

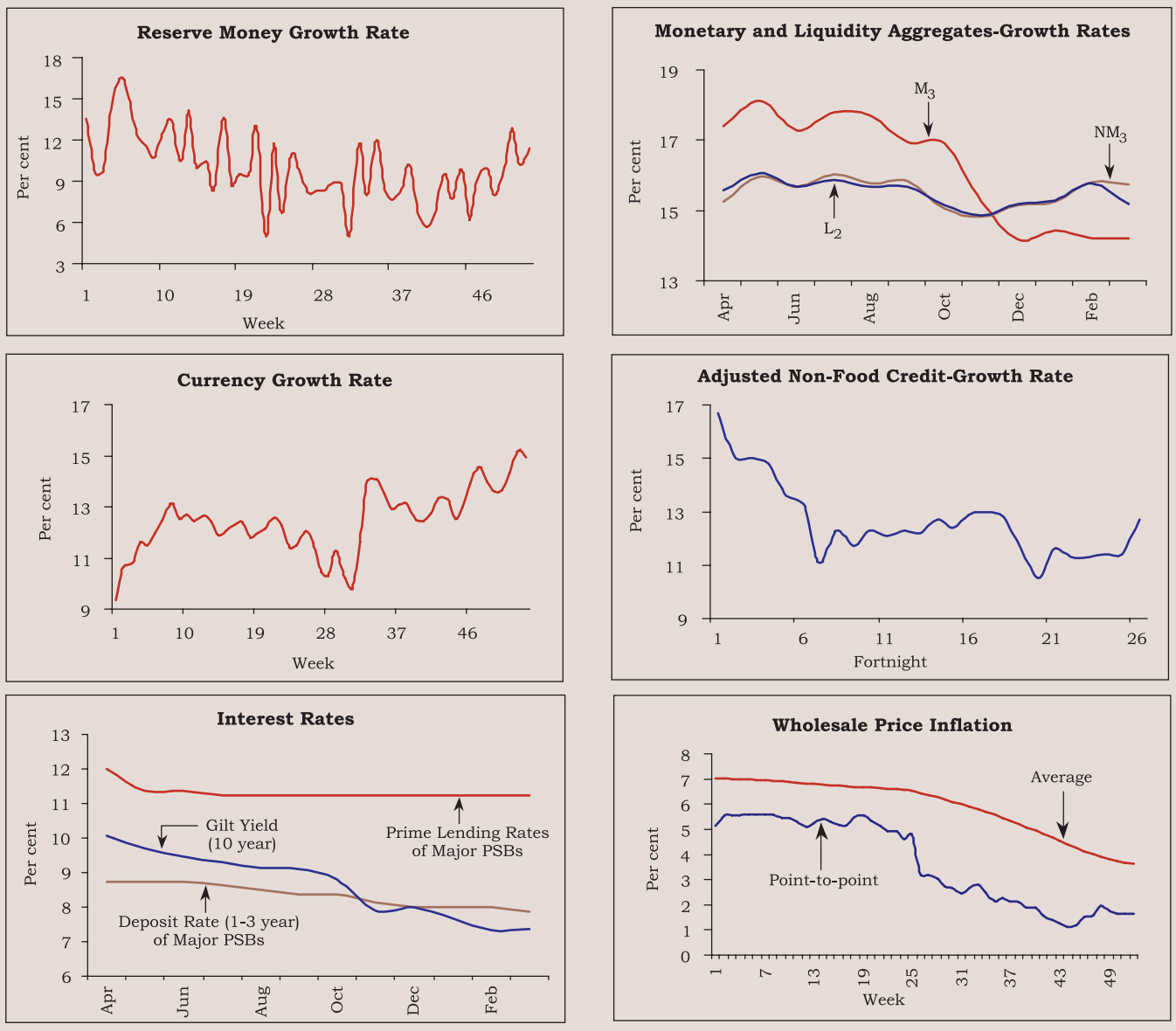
# III

## MONEY, CREDIT AND PRICES

3.1 Monetary conditions remained easy for the most part of 2001-02, enabled by the stance of monetary policy in support of the revival of investment demand in the economy (Chart III.1). Consistent with the policy preference for softer interest rates, market liquidity was modulated through reductions of cash reserve ratio (CRR), primary operations through private placements as well as secondary operations in the form

of open market operations (OMOs) in government securities and through the Liquidity Adjustment Facility (LAF). Reserve money rose faster during 2001-02 mainly due to a strong accretion to net foreign assets (NFA) of the Reserve Bank. Accordingly, liquidity conditions were generally comfortable throughout the year. Interest rates generally moved southwards in various market segments with all-time lows being

**Chart III.1 : Indicators of Monetary Conditions : 2001-02**



reached in the gilt markets. Broad money ( $M_3$ ) expansion was almost the same as in the preceding year. Similar patterns were exhibited in the behaviour of the new broad money aggregate ( $NM_3$ , i.e., broad money adjusted, *inter alia*, for non-resident foreign currency deposits) and the wider measures of liquidity, viz.,  $L_1$ ,  $L_2$  and  $L_3$ . Currency growth returned to trend levels. Time deposit growth was maintained as uncertainty in other segments of the financial markets fuelled a flight to safety. Credit off-take continued to remain weak in the absence of the much-awaited industrial recovery. Inflation began to dip after August 2001 as the impact of administered price revisions effected in the previous year wore off and by the end of the year it had fallen to 1.6 per cent.

### RESERVE MONEY

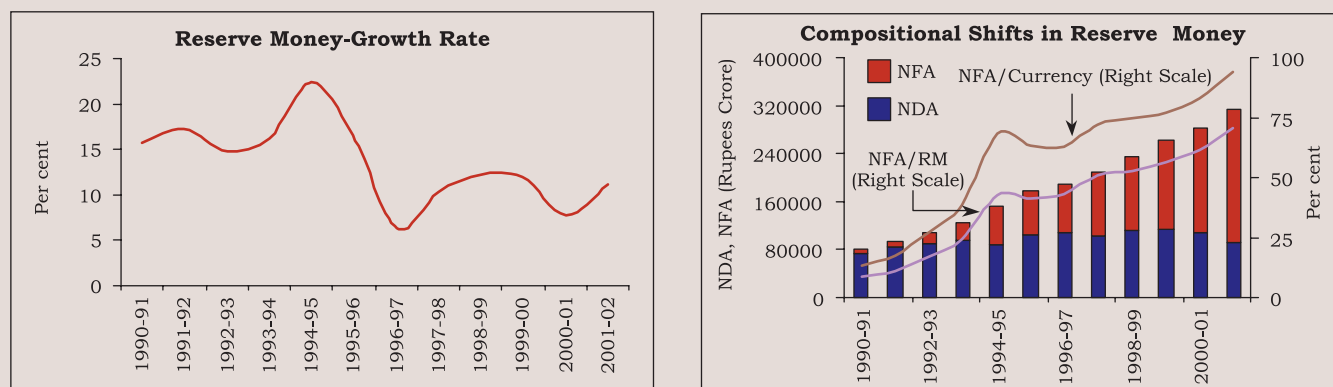
3.2 Reserve money expanded by 11.4 per cent (Rs.34,659 crore) during 2001-02 as compared with 8.1 per cent (Rs.22,757 crore) in 2000-01, driven by the Reserve Bank's foreign currency assets which rose by Rs.55,836 crore (net of revaluation) during 2001-02, almost double the increase of Rs.27,463 crore in the preceding year. Consequently, the ratio of the Reserve Bank's NFA to currency, an important indicator of the quality of monetary management, rose to reach 105.2 per cent as on March 31, 2002. The rising profile of the NFA/currency ratio in a period characterised by capital inflows strengthens the prospective conduct of monetary policy as it empowers the monetary authority to deal with capital outflows, if they take place, without contraction in domestic economic activity or pressures on the balance of payments. Similarly, the ratio of NFA to reserve money increased significantly from only 8.5 per cent in 1990-91 to 70.6 per cent during 2001-02. Net domestic assets (NDA) of the Reserve Bank declined by Rs.23,335 crore (adjusted for revaluation)

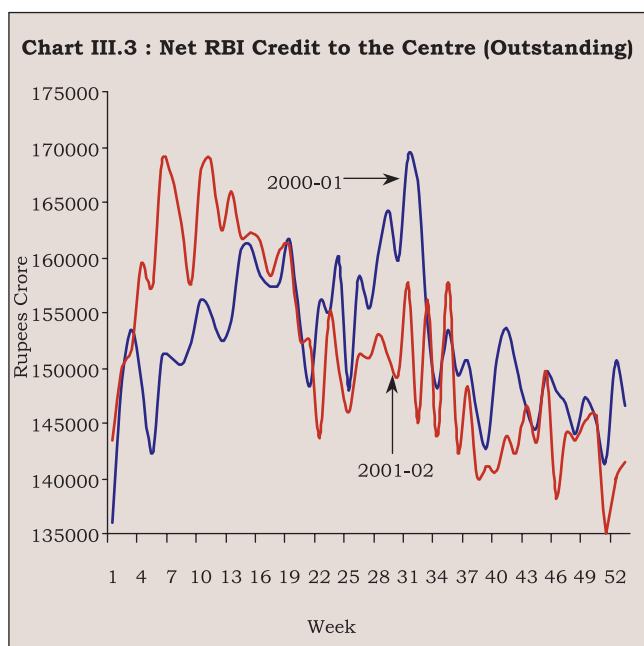
during 2001-02, partly off-setting the surge in the NFA and holding down the monetary impact of the foreign exchange inflows. The predominance of NFA in the sources of reserve money growth since the mid-1990s has reflected the growing openness of the economy to external capital inflows. Compensating changes in the NDA reflect active management of liquidity within a greater market orientation of monetary policy (Chart III.2). Accordingly, with the progressive erosion in the usefulness of the broader monetary aggregates as intermediate targets, reserve money has come to be employed as the principal operating target of monetary policy in India.

3.3 Among the constituents of the Reserve Bank's NDA, the net Reserve Bank credit to the Central Government (NRCCG) moved, by and large, in alternating patterns from quarter to quarter during 2001-02. Sizeable primary placements with the Reserve Bank coincident with the issuance of the bulk of the Centre's borrowing programme in the first five months of 2001-02 along with recourse to Ways and Means Advances (WMA) produced a strong expansion in the NRCCG. From September 2001 onwards, however, easing liquidity conditions invigorated the market demand for gilts in the Reserve Bank's open market sales, leading to a progressive decline in net outstanding claims on the Centre. Over the year, NRCCG declined by 3.5 per cent (Rs.5,150 crore) as against an increase of 4.8 per cent (Rs.6,705 crore) during 2000-01 (Chart III.3).

3.4 Reforms in monetary-fiscal coordination during the 1990s have necessitated a fundamental change in the analytics of reserve money behaviour. Prior to the reforms, the NRCCG represented the automatic monetisation of the fiscal deficit (Box III.1). With the phasing out of *ad hoc* Treasury bills, the activation of the Bank Rate, the evolution of the LAF

Chart III.2 : Movements in Reserve Money





and the progressive development of various segments of the financial markets, the traditional treatment of NRCCG in the financing of the fiscal deficit has become blurred. Movements in NRCCG are no longer determined passively by the fiscal stance. Primary financing of the fiscal deficit by the Reserve Bank is counterbalanced on monetary policy considerations by its secondary operations in financial markets to actively modulate liquidity. Accordingly, an increasing proportion of NRCCG is being determined by the Reserve Bank's own reaction function in the context of its assessment of market liquidity. In this milieu, it is important to distinguish between the primary and secondary operations of the Reserve Bank in order to extract analytical insights into the behaviour of NRCCG.

3.5 For the year as a whole, the Reserve Bank's subscription to the Centre's fresh dated securities amounted to Rs.28,892 crore (at face value). Primary operations of the Reserve Bank, which include such

### Box III.1

#### Fiscal and Monetary Policy Interface in India

Post-independence macro-economic policy formulation in India moved from fiscal neutrality to fiscal activism as in many other developing countries. Faced with the demand for increasing monetisation of fiscal deficits at low interest rates, the Reserve Bank had to manage the exogenous monetary expansion through pre-emption of commercial banks resources by raising the Statutory Liquidity Ratio (SLR) and the Cash Reserve Ratio (CRR) well beyond the limits warranted by genuine prudential requirements. Fiscal dominance became the largest area of concern for the conduct of monetary policy. The Reserve Bank's role as a debt manager for the fiscal authority often clouded its role as monetary authority. The external payments imbalances of 1990 should be assessed in the light of severe macro-economic imbalances, partly attributable to the nature of the fiscal-monetary interface.

The 1990s were characterised by fundamental changes in monetary fiscal co-ordination. *Ad hoc* treasury bills and automatic monetisation were replaced with a system of WMA. An increasing proportion of the fiscal deficit of the government is being financed by borrowings at market related rates of interest. Reduction was effected in pre-emptions of commercial banks resources from well over one-half to less than a third of their resources. The administered interest rate regime has been dismantled and there are very few prescriptions on interest rates. The Bank Rate was activated and OMOs (including repo) have been intensified.

The new arrangements for WMA and market-related borrowings are to be viewed not only in the context of encouraging fiscal discipline and transparency in government finances, but also in the context of overall

macro-economic developments. With a liberalised capital account, it is necessary for the Reserve Bank to have adequate marketable securities with it to conduct OMOs and sterilise the monetary impact of capital inflows. In fact, the Reserve Bank had to convert earlier holdings of special securities into dated securities at market-related rates of interest. The new arrangements have enabled the Reserve Bank to accommodate the Government at its discretion at market-related interest rates, and this has imposed market discipline on fiscal activism. Greater transparency has been imparted to the balance sheet of the Reserve Bank. In an international context, the Reserve Bank's balance sheet comes under scrutiny by foreign investors and international rating agencies. The net effect on the Government budget and the balance sheet of the Reserve Bank remains unchanged because of increased transfer of profits from the Reserve Bank to Government and consequently the beneficial effects are being realised with virtually no extra costs to the Government.

In view of the complex nature of interface, coordination between fiscal and monetary policies has to be considered from several angles. Once a final decision is taken on the fiscal deficit by the Government, the Reserve Bank's endeavour has been to ensure that it is financed in a way that is least disruptive in the context of macro-economic stability and growth. In fact, conduct of monetary policy without sensitivity to fiscal realities will be counterproductive. In this regard, the issue of optimal degree of monetisation of the fiscal deficit assumes importance. The Reserve Bank's Report on Currency and Finance, 2000-01 undertook an empirical exercise in the

(Contd.....)

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tradition of the unpleasant monetarist arithmetic (UMA) proposition to explore, within the confines of available methodology, the degree of monetisation that would keep the inflation rate close to five per cent. The Report observed that the optimal degree of monetisation has been falling in the second half of the 1990s. The Report added that the decline in monetisation may be reflecting structural changes and policy efforts to widen the financial markets to enable the absorption of government debt.

It needs to be emphasised that the Report's findings are essentially in the nature of exploring issues based on historical data and available methodologies in academia but they have to be viewed in the context of the stance of the Reserve Bank on monetary-fiscal co-ordination in India. The Reserve Bank's balance sheet has undergone a significant change during the 1990s with the share of net foreign exchange assets increasing to as much as 70.6 per cent during 2001-02, while that of net domestic assets has concomitantly declined. The degree of monetisation of fiscal deficits is, therefore, constrained by the fluctuations in capital flows and management of liquidity arising out of capital flows has emanated as a major concern.

Although monetary-fiscal interface in India has been improving, a number of issues continue to engage policy attention. Fiscal dominance continues to persist with growing

primary subscriptions as well as incremental WMA to the Centre, amounted to Rs.26,430 crore in 2001-02, down from Rs.34,941 crore during the previous year. Support through primary operations was concentrated in the first quarter of the year (Rs.27,376 crore) since a predominant part (Rs.21,000 crore) of the primary subscription by the Reserve Bank to the Central Government's market borrowing programme was made in that quarter. In the second quarter, consequent upon the repayment of WMA, the support through the Reserve Bank's primary operations declined by Rs.7,074 crore. The primary support increased by Rs.2,759 crore during the third quarter mainly on account of primary subscription; the primary support increased further by Rs.3,368 crore during the fourth quarter on account of recourse to WMA by the Centre as well as money neutral primary subscriptions by the Reserve Bank reflecting the funding of the transfer of NIC (LTO) loans to the Government.

3.6 Devolvement/private placement of government securities on the Reserve Bank is a conscious strategy adopted by the Reserve Bank. In case liquidity conditions in the market are not appropriate for a market issue, or in the event of the market expecting unreasonably high yields from the primary offering as reflected in the bids received, the Reserve Bank may

resort to private placement or devolvement. The Reserve Bank offloads such initial acquisitions when the liquidity conditions/expectations stabilise, or, at its discretion through strategic open market sales depending upon capital flows, credit growth and requirements of monetary management. Devolvments/private placements, therefore, not only help contain volatility in the market, but also act as a monetary signal from the Reserve Bank.

#### References :

1. Sargent, J.T. and N. Wallace (1981), "Some Unpleasant Monetarist Arithmetic", *Federal Reserve Bank of Minneapolis Quarterly Review*.
2. Rangarajan, C. (1998), *Indian Economy - Essays on Money and Finance*, UBSPD.
3. Reddy, Y.V. (2000), "Fiscal and Monetary Policy Interface: Recent Developments in India", *Reserve Bank of India Bulletin*, November.
4. Reserve Bank of India (2002), *Report on Currency and Finance, 2000-01*.

3.7 Secondary operations have acquired strategic importance with the growing market orientation that the conduct of monetary policy in India has imbued alongside the progressive shift towards reliance on indirect instruments of monetary control. Accordingly, a combination of reserve requirement changes, OMOs, repos and refinance is deployed so as to counteract the liquidity impact of flows generated independent of monetary policy action as also to signal the monetary policy stance. Consequently, timing and calibration of secondary operations assumes critical importance in managing market liquidity (Box III.2). Illustratively, with unchanged NFA, secondary operations which fully off-set primary liquidity flows leave interest rates unchanged. On the other hand, when primary flows are not fully offset by secondary operations, interest

## Box III.2

## Managing Market Liquidity : Cross-Country Experience

Market liquidity is essentially the most readily transactable amount of funds available with any market and is generally assessed in terms of size, transaction immediacy, depth, width and market resiliency. Market liquidity determines the nominal rate of interest in the money market along with influencing the functioning and stability of the other segments of the financial markets. Managing market liquidity is crucial in the context of the shift from a regime of administered to deregulated interest rates, the use of indirect market-based monetary instruments and the greater degree of inter-segment and inter-country integration of markets.

The operating procedures of monetary policy in the context of liquidity management could be classified into three generic types: i) a quantum target, ii) a price target (with a ceiling and occasionally, a corridor, prescribed by central bank policy rates through active operations) and iii) a passive supply of liquidity consistent with interest rate targets. The US Federal Reserve, which now

targets the price of liquidity in the market for bank reserves, estimates the excess demand of bank reserves (in terms of anticipated demand *less* borrowed reserves) and then conducts OMO to influence the inter-bank federal funds rate. The Bank of Japan, on the other hand, shifted to a bank reserves target in March 2001, from uncollateralised overnight call rate targeted earlier. The European Central Bank estimates the autonomous liquidity of the banking system and manages liquidity conditions through a policy mix of OMO (including repos), marginal refinance facilities and changes in the policy rates. The Bank of Mexico forecasts the demand for the monetary base in order to maintain interest rate stability through liquidity operations. The Central Bank of Brazil estimates the excess demand for reserves and conducts OMO to accommodate the daily variations in liquidity. Central banks of Canada and New Zealand provide primary liquidity at set policy rates to influence monetary conditions (Table).

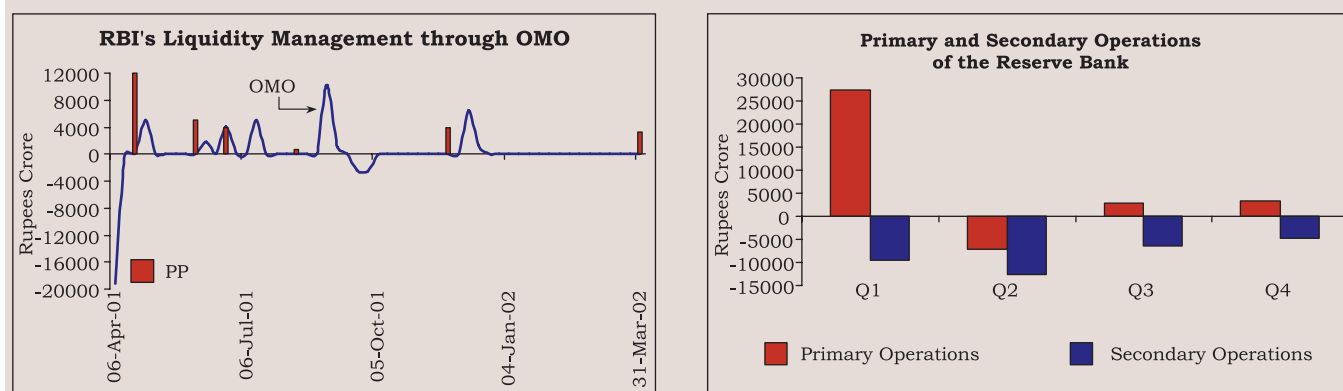
## Select Operating Procedures of Liquidity Management

Central Bank/ Country	Monetary Policy Objective	Intermediate/ Operating Target	Instrument	Supporting Indicator
1	2	3	4	5
Brazil	Sustainable growth and price stability	Money, credit and interest rates	CRR, OMO and financial assistance for liquidity	
Canada	Price stability	Overnight Interest Rate	Repos at target rate	Money, credit, etc.
European Central Bank	Price stability	No official target	OMO, repos, marginal lending and deposit facilities	Money, price, cost, output, demand, employment, fiscal and BoP.
Indonesia	Exchange rate and price stability	Monetary base and real effective exchange rate	CRR, discount rate, OMO and moral suasion	Interest rates, exchange rate.
Japan	Price stability	Current account balances	OMO, repos and complementary lending facility	
Malaysia	Price stability and growth	Intervention rate, inter-bank rates	Direct borrowing/lending, selective credit and administrative measures, CRR, OMO and moral suasion	Real interest rates, inflation and its indicators, asset prices, credit and money.
Mexico	Purchasing power of currency		Money and foreign exchange market operations	Money and monetary base, inflation, employment, BoP and exchange rate.
South Africa	Price stability	Repurchase rate	OMO, CRR, foreign currency swaps	Money, credit, interest rates, output gap, BoP and fiscal position.
USA	Price stability and growth	Federal funds rate	OMO, repos, reserve requirements, discount rate	Credit, employment.

## References:

1. Bank for International Settlements (2001), "Comparing Monetary Policy Operating Procedures Across the United States, Japan and the Euro Area", *BIS Papers No. 9*, Monetary and Economic Department.

Chart III.4 : Liquidity Management : 2001-02



rates have to move up or down to clear the market for bank reserves. In addition to changes in the quantum of liquidity, short-term interest rates respond rapidly to the price of liquidity generated through secondary operations.

3.8 The Reserve Bank undertook secondary operations in the market throughout the year to counterbalance the impact of the primary operations and the increase in the NFA (Table 3.1). Net open market sales of the order of Rs.30,335 crore and net repos of Rs.3,000 crore under the LAF were conducted during the year (Chart III.4). The Reserve Bank credit

to commercial banks and PDs declined by Rs.2,119 crore and Rs.2,127 crore, respectively.

3.9 Since the early 1990s, the CRR has been gradually losing its importance as the principal monetary instrument, giving way to instruments which impact on banks' balance sheets through market processes. Increasingly, the CRR has been viewed within the overall context of financial sector reforms in India, a key objective of which has been the progressive reduction in statutory pre-emptions with a view to improving the operational effectiveness of banks. Accordingly, the CRR has been progressively

Table 3.1: Net Reserve Bank Credit to the Centre: Variations

Variable	2001-02	2001-02				2002-03
		Q1	Q2	Q3	Q4	Q1
1	2	3	4	5	6	7
Net Reserve Bank Credit to the Centre (1+2+3+4-5)	-5,150	19,523	-20,140	-4,770	236	1,455
	(-3.5)	(13.3)	(-12.1)	(-3.3)	(0.2)	(1.0)
1 Loans and Advances	-219	3,619	-7,791	-1,223	5,176	2,472
2 Treasury Bills held by the Reserve Bank	-464	-3	-480	0	18	-18
3 Reserve Bank's holdings of Dated Securities	-2,223	13,150	-11,907	-3,529	63	-6,107
4 Reserve Bank's holdings of Rupee Coins	82	39	38	-18	24	64
5 Central Government Deposits	2,326	-2,718	0	-1	5,045	-5,044
<i>Memo Items*</i>						
A. Market Borrowings of Dated Securities by the Centre #	1,14,213	46,000	31,000	24,000	13,213	49,000
B. Reserve Bank's Primary Subscription to Dated Securities	28,892	21,000	679	4,000	3,213	22,018
C. Repos (-) / Reverse Repos (+) (LAF), Net position	-3,000	1,355	1,410	-1,160	-4,605	-20,355
D. Net Open Market Sales #	30,335	10,929	13,985	5,273	148	7,020
E. Primary Operations	26,430	27,376	-7,074	2,759	3,368	29,598
F. Secondary Operations	-33,335	-9,574	-12,575	-6,433	-4,753	-27,375

\* At face value.

# Excludes Treasury Bills.

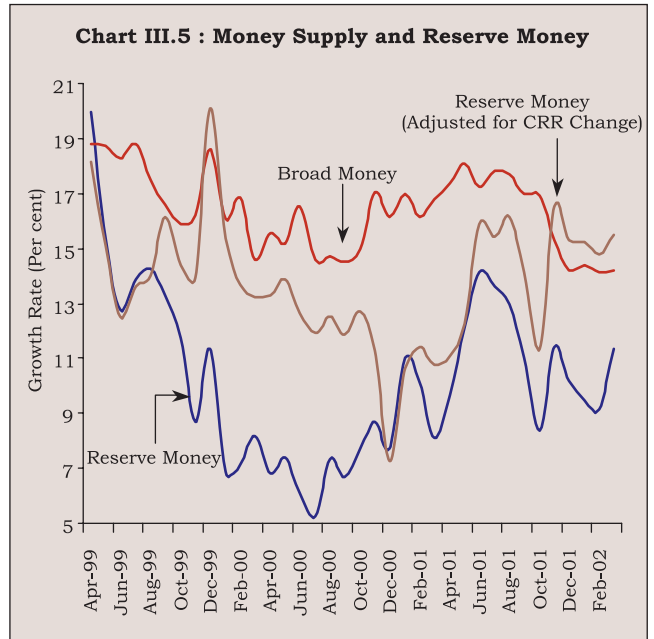
Figures in parentheses refer to percentage variations.

reduced from 15.0 per cent in March 1991 to 5.5 per cent by December 2001 and further to 5.0 per cent by June 2002, as part of the medium-term objective of reducing it to the statutory minimum of three per cent. Rationalisation of the CRR was also undertaken during 2001-02 through the withdrawal of exemptions and the restitution of interest on eligible CRR balances. The first round release of resources on account of CRR changes was Rs.12,500 crore during 2001-02 as compared with Rs.7,500 crore in the previous year. Changes in base money need to be adjusted for the release of such resources to examine the monetary impact of the supply of primary liquidity. Reserve money growth adjusted for the first round release of resources on account of CRR changes was 15.5 per cent during 2001-02 as compared with 10.8 per cent during the previous year (Chart III.5).

3.10 Reserve money, on a year-on-year basis, registered an increase of 10.2 per cent (Rs. 31,007 crore) as on August 16, 2002 as compared with an increase of 9.5 per cent (Rs. 26,363 crore) as at mid-August last year. The major source of reserve money growth was the foreign currency assets which increased by Rs. 69,291 crore (adjusted for revaluation) as compared with Rs. 42,917 crore during the corresponding period of the previous year. On the other hand, the Reserve Bank's net credit to the Centre declined by 12.1 per cent (Rs. 18,436 crore) as compared with a decline of 0.9 per cent (Rs. 1,309 crore) during the corresponding period of the previous year. The Reserve Bank's credit to commercial banks and PDs also declined by Rs.2,204 crore and Rs.884 crore, respectively.

**MONETARY SURVEY**

3.11 Broad money ( $M_3$ ) increased by 14.2 per cent (Rs. 1,86,782 crore) during 2001-02 as compared with



16.8 per cent (14.5 per cent, net of India Millennium Deposits (IMDs)) during 2000-01. Monetary expansion was in consonance with the projections set out in the Monetary and Credit Policy Statement for 2001-02 (Chart III.6). On a monthly average basis, the year-on-year  $M_3$  (net of RIBs/IMDs) growth at 15.3 per cent during 2001-02 was almost the same as that of 15.1 per cent during 2000-01 (Table 3.2).

3.12 The declining trend in income velocity of broad money characterising the past three decades continued during 2001-02 as it fell from the average of 2.0 during the second half of the 1990s to 1.7 during 2000-01 and further to 1.6 in 2001-02 (Chart III.7). The behaviour of the income velocity of money in India is consistent with the received wisdom which stresses the role of institutional factors such as monetisation and financial deepening in the economy

**Chart III.6 : Movements in Broad Money**

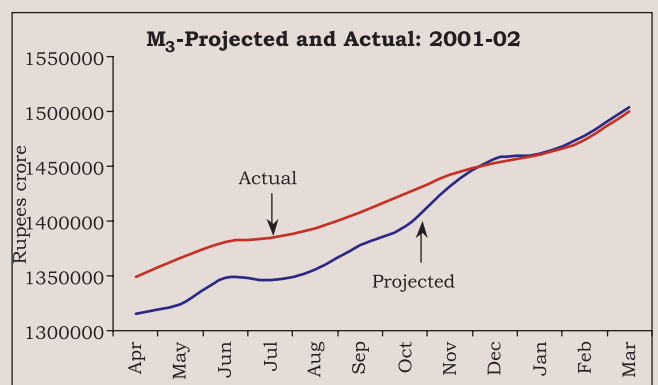
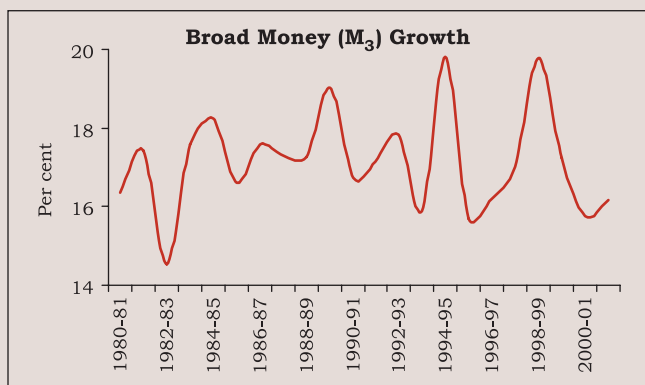


Table 3.2 : Monetary Indicators

Variable	Outstanding as on March 31, 2002 (Rupees crore)	Year-on-year growth rate(Per cent)		Monthly average growth rate (Per cent)	
		2000-01	2001-02	2000-01	2001-02
1	2	3	4	5	6
1 Reserve Money	3,37,970	8.1	11.4	7.8	11.1
2 Narrow Money (M <sub>1</sub> )	4,22,533	11.0	11.4	11.2	11.6
3 Broad Money (M <sub>3</sub> )	15,00,003	16.8	14.2	15.8	16.2
a) M <sub>3</sub> , net of IMDs and RIBs	14,56,396	14.8	14.7	15.1	15.3
4 Major Components of Broad Money					
a) Currency with the Public	2,41,399	10.8	15.2	9.2	12.7
b) Aggregate Deposits	12,55,754	18.0	14.2	17.3	17.0
of which: Scheduled Commercial Banks' (SCBs') Aggregate Deposits(i+ii)	11,03,360	18.4	14.6	16.6	17.5
i) SCBs' Demand Deposits	1,53,048	11.9	7.4	15.0	11.0
ii) SCBs' Time Deposits	9,50,312	19.5	15.9	16.9	18.6
5 Major Sources of Broad Money					
a) Net Bank Credit to the Government (i+ii)	5,86,466	16.0	14.6	13.8	16.6
i) Net Reserve Bank Credit to the Government	1,52,178	3.8	-1.1	0.9	1.5
of which: to the Centre	1,41,384	4.8	-3.5	0.3	0.6
ii) Other Banks' Credit to the Government	4,34,288	22.2	21.3	21.2	23.7
b) Bank Credit to Commercial Sector	7,56,265	15.8	11.3	20.1	12.7
of which: Scheduled commercial banks' credit	5,89,723	17.3	15.3	21.3	14.6
of which: Non-food Credit	5,35,745	14.9	13.6	19.5	12.1
c) Net Foreign Exchange Assets of the Banking Sector	3,14,733	21.5	26.0	17.9	24.6

Data provisional.

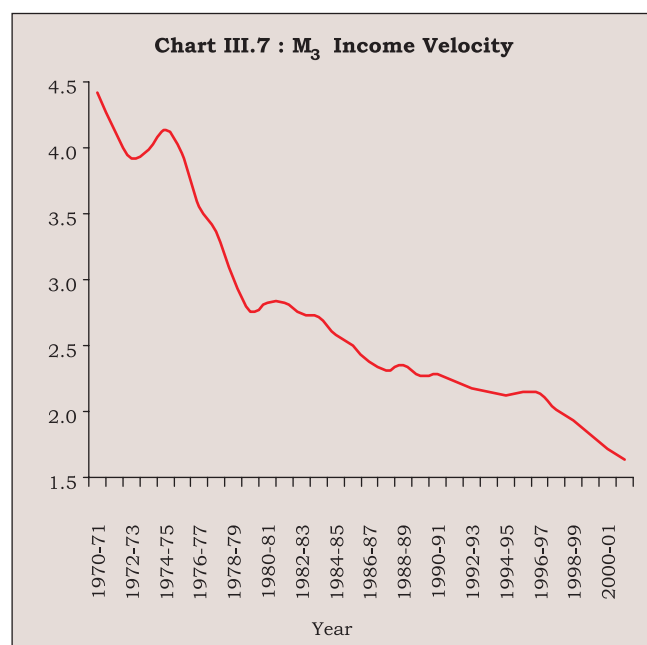
besides the conventional explanation in terms of the demand for money. Stability and predictability of the income velocity of money has underpinned the conduct of monetary policy based on targeting the path of monetary aggregates. Since the late 1990s, however, deep-seated institutional changes in the

financial system have weakened the predictive stability of the income velocity of money in India.

3.13 Among the components, currency with the public and time deposits contributed to monetary expansion during 2001-02. Time deposits accounted for nearly 72 per cent of total broad money as at end-March 2002 (Chart III.8). On the other hand, demand deposit growth slowed down considerably as credit decelerated and stronger cash demand induced substitution effects.

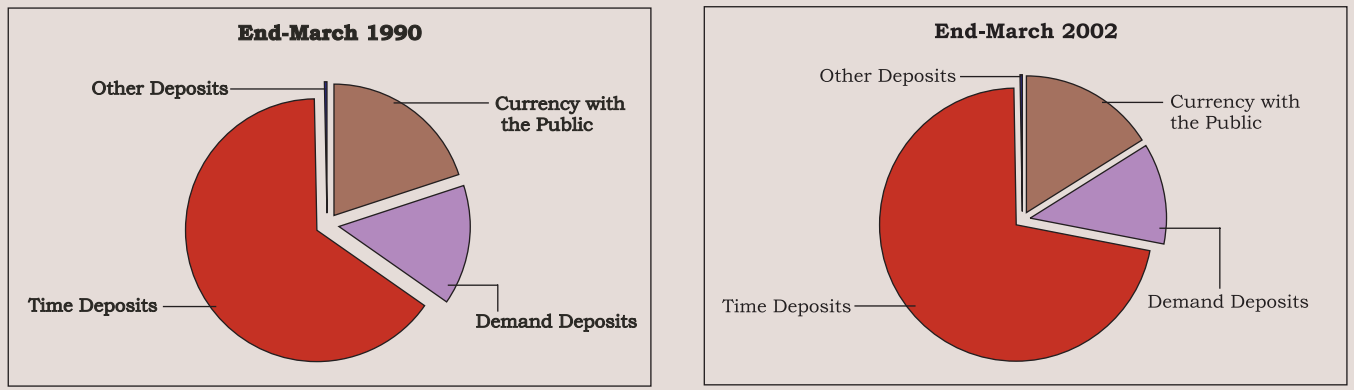
3.14 Currency with the public recorded a higher growth of 15.2 per cent during 2001-02 as compared with 10.8 per cent during the previous year. The increase in cash demand during 2001-02 reflected its typical co-movement with the performance of agriculture and rural demand for cash transactions (Chart III.9).

3.15 Aggregate deposits increased by 14.2 per cent during 2001-02, which was lower than that of 15.3 per cent (net of IMDs) recorded during the previous year. The accretion to aggregate deposits was largely on account of time deposits of scheduled commercial banks (SCBs), which increased by 15.9 per cent, almost the same rate as that of 15.8 per cent (net of IMDs) during the previous year. The broadly steady





**Chart III.8 : Components of Broad Money**



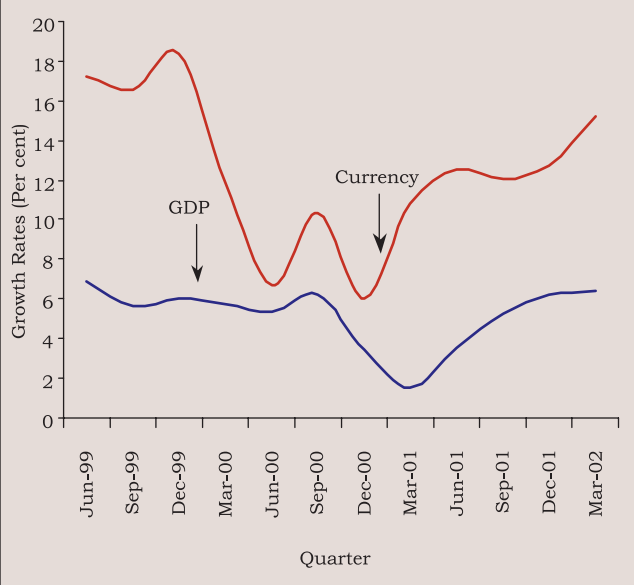
accretion to time deposits against the backdrop of downward movement of interest rates reflected 'safe haven' sentiments and the decline in interest rates on alternative savings instruments (Chart III.10).

3.16 The growth in demand deposits of the commercial banks, on the other hand, decelerated to 7.4 per cent from 11.9 per cent during the previous year. As a result, the ratio of currency to demand deposits increased marginally from 1.3 at end-March 2001 to 1.4 at end-March 2002 as compared with the average of 1.3 over the 1990s. The currency-deposit ratio, a key proximate determinant of the conventional money multiplier, has important behavioural characteristics that guide the conduct of monetary policy. Typically, a rising currency-deposit ratio indicates a shift in the public's preference for currency relative to deposits and therefore, *ceteris paribus*, a contraction

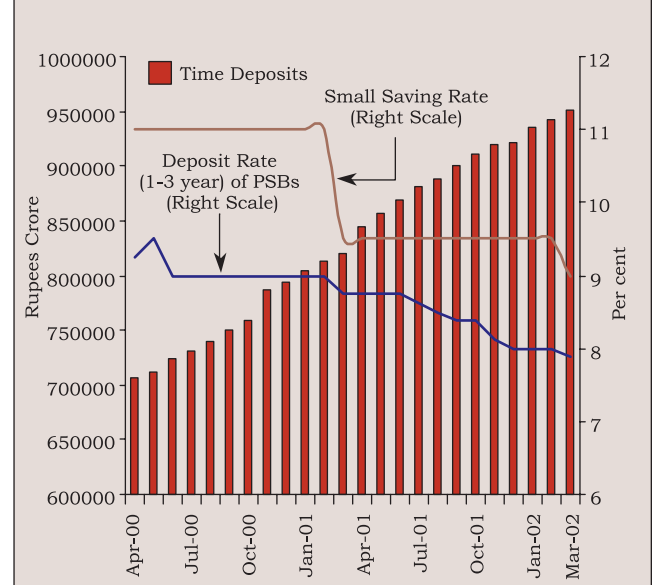
in the stock of money by truncating the chain of credit creation. With the impact of financial innovations, globalisation and institutional changes, however, the prognosis flowing from movements of the currency-deposit ratio for monetary conditions is not so certain.

3.17 Domestic credit (inclusive of commercial banks' non-SLR investments such as commercial paper, shares and debentures, which have assumed importance in recent years in banks' portfolios) decelerated to 12.4 per cent during 2001-02 from 16.3 per cent during 2000-01 as demand conditions in the economy, particularly in industry, continued to remain weak. Net bank credit to the Government also decelerated to 14.6 per cent during 2001-02 from 16.0 per cent during the previous year. The share of net credit to Government in adjusted domestic credit, on an average, was 41.8 per cent during 2001-02 as compared with 41.0 per cent during the

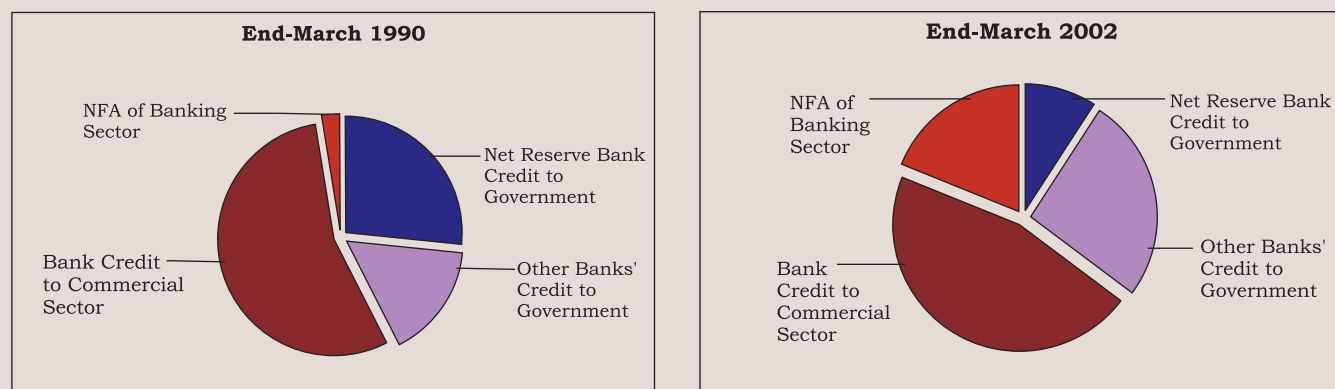
**Chart III.9 : Cash Demand and Economic Activity**



**Chart III.10 : Time Deposits and Interest Rates**



**Chart III.11 : Major Sources of Broad Money**



previous year. Although bank credit to the commercial sector is the dominant source of monetary growth, the deceleration in credit offtake experienced in the recent period has led to an erosion in its share. On the other hand, net foreign assets of the Reserve Bank are emerging as a key driver of money growth (Chart III.11).

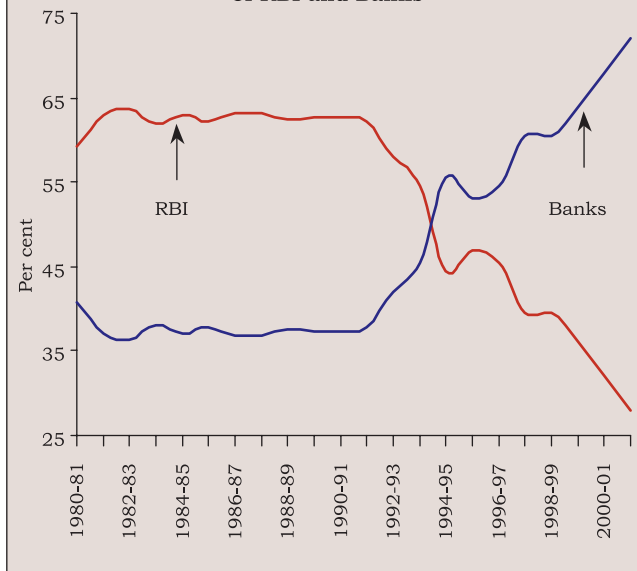
3.18 There were shifts in ownership within the banking sector's credit extended to the Government sector. SCBs' investments in Government securities continued to record a strong growth although it decelerated to 20.9 per cent during the year from 22.1 per cent in the previous year; the net Reserve Bank credit to government, on the other hand, declined by 1.1 per cent. As a result, the share of the Reserve Bank in outstanding net bank credit to the Government sector declined from 32.1 per cent during 2000-01 to 27.9 per cent during 2001-02 (Chart III.12). The high degree of market absorption of Government borrowings has led to the holding of Government securities by the SCBs at 36.5 per cent of their net demand and time liabilities (NDTL) at end-March 2002, substantially higher than the statutory requirement of 25.0 per cent. The preference of the banks for Government securities reflected the lack of credit demand from the commercial sector as well as uncertainty characterising market segments for alternative assets.

3.19 Bank credit to the commercial sector, on a monthly average basis, decelerated to 12.7 per cent during 2001-02 from 20.1 per cent during the previous year (Chart III.13). The growth rate of bank credit to the commercial sector was consistently lower in all the months of 2001-02 than the corresponding monthly growth rates in the preceding year.

**New Monetary and Liquidity Aggregates**

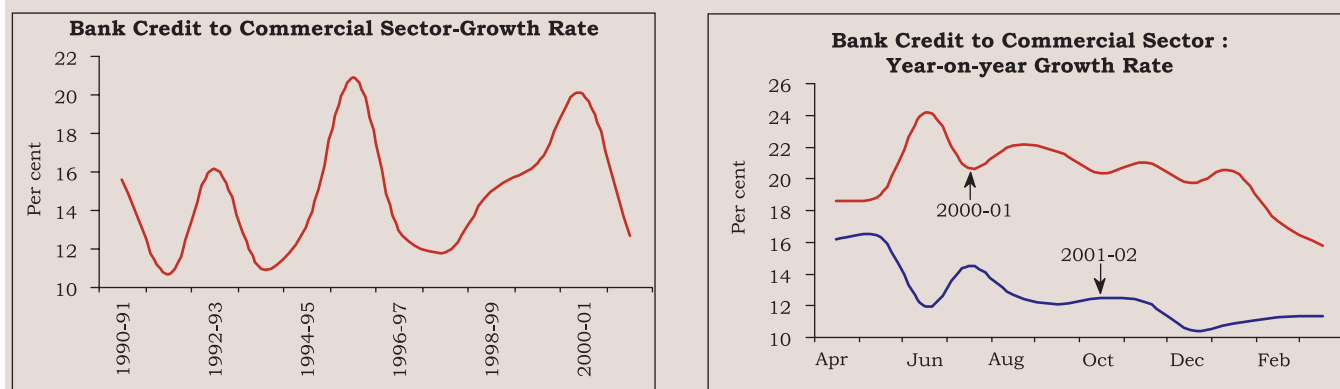
3.20 New monetary and liquidity aggregates were introduced in 1999 on the basis of the recommendations

**Chart III.12: Net Bank Credit to Government-Share of RBI and Banks**



of the Working Group on Money Supply: Analytics and Methodology of Compilation (Chairman: Dr. Y.V. Reddy). The new broad monetary aggregate (NM<sub>3</sub>), *inter alia*, excludes non-resident foreign currency deposits from the existing broad monetary aggregate on the basis of the criterion of residency recommended as a best practice by the International Monetary Fund (IMF). NM<sub>3</sub> segregates the sources of monetary changes under sectors consistent with the UN's System of National Accounts, 1993 currently in force. A set of liquidity aggregates, *i.e.*, L<sub>1</sub>, L<sub>2</sub> and L<sub>3</sub> were also introduced to provide broader magnitudes of monetary and near-money liabilities issued by non-banking financial institutions which compete with money in the public's holdings of liquid claims. The Reserve Bank has been disseminating the new aggregates alongside the existing monetary data with a view to sensitising the public to the analytical refinements in the new

**Chart III.13 : Bank Credit to Commercial Sector**



measures and thereby preparing the ground for replacing the existing broad money measure, *i.e.*,  $M_3$ . Considerable experience gained in the compilation of the new measures and feedback from reporting entities and analysts has been reflected in concurrent improvements in these aggregates. There is now a broader acceptance of the analytical and accounting superiority of the new monetary and liquidity aggregates *vis-a-vis*  $M_3$ , including in terms of international best practices.

3.21 The new broad money aggregate ( $NM_3$ ) registered a growth of 15.7 per cent during 2001-02 as compared with an increase of 14.7 per cent during the previous year. The increase in  $NM_3$  was almost of the same order as that of the existing broad money aggregate ( $M_3$ ) netted for the IMDs. Ample liquidity conditions were indicated by the growth of three

liquidity aggregates ( $L_1$ ,  $L_2$  and  $L_3$ ) during 2001-02 in comparison with the previous year (Table 3.3).

**Credit Behaviour**

3.22 Both food and non-food credit shared in the credit slowdown during the year. Slackening of credit off-take in medium- and large-scale industry accounted for the overall slowdown (Chart III.14).

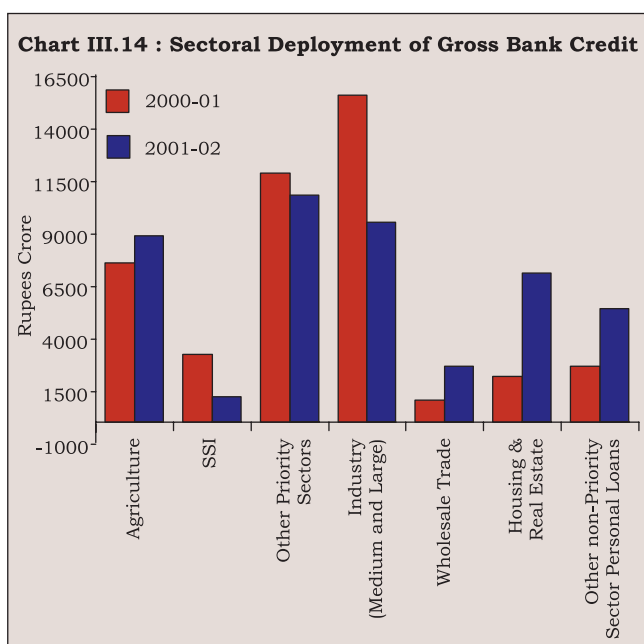
3.23 Industry-wise, credit off-take by the petroleum industry declined by 2.2 per cent during 2001-02 as against an increase of 29.0 per cent recorded during 2000-01. Credit demand also slowed down significantly in the case of cotton textiles and infrastructure. Amongst the principal industries, credit off-take improved only in the case of iron and steel (an increase of 3.3 per cent as compared with 3.2 per cent recorded

**Table 3.3 : Select New Monetary and Liquidity Aggregates**

Aggregate	Definitional changes	Outstanding as at end-March 2002 (Rupees crore)	Year-on-year variations (per cent)	
			2000-01	2001-02
1	2	3	4	5
$NM_3$	$M_3$ – Non-resident repatriable foreign currency fixed deposits + Non-bank call/term borrowings	14,20,608	14.7	15.7
$L_1$	$NM_3$ + Post Office deposits	14,62,876	14.6	15.9
$L_2$	$L_1$ + Term deposits with term-lending and refinancing institutions (FIs) + Term borrowing by FIs + Certificates of deposit issued by FIs	14,68,017	15.2	15.2
$L_3$	$L_2$ + Public deposits of NBFCs	14,85,640	14.8	15.0
Domestic Credit	Domestic credit (existing) + Reserve Bank's credit to NABARD + Banks' investments in all securities other than approved securities + Banks' net credit to primary dealers (PDs)	14,85,929	15.7	13.1
NFA of the Banking Sector	Net foreign assets (NFA) of the banking sector (existing) – Non-resident repatriable foreign currency fixed deposits – Banks' overseas foreign currency borrowing	2,25,683	13.2	40.0

Data are provisional.

MONEY, CREDIT AND PRICES



in the preceding year), engineering (3.4 per cent *vis-a-vis* 1.4 per cent), chemicals, dyes, paints, (8.0 per cent *vis-a-vis* 2.7 per cent) and other textile industries (12.0 per cent as against a decline of 7.6 per cent) (Table 3.4 and Chart III.15).

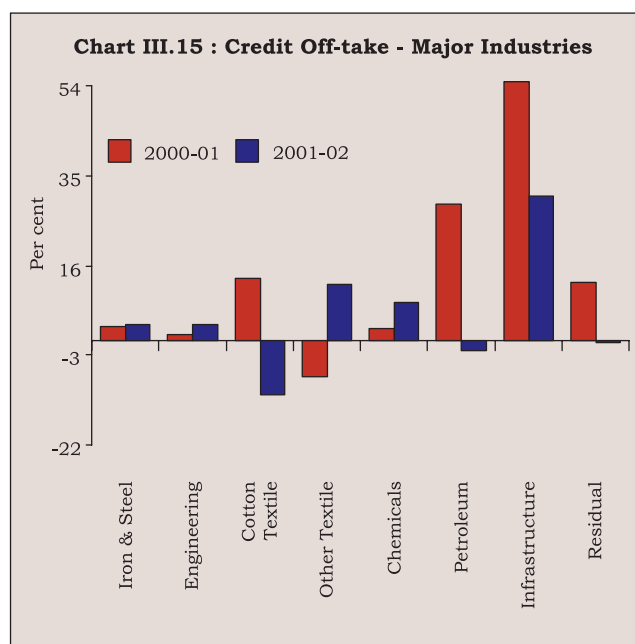
3.24 The net resource flow from non-bank sources (inclusive of capital issues, GDRs/ADRs/FCCBs, CPs subscribed by non-banks and credit from financial institutions) to the commercial sector at Rs. 5,726 crore

**Table 3.4 : Sectoral Deployment of Gross Bank Credit of Scheduled Commercial Banks**

(Rupees crore)

Sector/Industry	Variation during the year			
	2000-01		2001-02	
1	2	3	4	5
1. Priority Sector #	22,587	17.1	20,845	13.5
2. Industry (Medium and Large)	15,518	10.5	9,487	5.8
of which:				
Petroleum	2,603	29.0	-252	-2.2
Infrastructure *	4,106	56.7	3,460	30.5
Chemicals, dyes, paints etc.	625	2.7	1,923	8.0
Electricity	1,152	15.5	753	8.8
3. Wholesale Trade	1,027	6.1	2,614	14.6
(Other than food procurement)				
4. Other Sectors	14,903	18.8	20,641	21.9
<i>Memo:</i>				
Export Credit	4,203	10.7	-343	-0.8

# Excluding investments in eligible securities.  
\* Include power, telecommunications, roads and ports.  
**Note :** Data are provisional and relate to 49 select SCBs.



during 2001-02 was lower than that of Rs. 13,714 crore during the preceding year (Table 3.5).

**COMMERCIAL BANK SURVEY**

3.25 A quarterly analysis of operations of the scheduled commercial banks (SCBs) during 2001-02 encapsulates the dynamics of credit market activity (Table 3.6).

**Table 3.5 : Flow of Resources from Non-Banks to Commercial Sector**

(Rupees crore)

Variable	2000-01	2001-02
1	2	3
1. Capital Issues (a + b)	690	4,532
a) Non-Government Public Companies	690	4,182
(i) Bonds/Debentures	-2,268	3,300
(ii) Shares	2,958	882
b) PSUs and Government Companies	0	350
2. Global Depository Receipts (GDRs)/ American Depository Receipts (ADRs) and Foreign Currency Convertible Bonds (FCCBs)	5,611	2,208
3. Issue of CPs #	-1,671	930
4. Credit from FIs \$	9,084	-1,944*
<b>Total (1 to 4)</b>	<b>13,714</b>	<b>5,726</b>
<i>Memo Item</i>		
Gross Borrowings from FIs	72,038	55,869
Private Placements	64,950	67,836

Data are provisional.\* Excluding ICICI. # Excluding CPs issued to banks.  
\$ Comprises loans and advances to and investment in stocks/shares/ bonds/debentures of industrial concerns and bills of exchange and promissory notes discounted/rediscounted by ICICI, IDBI, IFCI, EXIM Bank, IDFC, TFCI, IIBI and SIDBI.

**Table 3.6: Operations of Scheduled Commercial Banks**

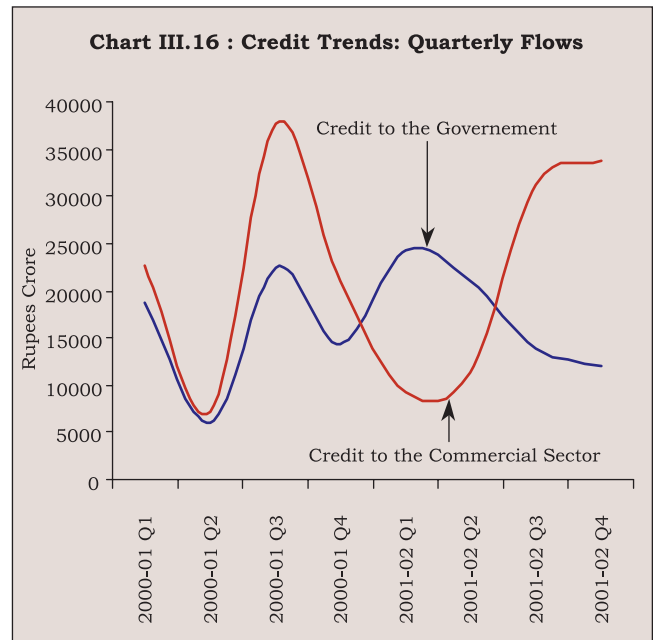
(Rupees crore)

Item	Outstanding as on March 22,2002	Quarterly Flows*							
		2001-02				2000-01			
		Q4	Q3	Q2	Q1	Q4	Q3	Q2	Q1
1	2	3	4	5	6	7	8	9	10
<b>Components</b>									
C1 Aggregate Deposits of Residents	10,12,356	31,834	29,143	21,521	53,337	27,943	30,075	19,810	38,981
C1.1 Demand Deposits	1,53,048	4,412	10,074	-9,382	5,392	2,521	13,600	-3,807	2,872
C1.2 Time Deposits of Residents	8,59,308	27,422	19,069	30,903	47,945	25,422	16,475	23,617	36,109
C2 Call/Term Funding from Fls	3,029	-1,471	409	1,865	-341	294	41	-225	-279
<b>Sources</b>									
S1 Credit to the Government	4,11,176	12,049	13,791	21,088	24,213	14,403	22,345	5,991	18,839
S2 Credit to the Commercial Sector	7,35,985	33,676	31,320	11,217	9,349	21,023	37,694	7,108	22,703
S2.1 Food Credit	53,978	1,702	4,015	-2,079	10,349	2,541	5,360	-1,092	7,491
S2.2 Non-Food Credit	5,35,745	28,347	25,673	12,649	-2,367	11,190	24,891	8,609	16,485
S2.3 Investments in other approved securities	27,093	-644	-1452	62	-997	-193	-412	151	91
S2.4 Other Investments	1,18,842	3,745	2,970	986	2,143	5,132	8,473	-2,399	4,472
S3 Net Foreign Currency Assets of Commercial Banks (3.1-3.2-3.3)	-38,286	-2,958	-4,075	-276	4,952	-2,118	-14,914	3,985	602
S3.1 Foreign Currency Assets	54,076	-3,483	-1,996	2,023	5,886	-541	12,006	5,689	2,496
S3.2 Non-resident Foreign Currency Repatriable Fixed Deposits	91,004	763	1,956	1,353	835	1,506	27,152	2,226	1,580
S3.3 Overseas Foreign Currency Borrowings	1,357	-1,288	123	946	99	71	-232	-522	314
S4 Net Bank Reserves	65,031	-3,929	-1,277	-7,373	16,304	-5,998	3,915	5,497	1,633
S5 Capital Account	72,320	1,150	958	2,297	4,403	353	278	1,950	4,297
S6 Other Items (net) (S1+S2+S3+S4-S5-C1-C2)	86,202	7,325	9,250	-1,026	-2,581	-1,281	18,646	1,047	777
<b>Memo Items</b>									
Resource Release through CRR variations	-	2000	6000	0	4,500	4,100	0	-3,800	7,200

\* Relate to last reporting Friday for each quarter.

3.26 During the first half of the year, there was a steady expansion in time deposits without any commensurate expansion in credit off-take; the liquidity overhang led to a surge in investments in government securities. The slowdown in credit off-take continued for the first three quarters of 2001-02 with the average quarterly increase in SCBs' credit to the commercial sector working out lower at Rs.17,295 crore during April-December 2001 than the average quarterly increase of Rs.22,502 crore during April-December 2000. Some signs of recovery were visible during the fourth quarter of 2001-02 as credit to the commercial sector went up by Rs.33,676 crore. The pick-up in the credit off-take was accompanied by slowing down of investments in government securities (Chart III.16).

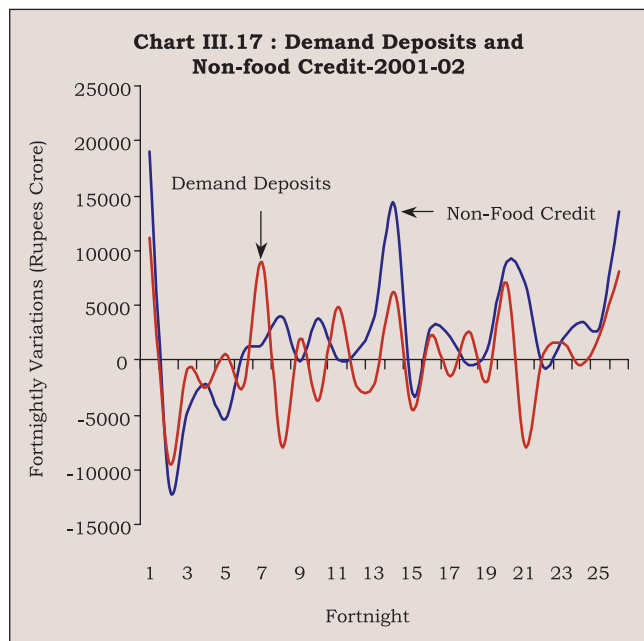
3.27 The momentum of aggregate deposit growth abated somewhat during the third quarter of 2001-02. As the monetary conditions eased further, incipient signs of a recovery in credit demand were visible. Deposit growth picked up again in the fourth quarter of 2001-02; the credit off-take improved somewhat in relation with the corresponding quarter of the preceding year, indicative of congenial conditions for a recovery in industrial output.



3.28 The credit extended by the banks in order to facilitate the working capital needs of industry is often parked in the form of demand deposits. Thus, these two variables generally move in consonance, typically showing quarter-end

bulges followed by unwindings thereafter (Chart III.17).

3.29 An important aspect of the monetary transmission mechanism is the 'pass-through' of monetary signals. This depends upon the structure of the financial system and the nature of its regulation,



the extent to which the policy change is anticipated and how the change affects expectations of future interest rates (Box III.3).

### Developments during 2002-03

3.30 Broad money ( $M_3$ ) expansion at 13.7 per cent as on August 9, 2002 remained within the projection of 14.0 per cent announced in the April 2002 annual Monetary and Credit Policy Statement and in consonance with overall macro-economic developments. Currency, on a year-on-year basis, grew by 13.6 per cent as compared with 11.8 per cent in the

same period of the previous year. Aggregate deposits increased by 13.8 per cent as compared with 16.2 per cent (net of IMDs) in the comparable period of the previous year. Net bank credit to the Government increased by 14.4 per cent (Rs.81,043 crore) as compared with 16.3 per cent last year. Bank credit to commercial sector increased by 19.1 per cent (Rs.1,31,858 crore) as compared with 13.8 per cent during the corresponding period of the previous year. The sharp increase in bank credit to the commercial sector during the current financial year reflects the accounting effect of the impact of mergers since May 3, 2002 on the assets and liabilities of the banking system.

### PRICE SITUATION

3.31 Inflation in India has been moving synchronously with the current phase of disinflation characterising the global business cycle. The ebbing of inflation in India has been symptomatic of the prolonged weakness of aggregate demand, the aggregate supply adjustment to which is being reflected in the slowing down of activity in several economies. In the rest of developing Asia, inflation is at even lower levels than in India reflecting deflationary pressures arising from the severe contraction of domestic demand in these countries in the aftermath of the crisis of 1997-98, as also a greater sensitivity to the behaviour of global demand engendered by a relatively greater degree of openness of these economies (Chart III.18).

3.32 The annual rate of inflation in India, measured as point-to-point variations in the wholesale price index (WPI), fell from above 5.0 per cent during the first five months of 2001-02 (April-August) to touch 1.1 per cent as on February 2, 2002 (the lowest during the year and in the last two decades). It was 1.6 per cent by end-March 2002 as compared with 4.9 per cent at the end of March 2001 (Chart III.19). The significant fall in inflation during the year represented a combination of factors: base effect

### Box III.3

#### Policy Instruments and the Interest Rates Spectrum: Identifying the Pass-Through

An important factor determining the successful conduct of the monetary policy is the effectiveness of the channels of monetary transmission. Monetary impulses are transmitted to output and prices through a host of channels. In practice, the critical issue in the choice of the transmission process is the degree of 'pass-through', *i.e.*, the speed and the magnitude of the response of the market interest rate spectrum to the monetary policy signals.

Available empirical evidence on the pass-through indicates that loan rates are sluggish in responding to

monetary policy actions with lags ranging from several weeks to several months depending upon the nature of the borrower/loan; even over time, the 'pass-through' is less than unity. Moreover, the response is asymmetric, *i.e.*, loan rates generally react faster and more completely when policy is tightened than when policy is eased. This has an important implication for the transmission mechanism with a monetary tightening being more effective than a monetary easing of the same magnitude.

(Contd.....)

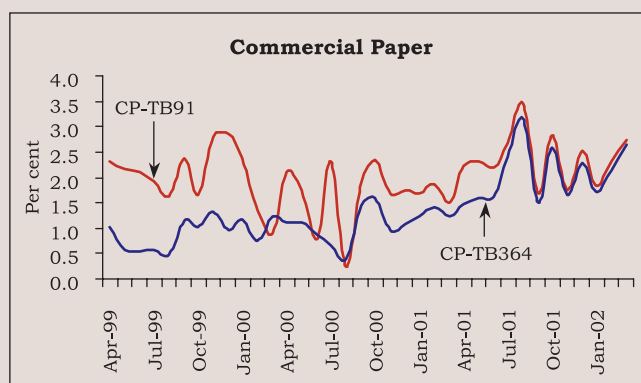
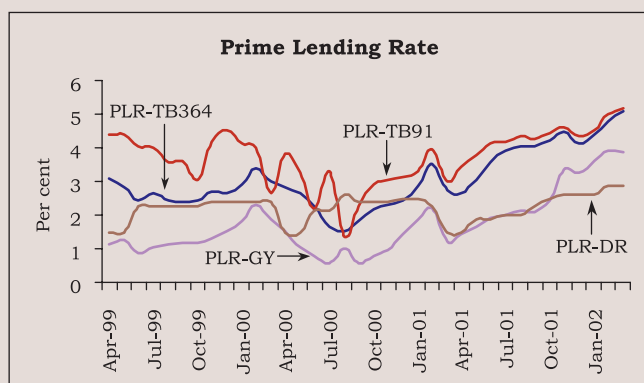
(Concl....)

Empirical evidence for the US during the 1990s indicates that the pass-through from the Fed funds rate to the prime rate increased significantly, becoming almost immediate. Pass-through for housing mortgage was also quite high. For other loans (car loans, credit cards and personal loans), the pass-through increased by 3-4 times during the 1990s but was still lower than unity. Credit card rates remain the stickiest with pass-through of only 0.3 during the 1990s.

The increase in response of interest rates to monetary policy signals during the 1990s can be attributed to changes in the financial structure, increased competition between banks and from non-banks, greater monetary policy transparency, more use of securitisation and

rates on to the interest rates on advances generally charged by banks has remained fairly low, despite a number of favourable enabling developments like reduction in administered interest rates over the last couple of years, cuts in the CRR coupled with an increase in the interest rate paid by the Reserve Bank on eligible cash balances. The differential of PLR vis-à-vis the yield on government securities (10-year) as well as vis-à-vis deposit rates has, as a result, increased in the recent months (Chart). There is also some evidence that the spread between the interest rates charged by banks to different borrowers has widened. The Reserve Bank accordingly initiated a number of steps to increase the flexibility of the response of market interest rates to policy signals (see Section VIII).

**Chart : Spread of Prime Lending Rate (PLR) and Commercial Paper (CP)**



variable-rate loans. An important implication is that a smaller change in the policy rate will achieve the desired change in the lending rates. A higher pass-through implies that financial markets have become forward looking and this would lead to decline in transmission lags. Institutional changes are, however, a pre-requisite for a uniform pass-through of policy signals across the entire spectrum of interest rates.

In the Indian context, the year 2001-02 witnessed one of the sharpest declines in interest rates: the yield on 10-year government securities declined by as much as 287 basis points and the Bank Rate, the repo rate and the overnight call money rates also eased significantly. However, the pass-through of the changes in the policy

**References**

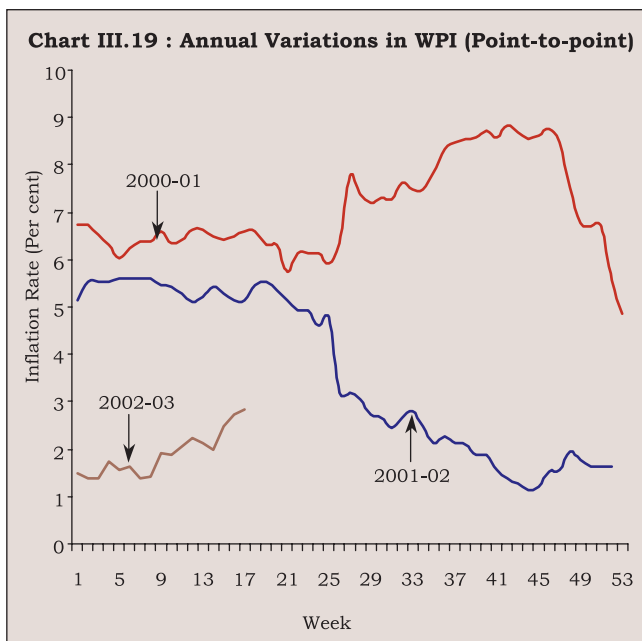
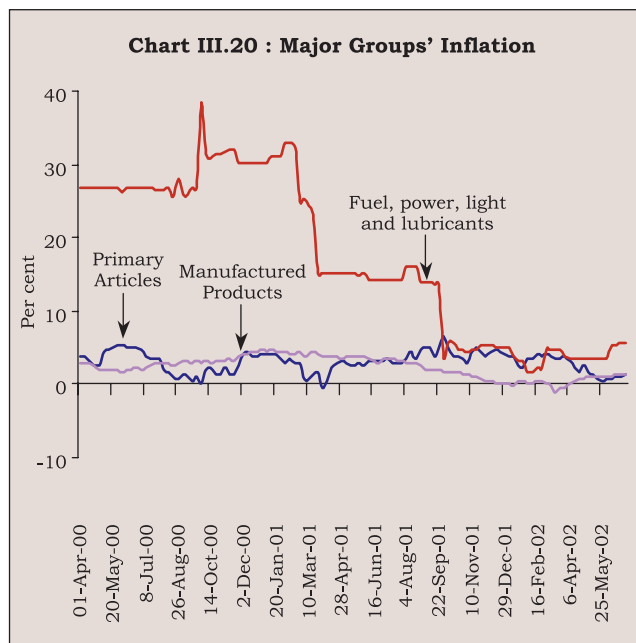
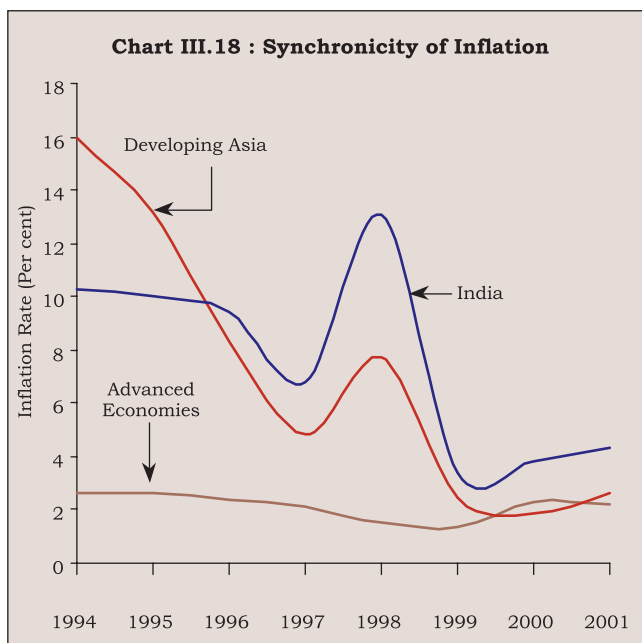
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2. Dueker, Michael J. (2000), "Are Prime Rate Changes Symmetric?" *Economic Review, Federal Reserve Bank of St. Louis*, September/October.
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correction (a higher base in 2000-01 due to administered price revisions), lower international crude oil prices, improved agricultural production, comfortable buffer stocks, absence of demand pressures due to sluggishness in investment demand, presence of excess capacities and inventory accumulation.

3.33 Fuel group inflation decelerated significantly to 3.9 per cent during 2001-02 from 15.0 per cent during 2000-01. Prices of 'manufactured products' remained unchanged as against an increase of 3.8 per cent a year ago. Primary articles inflation, on the other hand,

increased to 3.9 per cent in 2001-02 as compared with a fall of 0.4 per cent a year ago (Chart III.20).

3.34 The rise in primary articles group inflation was mainly due to 'fruits and vegetables' (14.4 per cent), 'eggs, fish and meat' (9.3 per cent) and oilseeds (6.8 per cent). In the case of manufactured products, cement, electrical machinery and cotton textiles registered price declines of 4.7 per cent, 1.1 per cent and 6.7 per cent, respectively, on a point-to-point basis, as against price rises of 20.3 per cent, 11.8 per cent and 6.3 per cent in 2000-01. The sub-group



trended downwards during 2001-02. The annual average WPI inflation fell to 3.6 per cent in 2001-02 from 7.2 per cent in 2000-01 (Chart III.21).

3.36 An analysis of the weighted contributions of major groups of WPI (on an average basis) indicates that the fuel group's contribution decreased to 48.0 per cent during 2001-02 from 63.1 per cent during 2000-01. Over the same period, the contribution of the manufactured products increased to 29.6 per cent from 27.6 per cent while that of the primary articles increased to 23.2 per cent from 9.7 per cent (Chart III.22).

3.37 At the retail level, consumer prices diverged from headline inflation. The annual point-to-point variation in the consumer price index for industrial workers (CPI-IW) rose to 5.2 per cent in 2001-02 from 2.5 per cent in 2000-01 (Chart III.23). On an average basis, it was 4.3 per cent as compared with 3.8 per cent a year ago. The divergence between the WPI and CPI could be attributed to the order of change in primary articles inflation coupled with their larger weightage in the CPI. In addition, the movements of prices of some services which are included in the CPI could have contributed to the divergence.

3.38 The prevalence of different measures of inflation and the leads and lags in their relationship makes the assessment of inflationary pressures for monetary policy purposes a difficult task. In general, there is considerable co-movement between the WPI and CPI in India; the problem of assessment is complicated in periods when they move widely in opposing directions. Therefore, there is a need to

'sugar, *khandsari* and *gur*' recorded a price decline of 3.2 per cent on top of a decline of 6.1 per cent in 2000-01. Chemical and chemical products, iron and steel, and transport equipments and parts registered a deceleration in inflation. On the other hand, the prices of edible oils registered a rise of 12.5 per cent as against a decline of 4.8 per cent during 2000-01 (Table 3.7).

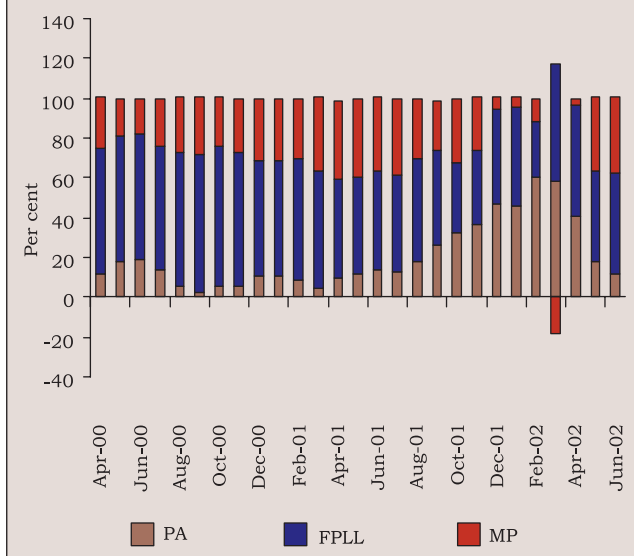
3.35 Inflation measured on the basis of variations in the WPI on an average of weeks basis, an indicator of underlying inflationary conditions, persistently



**Table 3.7: Commodity-wise WPI Inflation**  
(Point-to-point basis)

Commodity	Weight	Annual Variation		
		1999-2000	2000-01	2001-02
1	2	3	4	5
<b>All Commodities</b>	<b>100</b>	<b>6.5</b>	<b>4.9</b>	<b>1.6</b>
<b>I) Primary Articles</b>	<b>22.0</b>	<b>4.0</b>	<b>-0.4</b>	<b>3.9</b>
i) Cereals	4.4	4.7	-5.5	0.8
ii) Pulses	0.6	10.7	7.1	-3.3
iii) Fruits and Vegetables	2.9	-0.7	-2.9	14.4
iv) Milk	4.4	15.8	0.4	4.7
v) Eggs, Fish and Meat	2.2	10.1	-2.1	9.3
vi) Condiments and Spices	0.7	1.0	-13.8	-0.2
viii) Fibres	1.5	-3.6	7.4	-17.9
ix) Oilseeds	2.7	-8.0	2.8	6.8
<b>II) Fuel, Power, Light and Lubricants</b>	<b>14.2</b>	<b>26.7</b>	<b>15.0</b>	<b>3.9</b>
i) Mineral Oils	7.0	41.6	17.0	1.2
ii) Electricity	5.5	15.1	11.5	9.2
iii) Coal Mining	1.8	8.8	18.1	-1.9
<b>III) Manufactured Products</b>	<b>63.8</b>	<b>2.4</b>	<b>3.8</b>	<b>0.0</b>
i) Sugar, <i>Khandsari</i> and <i>Gur</i>	3.9	2.9	-6.1	-3.2
ii) Edible Oils	2.8	-17.9	-4.8	12.5
iii) Food Products	11.5	0.4	-3.7	0.3
iv) Cotton Textiles	4.2	-1.9	6.3	-6.7
v) Man-made Textiles	4.7	6.6	2.0	-4.7
vi) Chemicals and Chemical Products	11.9	5.5	4.0	2.5
vii) Fertilisers	3.7	8.7	3.4	3.6
viii) Urea-N-Content	2.2	12.8	1.8	4.7
ix) Cement	1.7	-0.7	20.3	-4.7
x) Iron and Steel	3.6	1.3	1.3	0.0
xi) Non-electrical Machinery	3.4	1.1	6.9	5.4
xii) Electrical Machinery	5.0	-1.8	11.8	-1.1
xiii) Transport Equipment and Parts	4.3	4.7	5.8	1.3

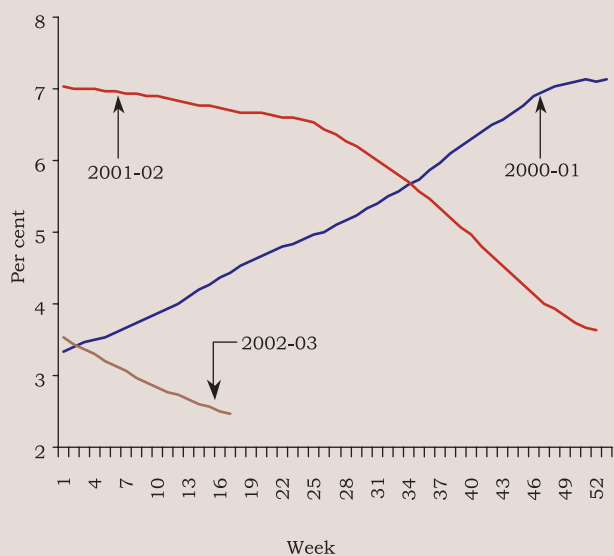
**Chart III.22 : Major Groups' Weighted Contributions to WPI Inflation**



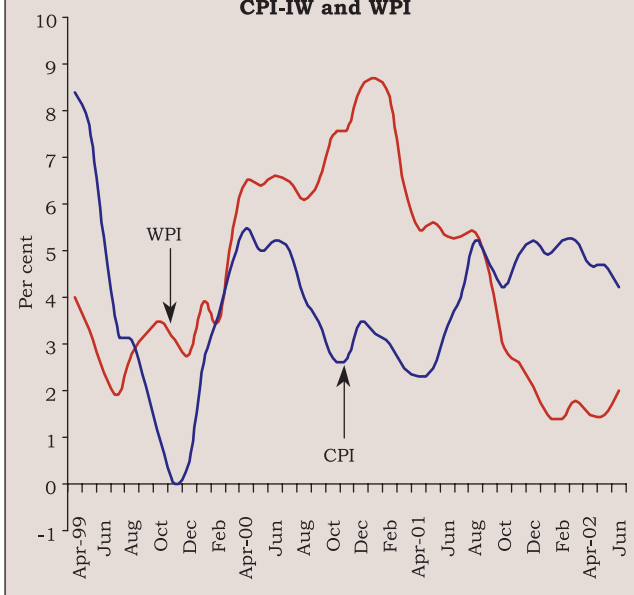
observe a host of other factors and other indicators of inflation along with changes in the WPI and CPI for assessing future inflationary conditions with a view to providing guideposts for formulating forward-looking monetary policy (Chart III.24).

3.39 The rate of inflation (year-on-year basis) during 2002-03 so far (up to August 3) has continued to remain low and stood at 2.7 per cent as compared with 5.5 per cent during the corresponding period of 2001-02. All major groups recorded deceleration in inflation. The fuel group inflation fell from 16.2 per

**Chart III.21 : Annual Variations in WPI (Average Basis)**

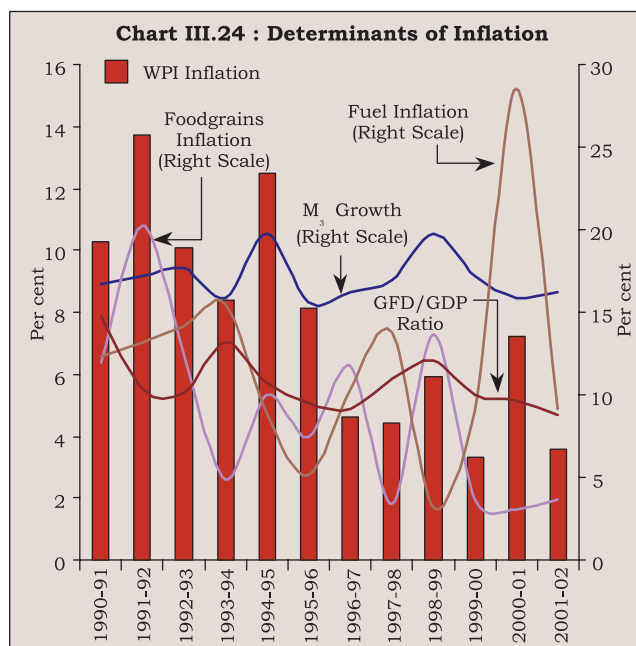


**Chart III.23 : Year-on-year Variation in CPI-IW and WPI**



cent to 5.6 per cent while that of primary articles and the manufactures groups decelerated from 3.6 per cent and 2.9 per cent during 2001-02 to 2.3 per cent and 1.9 per cent, respectively. Within the primary articles group, oilseeds, eggs, fish and meat and milk showed a higher order of increase. In the case of manufactured products group, edible oils, iron and steel, man-made textiles and fertilisers showed higher order of price rises. On an average basis too, the annual inflation rate consistently declined from 5.4 per cent to 2.0 per cent. The CPI-IW, on a point-to-point basis, showed an increase of 4.2 per cent as at end-June 2002 as compared with 3.4 per cent as at end-June 2001.

3.40 In the context of the co-existence of sluggish real activity and low inflation, the conduct of monetary policy in terms of objectives, framework and stance is proving to be extremely complex (Box III.4).



**Box III.4**

**Growth-Inflation Trade-Off : Some Perspectives**

The choice of a specific rate of inflation as the goal of monetary policy inevitably brings in the trade-off between growth and inflation celebrated in the Phillips curve. Within the unsettled ongoing debate there is some consensus that central banks have to contend with the short-run trade-off in the conduct of monetary policy. Accordingly, the rate of inflation chosen as the dominant goal of monetary policy has to be consistent with a rate of real output (and employment) growth. An inappropriate choice of inflation (and growth) results in losses of macroeconomic welfare. The dilemma deepens with the recognition that the association between growth and inflation is non-linear; that just as inflation is harmful to growth in the higher reaches of the scale, there is a point up to which inflation may be neutral and even beneficial to growth, especially in developing countries with unemployed resources for which moderate inflation can operate in a 'greasing role'. Extending the argument to its logical conclusion, there are also very low levels of inflation, say close to zero, which are associated with no growth or even a decline in real activity characteristic of deflation. The traumatic experience of the Great Depression in the early 1930s has led to the belief that while inflation can be unjust, deflation is inexpedient and the worse of the two.

Monetary policy regimes undertaking disinflation strategies involving a permanent movement from a high/medium inflation regime to low inflation may, in the interim period, have to suffer potential output losses. The output losses associated with disinflation, referred to as the sacrifice ratio, may arise on account of a number of factors

like real and nominal rigidities in the economy, misperceptions of economic agents and the degree of credibility of the central bank. Given the possible output consequences of lowering inflation beyond a point, underlying macroeconomic conditions determine the choice between a gradualist approach to disinflation and a 'cold turkey', *i.e.*, rapid disinflation approach. The sacrifice ratio becomes particularly relevant in situations when inflation is turning inertial at some low level and the economy is vulnerable to negative shocks.

Thus, both too high or too low inflation may be harmful to growth. Accordingly, goal assignment in the context of the deployment of monetary policy and efficiency in the pursuit of the goal, given the macroeconomic welfare considerations, depends critically on the empirical estimation of what has been termed as the 'threshold' rate of inflation which is associated with the absence of harmful effects on growth. The threshold inflation would depend upon a number of factors like the economy's structure, the past inflation history, the degree of indexing and future inflation expectations. Several recent studies incorporating developing countries have empirically estimated threshold inflation rates in the range of eight per cent to 40 per cent. Measuring threshold inflation in a cross-country framework runs the risk of being influenced by extreme values since samples typically include countries with inflation as low as one per cent and as high as 200 per cent and even higher. The appropriate inflation threshold, therefore, needs to be estimated for each country separately.

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Seminal work on the threshold inflation in India can be traced back to the Chakravarty Committee (1985) which suggested four per cent as the tolerable rate of inflation in India. Subsequent empirical studies conducted in the Indian context have yielded estimates of the threshold inflation in the range of 4-7 per cent. The robustness of these estimates is borne out by the fact that this range is invariant with the choice of methodology. In the Reserve Bank's Report on Currency and Finance, 2000-01, the economists in the Reserve Bank employed the widely used Sarel methodology and estimated the threshold inflation at around five per cent. The analysis pointed out that the estimate of the threshold inflation has a shifting perspective; with structural changes in the economy, prolonged price stability at the global level as well as in India and the credible anchoring of inflationary expectations at a lower level, the threshold inflation could also move downwards.

Furthermore, the analysis estimated the sacrifice ratio as 2 for India, *i.e.*, a reduction in the inflation rate by 1 percentage point would reduce the output by 2 percentage points below its potential. The estimation has been made on the basis of historical data and within the confines of the methodology adopted. Consequently, the estimation warrants several caveats in its relevance to the current policy framework. First, the sacrifice ratio refers to cumulative output losses spread over a number of years that are associated with decline in trend inflation. Secondly, the Report's finding is in the context of average annual rate of inflation and not point-to-point inflation (since the latter could be easily susceptible to statistical biases; for instance, during 2001-02, the average rate of inflation was 3.6 per cent as compared with 1.6 per cent

based on a point-to-point inflation rate). Thirdly, it is crucial to understand the dynamics and sources of inflation; in the current context, the recent low WPI inflation was significantly enabled by decline in international crude oil prices and the base effect of the sharp increase during 2000-01. Accordingly, a distinction needs to be made between low inflation driven by positive supply shocks and that due to a tight monetary policy. Current liquidity and monetary conditions suggest clearly that the recent deceleration in inflation can not be attributed to a tight monetary policy but rather to favourable supply shocks and trends in global inflation.

Although there has not been any explicit legislation for price stability, the major objectives of monetary policy in India have been those of maintaining price stability and ensuring adequate flow of credit to the productive sectors of the economy. The relative emphasis between the objectives depends on the underlying economic conditions and is spelt out from time to time.

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