8 percent, underpinned by gross domestic saving (excluding physical assets) equivalent to 18¼ percent of GDP a year.[15] Nearly half of this projected rise in saving is expected to come from the public sector. In addition, foreign saving, which has averaged roughly 1 percent of GDP since the 1990s, would be expected to rise to 3 percent of GDP, financed by portfolio flows and FDI, although these would need to rise considerably from current levels.

India: Net Financial Flows by Sector, 1971/72-2002/02 1/

(Annual average for period, in percent of GDP)

	1971-1980	1981-1990	1991-1995	1996-2001
Net use (+) of funds 2/				
Public nonfinancial sector	-4.4	-6.9	-7.2	-7.8
Of which : government administration 3/	2.1	-0.3	-2.2	-4.4
Private nonfinancial sector	4.2	4.9	6.0	6.9
Private corporate	-0.8	-2.4	-3.6	-2.9
Households	5.0	7.2	9.7	9.7
Rest of the world	0.1	2.0	1.0	0.8
Statistical discrepancy	0.1	0.0	0.1	0.2
Total	0.0	0.0	0.0	0.0

Sources: Central Statistical Organization; Reserve Bank of India; and staff estimates.

1/ On a fiscal year basis beginning April 1.
2/ A positive sign signifies that a sector's investments in financial assets and net increases in the value of those assets exceeds the funds made available to a sector over the specified period.
3/ Gross saving by government administration (center and state governments).

India: Household Sector Financial Flows, 1971/72-2001/02 1/

(Annual average for period, in percent of GDP)

	1971-1980	1981-1990	1991-1995	1996-2001
Net use (+) of funds 2/ 3/				
Currency and deposits	4.4	5.2	6.1	6.2
Small savings	0.3	1.0	0.8	1.4
Investments	0.1	0.8	1.7	0.7
Government securities	0.0	0.1	0.0	0.2
Corporate securities	0.1	0.4	1.1	0.4
Bank and FI securities	0.0	0.0	0.0	0.0
Foreign and other securities	0.0	0.3	0.6	0.1
Loans and advances	-1.7	-2.4	-1.7	-1.6
Life insurance	0.6	0.7	1.1	1.4
Pensions and provident funds	1.2	1.7	2.0	2.4
Other items (net) 3/	0.1	0.2	-0.4	-0.8
Total	5.0	7.2	9.7	9.7

Sources: Central Statistical Organization; Reserve Bank of India; and staff estimates.

1/ On a fiscal year basis beginning April 1.
2/ A positive sign signifies that a sector's investments in financial assets and net increases in the value of those assets exceeds a funds made available to a sector over the specified period.
3/ Includes statistical discrepancy.

9. **Flow of funds data support the above analysis.**[16] Focusing on financial flows between 1991/92–1995/96 and 1996/97–2001/02—roughly corresponding to the periods of accelerating and decelerating growth observed over the past decade, as well as to the last two FYPs—the following is observed:[17]

- **The household sector continues to provide the bulk of net financial flows, consistent with its share of domestic saving**. A rising share of funds was intermediated through bank deposits, small savings schemes, and life and pension funds in the second half of the 1990s compared with the first half of the 1990s. As noted earlier, these balances are largely pre-empted by the government. At the same time, net flows to corporate, foreign, and other securities (including mutual funds) declined during the second half of the 1990s.

[15] See *Report of the Working Group on Domestic and Financial Saving for the Tenth Five-Year Plan*, September 2001.

[16] Data on the flow of funds are compiled from the national income accounts and supplemented with flow of funds data compiled by the RBI through 1995/96.

[17] These two periods are also referred to as the first and second half of the 1990s.

- **The private corporate sector's receipt of net financial flows continued to rise through the first half of the 1990s, but not in the second half**. Through the first half of the 1990s, the trend reflects a sharp easing of regulatory restrictions on capital market financing and financial repression arising from lending rate caps. Supporting this view, Joseph et al (1999) note that despite a widening gap between private corporate saving and investment, gradual financial liberalization starting in the 1980s allowed medium to large scale firms to meet their financing needs more through external (i.e., outside the firm) versus internal sources of funds. However, the second half of the 1990s has seen some reversal in the private corporate sector's use of external funds, with new issues of corporate securities (debt and equity) declining from 4 percent of GDP a year in the first half of the 1990s to 2½ percent of GDP a year in the second half.[18] [19]

- **The public sector continued to be a dominant recipient of net financial flows in the 1990s**. Net issues of government securities and receipt of small savings were equivalent to nearly 60 percent of the households' total gross provision of funds during the first half of the 1990s, up from 45 percent in the first half of the 1990s. Comparing the public and private corporate sectors (excluding banks and FIs), net flows to the former exceeded those to the latter by an average of 3½ percent of GDP a year in the first half of the 1990s, but by the second half of the 1990s, the difference increased to 5 percent of GDP a year.

E. Conclusion

10. **Efforts in India over the past two decades to raise saving rates and improve financial intermediation have met with considerable success**, and compare well with other countries in the region. Gross domestic saving rose steadily through the mid–1990s, propelled in large part by household financial saving, partly reflecting rising income growth, higher real interest rates, and newly available savings instruments. Until the mid–1990s, annual increases in household saving were more than adequate on average to offset the decline in public saving, which nonetheless remained generally moderate owing to some measure of fiscal restraint. Foreign saving also stayed modestly positive. Household saving was sufficient to provide increasing flows to the private corporate sector.

11. **Notwithstanding these gains, the deterioration in fiscal situation starting in the mid to late 1990s and the maintenance of an apparatus for pre-empting saving has dampened some of the potential gains from financial sector reform and deepening.**

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[18] Based on data from the Centre for Monitoring the Indian Economy (CMIE).

[19] Shirai (2002) suggests that some of the reduced funding flows in the second half of the 1990s reflects the impact of tightened capital market regulations starting in the mid–1990s, in particular on low-quality firms, forcing them to rely more on internal sources of funds. Under these conditions, large profitable, low-risk, and export-oriented firms were found to more ably substitute bank loans for equity finance.

Since the early 1990s, direct controls over the pricing of financial products have been eased substantially, the range of financial products and services expanded rapidly, and the regulatory and supervisory framework strengthening considerably. However, significant controls (both direct and indirect) remain over the quantity of financial resources freely available to the private sector through the government's still heavy preemption of savings, which has become ever present and increasingly binding under the present fiscal stress. While easy monetary conditions and the low interest rate environment has brought some measure of relief, evidence in this and other studies points to some reduced financial flows and credit constraints facing the corporate sector, which may act to reinforce the trend slowdown in growth through weakened investment demand.

Table I.1. India: Financial Intermediation Indicators 1/

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	1981-90	1991-95	1996-2001
Broad money (in percent of GDP)	48.5	48.6	50.2	52.1	50.4	50.9	53.9	56.3	58.0	62.4	65.3	43.2	50.0	57.8
Bank deposits (in percent of GDP)	39.1	40.2	40.3	41.8	40.2	41.0	44.2	46.4	48.1	52.3	54.7	...	40.3	47.8
Public sector bank assets (in percent of total bank assets)	88.8	87.0	86.7	87.0	84.5	82.9	81.6	81.0	80.2	79.5	80.7	...	86.8	81.0
Bank credit to commercial sector (in percent of GDP)	27.7	28.6	26.9	28.3	28.4	27.0	27.9	27.8	30.3	32.3	32.9	28.0	28.0	29.7
Priority sector credit (in percent of bank credit) 2/	37.1	34.4	36.5	33.7	32.8	34.8	34.6	35.3	36.8	36.3	35.9	39.9	34.9	35.6
							(In percent of change in deposits)							
Change in scheduled commercial banks' (SCBs): 3/														
Loans and advances	...	40.7	-25.2	71.7	83.8	28.8	46.3	35.5	57.1	53.3	63.0	...	42.7	47.3
of which: term loans	...	4.4	-29.9	13.5	27.7	20.8	17.8	20.8	23.3	20.1	32.5	...	3.9	22.6
Investments	...	49.5	75.7	33.7	24.9	47.7	45.2	53.2	57.4	50.2	52.4	...	46.0	51.0
Approved	...	40.1	60.4	20.6	25.1	34.5	25.9	32.7	43.0	42.7	46.6	...	36.5	37.6
of which: government securities	...	35.2	57.6	20.2	25.8	35.9	26.4	33.9	44.7	43.5	48.5	...	34.7	38.8
Non-approved	...	9.4	15.4	12.4	0.6	13.3	19.3	20.5	14.4	7.5	5.8	...	9.4	13.5
							(In percent of bank assets)							
Government and other approved securities holdings of SCBs 3/														
Public sector banks	26.6	27.6	32.2	29.4	27.7	28.8	27.9	27.8	29.0	30.3	31.3	...	28.7	29.2
of which: government securities	18.1	19.3	24.3	22.7	22.0	23.9	23.7	24.5	26.4	28.1	29.5	...	21.3	26.0
Other banks	23.6	23.8	27.1	23.4	20.0	22.1	22.3	22.5	23.7	23.6	23.7	...	23.6	23.0
of which: government securities	18.9	20.6	24.3	21.2	18.3	20.7	21.2	21.6	23.0	23.0	23.3	...	20.7	22.1
							(In percent of bank advances)							
Credit by SCBs to public sector undertakings	9.7	11.7	12.0	9.9	9.3	9.4	10.7	11.1	11.0	14.3	15.6	...	10.5	12.0
Public sector banks	9.9	12.8	13.2	11.7	11.2	11.0	12.7	13.3	13.2	17.1	19.0	...	11.8	14.4
Other banks	8.3	4.2	5.6	1.3	1.5	3.7	3.7	3.2	3.3	5.0	6.7	...	4.2	4.3
Stock market capitalization (in percent of GDP)	19.4	54.2	30.6	46.6	46.7	48.2	35.7	38.7	33.0	47.1	29.7	...	39.5	38.7

Sources: Reserve Bank of India (RBI); Bombay Stock Exchange; and Fund staff estimates.

1/ On a fiscal year basis beginning April 1.
2/ Based on data from RBI's summary tables on banking statistics through 1999/2000 and staff estimates thereafter. Excludes priority sector advances made through Rural Infrastructure Development Fund and other indirect means.
3/ Excluding regional rural banks.

Table I.2. India: Priority Sector Lending Targets for Scheduled Commercial Banks
(Except regional rural banks)

Sectors	Target (In percent of net bank credit)
1. Domestic banks	
Agriculture, small scale industries (SSI), and other activities 1/	40 percent
Sub-targets	
• Agriculture	18 percent, with no more than one–fourth of agricultural advances to indirect finance. 2/
• SSI (cottage, village, and artisan activities)	10 percent, with two–fifths to SSI units with plant machinery less than Rs. 500,000, and one–fifth to SSI units with plant and machinery between Rs. 500,000 and Rs. 2.5 million.
• Weaker sections (may include agriculture and SSI)	10 percent, including: • Small and marginal farmers, landless laborers, and sharecroppers. • Cottage, village, and artisanal industries where individual credit limits do not exceed Rs. 50,000. • Scheduled casts and tribes, self-help groups, beneficiaries of the Differential Rate of Interest Scheme (DRI), and other specified groups. 3/
2. Foreign banks 4/	32 percent
Sub-targets	
• SSI	10 percent
• Export credit (for banks with no rural branch network)	12 percent

Source: Compiled from Reserve Bank of India, *Master Circular on Lending to Priority Sector* (November 2002).

1/ Includes small business and transport operators, retail trade, professional and self-employed persons, housing and education loans, and micro credit.
2/ Indirect finance to agriculture includes deposits held by banks in the Rural Infrastructure Development Fund maintained by NABARD.
3/ Under the DRI scheme, concessional rate of interest (4 percent per annum) provided to select low-income groups.
4/ Shortfalls in achieving target/sub-targets can be met through interest-bearing deposits for one year with Small Industries Development Bank of India.

Table I.3. India: Prescribed Investment Patterns for Nonbank Financial Institutions

Institution	Type of Investment	Holding Requirement 1/
Life insurance	1. Government securities	25 percent
	2. Government securities or other approved securities (inclusive of 1. above)	50 percent
	3. Approved investments	
	a. Infrastructure and social sector	15 percent
	b. Other investments are governed by exposure norms, with 'other than approved investments' not to exceed 15 percent	35 percent 2/
General insurance and reinsurance	1. Central government securities	25 percent
	2. State government securities and other guaranteed securities (inclusive of 1. above)	30 percent
	3. Housing and loans to state governments for housing and firefighting equipment	5 percent
	4. Investment in approved investments	
	a. Infrastructure and social sector	10 percent
	b. Other investments are governed by exposure norms, with 'other than approved investments' not to exceed 25 percent	55 percent 2/
Pension and general annuity	1. Government securities	20 percent
	2. Government securities or other approved securities (inclusive of 1. above)	40 percent
	3. Balance to be invested in approved investments and to be governed by exposure/prudential norms	60 percent 2/

Source: Compiled from *Insurance Regulatory and Development Authority 2001-02 Annual Report* (India).

1/ Minimum holding as a percent of total investment, unless otherwise indicated.
2/ Maximum holding.

Table 1.4. India: Sources of Growth, Saving, and Investment 1/

	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	1971-1980	1981-1990	1991-1995	1996-2001
Real GDP growth (at factor cost)	1.3	5.1	5.9	7.3	7.3	7.8	4.8	6.5	6.1	4.4	5.6	3.2	5.6	5.4	5.9
Real GDP growth (at market prices)	0.9	5.3	4.9	7.5	7.6	7.4	4.5	6.0	7.1	3.9	5.5	3.1	5.8	5.2	5.7
Domestic demand	-1.7	4.1	5.3	8.8	7.8	7.3	5.6	5.3	8.6	1.9	4.8	3.6	5.1	4.9	5.6
Private sector	-0.9	4.9	4.2	8.8	10.5	7.3	5.6	4.5	7.6	2.9	4.8	3.3	4.9	5.5	5.4
Consumption 2/	2.2	2.6	4.8	5.2	6.4	10.7	3.8	5.7	5.2	2.3	5.2	3.3	4.2	4.2	5.5
Investment 3/	-14.5	17.2	1.4	26.1	26.7	-3.9	12.5	0.1	16.2	4.8	3.4	4.2	8.9	11.4	5.5
Public sector 2/ 3/	-4.5	0.7	9.8	8.7	-2.9	7.0	5.6	9.2	13.0	-2.0	5.0	5.4	6.0	2.4	6.3
Domestic demand	-1.7	4.2	5.3	8.9	8.0	7.4	5.7	5.5	8.8	2.0	5.0	3.9	5.4	4.9	5.7
Private sector	-0.8	4.0	3.4	7.1	8.6	6.1	4.7	3.8	6.3	2.4	4.0	2.9	4.2	4.5	4.6
Consumption 2/	1.5	1.8	3.2	3.4	4.2	6.9	2.5	3.8	3.4	1.5	3.3	2.5	3.1	2.8	3.6
Investment 3/	-2.2	2.3	0.2	3.7	4.4	-0.8	2.2	0.0	2.9	0.9	0.7	0.4	1.1	1.7	1.0
Of which: private corporate 3/	1.3	0.9	0.3	2.2	3.0	0.5	0.5	-1.3	0.7	-1.7	0.1	0.1	0.4	1.6	-0.2
Public sector 2/ 3/	-1.0	0.1	1.9	1.8	-0.6	1.3	1.0	1.7	2.5	-0.4	1.0	1.0	1.3	0.5	1.2
Of which: public investment 3/	-0.9	-0.2	1.1	1.6	-1.5	0.5	-0.2	0.3	1.0	-0.4	0.1	0.6	0.5	0.0	0.2
Gross domestic saving	22.0	21.8	22.5	24.8	25.1	23.2	23.1	21.5	24.1	23.4	24.0	17.9	19.8	23.3	23.2
Private sector	20.1	20.2	21.9	23.2	23.1	21.5	21.8	22.5	25.1	25.7	26.5	14.2	17.0	21.7	23.8
Household	17.0	17.5	18.4	19.7	18.2	17.0	17.6	18.8	20.8	21.6	22.5	12.6	15.2	18.2	19.7
of which: financial saving	9.5	8.7	11.0	11.9	8.9	10.4	9.6	10.5	10.7	10.9	11.2	4.9	7.1	10.0	10.5
Private corporate	3.1	2.7	3.5	3.5	4.9	4.5	4.2	3.7	4.4	4.1	4.0	1.6	1.9	3.5	4.1
Public sector	2.0	1.6	0.6	1.7	2.0	1.7	1.3	-1.0	-1.0	-2.3	-2.5	3.8	2.8	1.6	-0.6
Of which: government administration	-1.8	-1.7	-3.0	-2.6	-2.0	-2.3	-2.8	-5.1	-5.0	-5.4	-5.7	2.1	-0.3	-2.2	-4.4
Gross investment	22.6	23.6	23.1	26.0	26.9	24.5	24.6	22.6	25.2	24.0	23.7	18.1	21.8	24.4	24.1
Private sector	13.5	15.1	14.1	16.3	19.1	16.6	17.4	15.6	17.8	17.2	17.1	9.9	12.1	15.6	16.9
Household	7.7	8.7	8.0	8.6	9.4	7.5	8.7	8.9	10.9	11.9	11.9	7.6	7.9	8.5	10.0
Private corporate	5.8	6.4	6.1	7.7	9.7	9.0	8.7	6.7	6.9	5.3	5.1	2.4	4.2	7.1	7.0
Public sector	9.1	8.5	9.0	9.7	7.8	7.9	7.2	6.9	7.4	6.8	6.7	8.2	9.7	8.8	7.2
Foreign saving	0.3	1.7	0.4	1.0	1.7	1.2	1.4	1.0	1.0	0.5	-0.3	0.1	2.0	1.0	0.8

Sources: Central Statistical Organization; CEIC; and Fund staff estimates.

1/ On a fiscal year basis beginning April 1.
2/ Includes statistical discrepancy on consumption
3/ Includes statistical discrepancy on gross capital formation.

Table I.5. Regional Comparison of Growth, Saving, and Investment 1/
(In percent of GDP, unless otherwise indicated)

GDP per capita (PPP basis, in U.S. dollars)

	1970	Ratio 1/	2002	Ratio 1/
Bangladesh	227	0.9	1,358	0.6
China	152	0.6	4,800	2.2
India	247	1.0	2,199	1.0
Indonesia	289	1.2	3,536	1.6
Korea	716	2.9	17,863	8.1
Malaysia	695	2.8	8,882	4.0
Sri Lanka	316	1.3	3,025	1.4
Thailand	515	2.1	7,259	3.3

GDP per capita (annual percentage change)

	1971-80	1981-90	1991-2002	2002
Bangladesh	-0.9	1.8	2.9	2.4
China	4.2	7.8	8.7	7.3
India	0.7	3.6	3.4	3.1
Indonesia	5.6	3.4	2.7	2.3
Korea	5.9	7.4	5.0	5.3
Malaysia	5.0	3.2	3.7	2.0
Sri Lanka	2.9	2.8	3.2	2.7
Thailand	4.0	5.9	3.4	4.2

Gross national saving

	1971-80	1981-90	1991-2002	2002
Bangladesh	8.1	8.5	20.3	23.2
China	41.5	28.1	30.1	33.4
India	17.6	19.7	23.3	23.7
Indonesia	16.8	23.5	26.2	26.7
Korea	25.8	31.7	33.2	26.7
Malaysia	13.6	30.0	34.7	32.1
Sri Lanka	10.5	15.8	20.2	22.0
Thailand	20.6	25.0	32.8	30.6

Gross private saving

	1971-80	1981-90	1991-2002	2002
Bangladesh	9.7	9.1	17.8	20.6
China	...	17.7	28.5	28.3
India	14.0	16.9	23.0	26.1
Indonesia	...	21.3	20.2	25.2
Korea	21.5	25.1	23.2	13.8
Malaysia	1.1	18.7	17.9	15.1
Sri Lanka	11.6	15.2	22.7	25.5
Thailand	15.3	19.0	22.7	23.2

Gross capital formation

	1971-80	1981-90	1991-2002	2002
Bangladesh	11.3	10.8	20.5	22.6
China	...	35.3	38.8	41.5
India	18.7	21.7	24.1	23.1
Indonesia	...	27.6	24.9	14.3
Korea	29.0	31.0	32.2	25.4
Malaysia	25.7	31.3	33.8	24.4
Sri Lanka	16.8	25.1	25.1	24.6
Thailand	25.4	29.1	32.7	24.6

Gross private capital formation

	1971-80	1981-90	1991-2002	2002
Bangladesh	6.5	7.5	14.7	17.2
China	...	...	20.0	20.4
India	12.1	12.0	16.9	16.8
Indonesia	...	...	10.2	9.1
Korea	25.8	26.8	27.1	21.3
Malaysia	14.7	17.1	21.1	10.2
Sri Lanka	16.8	20.0	21.8	22.0
Thailand	19.0	22.0	22.9	17.5

ICOR 2/

	1971-80	1981-90	1991-2002	2002
Bangladesh	2.4	3.4	4.2	...
China	3.0	3.5	3.9	...
India	3.5	3.5	4.3	...
Indonesia	2.4	4.9	4.3	...
Korea	3.1	3.6	4.8	...
Malaysia	3.5	4.4	4.3	...
Sri Lanka	2.9	6.2	5.0	...
Thailand	3.5	3.8	4.2	...

Foreign direct investment

	1971-80	1981-90	1991-2002	2002
Bangladesh	0.0	0.0	0.3	0.1
China	0.0	0.5	4.1	4.3
India	0.0	0.0	0.1	0.1
Indonesia	0.0	0.5	1.5	1.4
Korea	1.0	2.9	5.6	3.6
Malaysia	0.3	0.3	0.5	-0.1
Sri Lanka	0.0	0.0	0.1	0.4
Thailand	0.2	0.7	1.3	2.1

General government balance

	1971-80	1981-90	1991-2002	2002
Bangladesh	-6.7	-6.0	-3.7	-3.7
China	-0.2	-1.6	-2.6	-3.3
India	-4.6	-6.6	-5.4	-6.1
Indonesia	1.0	-1.2	-1.2	-1.6
Korea	-2.2	-0.5	-0.5	2.8
Malaysia	-3.0	-7.1	-1.8	-4.8
Sri Lanka	-10.6	-10.1	-8.3	-8.0
Thailand	-3.3	-2.8	0.1	-2.8

Broad money/GDP

	1971-80	1981-90	1991-2002	2002
Bangladesh	13.4	18.4	29.4	37.9
China	30.8	62.3	123.2	171.4
India	27.5	43.5	54.6	69.3
Indonesia	10.6	21.5	50.7	53.3
Korea	32.7	36.1	55.7	89.9
Malaysia	50.5	85.4	129.1	133.5
Sri Lanka	19.3	28.9	36.6	38.9
Thailand	37.0	69.1	102.1	101.9

Source: WEO; and staff estimates.

1/ Ratio of GDP per capita relative to India.
2/ Excludes highest and lowest observation for each period.

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II. India's Global Integration and The Role of the IT Sector[1]

A. Introduction

1. **In the early 1990s, despite being a relatively closed economy, India suffered a balance of payments crisis** (Table II.1).[2] At that time, India's trade openness (imports and exports as a share of GDP) was comparatively low, tariff rates were high, and nontariff barriers (including licensing, quantitative import restrictions, "canalization" of imports,[3] and controls on exports) were extensive. Private capital movements (both inflows and outflows) were tightly regulated, with portfolio investment not permitted. Foreign direct investment (FDI) was limited, and capital inflows during the 1980s primarily consisted of aid flows, concessional lending, external commercial borrowing, and nonresident Indian (NRI) deposits. On the domestic side, licensing and controls in industry and agriculture were pervasive, most labor-management relations were covered by government regulations, and many sectors were reserved for the state or if, "nonessential," for small-scale industries.

Table II.1. Pre- and Post-Reform India 1/

(percent of GDP, unless indicated otherwise)

	1991 Crisis	2002/03
Average (unweighted) tariff rate (percent)	128	29
Trade openness 2/	17.2	30.5
Financial integration 3/	0.2	5.2
FDI and portfolio investment	0.0	1.0
Current account balance	-3.1	0.8
Foreign Reserves (US$ billions, excluding gold) 4/	2.3	71.9
(in months of imports of goods and services)	1.1	9.1
External debt 4/	26.5	19.8
Short-term external debt 4/ 5/	4.6	3.0
(in percent of reserves, excluding gold)	630.1	21.6
Real GDP (at factor cost, percent change)	1.3	4.4
Per-capita real GDP (at factor cost, percent change)	-0.7	2.6
WPI Inflation	13.7	3.5

Sources: Indian authorities; WEO; and staff estimates (unless otherwise specified).

1/ For 1991 Crisis, 1990/91, except for GDP and inflation, which are 1991/92.
2/ Imports and exports of goods and services as percent of GDP.
3/ From Lane and Milesi-Ferretti (1999). Latest available data is for 1997.
4/ End of period.
5/ Residual-maturity basis, including estimated repayment of $5.5 billion for the Resurgent India Bond in August 2003.

2. **In response to the crisis, India embarked on an ambitious reform program, which included substantial liberalization of external transactions.**[4] The exchange rate was unified in 1993, and current account convertibility was achieved with India's acceptance of Article VIII of the Articles of Agreement of the International Monetary Fund in 1994. On trade, India lowered tariff rates, reduced licensing requirements and canalization, removed most export restrictions, and eliminated quantitative import restrictions (based on balance of payments grounds). The capital account was also gradually liberalized, with a focus on encouraging foreign equity investment while reducing the reliance on short-term and debt-creating flows. In particular, portfolio investments were permitted

[1] Prepared by Ranil Salgado. This chapter is based on data that were available on June 15, 2003.

[2] For a discussion of the crisis and subsequent reforms, see, for example, Chopra et al. (1995) and Krueger and Chinoy (2002).

[3] Canalization means that trade is restricted to state agencies.

[4] For details on India's trade reforms during the 1990s and current trade regime, see Salgado and Hammer (2001), Chauffour (2002), and Reserve Bank of India (2003). For details on India's capital account liberalization, see Reddy (2000) and Jadhav (2003).

through approved institutional investors and by NRIs, FDI policies were liberalized, and restrictions on capital outflows—mainly those associated with inflows (for example, from exporters or NRIs) or involving Indian banks or corporates (subject to prudential guidelines)—were reduced. External commercial borrowing remains restricted, but longer-term borrowing was gradually liberalized. Domestic structural reforms—including delicensing and deregulation of the industrial sector, liberalization of private investment, tax reforms, and financial sector reforms—also improved the efficiency of the Indian economy and aided in global integration.

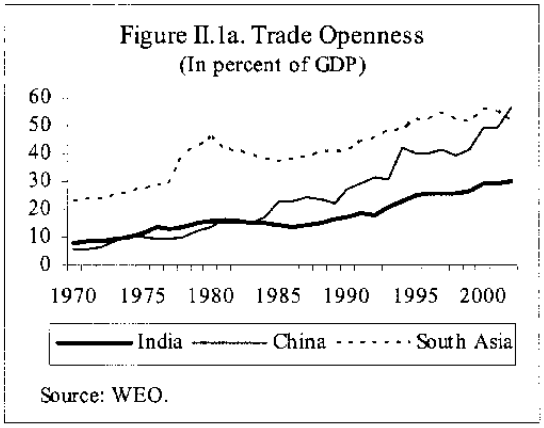
3. **With these reforms, India's trade openness and financial integration increased, while external vulnerabilities diminished** (see Table II.1). Both exports and imports surged during the decade following the crisis. Foreign direct and portfolio investments increased by roughly thirty fold as a share of GDP. At the same time, external debt—particularly short-term debt—decreased, while foreign reserves increased substantially.

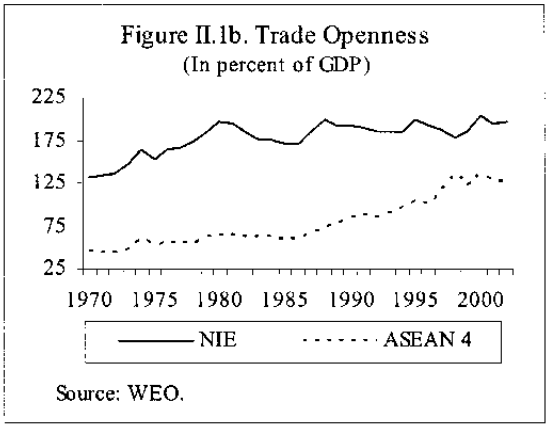
4. **This chapter examines India's progress with global integration, including in comparison to other Asian economies**. One unique aspect of the progress has been the importance of services trade, particularly software and IT-enabled services, in increasing India's integration. The next section takes stock of where India stands in this process, including relative to other Asian countries. Section C discusses the importance of the IT sector in India's globalization and also briefly describes the reasons behind the success of India's IT-related services sector. Section D assesses some of the future implications of India's integration. Increased global integration could be expected to have a number of economic effects, including on employment growth, poverty, inequality, and interstate disparities. We have chosen, however, to restrict the analysis in this paper to the broad macroeconomic impact from changes in the external accounts and the exchange rate. Section E provides some concluding remarks.

B. Progress with Global Integration

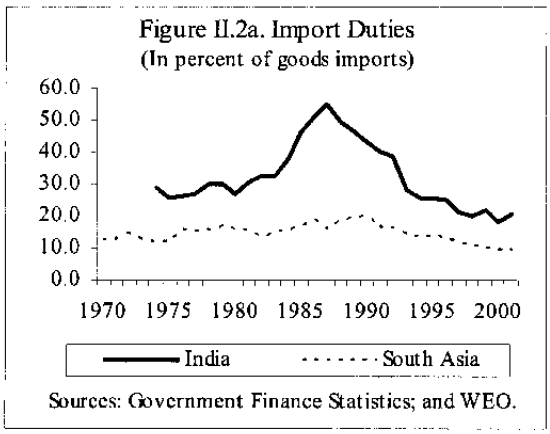
5. **After stagnating during the 1980s, India's trade openness doubled from under 15 percent of GDP in the late 1980s to about 30 percent of GDP in 2002**. The increase coincided with substantial trade liberalization. In particular, the average (unweighted) tariff rate fell from 128 percent at the beginning of the decade to under 30 percent in recent years, and nontariff barriers were reduced. While liberalization encouraged rapid growth in imports (averaging about 10 percent per annum in dollar terms during 1991–2002), the impact on the goods and services trade balance was offset by even faster export growth (10¾ percent per annum).

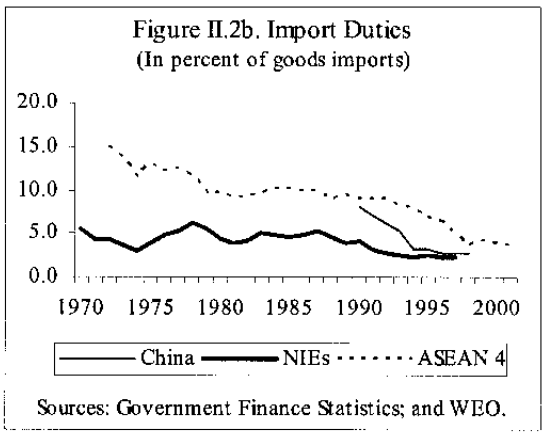
6. **Nonetheless, India remains less open to trade than other Asian economies**. India's trade share of GDP is lower than that of China, other South Asian countries (the simple average of Bangladesh, Nepal, Pakistan, and Sri Lanka), the newly industrialized economies (Hong Kong SAR, Korea, Singapore, and Taiwan POC), and the ASEAN-4 countries (Indonesia, Malaysia, the Philippines, and Thailand) (Figure II.1).





7. **While this partly reflects the size of the Indian economy,[5] it also is attributable to India's more restrictive trade regime**. Although trade-weighted average import duty rates (as percent of goods imports) have declined in India, they remain higher than in other Asian economies (Figure II.2). Nontariff barriers are also substantial, and in some cases, have increased during the past decade. In particular, India has become one of the most active users of anti-dumping measures—second only to the United States in initiations in recent years.[6] Overall, India's index of trade restrictiveness measured 8 in 2001 (on a scale of 1 to 10) compared to an average of 4.4 for Asian countries, suggesting that India has the potential to gain substantially more from further trade liberalization.





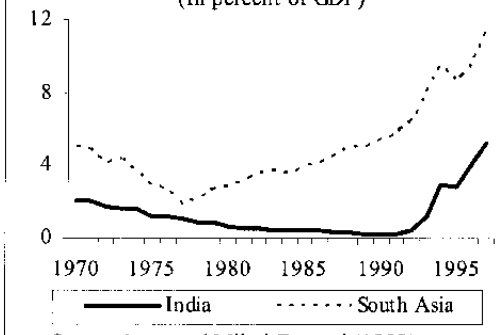
8. **Financial integration (or openness) also increased substantially during the 1990s, but remains less than in other Asian economies**. Using a similar principle to trade openness—but applied to asset markets—financial integration is defined as the sum of

[5] Controlling for other factors, trade in larger economies is typically a lower share of GDP than in smaller economies.

[6] In the year to end–June 2002, India surpassed the United States with 76 initiations, compared to 58 initiations by the United States. At end–June 2002, India had 150 outstanding measures, trailing only the United States with 264 and the European Union with 219.

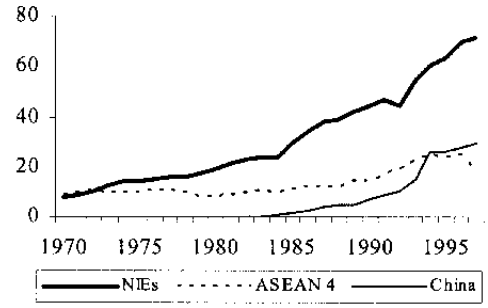
external assets and liabilities of FDI and portfolio investment as a share of GDP (see Lane and Milesi-Ferretti, 1999). Financial integration in India declined secularly during 1970-1990, reaching a nadir in 1991, before rising afterwards (Figure II.3). As with trade, however, India remains less integrated than other Asian economies, partly due to a more restrictive regime on foreign equity ownership (Figure II.4).[7]

Figure II.3a. Financial Integration
(In percent of GDP)



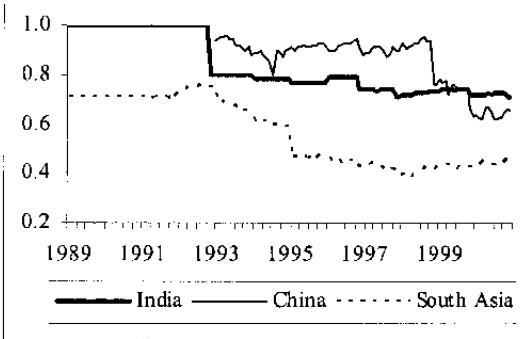
Source: Lane and Milesi-Ferretti (1999).

Figure II.3b. Financial Integration
(In percent of GDP)



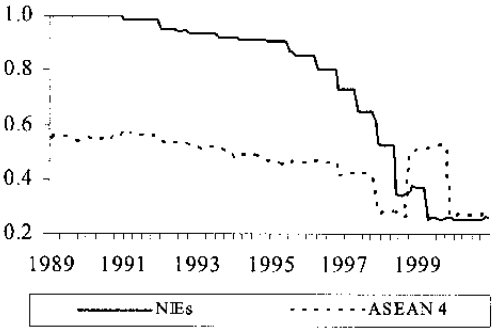
Source: Lane and Milesi-Ferretti (1999).

Figure II.4a. Foreign Ownership Restrictions



Source: Edison and Warnock (2003).

Figure II.4b. Foreign Ownership Restrictions



Source: Edison and Warnock (2003).

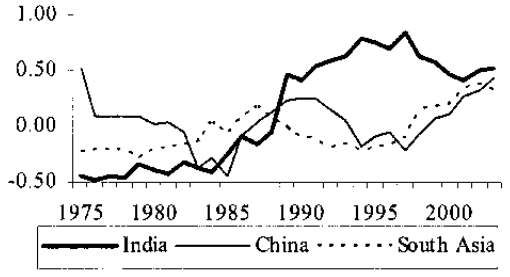
9. **With increasing trade and financial openness, the Indian economy has become more synchronized with global trading partners.** In the late 1980s, Indian GDP growth was negatively correlated with GDP growth of trading partners (Figure II.5). By the 1990s, the correlation had turned positive and has remained generally above 0.5. Notably, Indian growth has been more correlated with trading partners than Chinese or other South Asian growth.[8] The correlation of India's financial markets (stock and interest rates) with global

[7] Foreign ownership restrictions are defined in Edison and Warnock (2003) as one minus the portion of equity market that is available to foreign investors, which is set equal to market capitalization of Standard & Poor's/International Finance Corporation's Investable index (IFCI) divided by market capitalization of the Global index (IFCG).

[8] The low correlation for China may reflect its relatively high and stable growth rates compared to partner countries.

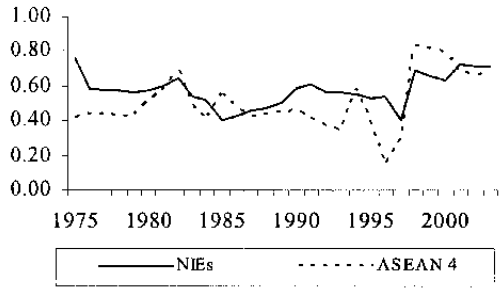
markets also increased in recent years (Figure II.6). In particular, the IT stock indices have been highly correlated.

Figure II.5a. 10-Year Lagged Growth Correlations with Trading Partners



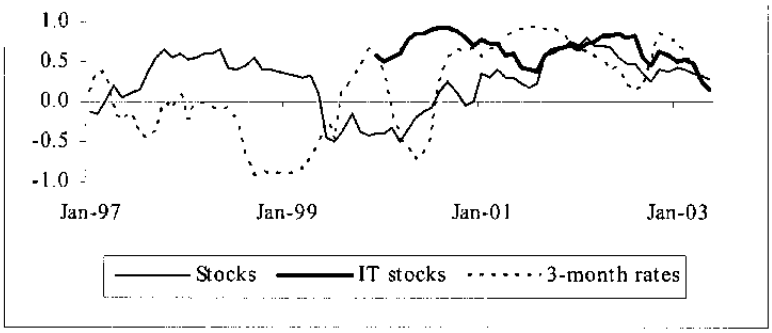
Sources: WEO; and staff estimates.

Figure II.5b. 10-Year Lagged Growth Correlations with Trading Partners



Sources: WEO; and staff estimates.

Figure II.6. India: 10-Month Correlation with the U.S. Financial Markets

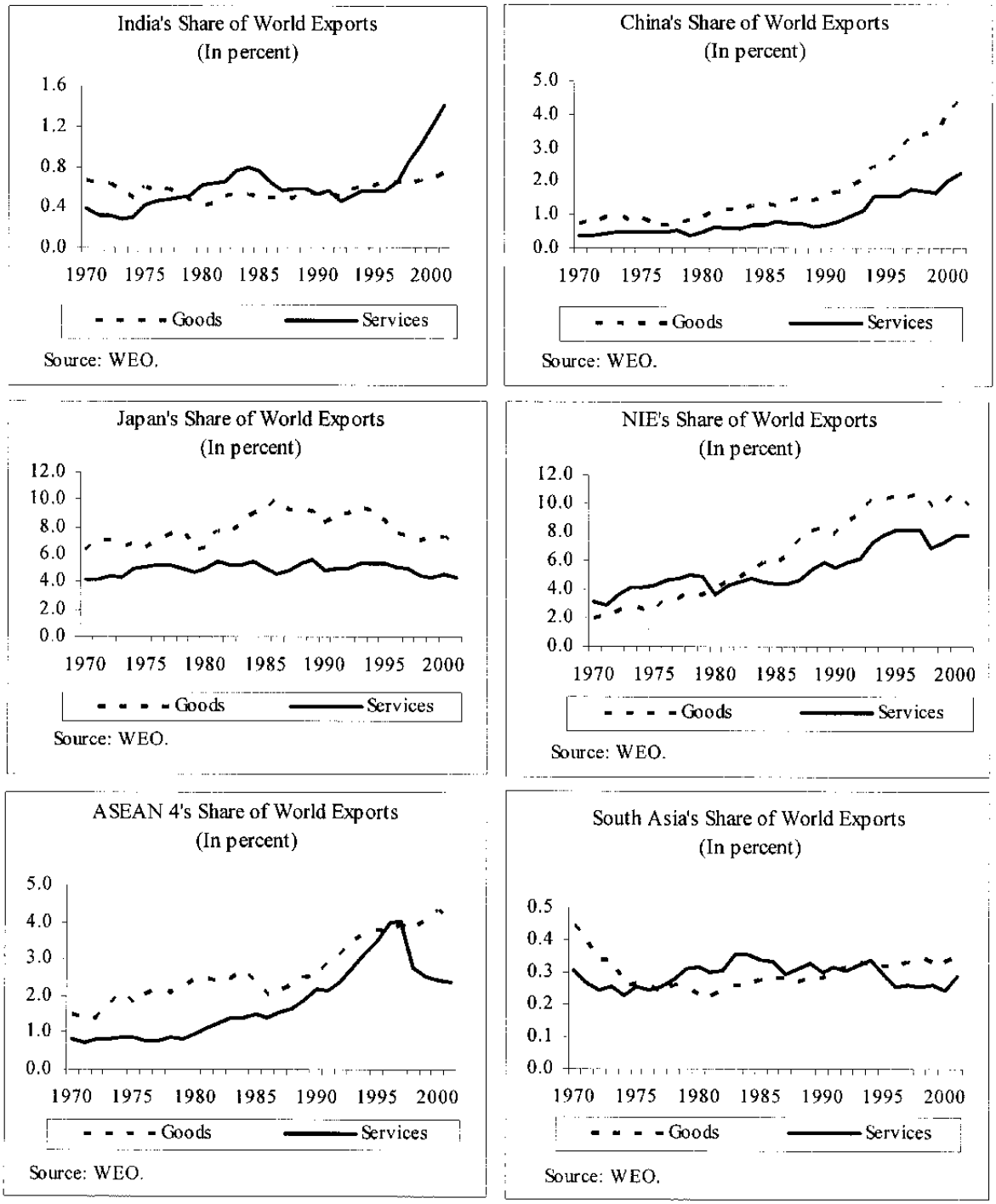


C. The Importance and Reasons for Success of the IT Sector

A unique aspect of India's global integration has been the important role played by services exports (Figure II.7). During 1991–2002, services exports surged by 15 percent a year (in dollar terms) on average, compared to goods export growth of 9¼ percent on average. Indeed, while goods exports gained some market share during the 1990s (from 0.5 percent to 0.8 percent of world goods exports), the market share of India's services exports almost tripled to 1.5 percent of world services exports. By contrast, in the rest of Asia, the market share of goods exports is higher than that of services exports, and market share gains in services were at the same rate or slower than market share gains in goods.

10. **The strength in services exports is attributable largely to IT-related exports**, which have surged at about a 45 percent annual growth rate from $0.5 billion in 1994/95 to $9.5 billion in 2002/03, based on preliminary estimates by National Association of Software

Figure II.7. Selected Countries' Share of World Exports



and Services Companies (NASSCOM) (Figure II.8). Excluding IT services, services exports only grew slightly faster than goods exports during the past decade, and the growth in IT-related services exports accounts for roughly a ½ percentage point of India's market share gain in total world services trade.

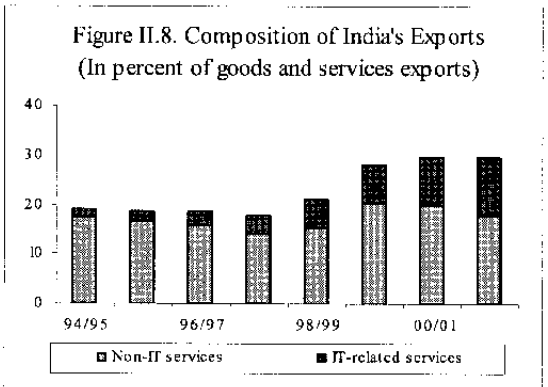


Figure II.8. Composition of India's Exports
(In percent of goods and services exports)

Sources: NASSCOM and Reserve Bank of India.

11. **Booming IT-related exports have helped strengthen India's balance of payments**. In 2001/02, India achieved a current account surplus of $1.4 billion (or 0.3 percent of GDP)—its first surplus in 24 years—and the surplus is expected to have grown in 2002/03, despite higher oil prices and non-oil imports. IT-related services exports accounted for about 12 percent of goods and services exports in 2001/02 or more than five times the current account surplus. Moreover, the increase in inward remittances (a component of private transfers) and bank deposits from nonresident Indians and the shift in the sources of these flows from the Middle East to the United States and Europe may reflect the repatriation of savings by overseas Indian IT professionals. Multinational corporations, such as GE Capital, American Express, and Citigroup, have also made significant investments in IT-related services in India.

12. **India's success in the IT-related services field is attributable to a combination of factors**.[9] These include its large pool of English-speaking university graduates, relatively low wages, a well-placed international diaspora, favorable government policies, and low start-up costs for software firms.

- India's more than 250 universities and engineering colleges graduated over 90,000 IT professionals in 2001/02, and this number is expected to increase to 115,000 by 2004/05, according to NASSCOM. In addition, over 2 million other students—many of whom are fluent in English—graduate from universities and colleges annually, and many of these English-speaking graduates are also employed in a number of IT-related services fields, such as call centers, back office processing, and consultancy services.

- Salaries in India are about one-tenth to one-half of those found in the United States. A NASSCOM-McKinsey study estimates that customers of Indian IT companies save from 1 percent to 15 percent of noninterest expenses by outsourcing work to India.[10]

[9] For a more extensive discussion of the factors behind the success of Indian IT-related services, see, among others, Arora (2000), Arora and Athreye (2001), and Desai (2002). For a description of the evolution of the Indian IT industry, see Saxenian (2002).

[10] See www.nasscom.org.

- There are over 20 million Indians living overseas, including about 2½ million in North America and over 1 million in the United Kingdom. A significant number of these overseas residents (including both NRIs and persons of Indian origin) are IT professionals—including, it is estimated, over 200,000 in the United States alone—many of whom are in management positions and some of whom play important roles in outsourcing work to India.

- Government policies have benefited the IT industry by minimizing interference in the sector (particularly compared to other industrial and services sectors), providing favorable tax treatment, and emphasizing investments in higher education. In 1998, government and industry began joint initiatives to establish the Indian Institutes of Information Technology (IIITs). The goals of the IIITs are to provide degrees in computer software and engineering as well as teach shorter IT courses. Indian IT firms have also benefited from the establishment of a number of software technology parks that provide infrastructure—particularly reliable communication and power—that are not readily available elsewhere.

13. **The structure of India's IT sector has made it less vulnerable to the global cyclical downturn**. Unlike other Asian economies, hardware (including peripherals) accounts for a negligible share of IT exports (about 2 percent in 1999/2000). Moreover, a large share of India's IT-related services exports are back-office and data processing services or customization of nonmission critical software—areas where low wages bring significant competitive advantages. Indeed, as global firms have cut costs during the recent economic slowdown, more work has been outsourced to Indian companies.

14. **However, India's IT services companies have encountered some challenges in recent months**. Rupee profit margins have shrunk due to the weaker dollar[11] and lower prices—the latter reflecting increased competition within India from both domestic firms and multinationals, which have been rapidly increasing their presence in India to take advantage of the low wages, and from ongoing pressures from customers to reduce costs. In addition, IT services exports are facing protectionist pressures in some industrial countries, including bills in a number of U.S. state legislatures, which aim to restrict outsourcing of government work to U.S. citizens.

D. The Implications on External Accounts and the Exchange Rate of Ongoing Integration

15. **Since September 2001, India has faced upward pressure on the rupee vis-à-vis the U.S. dollar, along with substantial balance of payments inflows**. The inflows partly have reflected India's increasing global integration—including strong export growth in both goods and services (both IT-related and other services), ongoing capital account liberalization, and India's increasing correlation with global financial markets (particularly, interest rates). In

[11] In 2002/03, 71 percent of IT-related exports were to North America, and a significant portion of exports to other countries (including in Europe) were also priced in dollars.

addition, it also reflected downward pressure on the dollar compared to other major currencies (the euro, yen, and sterling) and the widening spread between rupee and dollar interest rates, in particular.

16. **The Reserve Bank of India (RBI) has responded to the strong inflows primarily by accumulating reserves and partial sterilization in the domestic money markets** (Table II.2). During September 2001–May 2003, foreign reserves increased by $36½ billion.[12] The rupee appreciated by 1½ percent compared to the dollar during the same period, but it depreciated by 8½ percent in real effective terms largely due the weakness of the dollar. The RBI's intervention limited volatility in the currency markets and prevented a further appreciation of the dollar against the rupee.

Table II.2. The Recent Reserves Buildup
Change Relative to Trend
(In billions of U.S. dollars)

	Recent 1/ (1)	Change (3)=(1)-(2)	Trend 2/ (2)
Foreign reserves increase	25.6	17.1	8.4
Due to			
Valuation	3.1	3.8	-0.8
BOP change in reserves	22.5	13.3	9.2
Current account balance	5.6	9.0	-3.4
Merchandise trade balance	-14.9	3.7	-18.7
Services trade balance	7.2	3.0	4.1
Net investment income	-4.1	0.3	-4.4
Net transfers	17.5	1.9	15.6
Capital account balance	16.0	3.8	12.3
FDI, net	3.8	1.3	2.6
Portfolio, net	1.2	-1.4	2.6
External assistance, net	0.4	-0.6	1.0
Commercial borrowing, net	-2.0	-4.8	2.8
Short-term credit, net	-0.1	0.1	-0.2
NRI deposits, net	3.7	1.0	2.7
Other capital, net 3/	9.0	8.2	0.8
Errors and omissions	0.9	0.4	0.5

1/ Recent is September 2001-December 2002.
2/ Preceding three-year average.
3/ Includes rupee debt.

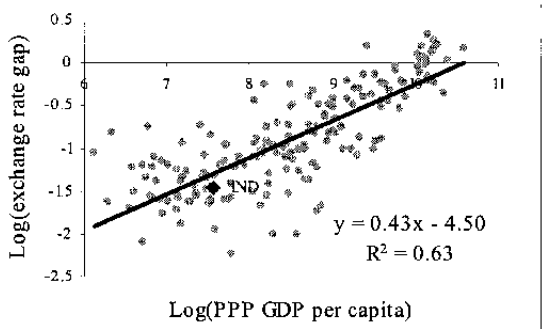
17. **With ongoing global integration—particularly the rapid expected growth of IT services exports, substantial balance of payments inflows could continue over the medium term.** NASSCOM recently increased its projection for IT services exports to $57 billion by 2008/09 (or roughly an annual growth rate of 35 percent). To put this in context, goods and services exports, excluding IT services, were $57½ billion in 2001/02. If these non-IT services exports were to grow at 10½ percent a year (roughly the growth rate over the last decade), they would amount to almost $115 billion by 2008/09, so that IT-related services would account for about a half of all other exports or one-third of total exports. In addition, further globalization could also encourage increased capital inflows, as India continues to grow faster than the rest of the world, although some of the balance of payments inflows could be offset by higher imports.

18. **The rapid growth of services exports has potential implications for the behavior of the equilibrium exchange rate.**

[12] The net forward position also increased by $3¼ billion to almost $2½ billion during September 2001–March 2003 (the latest available data).

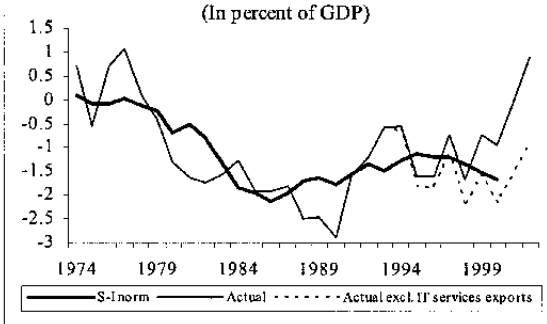
- First, economists have observed that over the long run, purchasing power parity (PPP) is generally valid for industrial countries, and that deviations from PPP or deviations in real exchange rates are positively correlated with differences in GDP per capita.[13] The positive correlation between real exchange rates and per-capita GDP is also evident in cross-country data, including of industrial and developing countries (Figure II.9).[14] Balassa (1964) suggested that the correlation reflected differences in the relative price of tradables being consistent with differences in per-capita output, and that with relatively faster growth in per-capita output, the relative productivity of tradables would improve faster than nontradables, leading to higher relative prices of nontradables and real exchange rate appreciation.[15]

Figure II.9. Cross-Country Balassa-Samuelson Effect in 1999



Sources: WEO; and staff estimates.

Figure II.10. Current Account Balance (In percent of GDP)



Sources: WEO; NASSCOM; and estimates based on Chinn and Prasad (2000).

- Second, an analysis of the medium-term equilibrium savings and investment balance (S–I norm) for India suggests that a small current account deficit of 1-2 percent of GDP is appropriate and sustainable (Figure II.10).[16] The current account balance in India was roughly in this range during the 1990s after the balance of payments crisis early in the decade. However, in recent years, the balance moved into surplus at about the time that IT-related services became a substantial portion of exports. As these current account inflows at least partly reflect higher productivity of tradables, they could accommodate an appreciation in the real exchange rate. In this

[13] The real exchange rate is generally defined as the domestic price of a basket of goods relative to the foreign price of that basket or of the relative price of nontradables to tradables.

[14] See De Broeck and Sloek (2001) for definition of the exchange rate gap, a proxy for the real exchange rate.

[15] This is generally known as the Balassa-Samuelson effect. See also Samuelson (1964). Time series studies, however, show mixed support for the Balassa-Samuelson effect. For a review, see Ito et al. (1996).

[16] The figure is based on a restricted version of the equation in Chinn and Prasad (2000), including a constant term to allow for a country-specific fixed effect for India. See Callen and Cashin (2001), including for a summary of factors affecting saving and investment norms.

context, it should be noted that deeper and more far-reaching reductions in tariffs and administrative barriers to trade could act to counter the upward pressure on the equilibrium exchange rate.

19. **At the same time, a number of arguments have been made in support of moderating upward pressures on the exchange rate**, particularly in the short term, including due to concerns about the competitiveness of exports and maintaining a stimulative macroeconomic environment.

- For India, over 20 percent of goods exports and over 70 percent of IT-related services exports are to the United States.[17] Moreover, substantial portions of exports to other countries are denominated in U.S. dollars or are to economies where the currency moves closely with the U.S. dollar.

- Moreover, in the current setting, the RBI has been attempting to maintain easy monetary conditions, given the slowdown in growth and investment, uncertainty about growth prospects, and limited inflationary pressures.

- In addition, studies of currency crises have highlighted the role of an overvalued or appreciating exchange rate—specifically in real terms—in increasing vulnerability to crisis and of increasing foreign reserves in reducing vulnerability.[18] Some observers have also expressed concern about a potential "Dutch disease" type effect over the longer term from increased capital or service receipt inflows that lead to an appreciation of the real exchange rate and a shift of resources from tradable goods.[19, 20]

These considerations, however, need to be weighed against the potential difficulties of limiting exchange rate appreciation through sterilized intervention. Going forward, the scope for intervention may become technically more difficult because of the declining stock of domestic securities held by the RBI that can be used for open market operations.[21] The cost or

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[17] For goods, the estimate is from the Direction of Trade Statistics for 2002, and for IT services, from NASSCOM for 2002/03.

[18] Among others, see Aziz, Caramazza, and Salgado (2000).

[19] "Dutch disease" is generally used in reference to balance of payments inflows (usually foreign aid or revenues from natural resources) that are spent on nontradables goods and lead to a rise in the price of nontraded goods compared to traded goods, i.e., real exchange rate appreciation. With the real appreciation, resources are shifted to producing nontradables.

[20] Since the real exchange rate in India has actually depreciated during the past 1½ years, this has not occurred in the recent past. Moreover, to the extent that any appreciation occurs due to revenues from services exports, it would mean a shift of resources from tradable goods to tradable services.

[21] There are, of course, a number of ways in which a central bank could continue sterilized intervention, even after fully depleting the stock of domestic securities. These include, among

(continued)

opportunity cost of limiting exchange rate appreciation through sterilized intervention also could grow over time particularly for a country—such as India—that is growing faster than trading partners due to relatively higher interest rates or expected investment rates of return in the faster-growing country.

E. Concluding Remarks

20. **The economic reforms that began in the early 1990s have led to greater openness in India to trade and financial flows**, with both trade shares and asset market shares increasing substantially during the past decade. In particular, services exports have grown rapidly, largely owing to IT-related services, where India has a comparative advantage. With increased trade and financial integration, the Indian economy has also become more correlated with those of global partners.

21. **However, India remains closed in comparison to other Asian economies.** This reflects more restrictive trade and capital account regimes, despite substantially liberalization in recent years. In particular, tariffs remain high and nontariff barriers substantial, while equity investments continue to be partially restricted. Ongoing liberalization of external transactions should prove beneficial to India.

22. **Significant balance of payments inflows could continue over the medium term.** With India's comparative advantage in IT-related services, these services are expected to grow rapidly and could amount to roughly one-third of total exports by 2008/09.

23. **Increasing globalization and the expected rapid growth of IT-related services have potential implications for the behavior of the equilibrium exchange rate.** Relatively faster productivity and per-capita growth, along with India's comparative advantage in IT services, suggest that the equilibrium exchange rate could appreciate over the longer term, although more far-reaching trade liberalization could counter some of the upward pressure. Exchange rate appreciation may also need to be moderated for other reasons, particularly in the short term, including due to concerns about the competitiveness of exports and maintaining a stimulative macroeconomic environment.

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others, issuance of bonds by the central bank, a higher or unremunerated cash reserve requirement, and a shifting of public sector deposits to the central bank.

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III. Nonresident Deposits in India: Trends and Determinants[1]

A. Introduction

1. **Since the 1980s, nonresident Indians (NRIs) have placed large amounts of funds on deposit with the Indian banking system.** Such inflows have provided India with a valuable source of foreign exchange. In March 2003, NRI deposits totaled $28.4 billion, which is about one sixth of the size of deposits of residents with commercial banks. Most of the NRI deposits are repatriable, and if account is taken of two foreign-currency bonds issued exclusively to NRIs—the Resurgent India Bond (RIB) in 1998, and the India Millennium Deposit (IMD) in 2000—NRIs hold 60 percent of India's external debt that is owed to private creditors.

2. **NRI deposit-taking gained momentum in the 1980s in conjunction with the increasing number of Indians going to work overseas, particularly in the Gulf countries.** So as to draw their savings back to India, the government formulated NRI deposits schemes that offered attractive interest rates and were fully repatriable. The deposits were made subject to concessionary reserve ratios and liquidity requirements, and the Reserve Bank of India (RBI) assumed the exchange rate risk on foreign currency denominated accounts. However, the schemes proved to be vulnerable during the 1991 balance of payments crisis, when outflows of deposits compounded the pressure on the external accounts (Acharya, 2001). As a result, steps were taken to enhance the stability of the deposits by switching the composition towards rupee denominated accounts, and by reducing the repatriable component (RBI, 2000). The exchange risk on foreign-currency deposits was shifted back to the banks.

Table III.1. India: Capital Flows
(In billions of U.S. dollars)

	1970s	1980s	1990s	2000s 1/
Capital account balance	6.2	39.3	78.2	28.7
External assistance	6.6	14.9	15.2	0.9
Commercial borrowing	1.1	10.3	17.8	1.2
NRI deposits	0.9	11.3	13.3	7.4
Portfolio investment	...	...	18.2	5.2
FDI	0.4	1.4	15.6	8.5
Other	-2.8	1.2	-1.8	5.6
Current account balance	-0.3	-44.1	-43.7	1.6
Change in reserves (-ve increase)	-5.9	4.8	-34.6	-30.3

Source: RBI.

1/ April 2000–December 2002.

3. **Since the 1991 crisis, NRI deposit inflows have continued to be substantial, but their relative importance in the external accounts has declined.** The past decade has witnessed rapid growth in I-T exports and inward foreign investment and India's foreign reserve position has become increasingly comfortable.[2] The authorities have responded by linking the interest rates offered on NRI foreign currency deposits more closely with Libor;

[1] Prepared by James Gordon and Poonam Gupta.

[2] See Chapter II of this volume.

by giving the banks flexibility to set interest rates on rupee deposits; and, from April 2002, by making all new deposits fully repatriable.

4. **This chapter analyzes trends in the accumulation of NRI deposits and investigates the determinants of these inflows.** It finds that monthly deposit flows have been quite stable since the 1991 crisis, with standard deviations comparable to portfolio equity inflows into India, which are themselves of fairly low volatility. Nevertheless, there have been occasions when monthly flows of deposits turned negative. Such incidents have coincided with clearly identifiable adverse domestic or external events, but the effects have tended to be short-lived.

5. **The determinants of NRI deposits are analyzed in a simple OLS framework.** Econometric analysis shows that the differences between the interest rates on NRI deposits and Libor are determinants of deposit inflows. This implies that the generally higher level of Indian interest rates has been a factor driving these flows. Evidence is found of withdrawals from foreign currency deposits at the time of the two extraordinary bond issues—the RIB and the IMD—both of which offered high interest rates. This supports the finding that NRI deposits are interest sensitive. The regression results also confirm that NRI deposits are affected by political and geopolitical uncertainties, such as the government resigning mid-term, or tensions on India's borders. In addition, deposits seem to be vulnerable to contagion from regional turbulence such as that which occurred during the Asian crisis.

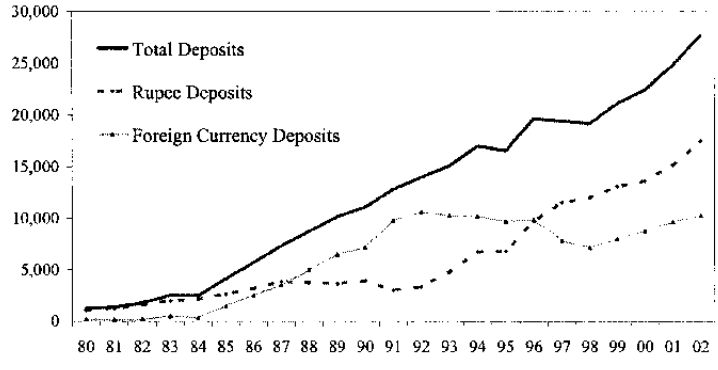
6. The chapter is organized as follows: Section B discusses trends in NRI deposits. Section C describes the data and methodology used in the econometric exercise, while Section D presents the econometric results. Section E concludes.

B. Trends in NRI Deposit Flows

Pre-Crisis

7. **NRI deposits were first introduced in February 1970**. The initial scheme was a rupee-denominated account, the Nonresident (External) Rupee Account (NRERA), with repatriable principal and interest. In November 1975, a foreign currency denominated deposit facility, the Foreign Currency Nonresident Account (FCNRA) was added. This deposit was also repatriable and was made attractive to the banks through the RBI assuming the exchange rate

Figure III.1. NRI Deposits
(In millions of US dollars)



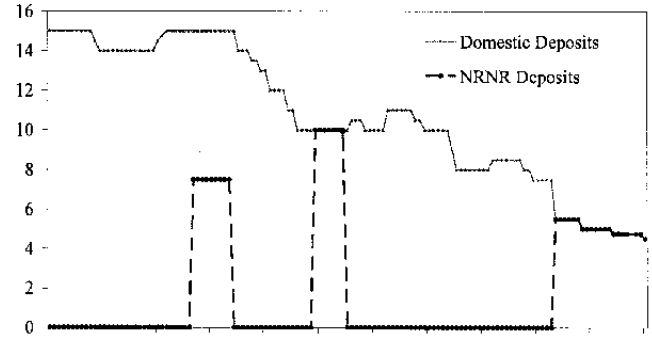
risk. Nevertheless, the two schemes got off to a slow start (Figure III.1). In the 1970s, India was a closed economy that made little use of foreign capital other than donor assistance, and there was not much need to mobilize NRI deposits. By March 1980, NRERA deposits had risen to only $850 million, while the FCNRA scheme had attracted less than $200 million.

8. **In the 1980s, inflows into NRI deposits accelerated, with the FCNRA schemes enjoying particularly rapid growth.** These inflows coincided with the widening of the current account deficit, and the need for increased borrowings on commercial terms. About half of the nonconcessional debt inflows during the decade was external commercial borrowing (ECB); the other half came from NRI deposits. By March 1990, the stock of NRI deposits had grown to $12.4 billion, of which 70 percent was foreign-currency denominated. The preferences of depositors for foreign currency deposits reflected the favorable interest rates on such deposits, together with the lack of exchange rate risk. Banks found FCNRA accounts to be an attractive source of funding because the RBI assumed the exchange rate risk, and because they tended to have a less onerous Cash Reserve Ratio (CRR) and Statutory Liquidity Requirement (SLR) than deposits raised domestically.

Post-Crisis

9. **The balance of payments crisis in the early 1990s was associated with some outflow of NRI deposits.** The amount outstanding under the NRERA and the FCNRA schemes fell by $904 million during fiscal year 1991–92.[3] The crisis revealed a number of fault lines in the NRI deposit system. To begin with, the deposits were fully repatriable and thus free to leave upon maturity. Moreover, while about three-quarters of deposits at that time were of longer than one year maturity (RBI, 2000), deposits could be closed prematurely subject to an interest rate penalty and early encashment may have intensified the pressures on the external accounts.[4] Moreover, as the rupee depreciated, the RBI began to sustain large losses on account of the exchange rate guarantee.

Figure III.2. Post-Crisis Cash Reserve Ratios
(In percent)



10. **In the wake of the crisis, the authorities made a number of changes to the deposit schemes.** In

[3] It is likely that the outflow was even larger during the course of 1991–92, but monthly data are not available for the crisis period.

[4] Mohanty, Kapur, and Sahoo (2000) note that the ability to encash deposits before maturity endows depositors with a put option which makes the deposits effectively short-term debt.

June 1992, a new rupee-denominated scheme, the NRNR account was introduced, which allowed the repatriation of interest income only. Deposits under this scheme were exempted from SLR and CRR requirements (Figure III.2). In May 1993, a new repatriable foreign-currency scheme, the FCNRB, was introduced, which differed from the FCNRA in that the banks were made to bear the exchange rate risk themselves. The FCNRA scheme was closed to new deposits with effect from August 1994, and by 1997, all remaining balances had been repaid.

11. **In the period since the crisis, NRI deposits have continued to accumulate**. During the 1990s, inflows under the FCNRB scheme were almost sufficient to offset the FCNRA repayments, but there were net inflows of $10 billion during the decade under the rupee schemes. Over the last three years, the pace of NRI deposit accumulation has accelerated, and average inflows have exceeded $2 billion per annum. At the same time, foreign reserves have grown rapidly. With the external position increasingly comfortable, efforts have been made to reduce the interest rates on NRI deposits, and to subject NRI deposits to the same CRR and SLR as resident deposits. From April 1, 2002, the NRNR scheme was discontinued and all new NRI deposits were made fully repatriable.

Properties of NRI Deposits

- **Currency composition**. As a result of the post-crisis changes, the share of foreign currency denominated deposits in total NRI deposits has fallen from 70 percent in 1990 to 36 percent in March 2003. The net inflow of foreign-currency deposits since 1994—the sample period considered in Section C below—has been negligible.

- **Repatriable component**. The post-crisis measures led to the repatriable component of NRI deposits declining from 100 percent in March 1990 to 69 percent by March 2000. However, the discontinuation of the NRNR scheme from April 2002 has caused the repatriable component of deposits to rise back to 88 percent by March 2003. This proportion will eventually increase to 100 percent once the outstanding NRNR deposits mature.

- **Stability**. In terms of standard deviations, there is similar volatility in monthly inflows of rupee deposits, foreign currency deposits and foreign portfolio investment into India (FII flows). However, as noted above, the post–1994 series for monthly inflows into foreign currency deposits has a very small mean, and thus a much higher coefficient of variation than either rupee deposits or FII equity flows (Table III.2).

Table III.2. Volatility of NRI Deposits and FII Equity Flows

	Mean (US$ millions)	Standard Deviation	Coefficient of Variation
Rupee deposits	116	189	1.6
Dollar deposits	-1	176	125.7
FII flows	137	188	1.4

Data for foreign-currency deposits and Rupee deposits are from 1994:4–2002:12, and the data for FII equity flows are from 1994:4–2001:10.

- **Effects of economic and political events**. In Table III.3, the effects of selected major economic and political events on net deposit flows are calculated. These include the government resigning mid-term, tensions on the border with Pakistan, credit rating downgrades, the Asian crisis, and substantial increases in the prices of oil. Net monthly deposit inflows are found to be affected by these events, but the magnitude and duration of the effects appear to be small.

- **Effects of alternative bond schemes**. To counter pressure on foreign reserves following the imposition of sanctions after the nuclear tests, a Resurgent India Bond was issued in August 1998. The RIB, which raised $4.2 billion, was targeted exclusively at the NRI community and paid an interest rate of 7¾ percent on U.S. dollar deposits. A second scheme, the Indian Millennium Deposit, raised $5.5 billion in October and November 2000. The IMD offered an interest rate on U.S. dollar deposits of 8½ percent.[5] There were negative monthly flows of NRI deposits at the time of both bond issues. The RIB seems to have had a particularly pronounced impact on foreign currency deposits, which fell by $600 million during the month it was issued (Table III.3).

C. Data and Methodology

12. **Monthly data on foreign currency deposits are consistently available** from April 1980–March 1991, and from March 1994–December 2002, and monthly data on rupee deposits are available for the period April 1980–December 2002. However, since only limited data are available for some of the possible explanatory variables for the earlier period, the analysis is restricted to the period March 1994–December 2002.

13. **Previous research on NRI deposits has been conducted by Mohanty, Kapur and Sahoo (2000)**. In comparison to that study, this chapter considers a more comprehensive set of possible determinants of NRI deposits over a slightly longer data period. Moreover, Mohanty et al (2000) find a strong link between NRI deposits and foreign exchange reserves, which they ascribe to the comfort factor that depositors derive from the level of reserves. However, as they recognize, there is a potential for simultaneity in this relationship, and the regressions below instead use instruments such as sovereign ratings and dummies for political and geopolitical events to capture credit risk.

14. **The dependent variable is net inflow of deposits measured in U.S. dollars**. Separate regressions are estimated for two different variants of NRI deposit flows:

(i) Change in foreign currency denominated deposits: FCDEP = FCNRA + FCNRB

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[5] A precursor to these schemes was the India Development Bond issued to NRIs during the crisis in 1991. This bond raised $1.6 billion and was repaid in 1996.

(ii) Change in rupee denominated deposits: REDEP = NRE + NRNR.

15. **In choosing explanatory variables, the hypothesis made is that deposit flows result from a portfolio choice by NRIs.** The interest rates on the various deposit schemes are therefore included as explanatory variables in the regressions. To capture relative returns, the returns on alternative investment opportunities open to NRIs such as equities are added. Since the riskiness of holding deposits should affect inflows, variables to proxy for Indian sovereign and geopolitical risk are also included. The wealth levels of NRIs are likely to influence their savings and should be an additional determinant of NRI deposits. However, NRI wealth is difficult to measure. As an imperfect measure, an oil price variable is used to capture the wealth of NRIs based in Gulf countries.

16. **NRI deposit inflows are also influenced by government policy.** For a large part of the sample period, interest rates on NRI deposits were controlled and thus were a policy variable that could be altered in response to the strength of NRI deposit flows. This creates a potential endogeneity problem in the econometrics that is discussed below. The CRR and SLR are other policy variables available to increase the attractiveness of NRI deposit collection to banks. The CRR, in particular, was changed quite frequently during the sample period.[6]

17. **Interest differentials seem more appropriate than interest rate levels as explanatory variables.** The interest rate on dollar deposits (DOLINT) and Libor are highly correlated. The same holds to a lesser extent for the interest rates on rupee deposits (NREINT) and Libor.[7] Thus, instead of including the interest rate series separately in the regressions, their difference is considered. The equation for foreign-currency deposits includes the difference between DOLINT and Libor, while the rupee deposit equation includes the difference between NREINT and Libor.

18. **As noted, it can be argued that the interest rate on NRI deposits is a policy variable.** It is thus potentially endogenous to the deposit flows, and using the contemporaneous interest rate variable may give biased results. However, the lag in collecting data on NRI deposits makes it likely that any policy response to deposit flows also occurs with a lag, rather than contemporaneously. It thus seems legitimate to include contemporaneous interest rates in the regressions.

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[6] By contrast, the SLR applicable to NRI deposits has not been changed very often. The SLR on NRE deposits was 30 percent in the first half of the 1990s compared to 38 percent for domestic rupee deposits. However, since 1997, the SLR on both has been set at 25 percent (RBI, 2000).

[7] NREINT is a dollar return calculated as the interest rate on NRE deposits of up to one year, less the depreciation of the rupee over the previous 12 months.

19. **The expected return on rupee deposits depends on the expected path of the exchange rate**. However, NREINT is calculated as an ex post return.[6] To capture expectations, the current month-on-month exchange rate is therefore also included as an explanatory variable. Here there is another potential endogeneity issue, since the exchange rate is in turn likely to be affected by deposit flows. The exchange rate variable is therefore lagged by one month (LEXCC).

20. **Since equities are an alternative place for the NRI community to put their savings, higher stock market returns may imply a smaller flow of deposits**. The monthly return on the Dow Jones Industrial Average is therefore a possible explanatory variable (DOWC), with the expectation that the sign of the coefficient will be negative. However, there may be an offsetting effect to the extent that changes in the Dow imply a wealth effect for NRIs. The return on the Bombay Stock Exchange is also included (BSEC). Again, however, it is difficult *a priori* to predict whether the sign of the coefficient on this variable should be positive (since local stock market returns are likely to vary inversely with perceived country risk) or negative (since like the Dow, the BSE is an alternative investment opportunity).

21. **Before committing funds, NRIs are likely to look for possible signs that the banks taking their deposits may experience repayment difficulties,** particularly with regard to deposits denominated in foreign currency. A dummy variable is thus adopted for downgrades in India's sovereign rating (RATING), as well as for political events such as the government resigning midterm (GOVT), and for geopolitical events such as the nuclear tests, the Kargil war, and the Indo-Pakistan stand off in mid–2002 when travel advisories were issued by several countries (GEOPOLT).

22. **Evidence shows that the capital flows to emerging markets are susceptible to financial crises in other emerging markets**. In the case of India, portfolio inflows slowed during the Asian crisis, but were not affected by crises in other emerging markets (Gordon and Gupta, 2002). In order to test for similar effects on the flow of NRI deposits, dummy variables are introduced for the Asian crisis (ASIA), and for crises in emerging markets outside Asia.

23. **Additional dummy variables are also introduced**. One set of dummies takes account of the effects of the Resurgent India Bond (DUMRIB), and India Millennium Deposit (DUMIMD) on deposit flows. To reflect possible seasonality in the data for NRI deposits, further dummies are added to capture beginning and end of year effects.

24. **An attempt is made to capture the wealth of NRIs using an oil price variable.** Since many expatriate Indians are located in the Gulf, the prosperity of that region will affect

the flow of their funds back to India.[8] Oil price changes are therefore included in the regressions (OIL). However, it is possible that the deposit flows respond only to large swings in oil prices, so an oil-shock dummy is experimented with which takes a value one if the oil price increase exceeds ten percent over the previous month (OIL10). The robustness of the results to an oil price increase of five percent is also checked.

25. **Tests for unit roots and autocorrelation were conducted**. The time series properties of the dependent and independent variables were analyzed by estimating the following equation for each variable:

$$W_t = c + \rho W_{t-1} + \upsilon_t, \quad \upsilon_t \approx \text{iid } N(0, \sigma^2), \quad t = 1,2,...,T \qquad (2)$$

and testing for the null hypothesis, $\rho=1$, against the alternative hypothesis $\rho\neq1$. The results are presented in Table III.4. Since most of the series are in percentage terms, the series are found to be I(0) and the null hypothesis of a unit root is rejected in favor of the alternative hypothesis.[9]

D. Econometric Results

26. **In the regression analysis, a general specification is first estimated which includes all the variables**. Then the variables with the least significant coefficients are dropped. Results reported in Table III.5 are for a subset of the equations estimated using the parsimonious set of regressors. Sensitivity analysis was conducted (not reported) which reveals most of the results to be robust.

27. **Regression results indicate a positive association between NRI deposit inflows and the difference between NRI deposit rates and Libor**. The coefficient of the interest rate differential variable is more significant for rupee deposits than for foreign currency deposits, perhaps reflecting that foreign currency deposit rates have tended to be very similar to Libor.

28. **The finding of interest rate sensitivity is supported by the behavior of deposits at the time the extraordinary bonds were issued**. In particular, the floating of the RIB seems to have led to some diversion of foreign-currency deposits into these high interest bonds. In the FCDEP regression, the coefficient of the variable DUMRIB is negative, and significant at the 1 percent level. By contrast, the coefficient of the variable DUMIMD is positive, but

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[8] In addition to bank deposits, the savings of NRIs also return to India in the form of remittances. It would be interesting to jointly analyze these two inflows since they probably share some common determinants. However, data on transfers are only available quarterly.

[9] See Hamilton (1994). The tests used are Augmented Dicky-Fuller (ADF) and Phillips-Perron (PP).

insignificant. In the REDEP regressions, both dummies have coefficients insignificantly different from zero.

29. **Concessionary CRRs do not appear to be a major factor explaining deposit inflows.** The coefficient on the CRR differential—defined as the difference between the CRR applying to NRI deposits (CRRFD) and the CRR applying to resident deposits (CRRRD)—is negative, as would be expected, but not significant. This contrasts with Mohanty et al (2000) who find a significant effect of a dummy variable for periods when differential CRRs applied.

30. **Domestic political uncertainty is associated with a reduced inflow of foreign currency deposits.** The coefficient on GOVT is significant at the 10 percent or 15 percent level. The variable is mostly insignificant in the regressions for rupee deposits. What seems to matter more for rupee deposit flows is the uncertainty associated with geopolitical risks. The coefficient of this variable is negative and significant at 5 percent or higher levels in the regressions for rupee deposits.

31. **NRI deposit flows are found to have been affected adversely by the Asian crisis, but not by crises elsewhere in the world.** The coefficients on ASIA for both foreign currency and rupee denominated deposits are negative and significant at the usual significance levels. The coefficient of a dummy variable for major crises in Mexico, Russia, Turkey, Brazil, and Argentina that occurred during the sample period is negative, but insignificant (results not reported). As noted, similar findings have been made for inward portfolio investment into India.

32. **The period of the Asian crisis was marked by tumultuous political events in India.** These included the Gujral Government resigning in November 1997, and the nuclear tests in May 1998. To test for the possibility that the ASIA dummy is picking up the effects of these domestic events, the ASIA, GOVT and GEOPOLT variables are included separately in the equations. The coefficients of the included variables are found to be somewhat more significant when only one variable (rather than all) are included in the regressions, but otherwise the results mostly remain unchanged.[10]

33. **Rupee deposit flows are found to be associated negatively with exchange rate depreciation, but the coefficient is not significant.** This is puzzling given that the bivariate correlation between rupee deposits and the lagged exchange rate (LEXCC) is strongly negative. However, rupee depreciation can also be shown to be positively correlated with the Asian crisis (ASIA) and domestic political events (GOVT). Since these variables are both associated negatively with rupee deposit flows, it seems likely that including them in the REDEP regression is taking away the significance of the LEXCC variable.

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[10] A seasonal effect is also found in the flow of NRI deposits (Time1 dummy): deposits are on average higher in the first four months of the year than during the rest of the year.

34. **Ratings downgrades do not appear to discourage NRI deposits**. The coefficient of the credit rating downgrade variable in the foreign currency deposit equation is positive and marginally significant, and negative, but insignificant, in the rupee deposit equations. This result is at odds with the finding in Gordon and Gupta (2002) that credit downgrades are associated with smaller portfolio flows into India. However, that foreign investors (FIIs) rely more on the views of foreign ratings agencies than do expatriate Indians (NRIs) is perhaps not surprising.

35. **Large swings in oil prices seem to be important in determining the flow of foreign currency deposits, but not the flow of rupee deposits**. This asymmetry is difficult to explain. If higher oil prices do make NRIs better off, it is difficult to see why the wealth effects should apply to foreign-currency and not rupee deposits. Thus it seems likely that the oil price variable is capturing some other effect.

36. **Finally, stock market returns do not appear to be important influences on deposit inflows**. While foreign currency deposits are found to be associated positively with returns on the BSE, the coefficient in the rupee deposit equation is not significantly different from zero (results not reported). Moreover, the return on foreign stock markets (DOWC) is not found to be associated significantly with either foreign-currency or rupee deposit flows.

E. Conclusion

37. **While NRI deposits have provided a substantial and stable source of foreign exchange, they appear to be influenced by standard risk and return variables**. India's ability to tap a large pool of expatriate savings is an option available to few countries. Moreover, in the period since the 1991 crisis, NRI deposits have supported India's balance of payments during a number of episodes of market turbulence. Nevertheless, NRI deposits are found to be risk and return sensitive, so they do not substitute for the need to maintain stable economic conditions and a sound policy stance.

Table III.3. Monthly NRI Deposits Flows

(Monthly averages; in millions of U.S. dollars)

	Dollar Deposits	Rupee Deposits
Overall Mean (105)	-1	116
Asian Crisis (12)	-113	-25
RIB float (1) Aug. 1998	-603	76
IMD float (2) Oct–Nov 2000	74	-34
Government falls (8)	-100	39
Elections (6)	74	111
Border tensions (10)	1	-26
Nuclear Tests (1) May 1998	-241	-504
Rating Downgrades (10)	1	43
Oil Shock (10)[1]	84	172

Data for foreign-currency deposits and Rupee deposits are from 1994:4–2002:12. Number of months for which the averages have been taken are given in parentheses.

1/ An oil shock is identified as a 10 percent increase in the price of oil over previous month.

Table III.4. Unit Root Tests of Dependent and Independent Variables[1/]

	Augmented Dickey-Fuller	P Value	Phillips-Perron	P Value
TOTDEP	-3.4	0.01	-102.7	0.00
FCDEP	-1.7	0.4	-120.3	0.00
REDEP	-3.4	0.05	-92.5	0.00
NRNR	-2.4	0.13	-71	0.00
NRE	-1.9	0.30	-96.1	0.00
DOLINT	-.61	0.87	.11	0.96
LIBOR	-.17	0.94	-.19	0.96
DOLINT-LIBOR	-3.1	0.03	-19.2	0.01
NREINT	-2.4	0.14	-41.8	0.00
EXCC	-3.8	0.00	-78.9	0.00
BSEC	-2.9	0.04	-100.1	0.00
DOWC	-6.0	0.00	-110.7	0.00
CRRFD	-2.9	0.04	-10.5	0.11
CRRRD	-2.4	0.15	-13.4	0.06

Source: Authors' own calculations.

1/ The Phillips-Perron test allows for serial correlation and heteroscedasticity in the error term. The P value is the probability with which the null hypothesis of unit root can be accepted. The tests have been conducted including a constant, but no trend, in the regressions. For variables NRNRC and NREC the time period included in the regressions is 1994:4–2002:4, for all other variables it is 1994:4–2002:12.

Table III.5. Regression Results for Foreign Currency and Rupee Deposits

	Foreign Currency Deposits (FCDEP)				Rupee Deposits (REDEP)			
	I	II DOLINT and LIBOR	III LEXCC	IV CRR	V	VI REINT and LIBOR	VII LEXCC	VIII CRR
C	-5.6 (-.24)	48.6 (.72)	-18.4 (.76)	-14.5 (-.48)	118.2 (4.71)	11.5 (.13)	120.4 (4.83)	129.4 (4.11)
DOLINT-LIBOR	48.1 (1.43)		38.7 (1.15)					
NREINT-LIBOR					11.3*** (2.39)		10.0*** (2.25)	
DOLINT		38.4 (1.08)						
NREINT						42.9**** (5.1)		
LIBOR		-48.8* (-1.45)				-51.96**** (-4.42)		
CRRFD/CRRRD				-.11 (-.03)				-0.21 (-.05)
ASIA	-128.3**** (-2.58)	-120.7*** (-2.38)	-147.1**** (-2.92)	-136.9**** (-2.58)	-101.5** (-1.73)	-39.9 (-.78)	-107.9** (-1.89)	-141.2*** (-2.47)
OIL10	73.9* (1.57)	72.8* (1.54)	82.4** (1.76)	76.2* (1.60)	11.1 (.21)	-24.1 (-.51)	16.6 (.32)	16.3 (.29)
GEOPOLT	6.2 (.11)	-9.7 (-.17)	12.0 (.22)	16.1 (.28)	-123.5*** (-2.02)	-170.9**** (-3.01)	-128.0*** (-2.12)	-119.7** (-1.89)
GOVT	-89.1* (-1.54)	-84.8* (-1.46)	-108.8** (-1.87)	-94.2* (-1.61)				-70.4 (-1.02)
RATING	92.4* (1.62)	84.5* (1.45)	82.2 * (1.45)	92.1* (1.59)	-2.05 (-.03)	-86.5* (-1.59)	13.2 (.21)	-26.6 (-.39)
LEXCC			23.1** (1.78)				-2.49 (-.17)	
DUMRIB	-342.3**** (-4.02)	-337.8**** (-3.95)	-324.7**** (-3.83)	-331.3**** (3.79)	82.3 (.79)			-20.9 (-.21)
DUMIMD	51.8 (.54)	70.7 (.72)	52.2 (.55)	87.1 (.93)	-45.7 (-.43)			-109.3 (-1.0)
TIME1	83.3*** (2.48)	84.2*** (2.50)	96.1*** (2.82)	85.6*** (2.52)	87.4*** (2.3)	42.4 (1.3)	82.9*** (2.2)	79.8*** (2.0)
# of obs R^2, Adj. R^2	105 .30, .23	105 .30, .23	105 .32, .25	105 .28, .21	105 .22, .16	105 .39, .34	105 .21, .16	105 .19, .11

t- Statistics in parentheses. *, **, ***, **** indicate significance at 15, 10, 5 and 1 percent respectively.

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IV. State Government Finances[1]

A. Introduction and Overview

1. **Following a period of relative stability, the fiscal situation of the states deteriorated dramatically in 1998** (Figure IV.1). The combined state deficit rose to an average level of 4.4 percent of national GDP, from less than 2½ percent of GDP in 1993/94. The deterioration reflects expanding state spending especially current and interest costs. Revenue (i.e., current) deficits increased even faster and a rising share of the gross financing requirement is being devoted to current spending rather than investment.

2. **State level finances play an important role in explaining the deterioration in general government (GG) finances**. Since 1997/98, the GG deficit has widened from 7¼ percent of GDP to about 10 percent of GDP while the overall official debt burden grew to 84 percent of GDP. As the states undertake more than half of GG spending but account for less than 40 percent of total receipts, about half of the increase in deficit reflects deteriorating state finances.

3. **The growing fiscal stress facing the states has manifested in several ways**. The official debt of states now comprises 25 percent of GDP, compared to 18½ percent of GDP in 1993/94. The level of outstanding guarantees grew even faster as states made increasing use of guarantees and other assured payments arrangements to finance investment, although in 2002 progress was made in reducing the outstanding stock.[2] Nevertheless, these guarantees could well result in direct claims on states' budgets as the funds are mainly used for infrastructure projects.[3] States are prolonged users of short-term credit facilities from the RBI, overdrafts are rising, and they are incurring arrears.[4] Fiscal activities are also conducted off budget through various state owned financial corporations (SFCs) and utilities, and in turn, the financial health of these entities has deteriorated.[5]

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[1] Prepared by Catriona Purfield.

[2] Of total guarantees, 44.6 percent of guarantees are for power, 13.4 percent for irrigation and 0.7 percent for road projects.

[3] Banking industry estimates show that defaults on state government guaranteed loans have exceeded Rs. 2,500 crore (0.1 percent of GDP) in September 2002, up from Rs. 1,800 crore at end–March 2002.

[4] Twenty states utilized overdrafts at the RBI in 2002. In 2003, the supreme court ordered the payment of overdue salaries in Bihar.

[5] The SFCs' capital adequacy ratio is negative (22 percent), and nonperforming assets range from 30 percent to 90 percent. Electricity cost recovery has fallen to 69 percent and the power sector losses are 1 percent of GDP.

Weaknesses in the system of inter-governmental fiscal relations underlie the deterioration. States receive central government (CG) transfers (shares of central taxes and grants) to help implement their budgets (Box IV.1). However, transfers from the center have failed to keep pace with rising expenditure. The average level of transfers fell by ½ percent of GDP during 1998–2001 compared to the 1993–1997. Yet state expenditure has grown by over ¾ percentage points of GSDP per annum since 1998/99. Two main factors underlie this rapid growth (Table IV.1): rising interest payments, reflecting growing debt, but also rising interest rates with the progressive deregulation of rates in the context of financial sector reform; and a 20 percent rise in combined pension and administrative costs (the latter includes wages) reflecting awards of the Fifth Pay Commission.[6] In some states, pension liabilities are also expected to rise substantially in 3-5 years. Obligatory outlays now comprise over one–third of total spending and the share of expenditure devoted to investment has fallen to 11 percent.

Table IV.1. India: Trends in State Finances

	1993/94	Average 1993-97	Annual 1998/99	1999/00	2000/01	Average 1998-2001
			(In percent of GDP)			
Overall deficit	2.4	2.7	4.3	4.7	4.3	4.4
Revenue deficit	0.4	0.8	2.5	2.8	2.5	2.6
Debt	18.6	18.2	19.6	21.7	24.0	21.8
Outstanding guarantees	5.7	4.9	5.6	6.8	8.0	6.8
			(In percent of GSDP)			
Total state spending	14.7	14.3	14.4	15.4	15.6	15.1
Of which:						
Interest	1.8	1.9	2.1	2.3	2.5	2.3
Pensions and administration	0.8	2.2	2.2	2.5	2.6	2.4
Energy	1.9	0.4	0.3	0.4	0.6	0.4
Capital	2.0	1.9	1.8	1.9	1.7	1.8
Total revenue	12.3	11.6	10.1	10.7	11.3	10.7
Own-tax revenue	5.4	5.4	5.1	5.3	5.6	5.3
Share of central taxes	2.6	2.5	2.3	2.3	2.4	2.3
Non-tax revenue	4.3	3.7	2.8	3.1	3.3	3.1
Of which:						
General & economic services	1.1	1.2	0.9	0.9	0.8	0.9
Grants from centre	2.5	1.9	1.4	1.6	1.8	1.6

Source: RBI Study on State Budgets; World Bank States' database; and staff estimates.

4. **The reliance on gap filling transfers creates little incentive for states to bridge the widening gap between expenditure and revenue**. Rising spending has been accompanied by deteriorating revenues as the link between expenditure and revenue decisions weakened. States' own revenue resources cover only half of their current outlays. Relative to the mid–1990s, state's own revenue resources have fallen by ½ percent of GSDP reflecting the lack of adjustment of user fees for utilities and other government services. In addition, little effort has been made to expand state's own tax bases causing the average state tax-to-GDP ratio to stagnate at the level of the mid–1990s. Property values have not been reassessed undermining the urban property tax yield, and most states do not tax agriculture income and property.

5. **The rest of this paper is structured as follows**: Section B examines fiscal performance in the 15 largest states. Section C assess whether the problems experienced in India are common in other decentralized systems. Section D reviews recent reforms

[6] In 1998/99, the Fifth Pay Commission recommended a 30 percent increase in civil servant salaries and a corresponding reduction in the work force. The pay increase was granted but employment rose slightly.

undertaken to correct states' fiscal imbalances, and Section E concludes with policy recommendations.

B. Regional Disparities in Fiscal Performance: The Empirical Record

6. **Deficits and debt rose across most states in the 1990s but the deterioration was more pronounced in those with larger initial imbalances** (Figure IV.2).[7] In Madhya Pradesh and Tamil Nadu, the deterioration reflects growing interest burdens. However for most, it reflects the failure to address already large (Gujarat, Orissa, and Kerala) and in some cases, growing, primary deficits (Andhra Pradesh, Bihar, Karnataka, Rajasthan, and West Bengal). The deterioration in the deficit in Maharashtra, Haryana, and Madhya Pradesh may have been contained by making more intensive use of guarantees to help finance investment. The states experiencing greatest stress remained broadly stable between 1990 and 2000.

7. **The more rapid pace of fiscal deterioration in the late 1990s is however attributable to the performance of a few states**. West Bengal, Andhra Pradesh, Gujarat, Bihar, Tamil Nadu, and Karnataka account for almost 60 percent of the decline in financial indicators since 1997/98. The share of the states' combined deficit accounted for by West Bengal and Gujarat rose from 16 percent in 1997/98 to over 20 percent by 2002; that of the other four states rose from 25 percent to 33 percent. Expenditure pressures in these six states were high. While combined state expenditure grew in nominal terms by 11.3 percent, expenditure growth ranged from a high of 123 percent in Bihar to a low of 12 percent in Tamil Nadu. Most of the growth in spending was attributable to recurrent rather than capital outlays. In Karnataka, where expenditure grew by only 6 percent, the decline in own revenue played a more important role.

8. **Changes in the arrangements for distributing transfers also exacerbated the divergence across states**. The Tenth and Eleventh Finance Commissions (EFC) devolved higher shares of central tax revenue. They also changed the formula for allocating resources between states to assist those states facing greater resource deficiencies and higher costs for service provision, while also trying to provide incentives for states to impose fiscal discipine.[8] The new formula cut transfers to Karnataka, Andhra Pradesh, and Tamil Nadu despite above-average financial pressure, and penalized states, such as Kerala, who had reduced their deficit. While extra resources were given to states in greater stress (Bihar, West Bengal, and Gujarat) it was not sufficient to prevent their deficits from widening in the face of the rapid growth in spending.

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[7] Except Kerala, Punjab, and Uttar Pradesh.

[8] Under the EFC, the weights assigned to cross state income differentials, area, and infrastructure increased while that assigned to tax effort was reduced. A new index of fiscal discipline was introduced but was given only a small weight.

9. **The evidence points to large disparities in the extent of fiscal distress across states.** A statistical analysis using cross-section regressions[9] suggests that the structure of a state's fiscal system plays an important role in explaining the cross-state disparities, as does the level of economic development (Figure IV.3):

- State deficits are significantly larger where the gap between own revenue and expenditure is larger illustrating that central transfers fail the bridge financial gaps between states. The positive intercept shows that transfers are insufficient to close the gap between the combined states resources and expenditure responsibilities.

- States with greater autonomy demonstrate greater discipline. The higher own resources in total taxes and expenditure, the lower the deficit.

- Poorer and slower growing states have significantly larger deficits, suggesting the level of development helps explain why some states have larger deficits.

10. **Other structural characteristics seem to be less important in explaining the diverging performance.** Larger states (area or population), and agricultural or service dependent states are associated with larger deficits but the relationships are not statistically significant. Market borrowing does not have a significant impact on fiscal discipline but the positive correlation suggests potential moral hazard from an implicit CG guarantee. Fiscal deficits are positively, but insignificantly, related to the deficits in the power sector.

11. **Between 1997/98–2000/01, states that progressed furthest with economic liberalization experienced greater fiscal stress.** The greater the diversification of economic activity away from agriculture, the greater the deterioration in fiscal deficit (except in Bihar). High income, but more slowly growing states also experienced a more pronounced deterioration.

C. Fiscal Federalism in an International Context

12. **India's fiscal system, already one of the most decentralized in the world, became increasing decentralized over the past decade** (Table IV.4). States in India are responsible for a higher proportion of GG spending than in most developing economies. Only China has a higher level of subnational expenditure. The higher level of expenditure responsibility is not matched by control over own revenue resources. As a result, states are more dependent on transfers.

13. **The extent of the states' fiscal imbalance in India is high.** The combined state deficit accounts for greater share of the general government deficit than in most other

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[9] Each regression estimated took as the dependent variable the average level of the deficit between 1990/91–2000/01; the independent variables were also averaged over the same period.

countries. In over half the sample, subnational governments run surpluses or near balanced budgets. Many others, especially in Latin America, made progress in the 1990s in correcting sub-national deficits while in India they deteriorated.

14. **It is unclear whether the states' imbalances in India are the result of the greater decentralization**. A closer look at Table IV.4 shows that subnational fiscal discipline is not problematic in highly decentralized countries like Canada, Denmark, the United States, Switzerland, and South Africa. However in other highly decentralized system, such as Argentina, Brazil, and Germany decentralization is associated with problems and has eroded macroeconomic instability. Various empirical studies have found that decentralization is associated with fiscal indiscipline at the subnational level and can aggravate fiscal problems at the central level, especially in developing countries.[10] For example, de Mello (2000) finds in developing countries that as the share of subnational spending in total government spending increases it tends to worsen the central government balance, yet there is no clear evidence of a deficit bias in the more decentralized OECD countries. Fornasari, Webb, and Zhou (2000) also find that increases in subnational spending and deficits lead to increases in national spending and deficits. Yet for India, Shome (2002) finds that decentralization is associated with lower fiscal deficits both at the individual states and central government levels.[11]

15. **In countries where institutional and financial arrangements for decentralization are weak, decentralization results in macroeconomic problems**. Hard budget constraints and the incentives for responsible behavior are undermined when the framework for intergovernmental fiscal relations is characterized by a

- lack of subnational autonomy over revenue and expenditure; and high dependence on transfers,
- lack of constraints on subnational indebtedness, and
- lack of clarity in the respective roles of each tier of government as well as weak institutions arrangements for tax administration and expenditure management.

16. **The system of federal relations in India possess many of these characteristics**:

- **Tax autonomy is low**, especially compared to other countries such as China (Table IV.2). However, shared taxes—which are closer in nature to grants because they are not distributed on a derivation basis—comprise a smaller share of state

[10] See Prud'homme (1995), Hunter and Shah (1996), Ter-Minassian (1997), de Mello (2002).

[11] Except when transfers are excluded and the inability of states to fund from their own expenditure in the absence of central government transfers results in higher state level deficits.

taxes.[12] With less than one–third of taxes comprising shared taxes, most of the tax base is under state control. But in common with China, local income and property tax bases and rates are determined with the CG and states work around the set statutory rates by providing tax incentives.

- **There is a high degree of transfer dependence**. Transfers account for a larger share of revenue, and slightly higher share of expenditure, than is typical in most decentralized systems. States have little control over the use of these grants. The split in responsibility for grant allocations across two agencies—the Finance and the Planning Commissions—is also unusual (Box IV.1). It leads to coordination problems, creates incentives for states to overstate revenue needs, and it allows larger and politically stronger states to bargain for larger transfers.[13]

- **The system necessitates high borrowing**. Even after shared taxes and central grants, the states' deficit remains high (Table IV.3). Elsewhere, tax sharing and grants bring subnational deficits closer to balance.

- **The rules governing subnational borrowing are comparatively liberal** and the borrowing regime ranks highly on an index of borrowing autonomy (Table IV.4). Many developing countries prohibit or ban local borrowing (China and Indonesia). Most that permit borrowing impose numerical ceilings on subnational indebtedness. Where ceilings are absent (South Africa and Czech Republic), hard budget constraints is enforced by legally prohibiting CG guarantees of subnational debt and state guarantees of public enterprise debt. India's borrowing regime is closer to that of advanced economies with the important difference that external borrowing is prohibited.

17. **This combination of (de facto or de jure) soft-budget constraints and transfer dependence generated serious fiscal problems in other countries**. Brazil and Argentina are well known examples where the bail out of subnational governments led to moral hazard problems. The ability to tap state-owned banks and enterprises proved problematic in Germany. A weak regulatory framework contributed to subnational bankruptcies and bailouts in the Czech Republic, Columbia, and South Africa. In transition economies, unfunded expenditure mandates resulted in arrears. In India, the states financial problems have not become a source of external instability because of the constraint on external borrowing.

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[12] In Denmark, Germany (income taxes only), and Hungary shared taxes are distributed on a derivation basis.

[13] See Rao and Singh (2000).

D. Recent Policy Initiatives

18. **Various steps have been taken to address state finances but it is not clear that these are sufficient to bring about a lasting improvement in states finances**:

- **Efforts to limit borrowing**: The growth in guarantees prompted the RBI in 1999 to urge states to set guarantee ceilings. To date statutory ceilings are operative in five states, and administrative ceilings in three others. A few states have set up guarantee redemption funds. One state enacted fiscal responsibility legislation in 2003 that includes debt ceilings, although there are questions about how successful states will be in meeting these various ceilings when they remain heavily reliant on central transfers. The RBI has recently introduced prudential requirements for guaranteed loans and investments. Investments in state government guaranteed bonds outside the market-borrowing program would now attract a credit risk weight of 20 percent. If a guarantee is invoked and is not honored, a credit risk weight of 100 percent is to be assigned.

- **Debt restructuring and write-offs**: Arrears and part of the accrued interest owed by SEBs to power generating public sector undertakings were settled in 2003 through the issue of 15–year tax-exempt state-government bonds worth 1½ percent of GDP. The rest of the accrued interest was written-off.

- **Voluntary debt relief schemes**: Since 1995, states have been engaged in voluntary fiscal adjustment programs with the CG who writes off the debt owed to it in return for fiscal adjustment. These agreements were not legally binding, and did not contain limits on new borrowing or sanctions. The relief provided was small. Thus, the schemes had limited success in arresting the growth in state debt. The new States Fiscal Reform Facility offering additional transfers between 2000 to 2005 for adjustment suffers from similar drawbacks.

- **Debt service relief**: From 2003–05, states will use 20 percent of their borrowing from the small savings scheme and additional funds borrowed from the market to prepay (at face value) debt to the CG carrying interest rates in excess of 13 percent. Because interest rates on these new borrowings are lower, states will obtain relief on their interest expenditure.

- **Other steps**: There is a growing awareness among states of the need to revise user charges for public services. For example, states have set up State Electricity Regulatory Commissions to determine electricity tariffs so as to reduce subsidies. Further some states have increased fees for higher education.

E. Policy Recommendations

19. **The deteriorating finances of state governments need to be tackled with greater urgency**. The fact that state finances continue to worsen despite various reforms suggests

more needs to be done preserve the credibility of the states' own reform goals and to close the growing gap in fiscal and development indicators across states. A comprehensive reform that addresses the existing debt stock while redesigning revenue and expenditure assignments to prevent its recurrence is needed. The reforms required are well documented in various studies and should include:[14]

- **Strengthening the framework regulating subnational borrowing and guarantees**: The framework should include an explicit commitment by the CG to reframe from further subnational bailouts; and centrally set ceilings on state debt that are risk based so that ceilings are gradated by the solvency of a state's finances.

- **For guarantees**, establishing escrow accounts in borrowing units; making credit ratings mandatory; and beginning risk-based provisioning.

- **Strengthening supervision of state credit**: Prudential regulations should require financial institutions to provide for risky and nonperforming state and state enterprise debt to strengthen the central government's commitment to a policy of no bailouts.

- **Improving the quality, comprehensiveness, timeliness, and availability state financial data**: To facilitate informed credit risk assessment on the part of lenders.

- **Reducing dependence on CG transfers by increasing state taxes**: Tax agricultural income; introduce a state level VAT, and extend the VAT to services.

- **Reconsidering the rationale for and relevance of the separation of plan and nonplan expenditure and assistance**: Grants could be amalgamated and should address imbalances across states. The distribution formulae should be revised to use criteria that capture deficiencies in basic minimum needs. A portion of the grant may be earmarked for capacity building (South Africa).

- **Strengthening budget planning and implementation**: Introduce multi–year fiscal budgeting, monitor and audit fiscal outturns, and evaluate expenditure effectiveness.

- And finally, as these reforms are implemented and as regulatory, supervisory, and monitoring mechanisms are strengthened, **increase reliance on market borrowing**, so that states would be subject to the discipline of the market.

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[14] See RBI (2002); the EFC; *The Kelkar Task Forces on Direct and Indirect Taxes*; and Shome (2002).

Box IV.1. Federal Arrangements in India [1/]

India is a federal state with strong unitary features. There are three tiers of government. The central government; an intermediate tier of 28 states and seven union territories (five are governed by central government appointees) and local bodies. Local bodies were given constitutional status in the 1993 amendments to the Constitution which made mandatory the creation of rural and urban bodies within states, a provision that was previously optional. There are now 247,033 rural bodies know as Panchayats and 3,682 urban bodies. The Constitution grants strong powers to the central government including the supremacy of central legislative power, control of the central executive over state legislation, the right to take over state administration in a state of emergency. All residuary power rests with the central government.

The Constitution assigns a wide range of functions to the states. The functions of the central government relate to macroeconomic stability, external relations, and areas of cross state interest, and include defense, foreign affairs and trade, transport, post, telecommunications, as well as strategic and heavy industries. States are responsible for health, education, power, irrigation, roads, rural development, public order and other functions.

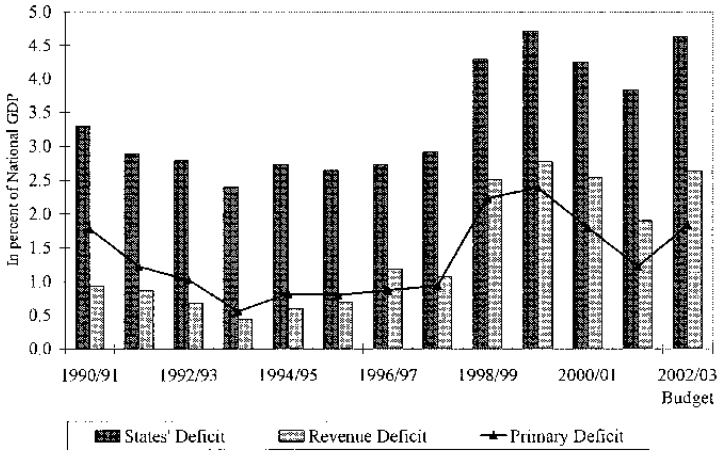
On revenue, the Constitution prevents overlapping tax powers and assigns taxes by source. The central government exclusively levies personal income tax (except on income earned from agriculture and the self-employed) corporate tax, import duties, and income tax surcharges. States can raise taxes on agricultural and self-employed income, but few states avail of this option. The authority to levy taxes on property wealth and capital transactions is spilt. The centre is responsible for raising taxes on nonagricultural sources. Agricultural sources are assigned to the states but currently no state taxes agricultural wealth and property. Taxes on the sale of goods are the most important income sources for states. Services are excluded from the base, and until the 93rd Constitutional Amendment in 2003 the central government levied taxes on a limited number of services using its residual powers.

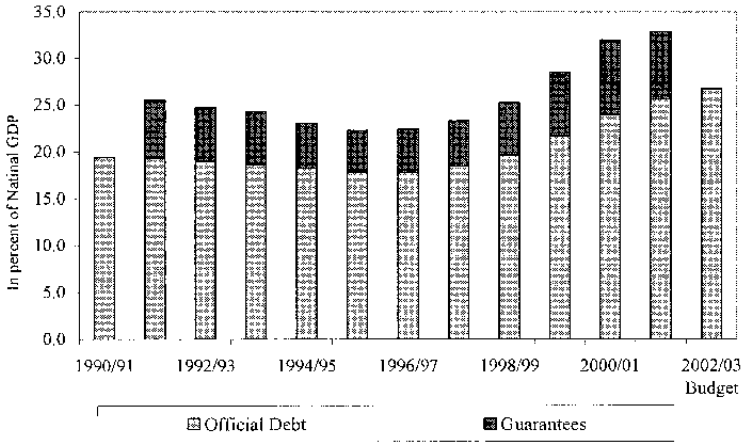
The Constitution recognizes that the assignment of tax powers creates vertical imbalances and provides principles for the sharing of resources between the centre and states. States received a specific share of the total central government tax collections. The Constitution does not specify the revenue shares but instead provides for a Finance Commission (FC) to be appointed every five years to recommend how taxes are to be shared, and how these resources are to be divided among the states.

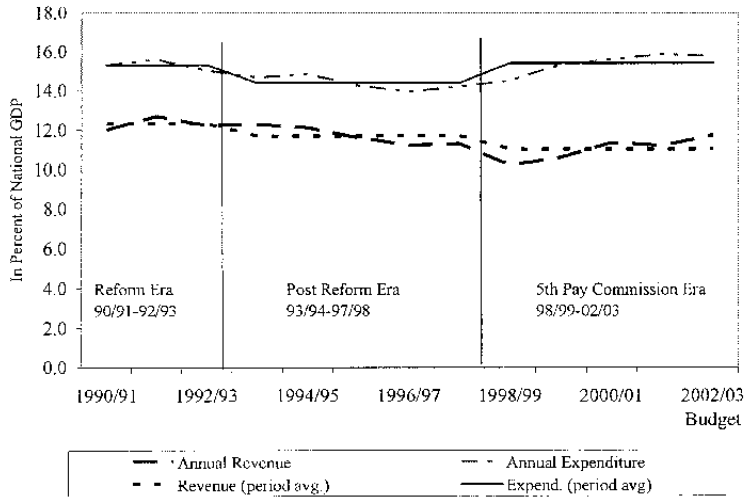
The vertical imbalances that remain after revenue sharing are filled through a combination of central government grants and borrowing. Responsibility for grant allocations is split between two agencies. The main "plan" grant is for implementation of state-level development plans approved by the Planning Commission (PC). These grants are distributed by a formula that effectively allocates resources to states with higher development needs and lower revenue capacity. About 30 percent of PC funds are distributed as grants. Specific earmarked grants for central sponsored schemes are also provided by the PC. The FC recommends grants-in aid to help fill residual gaps on the nonplan budget. The Constitution permits domestic state borrowing which is subject to central approval if a state has outstanding obligations to the centre. Loans from the central government were the most important source of borrowed funds because until 2002/03, it onlent the net proceeds from the small savings funds to states. Now the net proceeds from these funds are channeled directly to the states. The PC also allocates about 70 percent of its resources in the form of loans. Short-term borrowing (ways and means advances) from the RBI, up to specified limits, is also permitted to meet temporary mismatches of receipts and expenditure of the state governments.

[1/] See Hemming et al in Ter-Minassian (1997), Rao and Singh (2001), and the EFC for further details.

Figure IV.1. India: Trends in State Finances, 1990/91–2002/03 Budget







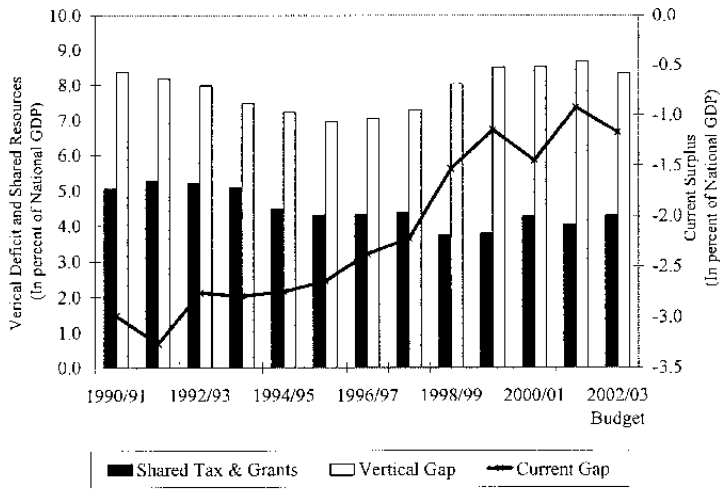
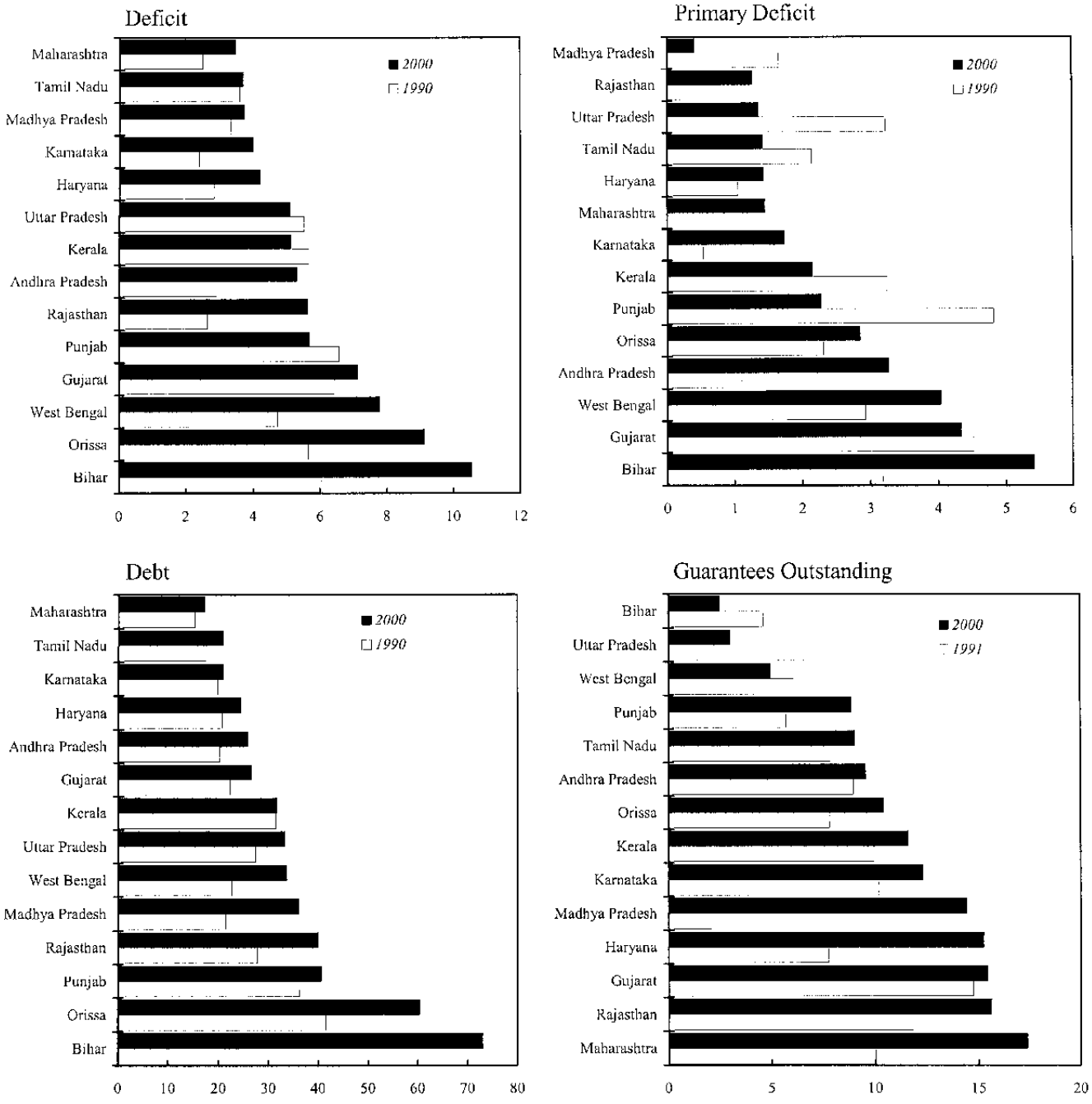
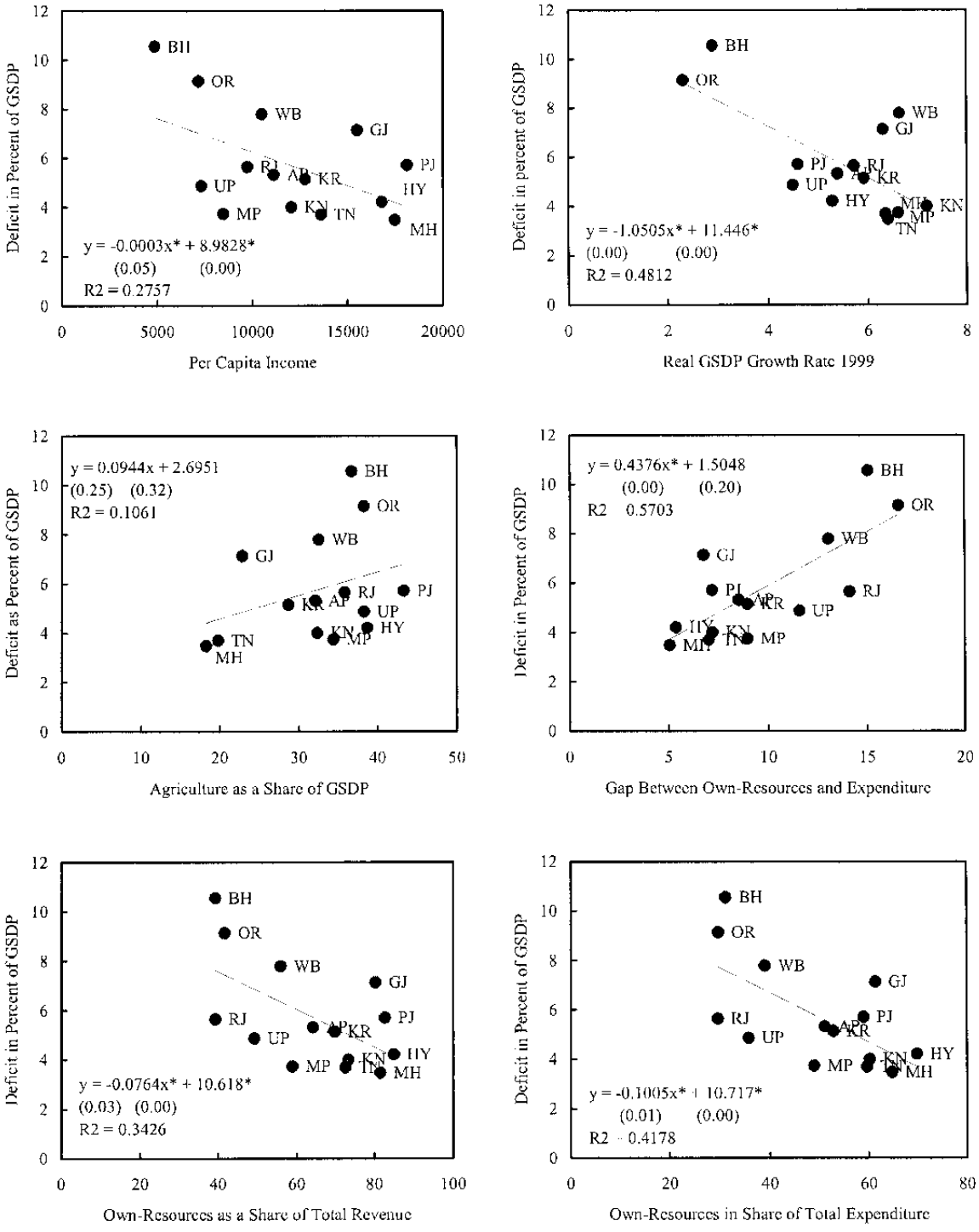


Figure IV.2. India: Fiscal Performance by State, 1990 and 2000
(In percent of GSDP)



Sources: World Bank States database; and staff calculations.

Figure IV.3. India: Relationships Between State Deficits and Economic Structure, 1990–2000 [1/]



Source: World Banks States database; and staff calculations.

1/ P-Values are shown in brackets. * implies variable is significant at the 5 percent level.

Table IV.2. India: Decentralization in an International Context

	Decentralization of:			Change in Decentralization of:		
	Expenditure	Revenue 1/	Deficit	Expenditure	Revenue	Deficit
	(Average for 1990-1997)			(Average 95-97 less average 90-94)		
	(In percent of General Government)					
India	56.7	39.1	36.7	0.5	-2.0	4.4
Europe 1/						
Austria	34.1	26.8	n.a.	-1.3	-1.0	n.a.
Belgium	11.7	5.9	-4.1	0.2	0.4	-11.8
Denmark	53.9	31.7	-1.9	0.8	0.4	-10.9
Finland	39.7	31.7	-3.0	-2.6	0.6	0.0
France	18.7	9.2	7.7	-0.4	0.6	-14.1
Germany	38.8	33.8	43.8	-1.4	-0.4	4.9
Sweden	36.0	31.4	-8.1	-3.2	-2.0	52.6
Average	*33.3*	*24.4*	*5.7*	*-1.1*	*-0.2*	*3.4*
CEE &FSU 2/						
Belarus	33.2	26.8	-6.0	0.8	-2.5	-2.8
Bulgaria	18.9	14.2	0.9	-5.0	-2.3	0.1
Czech Republic	23.0	15.8	13.1	1.8	1.1	13.5
Estonia	21.8	16.4	17.4	-1.9	-4.4	43.1
Hungary	26.9	12.7	-7.9	-1.1	1.7	-26.2
Lithuania	26.9	22.2	-0.2	-2.7	-3.0	0.2
Mongolia	29.7	23.5	0.7	2.5	-0.4	7.1
Romania	12.5	8.4	-7.3	3.4	3.6	13.7
Slovenia	11.2	9.0	38.6	-0.1	0.1	85.1
Average	*22.7*	*16.6*	*5.5*	*-0.3*	*-0.7*	*14.9*
Latin America 3/						
Argentina	45.6	39.1	177.4	-1.0	-0.4	-245.7
Bolivia	23.6	20.4	12.3	11.9	3.3	-12.0
Mexico	29.0	21.9	48.7	25.3	-0.3	-212.5
Peru	25.9	7.4	-2.3	5.1	-1.2	-3.9
Average	*31.0*	*22.2*	*59.0*	*10.3*	*0.4*	*-118.5*
Other						
Australia	49.0	31.7	-75.7	-2.0	1.8	246.4
Canada	58.8	53.0	3.8	0.7	0.2	-83.1
China 2/	81.5	59.7	-0.9	-3.3	-16.4	-17.1
Israel	14.1	33.9	-38.2	1.4	-2.9	-133.4
South Africa	34.8	12.5	6.5	25.5	-1.7	8.5
United States	44.4	42.1	-48.2	2.7	-0.6	-79.7
Average	*47.1*	*38.8*	*-25.4*	*4.2*	*-3.3*	*-9.7*

Sources: GFS, IFS; and staff calculations.

1/ Excluding grants from the central government.

2/ For China, non-GFS data from Ahmad, Keeping, Richardson and Singh (2002) IMF WP/02/168.

Table IV.3. India: Subnational Autonomy in an International Context

	Measures of Sub-National Autonomy					
	Tax Autonomy 1/	Tax Sharing 2/	Grants Share of Revenue	Grant Dependence 3/	Vertical Gap 4/	Vertical Gap After Grants
			(Average for 1990-1997)			
India	46.9	32.4	42.4	34.7	-38.5	-22.1
Europe 5/						
Austria	51.5	88.1	22.8	23.5	n.a.	n.a.
Belgium	36.1	45.9	55.1	55.9	2.8	1.3
Denmark	47.8	4.8	43.1	43.1	-0.1	-0.1
Finland	46.5	11.4	33.0	33.4	1.6	1.1
France	45.1	0	35.2	34.7	-4.3	-2.8
Germany	61.0	86.5	11.4	10.3	-9.2	-6.9
Sweden	72.7	0	18.4	17.7	-5.4	-4.4
Average	*51.5*	33.8	*31.3*	*31.2*	*-2.4*	*-1.9*
CEE &FSU 6/						
Belarus	71.9	93.8	22.6	22.7	-0.9	-1.0
Bulgaria	56.2	90	40.8	40.9	0.2	0.2
Czech Republic	47.4	91.7	29.4	29.0	-2.0	-1.4
Estonia	64.7	89.2	25.5	24.4	-6.6	-5.0
Hungary	19.3	67.4	58.6	59.3	2.1	1.3
Lithuania	67.0	100	27.6	27.6	-0.2	-0.2
Mongolia	49.5	n.a.	41.3	41.4	0.3	0.0
Romania	51.8	75	38.1	38.8	3.1	1.8
Slovenia	59.7	90-100	21.9	22.6	3.4	2.7
Average	*54.2*	87.8	*34.0*	*34.1*	*-0.1*	*-0.2*
Latin America 3/						
Argentina	79.1	64	12.4	11.5	-9.2	-8.1
Bolivia	41.9	93	24.4	19.4	-4.0	-3.3
Mexico	65.2	100	18.9	18.7	-4.3	-4.0
Peru	8.4	n.a.	70.4	71.0	2.2	0.0
Average	*48.7*	85.7	*31.5*	*30.1*	*-3.8*	*-3.8*
Other						
Australia	35.9	n.a.	37.4	38.1	2.4	1.6
Canada	65.6	n.a.	13.6	12.6	-9.5	-7.0
China 7/	53.0	n.a.	53.4	36.9	-0.7	-0.3
Israel	33.9	n.a.	40.6	38.1	-10.9	-6.5
South Africa	15.2	0	64.7	62.9	-10.6	-2.5
United States	55.0	n.a.	15.2	5.4	5.4	3.9
Average	*43.1*	n.a.	*37.5*	*32.3*	*-4.0*	*-1.8*

Sources: GFS, IFS; and staff calculations.

1/Ratio of tax revenue (including shared taxes) to total sub-national revenues, including grants.
2/ Ratio of shared taxes from central government to total subnational tax revenue.
3/ Ratio of central grants to total consolidated expenditure of subnational governments.
4/ Deficit as a share of sub-national non-grant revenue; a positive number implies a surplus.
5/ Tax share ratios from Ebel and Yimax (2002).
6/ Tax share ratios from Dabla-Norris and Wade (2002).
7/ Tax autonomy measure is from GFS data from 1995-1999. Other variables measured from data reported in IMF WP/02/168 for 1990-1997. Subnational governments in China receive 25 percent of domestic VAT, the business tax, enterprises income taxes on state enterprises, the person income tax and a number of smaller taxes. Rates on these taxes are generally decided by the centre.

Table IV.4. India: Subnational Borrowing Constraints in an International Context

	Controls on Sub-National Borrowing				
	Total	Domestic	Foreign	Numerical Limits	Borrowing Autonomy Index 1/
			(Description of control)		
India	Allowed	Administered by centre	Prohibited	No	2.5
Europe					
Austria	Allowed	Administered by centre	Administered by centre	No	1.4
Belgium	Allowed	Determined with centre	Determined with centre	As needed, ceilings on debt/revenue	n.a.
Denmark	Allowed	Determined with centre	Determined with centre	Yes, some exemptions	1.5
Finland	Allowed	Market based	Market based	No	3.0
France	Allowed	Market based	Market based	No	3.0
Germany	Allowed	Rules-based	Rules-based	Golden rule; borrowing from state banks	2.7 (state)
Sweden	Allowed	Market based	Market based	Balance deficit over two years	3.0
CEE &FSU					
Belarus	Prohibited	Prohibited	Prohibited	n.a.	n.a.
Bulgaria	Prohibited	Prohibited	Prohibited	n.a.	n.a.
Czech Republic	Allowed	Market based	Market based	No	n.a.
Estonia	Allowed	Rules-based/Administered	Rules-based/Administered	Ceiling on debt stock & arrears	n.a.
Hungary	Allowed	Administered by centre	Administered by centre	No	n.a.
Lithuania	Allowed	Rules-based	Rules-based/Administered	Ceilings on debt stock , net debt, and debt service/revenue	n.a.
Mongolia 2/	Prohibited	Prohibited	Prohibited	n.a.	n.a.
Romania	n.a.	Prohibited	Prohibited	n.a.	n.a.
Slovenia	Prohibited	Prohibited	Prohibited	n.a.	n.a.
Latin America					
Argentina	Allowed	Administered by centre	Administered by centre	Most provinces limit debt service/revenue	4 (state)
Bolivia	Allowed	Administered by centre	Administered by centre	No	1.5
Mexico	Allowed	Administered by centre	Prohibited	Some states set limit on debt stock to transfers	2.8 (state)
Peru	Allowed	Rules-based/Administered	Rules-based/Administered	Only when guarantee is sought	2.5
Other					
Australia	Allowed	Determined with centre	Determined with centre	Yes set cooperatively	2.6 (state)
Canada	Allowed	Market based	Market based	No	3.25 (state)
China	Formally, no	Prohibited	Prohibited		
Indonesia	Allowed	Administered by centre; banned for 2001 and 2002	Administered by centre; banned for 2001 and 2002	Ceilings on debt stock to revenue and debt service ratio.	n.a.
Israel	n.a.	n.a.	n.a		2.4
South Africa	Allowed	Determined with centre	Only in domestic currency	No ceilings, guarantees by centre ability prohibited	n.a.
United States	Allowed	Rules-based	Rules-based	Balanced budget rule	3 (States)

Source: World Bank Decentralization Database; Rodden (2002).

1/ Compiled by Rodden (2002).
2/ Except for the capital city.

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V. Monetary Policy Transmission in India[1]

A. Introduction

1. **The conduct of successful monetary policy critically hinges on an assessment of the timing and the effects of different shocks on important macroeconomic variables.** Monetary policy is transmitted to variables such as output, prices, and the exchange rate through several channels. While these channels may not be mutually exclusive, the relative importance of each channel differs across economies depending on the underlying structural characteristics, state of development of financial markets, monetary policy instruments, the fiscal stance and the degree of openness.

2. **In India, the monetary policy framework underwent a substantial transformation during the 1990s.** In 1998, the Reserve Bank of India (RBI) announced a move away from a broad money target toward a "multiple indicators" approach to the conduct of monetary policy. Under the multiple indicators approach, movements in a number of macroeconomic variables, including the interest rate, exchange rate, and inflation rate are evaluated to formulate monetary policy. In general, the objective of monetary policy is to maintain price stability while ensuring adequate liquidity to meet credit growth and support investment demand in the economy.

3. **This paper analyzes the channels of monetary transmission in India.** Specifically, the channels examined are, (i) the *interest rate channel* operating through the impact of monetary policy on the cost of capital and domestic demand, (ii) the *exchange rate channel* which takes into account the increasing degree of openness and thus any impact on trade and capital flows, and (iii) *the credit channel*, in particular the bank-lending channel, focuses on the possible effects of monetary policy actions on the supply of loans by financial institutions. The interactions between real and nominal variables in the economy implied by the various channels of the transmission mechanism are analyzed empirically by using vector auto-regressions.

4. **The main findings of this paper are**:

- The impact of shocks on key macroeconomic variables is larger when the exchange rate is introduced into the model. This implies that for a better understanding of monetary transmission in India, particularly since the 1990s, the exchange rate should be included in the analysis.

- There is little evidence that bank lending plays a very important role in transmitting monetary policy changes.

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[1] Prepared by Rania Al-Mashat.

- Decomposing the macroeconomic variables into their permanent and transitory components suggests that the stance of monetary policy is broadly appropriate at the present time.

- When the sample is split into pre- and post-reform periods, the results suggest that, (i) the wide-ranging administered prices in the 1980s seem to have limited the long-run effects of monetary expansion and tightening on prices, and (ii) the response of the nominal interest rate in the pre-reform period is smaller than that in the post-reform period, reflecting the regulated interest rate environment during the 1980s.

- A regional comparison of the monetary policy transmission shows that monetary tightening corresponds to a pronounced increase in the real interest rate in India, Indonesia, and the Philippines, the countries that have large fiscal deficits and have experienced periods of relatively high inflation.

5. **The rest of the paper is organized as follows.** Section B describes the methodology adopted, the data and the sample identified in the empirical analysis. Section C discusses the results and policy implications, and Section D concludes.

B. Methodology and Data

6. **The channels of monetary policy transmission are examined using a structural vector error correction model**, also known as the common trends model (CTM).[2] Studies that aim at evaluating the effects of monetary policy on the rest of the economy have, in general, utilized the standard reduced-form VAR framework. This framework either avoids issues of nonstationarity of the data, cointegration, simultaneity and exogeneity, or chooses recursive identification schemes that do not always have a clear economic interpretation. The CTM helps to overcome these limitations,[3] by allowing the imposition of identification restrictions that are suggested by economic theory. It also deals more systematically with the issues of nonstationarity and cointegration.[4] The CTM helps to test (i) hypotheses regarding long-run equilibria; (ii) the mechanisms of propagation of shocks (impulse responses); (iii) the causes of short-run fluctuations in key variables (variance decomposition); and (iv) the decomposition of endogenous variables into permanent and transitory components.

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[2] The credit channel is analyzed using a reduced from VAR because there are no long run identification restrictions that are suggested by theoretical relationships between credit and money.

[3] For a review of the empirical literature using U.S. data, see the Fall 1995 symposium in the Journal of Economic Perspectives. Also see Sims (1980), and Leeper, Sims and Zha (1998). Smets (1997), Peersman and Smets (2001) apply VAR models to examine the effects of monetary policy in the Euro area.

[4] For a discussion of the CTM, see Warne (1993) and Cassola and Morana (2002).

7. **The CTM focuses on the interaction between real variables (output, a measure of real cash balances, and the real effective exchange rate) and nominal variables (interest rates, and inflation)**. The seasonally adjusted index of industrial production y_t proxies economic activity (output), year-on-year change in the wholesale price index (WPI)[5] π_t represents inflation, real cash balances is the M2/WPI rm_t, the call money rate[6] is the policy rate i_t, and the real effective exchange rate $REER_t$ is the exchange rate measure. Except interest rates, all data are in logs.[7] Given the importance of oil prices to the Indian economy, the year-on-year change in the oil price index is included as an exogenous variable.

8. **Data are quarterly from 1981:1 to 2002:4**. To assess the potential changes in the transmission channels that could have occurred due to the structural reforms initiated in the economy during the 1990s, the empirical analysis is re-applied to two distinct sub-samples, 1981:1–1990:3 and 1992:1–2002:4.[8]

C. Empirical Evidence

9. **Two sets of structural vector autoregressions are used for the analysis**. The first excludes the exchange rate and thus focuses on the interest rate channel for the transmission of monetary policy. The second includes the exchange rate and thus can be used to identify the exchange rate channel. Given the key macroeconomic variables of interest—y_t, rm_t, $REER_t$, i_t, and π_t—the long-run equilibrium relationships considered in the paper are the money demand, and the Fisher parity.[9] When applied to the data, estimates of the money

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[5] The WPI is the main measure of the rate of inflation used in India. WPI has a broader coverage and is published on a more frequent and timely basis than other inflation measures.

[6] Among the array of interest rates on the short-end, the call money rate has shown highest sensitivity to disequilibrium in the money market and has become a meaningful tool for monetary management.

[7] Augmented Dickey Fuller unit root tests carried out on the levels of the variables suggest that all variables should be modeled as (I(1)) processes. Moreover, the null of no-cointegration can be rejected at the 5 percent significance level, in favor of the alternative hypothesis of two cointegrating vectors. Two lags have been selected for the VAR in levels.

[8] The intervening period (1990:4-1991:4) was excluded from the analysis due to the external payments imbalances that marked the balance of payments crisis in the early nineties. It should be noted, however, that since structural reforms took place in a staggered manner throughout the 1990s, structural shifts are difficult to capture through a discrete break in the sample.

[9] The money demand equation assumes that in the long run, a stable relationship exists between real cash balances, output, and the interest rate. The Fisher parity predicts that the interest rate and inflation rate share a common stochastic trend. In the long run, the response of the nominal interest rate is consistent with anticipated inflation.

demand function for both the interest rate and exchange rate channels are in line with previous studies on India. However, the coefficient on inflation in the Fisher relationship is lower (and below unity) for the exchange rate channel compared with the interest rate channel. Estimates below unity imply substantial adjustment in the real interest rate in response to changes in anticipated inflation.[10]

Long-Run Equilibrium Relationships

	The Money Demand	The Fisher Parity
The interest rate channel	$rm_t = \underset{(0.032)}{1.32}\, y_t + \mu_t$	$i_t = \phi_1 + \underset{(0.274)}{1.02}\, \pi_t + \vartheta_t$
The exchange rate channel	$rm_t = \underset{(0.043)}{1.51}\, y_t + \mu_t$	$i_t = \phi_1 + \underset{(0.112)}{0.368}\, \pi_t + \vartheta_t$

10. **The VARs are subject to a range of shocks.**

- **An unanticipated monetary policy shock**: A transitory shock which has no immediate effect on output; affects real and nominal variables in the short-run but not in the long run; defined as an increase in the real interest rate determined by a temporary deviation from the Fisher parity.

- **An aggregate supply shock**: A permanent shock which affects both real and nominal variables in the short-run and the long run; defined as a one standard deviation in shock to output.

- **An aggregate demand shock**: A transitory shock which affects real and nominal variables in the short-run; defined as a temporary deviation from the money demand relationship.

- **An inflation objective shock**: A permanent shock which affects both real and nominal variables in the short-run but only the latter in the long run (long-run neutrality of money); defined as a one standard deviation shock to the monetary aggregate.[11]

- **The real effective exchange rate shock**: A permanent shock which affects all variables in the short-run and the long run but is not affected by any of them in the long run; defined as a one standard deviation shock to the real effective exchange rate.

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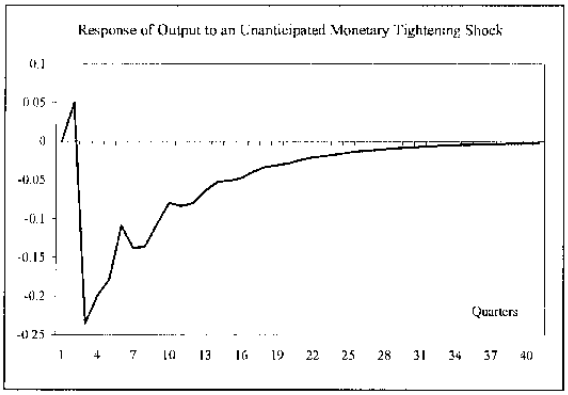
[10] For a summary of empirical estimations of the Fisher relations see Crowder & Hoffman (1996).

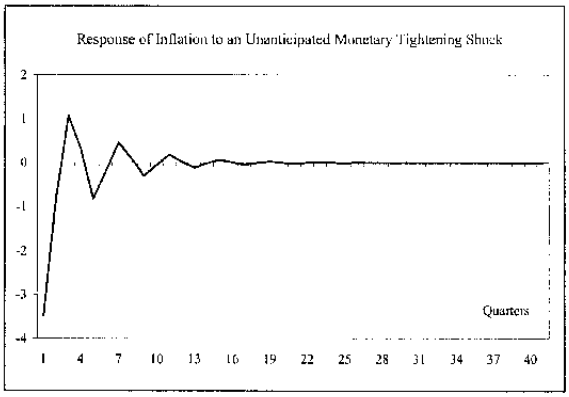
[11] In this framework, it is equivalent to an increase in the money supply beyond what is required to finance long-term GDP growth.

The Interest Rate Channel

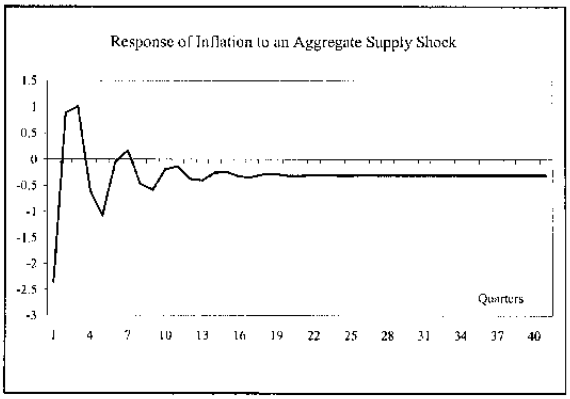
Impulse Responses

11. **An unexpected tightening in monetary policy, i.e., an increase in the real interest rate,[12] leads to temporary decreases in output and inflation**. Output falls reaching its trough in the second quarter. The shock is persistent with the contraction in output lasting almost 20 quarters. The response of inflation is immediate as it declines by 3½ percent in the first quarter. The nominal interest rate increases by 140 bps following the monetary tightening. The effect, however, is short-lived as the interest rate starts to fall in the fourth quarter. Initially, real cash balances increase (due to the decrease in inflation) and reach the long-run equilibrium level after 17 quarters.





12. **A positive supply shock, which causes output to rise above its potential level, leads to a lower long-run inflation level**. In India, cyclical changes in economic activity have often been induced by supply shocks, predominantly from international oil prices. An aggregate supply shock causes an immediate and sharp decrease in inflation, over 2 percent. The shock is persistent, as inflation reaches its new long-run equilibrium (-0.2 percent) after 20 quarters.



13. **A positive demand shock, causes output to rise above its potential level and this translates into higher inflation (1½ percent)**. The monetary authorities respond by immediately raising the nominal interest rate by almost 35 bps in the first quarter and further by 125 bps in the second quarter. Recall that the dynamics between inflation and the interest rate is determined by the Fisher parity.

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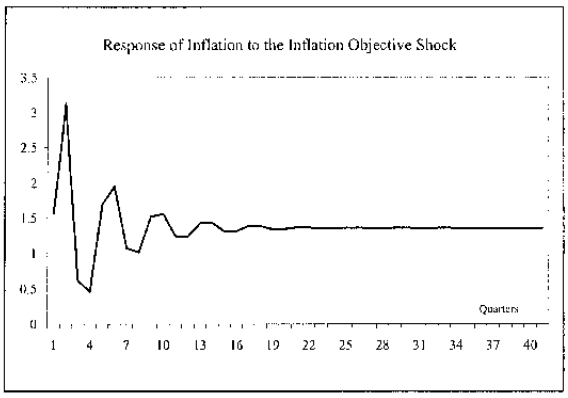
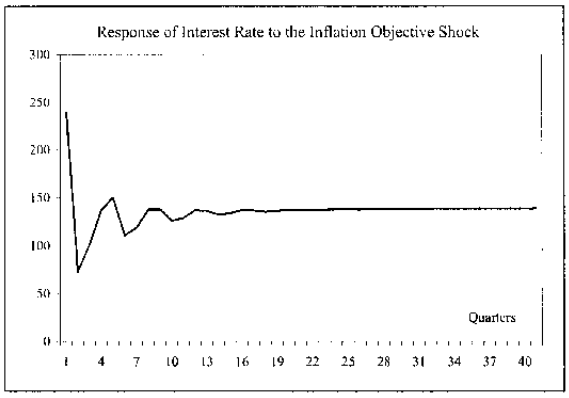
[12] In this case, the real interest rate increases by 500 bps.

14. **An increase in the inflation objective leads to a temporary decrease in output, and a permanent increase in the nominal interest rate**. Following a permanent 1.5 percentage point increase in inflation, output falls temporarily and slowly returns to its potential level. This demonstrates the trade-off between inflation and output.[13] The implied permanent increase in nominal interest rate is 140 bps.





Variance Decompositions

15. The variance decomposition separates the variation in an endogenous variable into the component shocks in the model and provides information about their relative importance. Results from the variance decomposition of output and inflation are discussed below.

16. **Aggregate demand shocks are the main causes of output variability in the short- to medium-term (80 percent and 57 percent respectively), while in the long-term aggregate supply shocks are the main determinants (52 percent) of output variability.**[14] Forecast error decomposition of output is in line with model predictions, productivity (aggregate supply) developments drive trend output and aggregate demand shocks cause output to deviate from its trend. In the Indian economy, supply shocks are the main determinants of trend output.

17. **In the short-term, aggregate supply shocks account for 25 percent of the inflation variability, while aggregate demand shocks account for about 10 percent of the variability**. The result suggests that determining the monetary policy response to observed variations in inflation in India is not easy. In the medium- to long-term, the inflation objective shock is the main source of inflation variability, reflecting the effects of excess money growth on the economy in the long-term.

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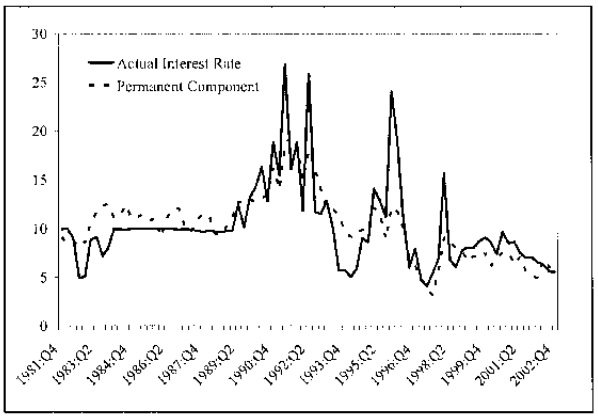
[13] Kapur and Patra (2000) explain the trade-off between inflation and output, and estimate the sacrifice ratio for India. They argue that the aggregate supply curve in India is flattening and this may raise the output costs of reining in inflation.

[14] The short-, medium-, and long-terms are defined as 1, 12 and 20 quarters, respectively.

18. **Decomposing the nominal interest rate into its permanent and cyclical components suggests that the stance of monetary policy is broadly appropriate at the present time.** The permanent component is generated by the dynamics between the variables in the model. As shown in the figure, the permanent component of the nominal interest rate is only slightly below the actual rate.[15]



The Exchange Rate Channel

19. **There is evidence that the exchange rate plays an important role in the transmission of monetary policy.** The impact of the above identified shocks on the key macroeconomic variables is magnified somewhat when the exchange rate channel is included as an additional transmission channel.[16] The interest rate channel is augmented to incorporate an exchange rate measure, in this case the real effective exchange rate.

20. **An unexpected tightening in monetary policy causes the real effective exchange rate to appreciate by 0.5 percent.**[17] The appreciation in the real effective exchange explains the larger decrease in output (0.4 percent) in the exchange rate channel of monetary policy transmission. The shock is quite persistent with the contraction in output lasting almost 30 quarters.

21. **A positive aggregate supply shock causes the real exchange rate to depreciate by 1 percent.** The depreciation is persistent, lasting for five quarters, and this could help explain the larger impact of this shock on variables in this model. The variance decomposition analysis shows that the contribution of the aggregate supply shock to output variability

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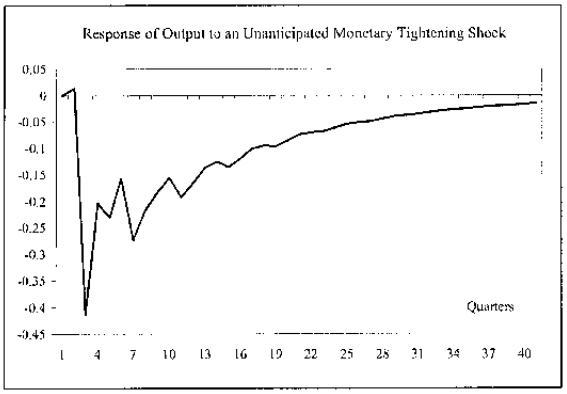
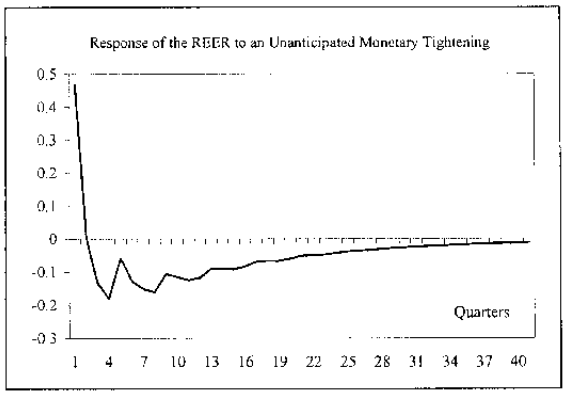
[15] Results generated from applying the same analysis until 2001:4, suggests that the nominal interest rate should have been reduced by over 200 bps. Between 2001:4 and 2002:4, the call rate fell by 221 bps from 6.81 percent to 5.60 percent.

[16] In India the exchange rate system has undergone a paradigm shift from a system of fixed exchange rate (until March 1992) to a market-determined regime in March 1993. Its possible that the post-1993 effects dominate the sample, and could explain this somewhat counter-intuitive result.

[17] The tightening in monetary policy corresponds to a 400 bps increase in the real interest rate some 100 bps lower than the increase observed in the interest rate channel. The difference in the response of interest rates could reflect the authorities' attempt to limit an appreciation of the real effective exchange rate and the consequent contraction in output.

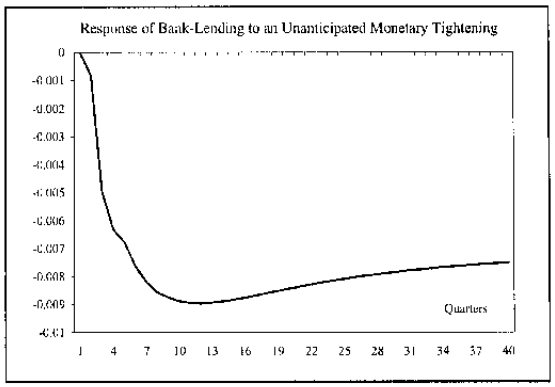
increases in the short- to medium-term (40 percent and 60 percent respectively), compared to the interest rate channel.





The Credit Channel

22. **There is little evidence that monetary shocks are transmitted through bank-lending**. The interest rate channel is augmented to include nonfood credit extended by commercial banks. This permits an examination of how changes in the policy rate affect bank-lending, and consequently, how bank-lending affects output.



Impulse Responses

23. **There is weak transmission from monetary policy changes to bank-lending.** Bank-lending falls in response to an unanticipated monetary tightening shock. However, the magnitude of the response is small and slow. As shown in the figure, bank lending reaches its trough after ten quarters. This can be explained by the low-level of pass-through of the changes in the policy rate to lending rates and to credit deployment. This has reduced the efficacy of the credit channel of monetary policy.[18] In large part, this is due to the fact that a

[18] Structural factors contributing to the downward inflexibility in the commercial bank interest rate structure include: (i) relatively high administered interest rates on some savings instruments—despite reductions in the administered interest rates on small savings, these instruments still yield higher returns than bank deposits, which are made even more attractive by tax benefits. This constrains the banks' ability to reduce deposit rates. (ii) the relatively high share of fixed rate deposits—substantial portion of bank deposits remains in the form of long-term deposits at fixed interest rates. This limits the flexibility available to banks in reducing their lending rates in the short-run. For a comprehensive discussion, see the RBI, *Report on Currency and Finance* (2003).

substantial part of the estimation period was dominated by credit budgeting through direct lending programs and heavy reserve requirements.[19]

Variance Decomposition

24. **Output does not react to bank-lending shocks.**[20] Shocks to bank lending explain only 1 percent of output variability over a 12–quarter period. However, shocks to output explain 40 percent of variability in bank-lending over the same period. This suggests that demand for credit factors may be more significant in explaining credit flows than factors that tend to influence the supply of credit. Alternatively, the finding that output does not react to bank-lending shocks could be interpreted as suggestive that unsystematic lending shocks are small.[21]

The Pre- and Post-Reform Periods

25. **After the balance of payments crisis in the early 1990s, India entered a process of wide-ranging structural reforms**. These reforms aimed at liberalizing the economy, inducing competition and instilling macroeconomic discipline. A number of reforms had a direct impact of the conduct of monetary policy: deregulating the interest rate; reducing the pre-emptions of resources from the banks through cuts in the cash reserve ratio (CRR) and statutory liquidity requirement (SLR); increasing reliance on indirect methods of monetary control; moving towards universal banking; and relaxing capital controls and allowing greater exchange rate flexibility. To assess the changes in the transmission that could have occurred due to the structural reforms, the sample was split into two, pre-reform (1981:1-1990:3), and post-reform (1992:1-2002:4).[22]

26. **The fairly wide-ranging administered prices in the 1980s seem to have limited the long-run effects of monetary expansion and tightening on prices**. In response to an

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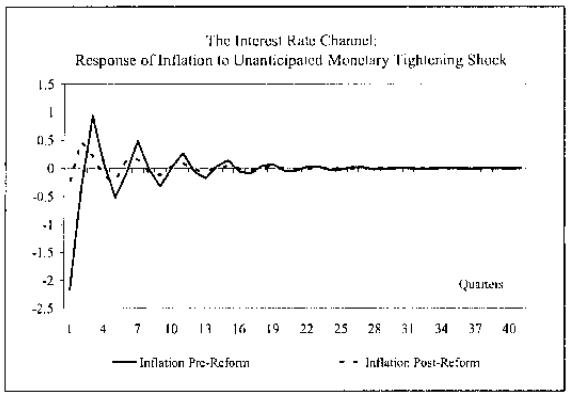
[19] During the sample period, the RBI applied "priority sector lending" intended to ensure an adequate credit flow to the desired sectors while preventing excessive credit withdrawal for less essential economic activities.

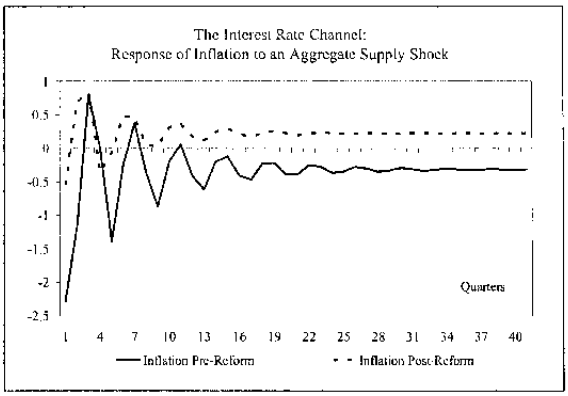
[20] Rangarajan and Arif (1990) show that credit is an important determinant of output growth. However, their empirical analysis was confined to a causality test or an ad-hoc specification of the aggregate production function with money appearing as a proxy for credit.

[21] This interpretation would be more consistent with the findings of Mukhopadhyay (1999), who shows that bank dependent industries suffer most during the period of quantitative credit controls.

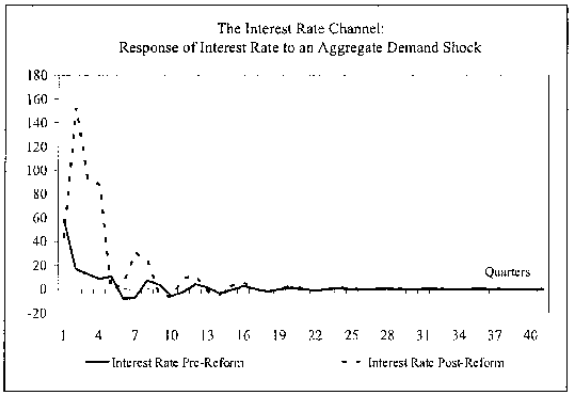
[22] Ray et al (1998) establish the rationale for re-establishing the channels of transmission mechanism by presenting some evidence that interest rates and exchange rates matter in the conduct of monetary policy in the post liberalization phase. They show that money, income, prices, and exchange rates are cointegrated and that disequilibrium in money markets endogenously impacts interest rates in the Indian economy in the post-liberalization period.

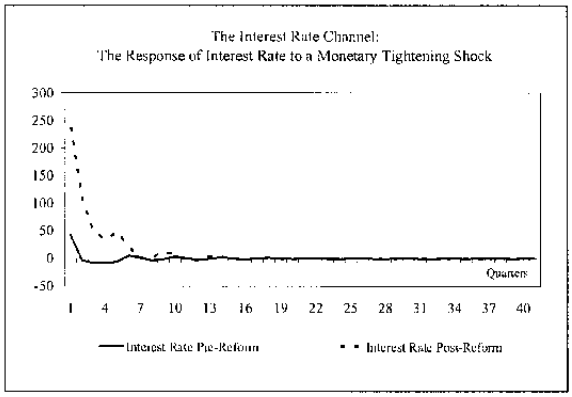
unanticipated monetary tightening shock, inflation falls by more in the pre-reform period compared to the post-reform period. This holds true for the two channels of monetary policy transmission, the interest rate and exchange rate channels. Similarly, in response to an aggregate supply shock, in the post-reform period, inflation is permanently higher compared to the pre-reform period. These results may reflect the greater openness in the nineties, and suggest that inflation is affected by external factors as well.





27. **The response of the nominal interest rate in the pre-reform period is smaller than that in the post-reform period, reflecting the regulated interest rate environment during the 1980s**. In response to an unanticipated monetary tightening, the nominal interest rate increases by more in the post-reform period compared to the pre-reform period. This holds true for the two channels of monetary policy transmission, the interest rate and exchange rate channels. Similarly, in response to an aggregate demand shock, in the post-reform period, the hike in the interest rate is higher compared to the pre-reform period. This implies that in the post-reform period, curbing inflationary pressures has been key in the conduct of monetary policy.





A Regional Comparison

28. **A regional comparison[23] of the impact of an unanticipated monetary tightening shock, reveals a greater degree of monetary tightening in India, Indonesia and the Philippines, the countries that have large fiscal deficits and periods of double-digit inflation.**

- **The interest rate channel**: There is a significant increase in the real interest rates in India and Indonesia, around 500 bps, following the tightening of monetary policy. The effects of discretionary monetary policy on output and inflation are found to be short-lived in Indonesia, Singapore, and Taiwan, but rather persistent in India, Japan, and Korea. The full impact of this shock on output and inflation is reached on average after 4 quarters.

- **The exchange rate channel**: The real effective exchange rate appreciates after a monetary tightening. The response of output is more persistent compared to the interest rate channel, and reaches its trough after 5 quarters. There is a significant increase in the real interest rate in the Philippines and India, around 400 bps.

D. Conclusion

29. **The interest rate and exchange rate channels of the monetary policy transmission mechanism are the most important.** However, the impact of shocks on key macroeconomic variables is larger when the exchange rate is accounted for. This implies that to better understand the monetary transmission in India, the exchange rate should be included in the analysis.

30. **The low-level of pass-through of the changes in the policy rate on to the lending rate coupled with directed lending requirements has reduced the efficacy of the credit channel of monetary policy**. The findings in this paper are broadly in line with those of RBI (2003), where it is noted that "an important factor determining the effectiveness of the monetary transmission process is the degree of pass-through. In view of the weak sensitivity of the bank lending rates to changes in the bank rate, the efficacy of the monetary policy in reinvigorating growth runs up against a constraint." For better monetary policy transmission, more flexibility should be introduced in the commercial bank interest rate structure. A higher pass-through would lead to declines in transmission lags. Recently commercial banks were encouraged to introduce a flexible interest rate option for all new deposits and urged to review and announce the maximum spreads around the prime-lending rate.

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[23] The countries included in the study are Indonesia, Japan, Korea, Philippines, Singapore, and Taiwan. For details see Al-Mashat & N'Diaye (2003). Fung (2002) arrives at a similar conclusion.

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Table 1. India: GDP at Factor Cost by Sector of Origin, 1996/97–2002/03 1/

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02 Est.	2002/03 Prov.
			(In billions of rupees, at current prices)				
GDP at factor cost	12,435.5	13,901.5	15,981.3	17,619.3	19,177.2	20,940.1	22,424.6
Agriculture and allied activities	3,626.1	3,870.1	4,424.9	4,619.6	4,784.7	5,225.8	5,160.2
Mining and quarrying	277.0	334.3	356.8	413.0	453.8	462.6	483.7
Manufacturing	2,206.8	2,319.8	2,522.4	2,667.8	3,014.3	3,199.3	3,483.7
Electricity, gas, and water supply	299.6	352.9	436.2	423.0	465.8	500.0	550.1
Construction	628.1	778.2	920.1	1,053.0	1,165.6	1,255.5	1,391.9
Trade, hotels, transport, and communication	2,552.9	2,920.5	3,333.8	3,703.6	4,129.5	4,569.2	5,009.8
Trade, hotels, and restaurants	1,716.5	1,945.3	2,208.2	2,460.4	2,726.7	3,024.6	...
Transport, storage, and communications	836.3	975.3	1,125.6	1,243.3	1,402.8	1,544.6	...
Financing, insurance, real estate, and business services	1,375.8	1,568.0	1,811.4	2,205.6	2,388.7	2,671.2	2,928.9
Community, social, and personal services	1,469.3	1,757.7	2,175.6	2,533.7	2,774.9	3,056.6	3,383.0
Of which : Public adminstration and defense	652.4	799.8	995.7	1,166.9	1,239.7	1,330.8	...
			(In billions of rupees, at constant 1993/94 prices)				
GDP at factor cost	9,700.8	10,165.9	10,827.5	11,484.4	11,986.9	12,654.3	13,203.1
Agriculture and allied activities	2,760.9	2,693.8	2,860.9	2,869.8	2,858.8	3,020.5	2,923.1
Mining and quarrying	233.7	256.7	263.9	272.7	279.3	282.2	296.3
Manufacturing	1,770.1	1,796.9	1,845.8	1,919.9	2,060.6	2,130.7	2,259.8
Electricity, gas, and water supply	233.8	252.2	269.9	284.0	298.1	310.8	323.0
Construction	464.5	512.1	543.9	587.4	628.2	651.5	697.6
Trade, hotels, transport, and communication	2,029.4	2,188.2	2,357.6	2,558.2	2,733.8	2,972.1	3,203.3
Trade, hotels, and restaurants	1,355.0	1,458.4	1,568.7	1,682.0	1,751.1	1,905.9	...
Transport, storage, and communications	674.4	729.8	788.8	876.2	982.7	1,066.2	...
Financing, insurance, real estate, and business services	1,100.0	1,227.8	1,318.9	1,458.6	1,509.1	1,577.1	1,672.5
Community, social, and personal services	1,108.4	1,238.2	1,366.6	1,533.8	1,619.0	1,709.5	1,825.7
Of which : Public adminstration and defense	491.1	562.4	622.1	704.3	722.2	743.2	...
			(In percent change, at constant prices)				
GDP at factor cost	7.8	4.8	6.5	6.1	4.4	5.6	4.3
Agriculture	9.6	-2.4	6.2	0.3	-0.4	5.7	-3.2
Industry 2/	7.1	4.3	3.7	4.8	6.6	3.3	6.0
Services 3/	7.2	9.8	8.4	10.1	5.6	6.8	7.1
Of which : Public adminstration and defense	4.1	14.5	10.6	13.2	2.5	2.9	...

Source: Central Statistical Organization (CSO).

1/ Data on a fiscal year basis beginning April 1.
2/ Includes mining and quarrying; manufacturing; electricity, gas, and water supply; and construction.
3/ Includes trade, hotels, and restaurants; transport, storage, and communication; financing, insurance, real estate, and business services; and community, social, and personal services.

Table 2. India: GDP at Market Prices by Expenditure Components, 1996/97–2001/02 1/

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02
			(In billions of rupees, at current prices)			
GDP at market prices	13,682.1	15,225.5	17,409.9	19,369.3	21,043.0	22,960.5
Private consumption	8,964.7	9,761.3	11,341.3	12,676.6	13,579.9	14,898.8
Government consumption	1,457.3	1,721.9	2,140.3	2,511.1	2,645.6	2,949.7
Gross capital formation	3,350.0	3,744.8	3,930.2	4,886.3	5,047.4	5,450.9
Gross fixed capital formation	3,118.5	3,304.2	3,743.3	4,219.0	4,597.9	4,972.8
Construction	1,327.8	1,575.2	1,790.1	2,025.7	2,240.6	2,467.1
Machinery and equipment	1,790.7	1,729.0	1,953.3	2,193.3	2,357.3	2,505.7
Change in stocks	-139.9	132.9	-21.3	363.6	138.3	178.1
Errors and omissions	371.4	307.7	208.1	303.7	311.2	300.0
Discrepancies 2/	71.9	188.8	292.6	-324.7	-70.9	-181.4
Exports of goods and services	1,448.5	1,652.0	1,952.8	2,277.0	2,901.8	3,044.9
Imports of goods and services	1,610.2	1,843.3	2,247.5	2,657.0	3,060.9	3,202.4
			(In billions of rupees, at constant 1993/94 prices)			
GDP at market prices	10,674.5	11,152.5	11,820.2	12,663.6	13,163.4	13,881.4
Private consumption	6,824.5	7,028.6	7,485.5	7,940.6	8,164.4	8,634.7
Government consumption	1,116.4	1,239.8	1,399.6	1,584.3	1,593.4	1,708.8
Gross capital formation	2,684.3	2,890.6	2,909.7	3,501.6	3,452.1	3,557.2
Gross fixed capital formation	2,494.9	2,548.0	2,769.5	3,027.9	3,144.0	3,245.5
Construction	1,000.9	1,126.9	1,191.6	1,275.0	1,365.2	1,430.9
Machinery and equipment	1,494.0	1,421.1	1,577.8	1,752.9	1,778.8	1,814.6
Change in stocks	-107.6	105.3	-13.7	255.7	95.3	115.9
Errors and omissions	297.1	237.3	154.0	218.0	212.8	195.8
Discrepancies 2/	6.3	156.8	315.2	-218.9	-195.8	-229.8
Exports of goods and services	1,360.7	1,328.9	1,513.5	1,785.8	2,203.7	2,335.9
Imports of goods and services	1,317.8	1,492.2	1,803.3	1,929.8	2,054.4	2,125.4
GDP deflator (1993/94=100)	128.2	136.5	147.3	153.0	159.9	165.4
			(In percent change, at constant prices)			
GDP at market prices	7.4	4.5	6.0	7.1	3.9	5.5
Consumption	7.3	4.1	7.5	7.2	2.4	6.0
Private	7.8	3.0	6.5	6.1	2.8	5.8
Government	4.5	11.1	12.9	13.2	0.6	7.2
Gross fixed capital formation	1.5	2.1	8.7	9.3	3.8	3.2
Construction	2.1	12.6	5.7	7.0	7.1	4.8
Machinery and equipment	1.1	-4.9	11.0	11.1	1.5	2.0
GDP deflator at market prices	7.2	6.5	7.9	3.8	4.5	3.5
GDP at factor cost	7.8	4.8	6.5	6.1	4.4	5.6

Source: Central Statistical Organization (CSO).

1/ Data are provisional.
2/ Residuals.

Table 3. India: Employment and Labor Statistics, 1996/97–2000/01

(In millions of persons, end-of-period)

	1996/97	1997/98	1998/99	1999/2000	2000/01
Employment in the organized sector 1/	28.2	28.2	28.1	28.0	27.8
Public sector	19.6	19.4	19.4	19.3	19.1
Central government	3.3	3.3	3.3	3.3	3.3
State government	7.5	7.5	7.5	7.5	7.4
Public enterprises	6.5	6.5	6.4	6.3	6.2
Local authorities	2.2	2.2	2.3	2.3	2.3
Private sector	8.7	8.7	8.7	8.6	8.7
Agriculture and allied activities	0.9	0.9	0.9	0.9	0.9
Industry	5.4	5.4	5.4	5.3	5.2
Mining and quarrying	0.1	0.1	0.1	0.1	0.1
Manufacturing	5.2	5.2	5.2	5.1	5.0
Electricity, gas, and water	0.0	0.0	0.0	0.0	0.1
Construction	0.1	0.1	0.1	0.1	0.1
Services	2.3	2.4	2.5	2.5	2.5
Trade, hotels, and restaurants	0.3	0.3	0.3	0.3	0.3
Transport, storage, and communication	0.1	0.1	0.1	0.1	0.1
Financing, insurance, real estate, and business services	0.3	0.3	0.4	0.4	0.4
Community, social, and personal services	1.6	1.7	1.7	1.7	1.7

Source: CEIC.

Table 4. India: Agricultural Production and Yields, 1996/97–2002/03

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03 Est. 1/
	(In millions of tons, unless otherwise indicated)						
Production							
Foodgrains	199.4	192.3	203.6	209.8	199.5	212.0	184.1
Rice	81.7	82.5	86.1	89.7	87.7	93.1	76.9
Wheat	69.4	66.4	71.3	76.4	69.7	71.8	70.3
Coarse cereals	34.1	30.4	31.3	30.3	31.1	33.9	25.1
Pulses	14.3	13.0	14.9	13.4	11.1	13.2	11.8
Oilseeds 2/	24.4	21.3	24.8	20.7	18.4	20.5	15.6
Cotton 3/	14.2	10.9	12.3	11.5	9.5	10.1	8.6
Jute 4/	10.0	10.0	8.8	9.4	9.3	10.6	9.9
Sugarcane	277.6	279.5	288.7	299.3	296.0	300.1	279.3
Tea 5/	0.8	0.8	0.9	0.8	0.8	0.8	...
Kharif foodgrains	103.9	101.6	102.9	105.5	104.7	111.6	89.5
Rabi foodgrains	95.5	90.7	100.7	104.3	94.8	100.5	94.6
	(In kilogram per hectare, unless otherwise indicated)						
Yields							
Foodgrains	1,614	1,552	1,627	1,704	1,636	1,739	...
Rice	1,882	1,900	1,921	1,986	1,913	2,086	...
Wheat	2,679	2,485	2,590	2,778	2,743	2,770	...
Maize	1,720	1,711	1,797	1,792	1,841	2,018	...
Pulses	635	567	634	635	533	609	...
Oilseeds 2/	926	816	944	892	826	897	...
Cotton	265	208	224	225	191	189	...
Jute	1,998	1,978	1,875	2,005	2,014	2,174	...
Sugarcane 6/	66	71	71	71	69	68	...
Tea 5/	1,875	1,865	1,995	1,840	...	...	...

Sources: Government of India, *Economic Survey*; and data provided by the Indian authorities.

1/ Third advance estimate.
2/ Nine major oilseeds.
3/ In million of bales of 170 kg each.
4/ In million of bales of 180 kg each.
5/ Data are on a calendar year basis. For example, data under the heading 1995/96 are for 1995.
6/ In tons per hectare.

Table 5. India: Index of Industrial Production, 1996/97–2002/03

	Weight 1/	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03
				(Annual percentage change)				
All industries	100.0	6.1	6.6	4.1	6.6	5.0	2.7	5.8
Manufacturing	79.4	7.3	6.6	4.4	7.2	5.4	2.9	6.0
Food products	9.1	3.5	-0.4	0.7	4.1	10.1	-1.6	10.7
Beverages, tobacco, and related products	2.4	13.5	19.4	12.9	7.6	4.3	12.2	27.3
Cotton textiles	5.5	12.0	2.3	-7.7	6.8	2.9	-2.2	-2.5
Wool, silk and man-made fibre textiles	2.3	10.5	18.5	2.8	11.9	5.8	4.4	3.7
Jute and other vegetable fibre textiles	0.6	-4.6	17.0	-7.3	-0.9	0.8	-5.9	8.4
Textile products (including wearing apparel)	2.5	9.5	8.5	-3.5	2.0	4.0	2.4	15.6
Wood and wood products	2.7	7.0	-2.6	-5.8	-16.2	2.8	-10.9	-17.8
Paper and paper products	2.7	9.1	6.9	16.0	6.3	-9.2	3.0	5.6
Leather and leather and fur products	1.1	9.5	2.2	8.1	13.7	10.7	5.4	-2.9
Basic chemicals and chemical products	14.0	4.7	14.4	6.6	9.9	7.3	4.8	4.0
Rubber, plastic, petroleum, and coal products	5.7	2.0	5.2	11.3	-1.0	11.8	11.1	4.9
Nonmetallic mineral products	4.4	7.9	13.5	8.3	24.4	-1.2	1.2	5.0
Basic metals and alloy industries	7.5	6.7	2.6	-2.5	5.0	1.9	4.3	9.2
Metal products and parts (except machinery and equipment)	2.8	9.8	7.8	17.1	-1.2	15.0	-10.0	6.4
Machinery and equipment (except transport equipment)	9.6	5.0	5.8	1.5	17.7	7.3	1.3	1.8
Transport equipment and parts	4.0	12.6	2.5	20.1	5.7	-1.9	6.8	14.9
Other manufacturing industries	2.6	24.7	-1.3	1.0	-16.1	11.7	8.9	-0.5
Mining and quarrying	10.5	-1.9	7.0	-0.8	1.0	2.8	1.3	5.7
Electricity generation	10.2	4.0	6.6	6.4	7.3	4.0	3.1	3.2
Index of industrial production classified by use:								
Basic goods	35.6	3.0	6.8	1.7	5.5	3.7	2.6	4.8
Capital goods	9.2	11.4	5.8	12.6	7.0	1.7	-3.4	10.6
Intermediate goods	26.5	8.1	8.0	6.1	8.8	4.7	1.6	3.9
Consumer goods	28.7	6.2	5.5	2.2	5.7	8.0	6.0	7.0
Durables	5.4	4.6	7.8	5.6	14.2	14.6	11.5	-6.2
Nondurables	23.3	6.6	4.9	1.1	3.2	5.8	4.1	11.9

Source: CEIC.

1/ Weights are for 1993/94 base-year data. Weights for index classified by use were revised slightly for data from 1998/99 onwards.

Table 6. India: Saving and Investment, 1996/97–2001/02 1/

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02
	(In percent of GDP at market prices, unless otherwise indicated)					
Gross domestic saving	23.2	23.1	21.5	24.1	23.4	24.0
Private sector	21.5	21.8	22.5	25.1	25.7	26.5
Household saving	17.0	17.6	18.8	20.8	21.6	22.5
Physical saving	6.7	8.0	8.4	10.3	11.2	11.3
Financial saving	10.4	9.6	10.4	10.5	10.4	11.2
Corporate saving	4.5	4.2	3.7	4.4	4.1	4.0
Public sector	1.7	1.3	-1.0	-1.0	-2.3	-2.5
Gross capital formation 2/	21.8	22.6	21.4	23.7	22.5	22.4
Gross fixed capital formation	22.8	21.7	21.5	21.8	21.8	21.7
Private sector	15.9	15.3	15.1	15.6	15.8	15.7
Household	7.3	7.4	8.5	9.9	11.0	11.1
Corporate sector	8.6	7.9	6.6	5.6	4.8	4.6
Public sector	6.9	6.4	6.5	6.2	6.1	5.9
Changes in stocks	-1.0	0.9	-0.1	1.9	0.7	0.8
Private sector	-1.2	0.6	-0.3	1.1	0.4	0.4
Public sector	0.1	0.2	0.1	0.7	0.3	0.4
Memorandum item:						
Fixed investment deflator 3/	6.1	3.7	4.2	3.1	5.0	4.8

Source: Central Statistical Organization (CSO).

1/ Data are provisional.
2/ Not adjusted for statistical discrepancy.
3/ Percent change.

Table 7. India: Price Developments, 1996/97–2002/03

	Weight	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03
				(Annual percentage change, end of period)				
Wholesale Price Index (WPI), 1993/94 weights	100.0	5.4	4.5	5.3	6.5	5.5	1.6	6.5
Primary commodities	22.0	9.2	4.6	7.6	4.0	1.5	3.9	6.1
Food	15.4	11.6	4.0	9.3	7.1	-0.2	5.2	0.8
Nonfood	6.1	3.3	7.2	2.7	-3.5	5.7	0.6	22.1
Minerals	0.5	17.0	-8.3	17.8	-11.6	13.5	1.7	-1.3
Fuel, power, light, and lubricants	14.2	13.3	13.7	3.2	26.7	15.1	3.9	10.8
Manufactured products	63.7	2.4	2.3	4.9	2.4	4.0	0.0	5.1
Food products	11.5	10.6	5.8	9.2	-0.3	-3.1	0.3	8.7
Beverages, tobacco, and tobacco products	1.3	10.4	8.3	9.4	3.3	10.0	5.6	0.5
Textiles	9.8	-9.0	1.5	-2.1	1.8	4.7	-5.0	10.6
Wood and wood products	0.2	0.0	64.6	-0.1	-4.9	-10.8	4.5	0.6
Paper and paper products	2.0	-7.1	1.8	14.5	5.0	15.6	-2.1	0.8
Leather and leather products	1.0	4.4	6.2	0.1	14.6	-6.3	-8.2	-1.1
Rubber and plastic products	2.2	-1.6	-0.2	0.1	0.1	1.0	0.8	6.0
Chemicals and chemical products	1.4	4.9	0.7	11.0	5.5	4.2	2.5	4.2
Nonmetallic mineral products	2.5	-3.6	-2.4	2.9	-0.9	15.6	-2.8	3.3
Basic metals, alloys and metal products	8.3	3.7	3.3	1.0	3.2	3.2	-0.9	6.6
Machinery and machine tools	8.4	3.0	-1.5	1.1	-0.5	10.0	2.0	0.5
Transport equipment and parts	4.3	5.0	3.1	2.3	4.7	5.8	1.3	-0.9
Other	10.7	5.2	0.7	10.8	5.4	3.9	2.4	4.5
Consumer Price Index (CPI)	100.0	10.0	8.3	8.9	4.8	2.5	5.2	4.1

Source: CEIC.

Table 8. India: Balance of Payments 1997/98-2002/03 1/

(In billions of U.S. dollars, unless otherwise indicated)

	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03
Current account balance	-5.5	-4.0	-4.7	-3.6	0.8	3.7
Trade balance	-15.5	-13.2	-17.8	-14.4	-12.7	-12.5
Merchandise exports	35.7	34.3	37.5	44.9	44.9	53.0
Merchandise imports	51.2	47.5	55.4	59.3	57.6	65.5
Oil	8.2	6.4	12.6	15.7	14.0	17.8
Non-oil	43.0	41.2	42.8	43.6	43.6	47.7
Customs	33.2	36.0	37.1	34.9	37.4	41.6
Non-customs	9.8	5.1	5.7	8.7	6.2	6.1
Non-factor services balance	1.3	2.2	4.1	2.5	4.6	6.2
Receipts	9.4	13.2	15.7	18.9	20.7	25.0
Travel	2.9	3.0	3.0	3.2	2.9	3.0
Transportation	1.8	1.9	1.7	1.9	2.0	2.5
Insurance	0.2	0.2	0.2	0.3	0.3	0.4
Government n.i.e.	0.3	0.6	0.6	0.7	0.5	0.3
Miscellaneous	4.2	7.4	10.2	12.9	15.1	18.7
Payments	8.1	11.0	11.6	16.4	16.1	18.8
Travel	1.4	1.7	2.1	2.9	2.3	3.5
Transportation	2.5	2.7	2.4	3.2	2.4	2.5
Insurance	0.2	0.1	0.1	0.1	0.3	0.3
Government n.i.e.	0.2	0.3	0.3	0.3	0.3	0.2
Miscellaneous	3.8	6.2	6.7	9.9	10.9	12.2
Net investment income	-3.5	-3.5	-3.6	-4.8	-3.6	-4.9
Credits	1.6	1.9	1.9	2.7	3.4	2.8
Debits	5.1	5.5	5.5	7.5	7.0	7.7
Transfers, net	12.2	10.6	12.6	13.1	12.5	14.9
Capital account balance	9.8	8.4	10.4	10.0	10.6	12.6
Direct investment, net 2/	3.5	2.4	2.1	3.3	4.7	3.6
Portfolio investment, net	1.8	-0.1	3.0	2.6	2.0	0.9
External assistance, net	0.9	0.8	0.9	0.4	1.1	-2.5
Commercial borrowing, net	4.0	4.4	0.3	3.7	-1.6	-1.7
Short-term credit, net	-0.1	-0.7	0.4	0.1	-0.9	1.0
NRI deposits, net	1.1	1.0	1.5	2.3	2.8	2.8
Rupee debt	-0.8	-0.8	-0.7	-0.6	-0.5	-0.5
Other capital	-0.7	1.5	2.9	-1.8	3.0	8.9
Errors and omissions	0.2	-0.2	0.7	-0.6	0.4	0.6
Overall balance	4.5	4.2	6.4	5.9	11.8	17.0
IMF, net	-0.6	-0.4	-0.3	0.0	0.0	0.0
Increase in gross reserves (-)	-3.9	-3.8	-6.1	-5.8	-11.8	-17.0
Memorandum items:						
Foreign exchange reserves	29.4	32.5	38.0	42.3	54.1	75.4
(In months of next year's imports (g & s))	6.0	5.8	6.0	6.9	7.7	...
Export value (in US$ terms; percent change)	4.5	-3.9	9.5	19.6	0.0	18.0
Import value (in US$ terms; percent change)	4.6	-7.1	16.5	7.0	-2.8	13.6
Exports (in volume terms; percent change)	8.4	3.1	12.2	21.7	2.7	14.0
Imports (in volume terms; percent change)	13.8	0.2	11.0	2.2	0.2	8.8
Current account (percent of GDP)	-1.3	-1.0	-1.1	-0.8	0.2	0.7
External debt (percent of GDP)	22.8	23.4	22.0	21.9	20.5	20.1
Short-term external debt (percent of GDP) 3/	2.9	2.7	2.8	2.3	3.0	3.0
Debt service in percent of exports (g & s)	19.3	19.1	17.8	15.3	9.5	14.1

Sources: CEIC; and Fund staff estimates.

1/ Indian authorities' presentation except for "Other capital" or as noted.

2/ Net foreign direct investment in India less net foreign investment abroad.

3/ Residual-maturity basis, except medium and long-term NRI deposits, which are on a a contracted-maturity basis.

Table 9. India: Official Reserves, 1996/97–2002/03

(In millions of U.S. dollars, end-of-period)

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03
Gold 1/	447	446	402	403	403	403	403
SDR holdings	2	1	8	4	2	12	4
Reserve position in IMF	295	284	663	658	616	609	672
Foreign exchange	22,367	25,975	29,522	35,058	39,554	51,049	71,890
Gross reserves	23,111	26,706	30,595	36,122	40,575	52,073	72,968
Use of Fund credit	1,313	664	288	26	0	0	0
Memorandum items:							
Gross reserves (gold valued at market prices) 2/	26,423	29,367	32,490	38,036	42,281	54,106	75,428
Outstanding net forward sales (-) / purchases (+)	-345	-1,792	-802	-675	-1,259	-400	2,420
Net reserves 3/	24,765	26,911	31,400	37,335	41,022	53,706	77,848

Sources: IMF, *International Financial Statistics;* except data for memorandum items, which are provided by the Indian authorities.

1/ Gold valued at SDR 35 per troy ounce.
2/ Excluding Reserve Position in the Fund.
3/ Defined as gross reserves (with gold valued at market prices) minus use of Fund credit and outstanding forward liabilities.

Table 10. India: External Commercial Borrowing, 1996/97–2001/02 1/

(In millions of U.S. dollars)

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02
Total sanctions	8,581	8,712	5,200	3,398	2,837	2,652
Financial institutions	1,502	795	150	125	70	150
Power	1,875	3,014	3,998	2,267	1,065	270
Railways	144	179	15	...	...	...
Shipping	146	210	37	27	144	...
Telecom	289	1,492	75	...	...	...
Petroleum	783	230	40	218	150	350
Civil aviation	46	373	...	...	...	...
Export-oriented units	...	...	...	...	...	...
Others	3,796	2,419	885	761	1,408	1,482
Gross disbursement 2/ 3/	7,571	7,371	7,226	3,187	9,324	...
Outstanding debt 3/	14,335	16,986	20,978	19,943	24,215	23,248
Total external debt	93,470	93,531	96,886	98,263	101,132	98,761
(In percent of total external debt)	15.3	18.2	21.7	20.3	23.9	23.5

Sources: Government of India *Economic Survey, 2001/02* ; and data provided by the Indian authorities.

1/ Borrowing controlled by the government's external commercial borrowing guidelines, including loans from banks abroad, bonds (except foreign currency convertible bonds), and credit from official export credit agencies.

2/ Through end-December 2000, except gross disbursement and outstanding debt, which are through end-September 2000.

2/ On a balance-of-payments basis.

3/ Includes Resurgent India Bonds and the India Millennium Deposit Scheme.

Table 11. India: External Debt, 1996/97–2002/03 1/

(In billions of U.S. dollars, end-of-period, except December for 2002/03)

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03
Foreign currency-denominated debt 2/	86.0	87.7	92.2	93.9	97.4	95.7	102.2
Medium and long term	79.2	82.6	87.9	89.9	93.8	93.0	98.8
Multilateral	29.2	29.6	30.5	31.4	31.1	31.9	32.6
Government borrowing	26.4	26.3	27.0	27.6	27.4	28.3	29.8
Concessional	17.6	17.8	18.6	19.3	19.1	19.7	21.2
Of which: IDA	17.3	17.5	18.3	19.0	18.8	19.4	20.9
Nonconcessional	8.7	8.5	8.4	8.3	8.3	8.6	8.6
Of which: IBRD	6.8	6.4	6.1	5.8	5.7	5.7	5.6
Nongovernment borrowing	2.8	3.2	3.6	3.9	3.7	3.6	2.8
Public sector	1.3	2.2	2.5	2.8	2.7	2.6	1.9
Financial institutions	0.7	0.6	0.6	0.7	0.7	0.8	0.7
Private sector	0.9	0.4	0.4	0.4	0.3	0.2	0.1
Bilateral	17.5	17.0	17.5	18.2	16.0	15.3	16.6
Government borrowing	13.7	13.0	13.4	14.0	12.2	11.5	12.4
Of which: Concessional	13.4	12.8	13.3	13.6	11.9	11.4	12.3
Nongovernment borrowing	3.8	4.0	4.1	4.2	3.8	3.8	4.2
Public sector	1.7	1.4	1.3	1.4	1.4	1.9	2.2
Financial institutions	1.3	1.5	1.5	1.5	1.3	1.3	1.4
Private sector	0.8	1.1	1.2	1.2	1.0	0.6	0.6
Export credit	5.9	6.5	6.8	6.8	5.9	5.4	5.0
Commercial borrowing	14.3	17.0	21.0	19.9	24.2	23.2	22.4
Of which: Commercial bank loans	8.3	10.0	10.3	10.1	9.9	10.0	9.8
Nonresident Indian (NRI) deposits 3/	11.0	11.9	11.8	13.6	16.6	17.2	22.2
IMF	1.3	0.7	0.3	0.0	0.0	0.0	0.0
Short term (contracted-maturity basis)	6.7	5.0	4.3	3.9	3.6	2.7	3.4
Of which: NRI deposits 4/	3.8	2.2	2.1	1.4	1.0	1.0	1.3
Rupee-denominated debt 5/	7.5	5.9	4.7	4.4	3.7	3.0	2.8
Total external debt	93.5	93.5	96.9	98.3	101.1	98.8	105.0
(In percent of GDP)	24.3	22.8	23.4	22.0	22.0	20.5	19.9
Memorandum items:							
Concessional debt 6/	39.5	36.9	37.3	38.2	35.9	35.5	38.0
(In percent of total external debt)	42.2	39.5	38.5	38.9	35.5	36.0	36.2
Short term (contracted-maturity basis)	6.7	5.0	4.3	3.9	3.6	2.7	3.4
(In percent of GDP)	1.7	1.2	1.0	0.9	0.8	0.6	0.6
Short term (residual-maturity basis) 7/	13.6	11.8	11.3	12.3	10.4	14.2	16.0
(In percent of GDP)	3.5	2.9	2.7	2.8	2.3	3.0	3.0

Source: Government of India.

1/ On a fiscal year basis ending March 31, except 2002/03, which is for end-December 2002.
2/ Excludes rupee-denominated debt owed to Russia.
3/ Deposits greater than one year's maturity. Excludes nonrepatriable, nonresident rupee deposits.
4/ Deposits of up to one year's maturity.
5/ Rupee-denominated debt owed to Russia, converted at current exchange rate, and payable through exports.
6/ Includes mutilateral and bilateral government and nongovernment borrowing.
7/ Except contracted-maturity for NRI deposits.

Table 12. India: Selected Monetary and Exchange Rate Indicators, 1997/98-2002/03

	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03
1. Monetary and interest rate indicators			(Annual percentage change)			
Reserve money	13.2	14.5	8.2	8.1	11.4	9.2
Broad money						
M3	18.0	19.4	14.6	16.8	14.2	15.0
NM3 1/	17.8	18.0	15.3	14.4	15.8	15.6
Credit to commercial sector	15.1	14.5	18.3	15.8	11.3	19.6
			(In percent, end-period)			
Cash reserve ratio 2/	10.30	10.50	9.00	8.00	5.50	4.75
Bank rate	10.50	8.00	8.00	7.00	6.50	6.25
Repo rate	7.79	6.00	6.00	7.00	7.00	5.00
91-day Treasury bill yield	7.33	8.75	9.17	8.75	6.13	5.89
Commercial bank PLR 3/	14.0	12.0-13.0	12.0-12.5	11.0-12.0	11.0-12.1	10.8-11.5
2. Exchange rate indicators						
Nominal exchange rate (rupees per U.S. dollar)						
Period average	37.2	42.1	43.3	45.7	47.7	48.4
End of period	39.5	42.4	43.6	46.6	48.8	47.5
Nominal effective exchange rate (1997/98 = 100) 4/	100.0	89.6	88.5	89.6	89.7	83.2
(annual percentage change)	3.3	-10.4	-1.1	1.2	0.1	-7.2
Real effective exchange rate (1997/98 = 100) 4/	100.0	93.8	94.8	100.7	102.5	96.7
(annual percentage change)	5.6	-6.2	1.1	6.2	1.8	-5.6

Sources: Reserve Bank of India; CEIC; and IMF, *Information Notice System*.

1/ New broad money series, which excludes non-resident foreign currency deposits from M3.
2/ Cash reserve ratio lowered to 4.5 percent as of June 14, 2003.
3/ Relates to five major commercial banks.
4/ Period average.

Table 13. India: Reserve Money, 1999/2000-2002/03

	1999/2000	2000/01	2001/02	2002/03			
				June	Sept.	Dec.	Mar.
			(In billions of rupees, end-period)				
Reserve money	2,806	3,033	3,380	3,291	3,359	3,437	3,689
Currency in circulation	1,971	2,182	2,510	2,656	2,597	2,708	2,823
Currency with public	1,891	2,096	2,414	2,555	2,508	2,614	2,717
Cash with banks	80	87	96	101	89	94	106
Bankers deposits	805	815	841	603	727	703	833
Other deposits	30	36	28	32	34	26	33
Net domestic assets of Reserve Bank of India (RBI)	1,147	1,061	740	459	330	60	107
Claims on government	1,483	1,539	1,522	1,480	1,282	1,108	1,201
Center	1,398	1,465	1,414	1,428	1,233	1,054	1,160
States	84	73	108	51	49	54	41
Claims on commercial sector	153	133	53	29	29	30	30
Claims on banks	168	130	107	72	67	64	72
Other items (net)	-656	-740	-943	-1,122	-1,048	-1,141	-1,196
Net foreign assets	1,659	1,972	2,640	2,832	3,029	3,376	3,582
			(Annual percentage change)				
Reserve money	8.2	8.1	11.4	4.8	11.1	9.2	9.2
Currency in circulation	12.1	10.7	15.0	14.5	14.5	13.2	12.5
Bankers deposits	0.9	1.3	3.3	-22.8	1.1	-3.1	-1.0
Net domestic assets of RBI	-5.5	-7.4	-30.3	-58.2	-62.5	-92.7	-85.6
Claims on government	-2.8	3.8	-1.1	-12.8	-15.7	-25.2	-21.1
Net foreign assets	20.2	18.9	33.9	38.6	41.3	45.5	35.7
Memorandum item:							
Contribution of RBI credit to government to annual growth of Reserve money (percentage points)	-1.6	2.0	-0.6	-6.9	-7.9	-11.8	-9.5

Sources: RBI; and Fund staff estimates.

Table 14. India: Monetary Survey, 1999/2000-2002/03 1/

	1999/2000	2000/01	2001/02	2002/03			
				June	Sept.	Dec.	Mar.
			(In billions of rupees, end of period)				
Broad money (M3)	11,242	13,132	15,000	16,174	16,387	16,848	17,246
Currency with public	1,891	2,096	2,414	2,555	2,508	2,614	2,717
Deposits	9,321	11,000	12,558	13,587	13,844	14,208	14,496
Nonbank deposits							
at Reserve Bank of India (RBI)	30	36	28	32	34	26	33
Net domestic assets	9,185	10,634	11,853	12,830	12,896	13,062	13,253
Domestic credit	10,279	11,912	13,427	14,452	14,618	15,000	15,788
Net credit to government	4,414	5,120	5,865	6,302	6,316	6,402	6,744
RBI	1,483	1,539	1,522	1,480	1,282	1,108	1,201
Other banks	2,931	3,581	4,343	4,822	5,034	5,295	5,543
Credit to commercial sector	5,866	6,792	7,563	8,150	8,303	8,598	9,045
Commercial bank lending	4,360	5,114	5,897	6,481	6,617	6,889	7,254
Nonfood	4,103	4,714	5,357	5,870	6,084	6,370	6,759
Food	257	400	540	610	534	519	495
Other 2/	1,506	1,678	1,665	1,670	1,685	1,708	1,791
Other items (net)	-1,094	-1,278	-1,575	-1,622	-1,722	-1,938	-2,535
Net foreign assets	2,056	2,498	3,147	3,344	3,491	3,786	3,992
			(Annual percentage change)				
Broad money (M3)	14.6	16.8	14.2	17.3	16.6	16.2	15.0
Currency with public	11.9	10.8	15.2	15.3	14.9	13.6	12.5
Deposits	15.3	18.0	14.2	17.8	17.0	16.8	15.4
Net domestic assets	14.4	15.8	11.5	13.7	12.7	11.9	11.8
Domestic credit	16.5	15.9	12.7	17.5	16.7	15.5	17.6
Net credit to government	14.1	16.0	14.6	13.9	12.9	12.2	15.0
Credit to commercial sector	18.3	15.8	11.3	20.4	19.8	18.2	19.6
of which: Commercial bank lending	18.2	17.3	15.3	24.8	24.9	23.3	23.0
Nonfood	16.5	14.9	13.6	25.1	26.3	25.8	26.2
Net foreign assets	15.6	21.5	26.0	33.1	33.7	35.7	26.8
			(Contribution to M3 growth)				
Net domestic assets	11.8	12.9	9.3	11.2	10.3	9.3	9.3
Net credit to government	5.6	6.3	5.7	5.6	5.1	4.8	5.9
RBI	-0.4	0.5	-0.1	-1.6	-1.7	-2.6	-2.1
Other banks	6.0	5.8	5.8	7.2	6.8	7.4	8.0
Credit to commercial sector	9.2	8.2	5.9	10.0	9.8	9.1	9.9
Net foreign assets	2.8	3.9	4.9	6.0	6.3	6.9	5.6

Source: RBI; and Fund staff estimates.

1/ End-year data are a consolidation of March 31 data for the RBI and the last reporting Friday data for commercial banks.
2/ Includes RBI commercial credit, bank holdings of securities, and credit distributed by cooperatives.

Table 15. India: Financial Performance of Indian Commercial Banks, 1994/95–2001/02 1/

(In percent of total assets, unless otherwise indicated)

	Net Interest Income	Non-Interest Income	Operating Expenses	Pre-Provision Profits	Provisions and Contingencies	Net Profits	Cost/Income Ratio 2/
				All Commercial Banks			
1994/95	3.00	1.40	2.76	1.64	1.22	0.41	0.63
1995/96	3.13	1.49	2.94	1.69	1.54	0.16	0.63
1996/97	3.22	1.45	2.85	1.82	1.15	0.67	0.61
1997/98	2.95	1.52	2.63	1.84	1.02	0.82	0.59
1998/99	2.78	1.34	2.67	1.45	0.98	0.47	0.65
1999/2000	2.73	1.42	2.50	1.66	1.00	0.66	0.60
2000/01	2.84	1.32	2.64	1.53	1.03	0.49	0.63
2001/02	2.57	1.57	2.19	1.94	1.19	0.75	0.53
Average	2.86	1.43	2.65	1.65	1.25	0.40	0.62
				Public Sector Banks			
1994/95	2.92	1.32	2.83	1.41	1.16	0.25	0.67
1995/96	3.08	1.41	2.99	1.49	1.56	-0.07	0.67
1996/97	3.16	1.32	2.88	1.60	1.03	0.57	0.64
1997/98	2.91	1.33	2.66	1.58	0.81	0.77	0.63
1998/99	2.80	1.22	2.66	1.37	0.95	0.42	0.66
1999/2000	2.70	1.29	2.53	1.46	0.89	0.57	0.63
2000/01	2.86	1.20	2.72	1.34	0.92	0.42	0.67
2001/02	2.73	1.43	2.29	1.88	1.16	0.72	0.55
Average	2.84	1.31	2.69	1.46	1.18	0.28	0.65
				Old Private Sector Banks			
1994/95	3.04	1.45	2.33	2.16	1.00	1.16	0.52
1995/96	3.14	1.56	2.60	2.10	1.04	1.06	0.55
1996/97	2.93	1.48	2.52	1.89	0.98	0.91	0.57
1997/98	2.57	1.71	2.31	1.97	1.16	0.81	0.54
1998/99	2.15	1.33	2.26	1.21	0.73	0.48	0.69
1999/2000	2.33	1.66	2.17	1.82	1.01	0.81	0.54
2000/01	2.51	1.23	1.98	1.75	1.15	0.59	0.53
2001/02	2.39	2.38	2.08	2.70	1.62	1.08	0.43
Average	2.67	1.57	2.30	1.94	1.11	0.83	0.55
				New Private Sector Banks			
1994/95	1.17	...	0.65	1.07	0.43	0.64	...
1995/96	2.84	1.82	1.89	2.77	0.92	1.85	0.41
1996/97	2.88	2.03	1.94	2.98	1.24	1.73	0.39
1997/98	2.23	2.40	1.76	2.86	1.32	1.55	0.38
1998/99	1.98	1.53	1.74	1.78	0.75	1.03	0.49
1999/2000	1.95	1.58	1.42	2.11	1.14	0.97	0.40
2000/01	2.14	1.35	1.75	1.74	0.93	0.81	0.50
2001/02	1.15	1.18	1.12	1.21	0.77	0.44	0.48
Average	2.04	1.70	1.53	2.07	0.94	1.13	0.44
				Foreign Banks			
1994/95	4.24	2.42	2.73	3.93	2.27	1.66	0.41
1995/96	3.74	2.37	2.77	3.35	1.77	1.58	0.45
1996/97	4.13	2.49	3.00	3.62	2.44	1.19	0.45
1997/98	3.93	2.94	2.97	3.91	2.94	0.97	0.43
1998/99	3.47	2.43	3.59	2.32	1.63	0.69	0.57
1999/2000	3.92	2.54	3.22	3.24	2.08	1.17	0.46
2000/01	3.64	2.47	3.05	3.05	2.12	0.93	0.50
2001/02	3.25	2.91	3.03	3.15	1.80	1.33	0.49
Average	3.84	2.53	3.00	3.37	2.15	1.23	0.46

Sources: Reserve Bank of India, *Report on Trend and Progress of Banking in India* (various issues), and *RBI Bulletin* (December 2002); and Fund staff estimates.

1/ For fiscal year beginning April 1.
2/ Ratio of non-interest expenses to total income less interest expenses.

Table 16. India: Indicators of Financial System Soundness, 1996/97–2001/02 1/

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02
Risk-weighted capital adequacy ratio (CRAR)	10.4	11.6	11.2	11.1	11.4	11.9
Public sector banks	10.0	11.6	11.2	10.7	11.2	11.7
Domestic private banks	12.8	12.7	11.9	12.9	11.8	12.5
Foreign banks	10.4	10.4	10.8	11.9	12.6	13.0
Number of institutions not meeting 9 percent CRAR	21	15	10	4	5	5
Public sector banks	6	3	1	1	2	2
Domestic private banks	7	6	6	3	3	2
Foreign banks	8	6	3	0	0	1
Net nonperforming loans (in percent of outstanding net loans) 2/ 3/	8.1	7.3	7.6	6.8	6.2	5.5
Public sector banks	9.2	8.2	8.1	7.4	6.7	5.8
Domestic private banks	5.4	5.3	7.4	5.4	5.4	5.7
Foreign banks	1.9	2.2	2.9	2.4	1.8	1.9
Gross nonperforming loans (in percent of outstanding loans) 3/	15.7	14.4	14.7	12.7	11.4	10.4
Public sector banks	17.8	16.0	15.9	14.0	12.4	11.1
Domestic private banks	8.5	8.7	10.8	8.2	8.4	9.6
Foreign banks	4.3	6.4	7.6	7.0	6.8	5.4
Number of institutions with net NPLs above 10 percent of advances	16	23	30	21	23	22
Public sector banks	10	10	9	5	5	3
Domestic private banks	3	4	8	6	7	5
Foreign banks	3	9	13	10	11	14
Net profit (+)/loss (-) of commercial banks 4/	0.7	0.8	0.5	0.7	0.5	0.8
Public sector banks	0.6	0.8	0.4	0.6	0.4	0.7
Domestic private banks	1.1	1.0	0.7	0.9	0.7	0.7
Foreign banks	1.2	1.0	0.7	1.2	0.9	1.3
Balance sheet structure of commercial banks						
Loan/deposit ratio	54.6	50.3	47.9	46.8	46.5	47.0
Investment in government securities/deposit ratio	35.5	29.0	29.8	31.4	32.2	33.1
Lending to sensitive sectors (in percent of private credit)						
Real estate	0.6	0.6	0.5	1.6	1.6	1.5
Capital market	...	...	0.5	1.1	0.9	0.5
Commodities	...	...	...	1.7	1.8	1.6

Sources: Indian authorities; and Fund staff estimates.

1/ Loan classification and provisioning standards do not meet international standards. Banks will be required to classify loans overdue for 90 days as substandard (compared with the current 180 days) effective March 2004, and loans that have been in the substandard category for 12 months (compared with the present 18 months) as doubtful, effective March 2005.
2/ Gross nonperforming loans less provisions.
3/ Starting in 2001/02, figure includes ICICI, formerly a large development finance institution, which merged with ICICI Bank Ltd. in 2002.
4/ In percent of total assets.

Table 17. India: General Government Operations, 1997/98–2002/03 1/

	1997/98	1998/99	1999/2000	2000/01	2001/02	2002/03
					Staff estimates 2/	
			(In billions of rupees)			
Total revenue and grants	2,739	2,996	3,381	3,720	4,035	4,523
Tax revenue 3/	2,205	2,328	2,743	3,066	3,201	3,596
Non-tax revenue 4/	524	658	627	646	816	908
Grants	10	10	11	8	18	18
Total expenditure and net lending 5/	3,837	4,525	5,293	5,800	6,442	6,988
General government balance	-1,098	-1,529	-1,912	-2,079	-2,408	-2,465
RBI: Gross fiscal deficit 6/	-1,107	-1,571	-1,848	-1,973	...	...
OCC balance	18	109	-29	-63	...	...
Financing	1,098	1,529	1,912	2,079	2,408	2,465
External (net)	11	19	12	75	56	-126
Domestic (net)	1,087	1,509	1,900	2,004	2,352	2,591
Disinvestment receipts	11	64	17	21	36	32
			(In percent of GDP)			
Total revenue and grants	18.0	17.2	17.5	17.7	17.6	17.7
Of which : Tax revenue 3/	14.5	13.4	14.2	14.6	13.9	14.1
Nontax revenue 4/	3.4	3.8	3.2	3.1	3.6	3.6
Total expenditure and net lending 5/	25.2	26.0	27.3	27.6	28.1	27.3
General government balance	-7.2	-8.8	-9.9	-9.9	-10.5	-9.6
(including disinvestment receipts)	-7.1	-8.4	-9.8	-9.8	-10.3	-9.5
Domestic financing (net)	7.1	8.7	9.8	9.5	10.2	10.1
Memorandum items:						
Consolidated general government						
Revenue balance 6/	-4.1	-6.4	-6.3	-6.6	-7.0	...
Primary balance	-2.1	-3.5	-4.2	-4.0	-4.2	-3.7
Non-defense capital expenditure	3.0	2.8	3.2	2.8	3.3	3.2
Net interest payments	5.1	5.3	5.7	5.9	6.2	5.9
General government balance	-7.2	-8.8	-9.9	-9.9	-10.5	-9.6
Central government	-4.9	-5.5	-5.5	-5.7	-6.3	-5.8
Oil Coordination Committee (OCC)	0.1	0.6	-0.1	-0.3	...	...
State and Union Territory governments	-2.9	-4.3	-4.7	-4.3	-4.6	-4.6
Consolidation items 7/	0.5	0.4	0.5	0.4	0.5	0.5
General government debt	66.7	67.1	70.8	75.2	80.9	81.9

Sources: Data provided by the Indian authorities; and Fund staff estimates.

1/ The consolidated general government comprises the central government (including the OCC) and state governments.
2/ Based on the central government (CG) accounts' provisional figures and revised estimates for states (*RBI Bulletin* , October 2002).
3/ Tax revenue = Tax revenue of CG, including states' share, plus state tax revenue.
4/ Nontax revenue = Nontax revenue of CG (including OCC), less interest payments by states on CG loans, plus nontax revenue of states.
5/ Expenditure and net lending = Total expenditure and net lending of CG, less net loans and grants to states and union territories, plus total expenditure of states (excluding interest payments on CG loans).
6/ From the *RBI Handbook of Statistics,* 2002; the authorities treat disinvestment proceeds above-the-line as capital receipts, while staff's definition treats these as a below-the-line financing item.
7/ Above-the-line items in CG accounts that cancel out in the consolidation (e.g., loans to states).

Table 18. India: Central Government Operations, 1997/98–2003/04

	1997/98	1998/99	1999/2000	2000/01	2001/02 1/	2002/03 Prov. Outturn 1/	2003/04 Budget 2/
				(In billions of rupees)			
Total revenue and grants	1,406	1,577	1,905	2,041	2,143	2,449	2,711
Net tax revenue	957	1,047	1,283	1,369	1,342	1,599	1,878
Gross tax revenue	1,392	1,438	1,718	1,886	1,871	2,160	2,515
Of which : Corporate tax	200	245	307	357	366	463	515
Income tax	171	202	257	318	320	363	441
Excise taxes	480	532	619	685	726	823	968
Customs duties	402	407	484	475	403	448	494
Less: States' share	435	391	435	517	528	561	638
Non-tax revenue	440	520	611	664	783	832	819
Grants	10	10	11	8	18	18	15
Total expenditure and net lending	2,147	2,531	2,969	3,251	3,589	3,927	4,380
Current expenditure	1,871	2,247	2,581	2,894	3,144	3,518	3,834
Of which : Interest payments	656	779	902	993	1,075	1,157	1,232
Wages and salaries	259	289	315	276	299	316	330
Major subsidies	182	212	232	259	301	404	486
Capital expenditure and net lending 3/ 4/	277	284	388	357	444	409	545
Overall balance 5/	-741	-954	-1,064	-1,210	-1,446	-1,478	-1,668
Overall balance (authorities' definition) 6/	-732	-896	-1,047	-1,188	-1,410	-1,447	-1,536
Financing	741	954	1,064	1,210	1,446	1,478	1,668
External (net)	11	19	12	75	56	-126	36
Domestic (net)	730	935	1,053	1,135	1,390	1,604	1,633
Of which : Market borrowing	325	690	703	729	877	1,120	1,072
Small savings and other funds	211	231	221	217	210	-334	-425
Disinvestment receipts	9	59	17	21	36	32	132
				(In percent of GDP)			
Total revenue and grants	9.2	9.1	9.8	9.7	9.3	9.6	9.9
Net tax revenue	6.3	6.0	6.6	6.5	5.8	6.3	6.8
Gross tax revenue	9.1	8.3	8.9	9.0	8.1	8.4	9.1
Of which : Corporate tax	1.3	1.4	1.6	1.7	1.6	1.8	1.9
Income tax	1.1	1.2	1.3	1.5	1.4	1.4	1.6
Excise taxes	3.2	3.1	3.2	3.3	3.2	3.2	3.5
Customs duties	2.6	2.3	2.5	2.3	1.8	1.8	1.8
Less: States' share	2.9	2.2	2.2	2.5	2.3	2.2	2.3
Nontax revenue	2.9	3.0	3.2	3.2	3.4	3.3	3.0
Grants	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Total expenditure and net lending	14.1	14.5	15.3	15.4	15.6	15.4	15.9
Current expenditure	12.3	12.9	13.3	13.8	13.7	13.8	13.9
Of which : Interest payments	4.3	4.5	4.7	4.7	4.7	4.5	4.5
Wages and salaries	1.7	1.7	1.6	1.3	1.3	1.2	1.2
Major subsidies	1.2	1.2	1.2	1.2	1.3	1.6	1.8
Capital expenditure and net lending 3/ 4/	1.8	1.6	2.0	1.7	1.9	1.6	2.0
Overall balance 5/	-4.9	-5.5	-5.5	-5.7	-6.3	-5.8	-6.1
Overall balance (authorities' definition) 6/	-4.8	-5.1	-5.4	-5.6	-6.1	-5.7	-5.6
Financing	4.9	5.5	5.5	5.7	6.3	5.8	6.1
External (net)	0.1	0.1	0.1	0.4	0.2	-0.5	0.1
Domestic (net)	4.8	5.4	5.4	5.4	6.1	6.3	5.9
Of which : Market borrowing	2.1	4.0	3.6	3.5	3.8	4.4	3.9
Small savings and other funds	1.4	1.3	1.1	1.0	0.9	-2.1	-1.5
Divestment receipts	0.1	0.3	0.1	0.1	0.2	0.1	0.5
Memorandum items:							
Military expenditure	2.3	2.3	2.4	2.4	2.4	2.3	2.4
Primary balance	-0.6	-1.0	-0.8	-1.0	-1.6	-1.3	-1.6
Revenue balance 7/	-3.0	-3.8	-3.5	-4.1	-4.4	-4.2	-4.1
Central government debt 8/	51.1	51.2	52.7	55.5	59.5	61.1	64.7
(Measured at current exchange rates)	58.1	58.2	59.6	62.3	...	...	...
Central government guarantees	4.9	4.3	4.3	4.1	4.2	...	...
Nominal GDP (in Rs. billion)	15,225	17,409	19,369	21,043	22,960	25,571	27,491

Sources: Data provided by the Indian authorities; and Fund staff estimates.

1/ Provisional outcome, based on Controller General of Accounts data for 2001/02 and unaudited provisional outturn for 2002/03.
2/ Ratios utilize authorities' projection of GDP.
3/ Excludes onlending to the states from small savings collections in all years.
4/ Authorities' treatment of state debt swap in 2002/03 shows the prepayment by states of on-lent funds to the center as net lending; the center's prepayment of its debt to the National Small Savings Fund (NSSF) is treated as a capital outlay. Excluding debt prepayment from capital expenditure reduces deficit to 5.4 percent of GDP (based on the IMF Definition).
5/ Staff's definition treats divestment receipts as a below-the-line financing item.
6/ Authorities' definition treats divestment receipts as a revenue item (above-the-line); onlending to states from the small savings collections was included by the authorities in capital expenditure and net lending through 1998/99, but the new definition is reported here (excluding onlending from small savings).
7/ Total receipts (excluding divestment proceeds) less non-capital expenditures.
8/ External debt measured at historical exchange rates.

Table 19. India: State Government Operations, 1997/98–2002/03

	1997/98	1998/99	1999/2000	2000/01	2001/02 Rev. Est. 1/	2002/03 Budget 2/
			(In billions of rupees)			
Total revenue and grants	1,722	1,782	2,058	2,391	2,576	3,004
Tax revenue	1,248	1,281	1,461	1,697	1,859	2,138
Share of central government tax revenue 2/	435	391	435	517	528	612
State taxes	812	890	1,026	1,180	1,331	1,526
Taxes on income	11	14	18	20	23	28
Taxes on property and capital transactions	83	85	97	112	139	160
Taxes on commodities and services	718	790	911	1,048	1,169	1,339
Non-tax revenue	244	242	299	315	317	378
Grants from central government 2/	230	258	298	380	399	488
Total expenditure	2,166	2,529	2,972	3,287	3,642	4,033
Developmental	1,453	1,645	1,873	2,105	2,364	2,462
Social services	735	881	1,030	1,137	1,298	1,342
Economic services	717	764	843	969	1,066	1,120
Non-developmental	718	865	1,102	1,189	1,436	1,604
Of which : Interest payments	301	359	452	517	645	723
Less: Recovery of loans and advances	55	33	34	69	79	33
Other (net) 3/	50	52	31	61	-80	1
Overall balance	-444	-748	-915	-895	-1,066	-1,028
Financing	444	748	915	895	1,066	1,028
Market borrowings (net)	73	105	127	125	161	118
Loans from center and small savings (net) 2/	226	302	365	414	454	438
Asset sales	2	5	0	0	0	0
Other 6/	143	335	423	356	451	472
			(In percent of GDP)			
Total revenue and grants	11.3	10.2	10.6	11.4	11.2	11.7
Tax revenue	8.2	7.4	7.5	8.1	8.1	8.4
Share of central government tax revenue 2/	2.9	2.2	2.2	2.5	2.3	2.4
State taxes	5.3	5.1	5.3	5.6	5.8	6.0
Taxes on income	0.1	0.1	0.1	0.1	0.1	0.1
Taxes on property and capital transactions	0.5	0.5	0.5	0.5	0.6	0.6
Taxes on commodities and services	4.7	4.5	4.7	5.0	5.1	5.2
Non-tax revenue	1.6	1.4	1.5	1.5	1.4	1.5
Grants from central government 2/	1.5	1.5	1.5	1.8	1.7	1.9
Total expenditure	14.2	14.5	15.3	15.6	15.9	15.8
Developmental	9.5	9.4	9.7	10.0	10.3	9.6
Social services	4.8	5.1	5.3	5.4	5.7	5.2
Economic services	4.7	4.4	4.4	4.6	4.6	4.4
Non-developmental	4.7	5.0	5.7	5.6	6.3	6.3
Of which : Interest payments	2.0	2.1	2.3	2.5	2.8	2.8
Less: Recovery of loans and advances	0.4	0.2	0.2	0.3	0.3	0.1
Other (net) 3/	0.3	0.3	0.2	0.3	-0.3	0.0
Overall balance	-2.9	-4.3	-4.7	-4.3	-4.6	-4.0
Financing	2.9	4.3	4.7	4.3	4.6	4.0
Market borrowings (net)	0.5	0.6	0.7	0.6	0.7	0.5
Loans from center and small savings (net) 2/	1.5	1.7	1.9	2.0	2.0	1.7
Asset sales	0.0	0.0	0.0	0.0	0.0	0.0
Other 4/	0.9	1.9	2.2	1.7	2.0	1.8
Memorandum items:						
Primary balance 5/	-0.9	-2.2	-2.4	-1.8	-1.8	-1.2
Revenue balance 6/	-1.1	-2.5	-2.8	-2.5	-2.6	-1.9
Net resources transferred from central government	5.9	5.5	5.7	6.2	6.0	6.0
Gross borrowing against small savings	1.0	1.4	1.4	1.5	1.5	1.3
State government debt	18.5	19.6	21.7	24.0	25.6	26.7
Of which: Loans and advances from central governmen	11.3	11.7	11.2	10.7	...	...
State government guarantees 7/	4.8	5.6	6.8	8.0	7.2	...

Sources: Data provided by the Indian authorities; and Fund staff estimates.

1/ Based on figures published in the Reserve Bank of India's *State Finances, A Study of Budgets of 2002–03* (February 2003).

2/ Based on central government accounts.

3/ Includes other expenditure and discrepancies between central government and state government sources on share of central government tax revenues and grants from central government.

4/ Includes other financing and discrepancies between central government and state government sources on loans from central government.

5/ Overall balance excluding interest payments.

6/ Total receipts (excluding divestment proceeds) less non-capital expenditures.

7/ Explicit guarantees of 17 major states.