

CHAPTER I

INTRODUCTION

1.1 The Reserve Bank of India has a long tradition of compilation and dissemination of monetary statistics, dating back to July 1935. However, monetary statistics have undergone refinements over time. The revised monthly series on monetary data for the period July 1935 through December 1952 were made available through the publication entitled, *Banking and Monetary Statistics*, in 1954. However, the rationale and analytical foundations behind the compilation of monetary aggregates were provided only in 1961 by the First Working Group on Money Supply (FWG), which were further refined and broadened by the Second Working Group (SWG) in 1977.

1.2 Following the recommendations of the SWG, monetary statistics at present are compiled in a balance sheet framework with the data drawn from the banking sector and postal authorities. However, far-reaching changes have since taken place in the macro-economic and financial environment necessitating a fresh look at the compilation of monetary aggregates. In order, therefore, to re-examine the analytical aspects of monetary survey in the light of the changing dimensions and depth of the financial sector consequential to the implementation of financial sector reforms, the present Working Group on 'Money Supply : Analytics and Methodology of Compilation' was set up by Governor, Reserve Bank of India on December 3, 1997 (*Annexure I.1*). The constitution of the Working Group is as follows:

1. Dr. Y.V.Reddy, Chairman
2. Dr. A. Vasudevan, Vice Chairman
3. Professor Ganti Subrahmanyam, Member
4. Professor Romar Correa, Member

5. Dr. B.K.Bhoi, Member
6. Shri Deepak Mohanty, Member-Secretary

1.3 The Chief General Managers (CGMs) of Department of Banking Operations and Development (DBOD), Department of Government and Bank Accounts (DGBA), Exchange Control Department (ECD), Rural Planning and Credit Department (RPCD) and Urban Banks Department (UBD) were associated as special invitees.

1.4 The Working Group was given the following terms of reference:

- a) to examine the adequacy of the existing money stock measures for appropriately reflecting the liquidity in the economic system and in this context, consider the possibility of including any other financial asset(s);
- b) to suggest improvements in the existing reporting system and to recommend new reporting systems, where necessary, from the relevant economic entities;
- c) to suggest suitable arrangements for effecting transition from the present system of reporting, compilation and dissemination of data to the recommended system;
- d) to examine the appropriate form of presentation of data to the public in the light of the widely prevalent practices of central banks; and
- e) to consider any other related matters.

I.1 Present Basis of Compilation

1.5 As indicated above, the analytical framework under which various monetary stocks are compiled

now in India was formalised by the previous two Working Groups¹. The FWG considered “money supply as the most liquid and the most generally accepted means of payment available for mediation of transactions and final settlement of claims”. It, however, recognised that “the aggregate of money supply and time liabilities are more meaningful than money supply (M_1) as such, for some analytical purposes related to the formulation of monetary policies”. This issue was dealt with more elaborately by the SWG as it devised four distinct measures of money stock viz., M_1 , M_2 , M_3 and M_4 in accordance with varying degrees of their liquidity. While recommending a larger set of monetary aggregates, the SWG extended the institutional coverage of the co-operative banking sector to include: a) central co-operative banks and b) primary co-operative banks. Besides, deposits of Post Offices were reckoned as constituents of monetary aggregates. It also distinguished various attributes of monetary aggregates distinct from one another by altering the apportionment of savings deposits into demand and time liabilities on the basis of interest applications on such deposits.

1.2 Need for Review of Monetary Aggregates

1.6 The behaviour of monetary aggregates reflects variations in aggregate demand in a medium- to long-term perspective, in situations typical of underdeveloped economies, where households’ savings are held to an overwhelming extent in the form of currency and deposits. In these economies, the asset structure of banks’ balance sheet is generally dominated by loans and advances to both government and commercial sectors. In several cases, lending to commercial sector is characterised by high proportion of directed lendings. The financial markets are not well developed and are often characterised by

administered nature of interest rates and restricted external capital account transactions. Balance sheets of the banks and financial institutions, as a result, hardly show marked shifts. In such a framework, monetary aggregates estimated on the basis of the balance sheets of banking institutions would provide a good basis for measurement of aggregate demand.

Financial Liberalisation

1.7 The implementation of a series of liberalisation measures in India since the late 1980s provided considerable manoeuvrability to banks and financial institutions in the choice of their portfolios. For the banks, the reserve requirements have been progressively scaled down. Banks have also been afforded considerable operational freedom in the determination of their interest rates. They also have been allowed to venture into newer activity-areas. As a result, banks have been, particularly in the last three years, under increasing competitive pressure to seek resources from sources that go beyond their traditional areas. For example, Certificates of Deposit (CDs) and other money market instruments viz., call money and repos, as well as various external liabilities such as FCNR(B) and NRE deposits have provided the means for mobilising resources. The increase in such managed liabilities coupled with interest rate deregulation has, however, led to both increase and diversification of assets, together with enhancement of risks and uncertainties. Banks have been funding assets which were hitherto not significant *e.g.*, investments in Commercial Paper (CP), shares and debentures of corporates, foreign securities *etc.* These developments were needed to be taken into account by monetary authorities while evaluating the movements in the existing monetary aggregates from the point of view of their impact on aggregate demand.

1.8 Yet another issue which has been increasingly becoming apparent is the gradual blurring of distinctions in the operations among the institutions,

¹ The composition of the two Working Groups is given in Annexure 1.2.

viz., commercial and co-operative banks, development financial institutions and non-banking financial companies. These operations tend to affect the efficacy of the existing monetary aggregates, and efforts are, therefore, required to be made to capture these developments, in order to appropriately capture the changes in aggregate spending.

1.9 At present the sources of money supply do not appropriately reflect banks' investments in equity and debt market instruments and foreign assets. There is no explicit cognisance of valuation of domestic and foreign assets arising out of fluctuations in interest rates and the exchange rate. Besides, there are some structural factors contributing to inadequacies in the measurement of monetary aggregates *viz.*, long delays in receipt of information from the non-scheduled segment of the co-operative sector *i.e.*, district central co-operative banks, urban co-operative banks and salary earners' societies. The data gaps and inadequacies in the short period overstate/understate the monetary aggregates or net non-monetary liabilities (NNML) of the commercial and co-operative banking sector. The behaviour of NNML which are derived as a residual item has, as a result, assumed significance and has often been reflective of the sharp shifts in asset portfolios and other liabilities of banks. But in the absence of full details of the components of NNML, it has become difficult to interpret the movements in monetary variables.

1.10 In recent years, the importance of non-banking financial companies and development financial institutions in respect of intermediating funds has increased substantially. This development would need to be considered since monetary aggregates which typically cover the banking sector may not adequately reflect the state of liquidity in

the economy.

IMF Manual on Monetary and Financial Statistics

1.11 Another development which has prompted a relook into the methodology of compilation of monetary aggregates in India is the need to ensure that the Indian standards in this regard are close to the international ones. The Manual, now available in draft form, on *Monetary and Financial Statistics (MFS)* by the International Monetary Fund (IMF) provides the benchmark for such comparison.² The draft *MFS Manual* of the IMF aims at complementing the *System of National Accounts*, 1993 and the Fund's other methodological manuals (*the Balance of Payments Manual*, Fifth Edition and *Manual on Government Finance Statistics*) and to bring monetary and financial statistics into greater harmonisation with the standards in those manuals. The basic approach of the *MFS Manual* has been to clearly set out i) financial asset boundary including financial derivatives, ii) distinction between financial intermediaries and auxiliaries, iii) development of monetary authorities concept as an analytical framework which in certain cases could be different from that of the central bank, iv) setting out valuation standards, v) measurement of financial transactions, vi) operational definition of money, vii) preparation of sectoral balance sheets and above all, viii) harmonisation of monetary and financial statistics with balance of payments statistics, government financial statistics and the system of national accounts and flow-of-funds.

1.12 Once the provisions of the *MFS Manual* come into effect, it will have implications for collection, coverage, processing and dissemination of statistics. Keeping in view the level of institutional developments and accounting standards, the Working Group proposed that the review of monetary aggregates should take into account the various provisions of the *MFS Manual* to the extent feasible. A major recommendation of the *MFS Manual* is to extend the reporting of

² *Manual on Monetary and Financial Statistics (Revised Draft)*, International Monetary Fund, Statistics Department, August 1996.

financial statistics beyond monetary aggregates. A major challenge in this direction is that, as of now, there is no reporting mechanism in India for data relating to the financial sector at regular intervals except for the central bank, commercial banks and cooperative banks. Apart from the usefulness in mimicking relevant provisions of the *MFS Manual*, the ongoing financial liberalisation and the gradual move towards indirect instruments of monetary control would make it imperative to collect and prepare a comprehensive set of accounts of the entire financial sector at regular intervals for policy purposes.

I.3 Organisation of the Report

1.13 Against this backdrop, the Report is organised into five chapters including the introductory one. A detailed analysis of the present practices of compilation of monetary aggregates and the various measures proposed to be undertaken to address the inadequacies of the aggregates now available are given in Chapter II. Keeping in view the wide area that had to be covered, the Group had set up in its first meeting, four task forces to look into specific areas: i) Task Force on Data Reporting System for Commercial Banks (Convenor: Shri A. Ghosh, Chief General Manager, Department of Banking Operations and Development); ii) Task force on Data Reporting System for Financial Institutions (Convenor: Shri M.M.S. Rekhrao, Chief General Manager, Financial Institutions Division, Department of Banking Supervision); iii) Task Force on Data Reporting System for Co-operative Banks (Convenor: Shri R. Ramanujam, Chief General Manager, Rural Planning and Credit Department) and iv) Task Force on Data Reporting System for Non-Banking Financial Companies (Convenor: Shri T.Bandyopadhyay, Chief General Manager, Department of Non-Banking Supervision). The task forces had representations from commercial banks and financial institutions apart from the concerned officials from the Reserve Bank of India. The recommendations of the task forces are reflected in

Chapter II. The names of the participants in the Task Forces are given in *Annexure I.3*. The Group also received technical material from central banks of other countries and had the benefit of discussions with multilateral international financial institutions, *e.g.* BIS and IMF. The list of international institutions is presented in *Annexure I.4*.

1.14 Chapter II also focuses on conceptual issues in compilation of monetary aggregates and the scope and coverage of the proposed new aggregates. Besides, it lays down the modified data reporting formats for the commercial and co-operative banks and proposes a data reporting system for the financial sector which includes term lending and refinancing institutions, investment institutions, mutual funds and non-banking financial companies. On the basis of the prospective flow of information from financial institutions, the Chapter proposes a compilation of comprehensive financial sector survey which could potentially be developed into a set of flow-of-funds account of the financial sector. This Chapter also presents a cross-country survey of monetary aggregates for as many as 29 countries and an *Annexure* highlighting the evolution of methodology of compilation of monetary aggregates since the First Working Group on Money Supply in 1961.

1.15 Chapter III focuses on issues relating to collection and dissemination of monetary data. This Chapter discusses the proposed improvement in dissemination practices, including seasonal adjustment of monetary data. The Chapter also gives the calendar for the implementation of the revised reporting system and the new official series on monetary aggregates.

1.16 The focus of Chapter IV is on analytical issues pertaining to monetary aggregates which covers the relevance of monetary aggregates for policy purposes. This Chapter looks into the money supply process and evaluates the relative performance of weighted monetary aggregates *vis-a-vis* the traditional simple sum aggregates. The

money supply process is also analysed in a money multiplier framework which is often used for policy purposes, more so with the use of reserve requirements as active instruments of monetary policy. Under a monetary targeting framework, it is essential that the money demand function remains stable and predictable so that the behaviour of monetary aggregates would be able to provide early information on the likely behaviour of aggregate demand in the medium-term perspective. In developed economies, it has been found that financial innovations coupled with sharp drop in transactions cost and the consequent increase in portfolio sensitivity to movements in interest rates, imparted sharp volatility in the behaviour of velocity leading to deemphasis of monetary aggregates as intermediate targets. In India, the research work on velocity behaviour and demand for money has generally found that the money demand function has not as yet seen the kind of instability that has been experienced in many developed economies during the early 1980s. However, considering the fact that predictable relationship among money, output and prices is the fundamental building block for pursuing the monetary targeting approach, this Chapter analyses the issue of causality among these three economic variables. Moreover, estimates of new monetary and liquidity aggregates on a monthly basis for the post-reform period from 1993-94 through 1996-97 are provided in this Chapter based on the framework suggested by this Group. The relative performance of the new aggregates is evaluated and the money demand function has been estimated in a cointegration framework. Given that long-run price stability is the primary objective of

monetary policy, it is critical to understand the transmission mechanism of monetary policy such that appropriate operating instruments corresponding to intermediate target(s) capable of influencing the ultimate target could be identified and used for policy purposes. Keeping this in view, the Chapter also discusses the possible channels of monetary transmission in India on the basis of new aggregates estimated by the Group.

1.17 Chapter V provides summary and recommendations of the Working Group.

1.18 The Group had sought the views of some eminent monetary economists and former top executives of the Reserve Bank and received useful comments and suggestions from a few of them (names in *Annexure I.5*). The Group had also received valuable technical material from a few officials in the Reserve Bank (names in *Annexure I.6*).

1.19 The secretariat of the Group was located in the Division of Money and Banking (DMB), Department of Economic Analysis and Policy (DEAP). Apart from providing logistic support to the Group, the Secretariat prepared a number of position papers on relevant issues for the use of the Group (names in *Annexure I.7*).

1.20 The historical time series data on monetary aggregates on a monthly basis for the 28-year period 1970-71 to 1997-98 is presented in a *Statistical Appendix* for the benefit of researchers and analysts.

CHAPTER II

COMPILATION OF MONETARY AGGREGATES

II.1 Conceptual Issues in Compilation of Monetary Aggregates

Definitions of Money

2.1 There is no unique definition of ‘money’, either as a concept in economic theory or as measured in practice. Money is a means of payment and is thus a lubricant that facilitates exchange. Money also acts as a store of value and a unit of account. In order to serve as a perfect means of payment, ‘money’ should be highly liquid having a fixed nominal or face value. Money may not entail payment of interest because holders of monetary assets derive certain benefits in the form of monetary services in lieu of payment of interest. In the real world, however, money provides monetary services along with tangible remuneration. It is for this reason, money has to have relationship with the activities that economic entities pursue. Money can, therefore, be defined for policy purposes as the set of liquid financial assets, the variation in the stock of which could impact on aggregate economic activity.

2.2 Money as a statistical construct reflects i) assets with monetary characteristics, or ii) specific liquid liabilities of a particular set of financial intermediaries. Since monetary characteristics could differ from asset to asset, money supply measures could be viewed dimension-wise as narrow or broad. Narrow money is highly liquid and readily serves as a means of payment

and does not lose its nominal value; it may accordingly include currency and transferable deposits. In effect, narrow money would perfectly satisfy the demand for transaction balances. The constituents of narrow money are, therefore, limited to the central bank (and the central government if it issues currency) and ‘depository corporations’ such as commercial and co-operative banks. Broad money, on the other hand, would consist of, besides the narrow money, other financial instruments that serve as a store of value and could be converted into cash for use in transactions without much difficulty.

Sectorisation Issue

2.3 As a statistical concept, money could include certain liquid liabilities of a particular set of financial intermediaries or other issuers. For the purpose of compilation of monetary aggregates, the FWG had divided the economy into three sectors: i) the banking sector, ii) the government sector and iii) the private sector comprising the rest of the domestic sector and the foreign sector. This sectorisation was retained by the SWG as well. The nomenclature ‘private’ sector was, however, changed to ‘commercial’ sector in 1970 as it included commercial/manufacturing enterprises in the public sector¹ as well.

2.4 The present Working Group proposes to divide the economy into four exclusive sectors, viz., i) households, ii) non-financial commercial sector, iii) general government and iv) financial corporations. In addition, non-residents constitute the ‘rest of the world sector’ which can have transactions with any of the domestic sectors. The sectorisation of the economy is broadly similar to that of the System of National Accounts 1993 (SNA) as adopted by the *IMF Manual on Monetary and Financial Statistics (MFS Manual)* except that

¹ The SWG pointed out that it would be improper to make a distinction between private and public enterprises in so far as the inclusion of their deposit balances in money stock measures is concerned, as government transfers to public sector enterprises are essentially in the nature of investments in shares and debt obligations and thus directly linked to their commercial operations and rarely in terms of grants and sharing of revenues.

the household sector includes non-profit institutions serving households. The *MFS Manual* defines the financial corporations sector to include apart from the central bank, 'other depository corporations', 'insurance corporations and pension funds', 'other financial intermediaries' and 'financial auxiliaries'. The expression 'depository corporations' is defined by the IMF to include institutions which have deposit liabilities or close substitutes and have common characteristics as 'banks' regardless of whether they are called 'banks'.

Coverage of Depository Corporations

2.5 While deliberating on the sectorisation issue the Group decided that, in the Indian context, even though the development financial institutions and non-banking financial companies are allowed to accept deposits from the 'public', it may not be appropriate to treat these institutions as 'depository corporations' in view of the restrictions prevalent on their deposit taking activities and the relatively small share of their deposit liabilities to total liabilities. For the purpose of money supply compilation, the Group proposes to restrict the coverage of 'depository corporations' only to the banking sector.

2.6 The banking sector in India comprises i) the Reserve Bank of India and ii) the banking system in India defined as per the Banking Regulation Act, 1949, which includes a) the State Bank of India and its subsidiaries, b) nationalised banks, c) regional rural banks, d) all other banking companies in private sector (including foreign banks operating in India) - constituting what are commonly known as commercial banks, e) co-operative banks² and f) any financial institution notified by the Central Government (Box II.1).

² Excluding primary credit societies and co-operative land mortgage/development banks.

Box II.1 : Banking System in India

The Indian banking system is dominated by the scheduled commercial banks, which accounted for almost 90 per cent of bank deposits as at end-March 1997, the balance being accounted for by co-operative banks. The State Bank of India group alone accounts for about a quarter. Nationalised banks account for nearly half of bank deposits, while the Regional Rural Banks account for 3 per cent. The new private sector banks account for 2.0 per cent and the foreign banks 6.4 per cent. Among the co-operatives, the central co-operative banks account for 4.2 per cent followed by urban co-operative banks 3.5 per cent.

Financial Corporations

2.7 Analogous to the notion of the 'depository corporation' and keeping in view the prospective availability of information on the rest of the organised financial sector, the Group proposes to use the concept of financial corporations sector, and define it to include the following institutional categories, viz., 'banking sector', 'development financial institutions', which include term lending institutions and refinancing institutions (FIs), 'insurance corporations', 'mutual funds' and 'non-banking financial companies accepting deposits from the public'.

2.8 The position of primary dealers in the financial corporations sector is unique in the sense that while these are essentially non-banking financial intermediaries operating in the money and government securities markets (and as such classified as non-banking financial companies), their lendings to banks are reckoned as part of inter-bank liabilities. Since primary dealers are not depository corporations, the Group has decided to treat them as non-banks for the purpose of money supply compilation.

Money Issuing/Holding Sector

2.9 The money issuing sector is considered as part of the financial corporation sector, viz., the

banking sector. The money holding sector, on the other hand, comprises resident units outside the money issuing sector. The money holding sector is defined as the 'commercial sector', alternatively defined as 'public', which includes households, non-financial commercial sector and non-depository financial corporations.

Residency

2.10 Residency essentially relates to the country in which the holder has a centre of economic interest. Currency and deposits held by the non-residents in the rest of the world sector would presumably be related to balance of payments considerations such as international capital flows rather than to the domestic demand for monetary assets or to the use of money in domestic transactions and should, therefore, be regarded as external liabilities to be netted from foreign currency assets of the banking system.

2.11 The SWG had included balances under the erstwhile Foreign Currency (Non-Resident) Accounts instituted in November 1975 in money supply accounts along with the balances under the Non-Resident (External) Rupee Accounts instituted in March 1970 which was already being reported under aggregate deposits by scheduled commercial banks. Subsequently, various categories of banks' external deposit liabilities to non-residents including FCNR (B) deposits have been included in money supply. While there is a need to categorise deposit liabilities by residency, it may not be appropriate to exclude all categories of non-resident deposits from domestic monetary aggregates as non-resident rupee deposits are essentially integrated into the domestic financial system. The Group, therefore, proposes that only non-resident repatriable foreign currency fixed deposits should be excluded from deposit liabilities and treated as external liabilities. Accordingly, from among the various categories of non-resident deposits at present, only FCNR(B) deposits may

be classified as external liabilities and excluded from the domestic money stock.

Government Deposits

2.12 The deposits of the Central and state governments with the RBI are set off against the RBI's claims on them and the RBI credit to government is shown on a net basis because the governments generally keep the statutory minimum balance with the RBI. While the Centre's cash balances have always been excluded from money supply, the balances of the state governments have been excluded since April 1956. The Group proposes to continue the existing practice.

Valuation Issues

2.13 Monetary and financial statistics generally should value financial instruments and transactions at market prices. However, many assets (*e.g.* currency, deposits and loans *etc.*) have fixed nominal values, and hence their purchase prices and current market values are identical. The Reserve Bank of India has laid down norms for valuation of investment portfolio of commercial banks with the objective of moving progressively to the international best practice of valuing the entire portfolio on mark to market basis. While short-term investments such as Treasury Bills and commercial paper are valued at carrying cost, long-term investments are to be valued as per market quotations to the extent possible. The mark to market portion of commercial banks' investments in government securities has been raised from 30 per cent during the accounting year 1992-93 to 70 per cent in 1998-99 which would further increase to 100 per cent in the next three years.

2.14 The Group proposes the compilation of monetary survey for India keeping in view the conceptual framework enumerated above.

MONETARY SURVEY

II.2 Monetary and Credit Aggregates

2.15 Money supply³ was initially compiled by the RBI as the sum of public holdings of free currency (excluding those of banks and the Central Government) and deposit money with banks withdrawable on demand. Deposit money with the banks comprised demand liabilities of banks (excluding inter-bank demand deposits), deposits of state governments and ‘other’ deposits with the RBI. This corresponds to what is often referred to as narrow money in economic literature and is widely known as M_1 . The FWG recommended the compilation of a broader money aggregate by adding time deposits to M_1 . This was referred to as ‘aggregate monetary resources’ till the SWG rechristened it as M_3 . The SWG also introduced two other measures of money stock (Box II.2).

2.16 On the sources’ (assets) side, broad money (M_3) comprises the sum of i) net bank credit to government, ii) bank credit to the commercial sector, iii) net foreign exchange assets of the banking sector, and iv) the government’s currency liabilities to the public netted for v) the banking sector’s net non-monetary liabilities (NNML). Since money supply is compiled in a balance sheet framework, the NNML could conceptually include

³ The Reserve Bank of India has published data on narrow money viz., money supply with the public and later referred to as M_1 since July 1935. A monthly series on monetary data since July 1935 is available in the *Banking and Monetary Statistics* published by the RBI in 1954. A series on ‘total money supply’ was published in the *Report on Currency and Finance 1944-45*. Data on broad money referred to as Aggregate Monetary Resources (equivalent to M_1 plus time deposits with banks) was published in the Bank’s Annual Report for the first time in 1964-65 and in the Report on Currency and Finance from 1967-68 onwards. A second monthly series on components of money stock was published in the RBI Bulletin, March 1970. A new series of monetary aggregates from March 1970 came into effect with the acceptance of the Report of the Second Working Group.

Box II.2 : Measures of Monetary Aggregates

M_1 = Currency with the Public + Demand Deposits with the Banking System + ‘Other’ Deposits with the RBI.
 M_2 = M_1 + Savings Deposits of Post Office Savings Banks.
 M_3 = M_1 + Time Deposits with the Banking System.
 M_4 = M_3 + all Deposits with Post Office Savings Banks (excluding National Savings Certificates).

two major items, viz., i) the capital accounts of the entities and ii) unclassified items of liabilities and assets. It may be noted that while the complete balance sheet data of the RBI are available on a weekly basis which could help identify the items that constitute its NNML, the other banks’ NNML are computed as a residual item balancing the components and sources of money stock. This issue is discussed in detail later in the Chapter.

Characteristics of Present Aggregates

2.17 On reviewing the present aggregates, the Group recognised that from among the four measures of money, M_1 and M_3 are the two measures which are extensively used both for policy purposes and in academic exercises. Use of data on M_2 and M_4 are conspicuous by their near-absence. The introduction of M_2 and M_4 as money stock measures seems to have been prompted by the fact that during the pre-1969 period, post offices catered banking facilities in many places where banks were not in existence. The strength of this reasoning has lost much of its sharpness with the strong growth of the banking network in rural and semi-urban areas since then. Moreover, operationally two problems have been encountered. First, the monthly flow of data from the postal department has over time been subject to considerable delays, thereby rendering the relevant aggregates less significant for policy purposes. Second, there is also opaqueness in the manner of deployment of postal deposits as the postal department is a part of the general government.

2.18 As between M_1 and M_3 , the latter captures the balance sheet of the banking sector, the institutional category which has been the focus of the policy. In India, as in many countries, the broad money concept has been found to be operationally useful because of better correlation with aggregate economic activity. The narrow money aggregate (M_1), on the other hand, includes apart from currency with the public, the non-interest bearing deposits with the banking sector, including the RBI. However, M_1 does not adequately capture the transactions balances of entities because of the manner in which savings deposits with banks are partitioned into demand and time categories - purely on the basis of interest applications. It needs to be recognised that savings deposits which pay a very low rate of interest and provide chequing facilities function essentially as transactions balances. On the other hand, broad money is too aggregative a concept encompassing term deposits of various maturities apart from Certificates of Deposit (CDs). The Group, therefore, felt that there is a need to provide for an intermediate aggregate between M_1 and M_3 which captures, apart from transaction balances, liabilities of short-term nature which are highly liquid and more interest sensitive.

Proposed New Aggregates

2.19 The Group is of the view that the present set of monetary aggregates are not in conformity with the largely followed norm of progressivity in terms of liquidity. Moreover, the treatment of postal deposits as a part of monetary aggregates may not be in harmony with the notion of 'depository corporation' as in the case of a bank unit, since the postal department is a part of general government. It was felt that as part of financial innovations, while financial institutions may issue financial assets closely resembling bank deposits, it may not be appropriate to treat them as monetary assets unless the institutions provide services similar to that of the banks. Such instruments, which compete with broader monetary aggregates could, therefore, be treated as part of liquidity measures. Thus, the

Working Group sought to differentiate monetary aggregates from other financial aggregates not so much on the basis of the attributes of the instruments themselves as on the nature and functioning of institutions issuing such instruments.

2.20 While constructing the monetary aggregates, the essential guiding principle could be that only the central bank and the depository corporations in the sense of banks capable of creating money are considered. The broadest aggregate that can be arrived at by consolidating the balance sheets of the banking system (e.g. M_3 in India) could be considered as an appropriate index of state of overall liquidity available in the economy so long as the share of non-depository corporations remains insignificant. However, following deregulations, the areas of jurisdictions across various categories of financial entities have been tending to overlap. As a result, the share of non-depository corporations in total financial assets has been growing over time. Therefore, in order to have an appropriate measure of overall state of liquidity at any particular point of time, a need has been felt to have a broader liquidity measure taking explicit cognisance of the importance of non-depository corporations in regard to intermediating liabilities from non-bank, non-government sector. In fact, many countries have dealt with this issue by constructing measures broader than 'broad money' (sometimes called very broad money, or extended money supply, or liquidity and denoted by 'L', M_2+ , M_3 extended or M_3E , MCT, ALP, etc.). Liquidity measures generally include instruments that are considered to be good substitutes for broad money, or include a range of instruments that may be empirically related to overall economic activity or prices.

2.21 In this context, the comparison of monetary aggregates across countries is useful in the evaluation of our own monetary statistics. A survey of 29 countries reveals that there is a wide diversity in the definition of monetary aggregates depending on the development of money substitutes although the basic definition of money supply – the narrow

money (M_1) – has remained relatively unchanged. As regards broader monetary aggregates, apart from currency and deposits, the following instruments merit consideration for inclusion: i) other (outside the ‘depository corporations’) call/term funding and ii) non-convertible debentures (NCDs) issued by banks. While banks in India are yet to issue NCDs, banks rely on call funding from non-bank financial institutions which could be included in broader monetary aggregates (*Annexure II.1*).

2.22 While the Group is of the opinion that the consolidated account of the banking sector may be considered for compilation of monetary aggregates, it proposes that the items of liabilities of non-banking financial institutions which are predominantly held with the public and which compete with broad money aggregates may be included in various measures of liquidity. One such item is postal office deposits on which monthly data are available *albeit* with some time lag. There are, however, other instruments which could be included in the broad measure of liquidity: i) public deposits, term borrowings and certificates of deposit of financial institutions as these liabilities directly compete with the liabilities of the banking sector and ii) those liabilities of non-banking financial companies (NBFCs) such as public deposits (a component of regulated deposits) which are competitive to deposits with commercial banks and bypass the process of bank intermediation. Some countries include Commercial Papers and Treasury Bills under the broad liquidity measure. In the Indian context, these two instruments are predominantly held by banks and financial institutions and hence should not form a part of liquidity of the non-financial non-government sector. A much broader concept of liquidity measures could be defined as the total assets held by the public that are issued by all financial intermediaries. The Group proposes that data on these items can be obtained on a monthly basis for preparation of liquidity aggregates. But keeping in view the difficulties of obtaining data at a higher

frequency from NBFCs, the Group proposes that at least the data could be obtained on quarterly basis to start with.

2.23 Mutual funds that raise resources from the public with liabilities that could substitute for deposits and which invest in short-term money market instruments are included in broader definitions of monetary aggregates in a number of countries. In some countries, prominent among them being the US, money market mutual funds act like depository corporations by issuing chequing facility against units. In India, although policy guidelines for setting up of money market mutual funds (MMMFs) were issued way back in 1992, it was only in 1996 that a few MMMFs were set up. The MMMFs in India have not gained the popularity as in many other countries. Moreover, there are balance sheet restrictions on the functioning of MMMFs. Keeping in view the negligible presence of MMMFs at present, the Group did not favour inclusion of MMMFs either in monetary or in liquidity aggregates. However, the Group is of the view that all the mutual funds could be classified under ‘non-depository financial corporations’.

2.24 While it is important that the compilation of monetary aggregates be uncomplicated and easy to comprehend, it is equally important that the compilation is operationally feasible keeping in view the availability of information and the frequency of availability of such information. Accordingly, the Group recommends compilation of four measures of monetary aggregates, and three measures of liquidity aggregates besides a comprehensive financial sector survey (Box II.3).

2.25 It would thus be seen that the Group sought to define the monetary aggregates by residency criteria with a qualification, the qualification being that they exclude repatriable foreign currency fixed deposits by non-residents. The partition between monetary and liquidity aggregates has been dictated by the fact that while the first relates only to

Box II.3 : Recommended Measures of Financial Aggregates**A. Monetary Aggregates***Weekly Compilation*

M_0 = Currency in Circulation + Bankers' Deposits with the RBI + 'Other' Deposits with the RBI.

Fortnightly Compilation

M_1 = Currency with the Public + Demand Deposits with the Banking System + 'Other' Deposits with the RBI = Currency with the Public + Current Deposits with the Banking System + Demand Liabilities Portion of Savings Deposits with the Banking System + 'Other' Deposits with the RBI.

M_2 = M_1 + Time Liabilities Portion of Savings Deposits with the Banking System + Certificates of Deposit issued by Banks + Term Deposits (excluding FCNR(B) deposits) with a contractual maturity of up to and including one year with the Banking System = Currency with the Public + Current Deposits with the Banking System + Savings Deposits with the Banking System + Certificates of Deposit issued by Banks + Term Deposits (excluding FCNR(B) deposits) with a contractual maturity up to and including one year with the Banking System + 'Other' Deposits with the RBI.

M_3 = M_2 + Term Deposits (excluding FCNR(B) deposits) with a contractual maturity of over one year with the Banking System + Call borrowings from 'Non-Depository' Financial Corporations by the Banking System.

B. Liquidity Aggregates*Monthly compilation*

L_1 = M_3 + all Deposits with the Post Office Savings Banks (excluding National Savings Certificates).

L_2 = L_1 + Term Deposits with Term Lending Institutions and Refinancing Institutions (FIs) + Term borrowing by FIs + Certificates of Deposit issued by FIs.

Quarterly Compilation.

L_3 = L_2 + Public Deposits of Non-Banking Financial Companies.

Financial Sector Survey (FSS) = Aggregate Assets and Liabilities of the Financial Corporations.

monetary liabilities of the central bank and 'depository corporations', *i.e.*, the banking system, the latter also includes select items of financial liabilities of non-depository financial corporations

such as development financial institutions and non-banking financial companies accepting deposits from the public apart from post office savings banks.

2.26 M_0 is essentially the monetary base, *i.e.*, reserve money. M_0 is mainly compiled from the balance sheet of the central bank, *i.e.*, the Reserve Bank of India. M_1 which purely reflects the non-interest bearing monetary liabilities of the banking sector continues to be the same as at present. M_2 which includes savings and short-term deposits is, however, a refined measure recommended by the present Group. Savings deposits are essentially held by households and are withdrawable without any effective constraint. The rules governing the restrictions on number of cheques/withdrawals that could be issued are hardly followed in practice. Term deposits with contractual maturity of up to one year are held for liquidity considerations and for ensuring portfolio management. Hence M_2 may adequately reflect the transactions balances of entities apart from being relatively interest sensitive. M_3 has been redefined to reflect additionally the call fundings of the banking system by other financial institutions.

Credit Aggregates

2.27 Bank credit is often specifically referred to in several writings in monetary economics as a critical variable affecting consumption and capital formation in a direct manner. As such it is often regarded as a more useful indicator of real sector activity than money supply. In India, one of the objectives of monetary policy is clearly stated in official documents as one of ensuring adequate flow of credit to the productive sectors of the economy. But as changes in bank credit were treated as impacting wholly on money supply in the absence of a movement in foreign exchange assets, credit aggregates were hitherto not considered as important. This situation, however, may not continue for long in view of growing openness of the economy. There is a clear need for having

comprehensive measures of credit that relate to 'depository-corporations' and the 'financial sector', which are the main focal points of policy. The Reserve Bank of India extends credit to the government by way of loans and advances and investments in government securities, and to a limited extent to the financial sector including banks. The 'depository corporations' such as commercial and co-operative banks invest in government papers and other market instruments and extend credit to the commercial sector including 'non-depository financial corporations'. The 'non-depository financial corporations' also invest in government securities and extend credit to the commercial sector and to a limited extent to the banking sector by way of refinance.

2.28 At present, while credit to government from the banking system is clearly identified, bank credit to the commercial sector, in the conventional sense, includes only advances in the form of loans, cash credit, overdrafts, bills purchased and discounted and investments in approved securities other than government securities. However, commercial banks have in recent years been investing in securities such as commercial paper, shares and debentures issued by the commercial sector which are not reflected in the conventional credit aggregates. The Group, therefore, proposes to broaden the definition of bank credit to the commercial sector by including all these investments in the conventional credit aggregates.

2.29 Another major problem in the present reporting system has been that there is no estimate of credit flow from the entire financial system either to the government or the commercial sector. The Group proposes to address this lacunae by recommending preparation of a comprehensive financial sector survey on a quarterly basis which would throw up estimates of credit from the financial sector to: i) government and ii) non-financial commercial sector.

2.30 The evolution of methodology of compilation

of money stock measures since the First Working Group in 1961 is given in *Annexure II.2*.

II.3 The Format of the Monetary Survey

2.31 The monetary aggregates thus defined can essentially be presented in a balance sheet framework by consolidation of the accounts of the banking sector. The components derived from the liabilities side could be matched with those on the assets side of the consolidated balance sheet of the banks. The sources (assets) side can functionally be depicted by i) domestic credit, ii) net foreign assets, iii) capital account and iv) other items (net).

Domestic Credit

2.32 The break up of 'domestic credit' would include i) net credit to the government and ii) credit to commercial sector – defined to include households, non-financial corporate sector and non-depository financial corporations. Net bank credit to government is the sum of the net RBI credit to government and the investments of the banking system in government securities. Bank credit to the commercial sector would include RBI credit to the commercial sector - non-depository financial corporations - and bank credit in India of the banking system, which includes i) advances in the form of loans, cash credit and overdrafts in both rupees as well as in foreign currency, ii) inland and foreign bills purchased and discounted (which together constitute what is commonly known as bank credit) and iii) investment in all securities other than government securities. The inclusion of banking systems' investments in shares, debentures, bonds, commercial paper *etc.* issued by the commercial sector under credit to the commercial sector would, in the view of the Group, enhance the value of the commercial credit aggregate as an important informational variable.

Foreign Assets

2.33 Net foreign exchange assets (NFA) of the

banking sector comprise the RBI's net foreign exchange assets and the net foreign currency assets of the banking system. While there is no change in the composition of net foreign exchange assets of the RBI, net foreign currency assets of the banking system should comprise their holdings of foreign currency assets net of i) their holdings of non-resident repatriable foreign currency fixed deposits which is presently defined to include FCNR(B) deposits⁴ and ii) overseas foreign currency borrowings.

Capital Accounts

2.34 The capital account of the banking system, the net unclassified assets and liabilities have hitherto been classified under the omnibus head of net non-monetary liabilities (NNML) of the banking sector comprising the net non-monetary liabilities of the RBI and the banking system. NNML of the banking system would include their i) capital and reserves, ii) revaluation on account of price and exchange rate changes, iii) net inter-bank liabilities, iv) other non-deposit sources including call money borrowings from non-bank parties and v) other net liabilities such as net branch adjustments and other sundry items. Of late unexplained changes in NNML have been a major source of variations in monetary aggregates. While the details on the NNML of the Reserve Bank are available on weekly basis, those of the banking system (commercial and co-operative banks) are derived as a residual, balancing the components and sources of money stock and as such may include errors in the reporting of the data by the commercial and co-operative banks. This is sought to be remedied by modifying the scope and coverage of the reporting format for the banking system. The Group proposes to do away with the present concept of NNML in the presentation of the monetary survey; instead, the

balancing items could be: i) capital accounts and ii) other items (net) which would be in conformity with the international practice.

2.35 The capital account consists of i) paid-up capital, ii) retained earnings, iii) various provisions, iv) revaluation accounts and v) accounts that cover any changes in net worth caused by statistical adjustments used to construct the balance sheet.

2.36 The unclassified liabilities and assets could be reported under the category 'other items' (net). As the Group proposes a considerable expansion of the scope and coverage of the reporting format for the banking system, the residual item should form a very small portion of the balance sheet totals.

2.37 The format for presentation of the monetary survey is given in *Annexure II.3*.

II.4 Treatment of New Instruments

Credit/Debit Cards

2.38 In India, an increasing volume of purchases is being made on credit cards. The Group, therefore, debated on the treatment of transactions undertaken through credit/debit cards and concurred with the views of the Advisory Committee on Monetary Statistics in the United States (Bach Committee, 1974) which was of the view that 'in so far as credit-card purchases and the elimination of physical bank cheques merely provide more convenient and efficient means of transferring demand deposits, they do not call for any redefinition of the money stock – although they may lead to a higher velocity of circulation'. The *MFS Manual* is also of similar view that contingent instruments, such as lines of credit on credit cards, are not financial assets and are not recorded in monetary and financial data, regardless of whether they are electronic in nature or not. Similarly, debit cards which use remote terminals to debit user's deposit account and immediately credit vendors' accounts does not necessitate a redefinition of monetary aggregates

⁴ The Union Budget 1998-99 announced issuance of a new Resurgent India Bond denominated in foreign currencies for subscription by non-resident Indians (NRIs). This instrument could be treated as external liability of the banking sector.

as the transaction serves the same function as a cheque, but the transfer is immediate. Debit cards that use remote automated teller machines (ATMs) are very common in many parts of the world.

Electronic Payments Instruments

2.39 Several new technologies are under development to make payments *via* computer chips, through computer networks or across the worldwide Internet. It has been suggested that electronic equivalents will be developed for all major payments methods: currency, cheques, debit cards, credit cards and travellers' cheques. For example, electronic currency issued by commercial banks appears to have characteristics of a private currency that can compete with the official national currency. These may develop rapidly and have a variety of as yet undetermined, but possibly large, effects on monetary and financial system. If these systems establish themselves, new statistical definitions, classification systems and reporting procedures may be needed.

Treatment of Derivatives

2.40 There are mainly four types of derivatives: currency related derivatives, interest rate derivatives, security/equity related derivatives and commodity-related derivatives. These derivatives may be in the form of forwards, futures, swaps or options or a combination thereof in the form of some hybrid instruments. These have grown enormously in recent years in many industrial countries and have made a noticeable presence in some of the major emerging economies with increasing participation by banks. Financial derivatives that are traded in the market and carry a market value would require to be recognised as financial assets in balance sheets. Instruments such as futures, warrants and exchange-traded options could be classified as financial assets because they are market traded. Besides, interest rate swaps, forward rate agreements, interest rate caps, forwards and collars which could be offset on the market may

need to be treated as financial assets. On the other hand, privately-arranged swaps and other instruments that do not have offset arrangements would not be reckoned as financial assets. In India, as market trading in derivatives is yet to be introduced and transactions in derivatives are privately-arranged, these are treated as off-balance sheet items. The Group is of the view that derivatives may not have any immediate significance in the compilation of monetary aggregates. However, developments in the area of derivatives should be periodically monitored as monetary transmission mechanisms may be affected if large volumes of derivatives hedge a variety of market exposures.

RESERVE BANK OF INDIA SURVEY

2.41 The Group felt that a survey of the Reserve Bank of India's balance sheet with the focus on the monetary base or reserve money (M_0) may continue to be prepared *albeit* with certain modifications on a weekly frequency on the basis of the Weekly Statement of Affairs of the RBI prepared on each Friday under Section 53(1) of the RBI Act 1934. The balance sheet of the RBI is split into two parts pertaining to the Issue Department and the Banking Department, which may be consolidated as per the format suggested in *Annexure II.4*.

II.5 The Format of the RBI Survey

II.5.1 Liabilities

Currency

2.42 Currency in circulation is the sum of i) notes in circulation which is the principal liability of the Reserve Bank under Section 22 of the RBI Act, 1934 and ii) the government's currency liabilities to the public comprising rupee coins and small coins. While rupee and small coins are liabilities of the Central Government, the Bank acts as an agent of the Central Government in the issue, distribution and handling of such coins under

Section 38 of the RBI Act. The government's currency liabilities to the public were taken as claims of banks on the government in the computation of net bank credit to government till October 1962 but treated as an independent source of money stock thereafter.

Other Deposits

2.43 'Other' deposits with the RBI comprise mainly i) deposits of quasi-government and other financial institutions including primary dealers, ii) balances in the accounts of foreign central banks and governments, iii) accounts of international agencies such as the International Monetary Fund etc., iv) provident, gratuity and guarantee funds of the Reserve Bank staff and some temporary accounts netted for balances under certain accounts, viz., a) IMF Account No.1 (since 1948), b) the RBI Employees' Pension/Co-operative Guarantee/Provident funds (since January 1964), and c) the Additional Emoluments (Compulsory Deposits) Act, 1974 (since August 1974) and Compulsory Deposit Scheme (Income Tax Payers) Act, 1974 (since December 1974), d) subscription to the State Government Loans pending allotment and temporarily held under other deposits and v) profits of the RBI held temporarily under the deposits pending transfer to the Central Government. These accounts are excluded from 'Other' Deposits with the RBI and treated as part of 'Other' Liabilities due to their illiquid nature.

Bankers' Deposits

2.44 Bankers' deposits with the RBI comprise balances maintained at the central bank by banks. In terms of Section 42(1) of the Reserve Bank of India Act, 1934, scheduled commercial banks are required to maintain with the Reserve Bank a minimum of cash reserve (CRR) of 3 per cent on

fortnightly basis of their net demand and time liabilities (NDTL) and the RBI is empowered to increase the said CRR to a rate not exceeding 20 per cent of the NDTL under the Act. The state co-operative banks and regional rural banks are required to maintain low level of cash reserve of 3 per cent of their NDTL. CRR for scheduled urban banks is 6 per cent. Non-scheduled banks are required to maintain in cash with themselves or in current account with the RBI, the State Bank of India (SBI) or any other bank notified on this behalf or partly in cash and partly in such accounts a minimum of 3 per cent of their NDTL under Section 18 of the Banking Regulation Act, 1949. Banks, however, could maintain excess reserves with the RBI.

II.5.2 Assets

Credit to Government

2.45 The net RBI credit to government⁵ is the sum of the net claims of the Bank on the Central and the state governments as the central bank is the banker to governments under Sections 20 and 21 of the RBI Act. The net RBI credit to the Centre is the sum of i) loans and advances from the RBI to the Centre and ii) the RBI's holdings of a) Treasury Bills, b) dated securities and c) rupee coins and small coins net of d) the Centre's cash balances. Dated securities of the Central Government include, *inter alia*, marketable securities, special securities, special non-interest bearing securities and gold bonds. The provisions governing the loans and advances to the Centre are changed from time to time and at present, these are laid out in the agreement signed between the RBI and the Government of India on March 26, 1997. Under Section 17(8) of the RBI Act, the Bank is authorised to engage in purchase and sale of Government securities. The Central Government is obliged to maintain a balance of Rs.50 crore on each Friday and Rs.4 crore on all other working days. The net RBI credit to the state governments comprises its loans and

⁵ The RBI used to publish data on the net RBI credit to Government until the SWG split the RBI's net claims on the Government in respect of the Centre and the State Governments.

advances to state governments net of their deposit balances with the central bank.

Credit to Commercial Sector

2.46 The RBI's credit to the commercial sector is the sum of holdings of i) shares/bonds of financial institutions, ii) ordinary debentures of the co-operative sector, iii) debentures of co-operative land mortgage banks, iv) loans to financial institutions, primary dealers and 'others' and v) internal bills purchased and discounted.

Claims on Banks

2.47 The RBI's gross claims on banks include i) its refinance to the banks and ii) fixed investment in banks' shares/bonds/debentures such as holding of shares of the State Bank of India.

Net Foreign Assets

2.48 Net foreign assets of the RBI is the sum of its holdings of i) gold coin and bullion, ii) eligible foreign securities and iii) balances held abroad netted for balances in IMF Account No.1 minus India's quota subscription in rupees.

Capital Account

2.49 The capital account of the RBI is computed to include paid-up capital, statutory reserve, contingency reserve (CR), exchange fluctuation reserve (EFR) and the exchange equalisation account (EEA) and contributions to the national funds.

Other Items (net)

2.50 Other items (net) constitute liabilities such as bills payable, balances under the RBI Employees' Pension/Co-operative Guarantee/Provident Funds, Compulsory Deposit Schemes, IMF quota subscriptions in rupees, and other sundry liabilities netted from other assets such as the value

of premises, furniture and fittings, debit balances under various heads of expenditure of the bank pending transfer to Profit and Loss Account, loans and advances granted to members of the staff towards housing, purchase of motor vehicles etc. The other sundry liabilities are 'other liabilities' net of CR, EFR, and EEA. The 'other assets' are reckoned net of gold held in the Banking Department since it is part of net foreign assets of the RBI.

COMMERCIAL BANK SURVEY (CBS)

2.51 The Group proposes a comprehensive Commercial Bank Survey (CBS) on the lines of the *MFS Manual* on the basis of the scheduled banks' summary statements on their demand and time liabilities and selected assets as at close of business on every alternate Friday on the basis of returns filed with the RBI in terms of Section 42(2) of the RBI Act beginning March 29, 1985 (Box II.4) supplemented by additional items of liabilities and assets as proposed by the Group essentially to reflect the changing scope of their activities (*Annexure II.5*).

II.6 Reporting Format for Commercial Banks

2.52 With the gradual deregulations of the financial sector and their consequent impact on the balance sheet of banks, a need has arisen to modify the data reporting system of commercial banks as the Section 42 (2) returns in their present form, do not capture i) the total resource flow to the commercial sector since investments in capital market instruments (non-approved securities) e.g., shares and debentures of corporates, Commercial Paper etc. remain unreported and ii) the net foreign currency exposure of the banking sector as it does not incorporate data on holdings of foreign currency assets. Since the importance of these assets have been growing and are expected to grow markedly in future, leaving them outside the framework of money supply would obviously distort the monetary aggregates. In order to address these issues, the

Group had constituted a Task Force (Convenor: Shri Amalendu Ghosh) to broaden the present reporting system. It recognised that the ambit of Sec. 42(2) returns is circumscribed by the need to monitor the statutory cash reserve ratio (CRR) and statutory liquidity ratio (SLR) requirements and, therefore, timely submission of returns by banks was considered of paramount importance. However, in order to effectively address the problem of delays that could arise on account of formal amendment of the statutory format, it is proposed to expand the Sec. 42(2) returns without altering the principal Form A, but adding i) a Memorandum to Form A, incorporating data on paid-up capital, reserves, certificates of deposit, and maturity structure of time deposits, and two Annexures, viz., ii) Annexure A incorporating data on break-up of external liabilities in terms of various schemes *e.g.*, FCNR(B) *etc.*, foreign currency assets and bank credit in India in foreign currency, and domestic liabilities subject to differential/zero reserve prescriptions and iii) Annexure B incorporating detailed data on banks' investments in the three categories of domestic securities, viz., government securities, other approved securities and other market instruments (*Annexure II.6*).

2.53 The gradual deregulation of the financial sector has provided much larger operational freedom to the banking sector but it has also thrown up a changing scenario whereby increasing competitive pressure has been forcing financial units to venture into newer areas hitherto untapped. In the process, the risk profile of banks has changed substantially in the recent period. For example, commercial banks' reliance on Certificates of Deposit (CDs) and other money market instruments viz., call money, reverse repo *etc.* have been becoming important relative to the traditional segment of core deposits. These apart, the banking system has been gradually mobilising resources of medium- and long-term nature not only from capital market but also from external sources as well. Though these managed liabilities help them to suitably adjust to occasional demands placed on

**Box II.4 : Section 42(2) of the
Reserve Bank of India Act**

Every scheduled bank shall send to the Bank a return signed by two responsible officers of such bank showing—

- a) the amount of its demand and time liabilities and the amount of its borrowings from banks in India, classifying them into demand and time liabilities,
- b) the total amount of legal tender notes and coins held by it in India,
- c) the balance held by it at the Bank in India,
- d) the balances held by it at other banks in current account and the money at call and short notice in India,
- e) the investments (at book value) in Central and State Government securities including Treasury Bills and Treasury deposit receipts,
- f) the amount of advances in India,
- g) the inland bills purchased and discounted in India and foreign bills purchased and discounted, at the close of business on each alternate Friday, and every such return shall be sent not later than seven days after the date to which it relates.

their stock of loanable resources, these liabilities have the typical attributes of higher interest sensitivity as well as exchange rate sensitivity. Moreover, following implementation of prudential norms, banks in India in the recent period have also become more security oriented while building up their portfolio. Larger investments in government securities, Commercial Papers, corporate debentures *etc.*, are reflective of this trend. Since progressively all these investments have to be marked to market, their assets are now more interest rate sensitive than earlier. This also brings to the fore the valuation issue of both domestic and foreign assets. Provisions have, therefore, been made in Annexures A and B to obtain data on revaluation on account of i) price changes in respect of domestic securities and ii) exchange rate changes in respect of foreign currency assets/liabilities not swapped into rupees. Banks are, however, advised to provide data on valuation changes as and when they occur.

II.6.1 Liabilities

2.54 Liabilities of a bank may be in the form of deposits (demand or time) or borrowings or other

miscellaneous items of liabilities. The nomenclature ‘demand liabilities’ is used to include all liabilities which are payable on demand and the expression ‘time liabilities’ is used to represent those which are payable otherwise than on demand. Assets/liabilities of a bank are also classified as assets/liabilities within the banking system and with others. These expressions are part of Section 42(2) Returns. Net inter-bank liabilities are excluded from money supply as these are expected to be cancelled out in consolidation of banking data.

Demand Liabilities

2.55 Demand liabilities at present include i) current deposits, ii) demand liabilities portion of savings bank deposits, iii) margins held against letters of credit/guarantees, iv) balances in overdue fixed deposits, cash certificates and cumulative/recurring deposits, v) outstanding Telegraphic Transfers (TTs), Mail Transfers (MTs) and Demand Drafts (DDs), (vi) unclaimed deposits, vii) credit balances in the Cash Credit Account (CC A/c), viii) demand portion of Participation Certificates (PCs) and (ix) deposits held as security for advances which are payable on demand.

Time Liabilities

2.56 Time liabilities include i) fixed deposits, ii) cash certificates, iii) cumulative and recurring deposits, iv) time liabilities portion of savings bank deposits, v) staff security deposits, vi) margins held against letters of credit, if not payable on demand, vii) fixed deposits held as securities for advances, and viii) time portion of PCs.

2.57 In order to achieve progressivity of liquidity in the money stock measures, the Group proposes that banks should classify their time liabilities into short-term and long-term liabilities. Short-term time liabilities are defined here as those with a contractual maturity of one year or less while time

liabilities with contractual maturity over one year are considered as long-term.

Other Demand and Time Liabilities

2.58 Other Demand and Time Liabilities (ODTL) include i) interest accrued on deposits, ii) bills payable, iii) unpaid dividends, iv) suspense accounts balances representing amounts due to other banks or public, v) inter-bank Participation Certificates (PCs), vi) net credit balance in the Branch Adjustment Account, vii) any amount due to the banking system which are not in the nature of deposits or borrowings on account of such items as collection of bills on behalf of other banks and interest due to other banks, and viii) credit balances in the *vostro* account. The Group proposes that borrowings by authorised dealers from banks and other institutions abroad as foreign liabilities be offset against foreign assets.

External Liabilities

2.59 Banks’ external liabilities should include i) non-resident deposits and ii) other deposits/schemes, as per RBI guidelines, iii) inter-bank foreign currency liabilities in the form of deposits and borrowings and iv) overseas borrowings. Foreign currency assets of banks should consist of their holdings of i) balances held abroad (*i.e.*, the cash component of *nostro* accounts *etc.*), ii) short-term foreign deposits and investments in eligible securities, iii) foreign money market instruments including Treasury Bills and iv) foreign shares and bonds.

II.6.2 Assets

Investments

2.60 Banks’ investments in domestic securities comprise their holdings of ‘approved securities’ and ‘other investment’ securities. Approved securities are bifurcated further into government securities and other approved securities.

2.61 The expression ‘approved securities’ emanates from the statutory stipulation that enjoins banks to maintain at the close of business on any day a minimum proportion of their demand and time liabilities in India as liquid assets in the form of cash, gold and unencumbered approved securities comprising Government securities and other approved securities under Section 5(a) of the Banking Regulation Act, 1949. Government securities include Central and state governments’ securities including treasury bills, treasury deposits receipts, treasury savings deposit certificates, recapitalisation bonds and postal obligations. Apart from these investments, scheduled commercial banks’ portfolios include i) commercial paper (CP), ii) units of Unit Trust of India and other mutual funds and iii) shares/bonds/debentures issued by a) public sector undertakings other than public financial institutions, b) public financial institutions and c) non-banking private corporate sector. Public financial institutions include a) term-lending institutions (such as IDBI, ICICI, IFCI, IIBI, Exim Bank and TFCI), b) refinancing institutions (such as NABARD, SIDBI and NHB) and c) investment institutions such as UTI, LIC and GIC and its subsidiaries which are not reported in Section 42(2) returns. The Group proposes that data on such ‘other investments’ be collected and be made a part of bank credit to commercial sector. On the classification of these investments in terms of maturity period, it may be noted that while other approved securities typically carry a maturity period of more than a year, investments in government securities need to be classified into short-term and long-term government securities depending on whether they bear a contractual maturity of up to one year or more than one year.

II.7 Reporting Format for Co-operative Banks

2.62 Co-operative banks include i) scheduled state co-operative banks, ii) non-scheduled state co-operative banks, iii) district central co-operative banks (DCCBs) and iv) primary co-operative banks comprising a) scheduled primary co-operative

banks (SPCBs), b) urban co-operative banks (UCBs) and c) salary earners’ credit societies. Data on scheduled co-operative banks (*i.e.*, scheduled state co-operative banks and scheduled primary co-operative banks) are available in the fortnightly Section 42(2) returns filed by them with the RBI. Data in respect of non-scheduled co-operative banks are available in the monthly returns under Sections 24 and 27 of the Banking Regulation Act.

2.63 While the SWG had factored in an unavoidable lag of two months or so in respect of the flow of data from non-scheduled co-operative banks on account of their large number, the delay has deteriorated further over the years and at present non-scheduled co-operative sector figures flow in with a time lag of nearly a year. As a consequence, money supply compilation has been using month-end estimates based on the linear extrapolation of the average annual growth rates of the past five years.

2.64 In order to examine the possibilities of expediting the flow of data in respect of non-scheduled co-operative banks, the Group had set up a Task Force (Convenor: Shri R. Ramanujam). It has been found that most of these banks are not computerised and do not have adequate infrastructure to ensure timely reporting. In view of the difficulties in obtaining data from major categories of co-operative banks and the time lags in their reporting, the Group felt that a sample survey of major co-operative banks for only the items of liabilities and assets which have a direct bearing on the monetary survey may be reported at a monthly frequency followed by a population survey (*Annexure II.7*). In no case should the reporting delays of the larger of these banks be in excess of one month from the month of reference. For other banks, such reporting delays should not exceed three months. Efforts should, however, be made to encourage these banks to quickly put in place mechanisms to improve their reporting methods so that the reporting system could be current by 2000 AD.

2.65 An analysis of data for non-scheduled co-operative banks showed that in respect of DCCBs, about a third of these banks with deposits of Rs.50 crore and above accounted for about three-fourths of their total deposits at end-November 1996. The majority of these large banks are concentrated in the six states of Maharashtra, Gujarat, Tamil Nadu, Kerala, Uttar Pradesh and Punjab. In respect of UCBs, 230 banks out of a total of 1377 banks with deposits of Rs.25 crore and above accounted for about 62 per cent out of their total deposits as at end-June 1997. The majority of these large banks (184 out of 230) were clustered around Maharashtra (97), Gujarat (68) and Karnataka (19), their combined shares accounting for 51.4 per cent of aggregate deposits of all UCBs.

2.66 The Task Force, therefore, suggested that data on select banking variables in respect of major DCCBs and UCBs would be compiled at RPCD and UBD on a priority basis as per the time frames suggested above and provided expeditiously to the compilers of money supply measures in the Department of Economic Analysis and Policy (DEAP). The Group feels that the two departments, RPCD and UBD, would have to take all necessary steps to impress upon their regional offices as well as the major co-operative banks to improve the infrastructure and to submit the returns on time. Within the medium term of 3 years, all the non-scheduled co-operative banks should submit returns in time preferably through electronic media.

FINANCIAL SECTOR SURVEY (FSS)

2.67 Apart from the compilation of monetary survey and broader liquidity aggregates, the Group proposes the compilation of a comprehensive financial sector survey (FSS) to capture the dynamic interlinkages between the 'depository corporations' and the rest of the organised financial sector. It was felt necessary because in a deregulated environment and with financial innovations, the

distinction between banks and non-banks would get blurred making it imperative to widen the institutional categories which could be the focus of policy. In order to address these issues the Group constituted two Task Forces, one to deal with data reporting system for public financial institutions (Convenor: Shri M.M.S. Rekhrao) and the other to deal with data issues relating specifically to non-bank financial companies (NBFCs) (Convenor: Shri T. Bandopadhyay). These two Task Forces engaged their attention to devise a formal data reporting system for financial institutions for compilation of FSS data (*Annexure II.8*).

II.8 Term Lending Institutions and Refinancing Institutions (FIs)

Liabilities

2.68 The liabilities of term lending institutions and refinancing institutions comprise, apart from i) paid-up capital and ii) reserves, iii) borrowings by way of bonds and debentures, iv) deposits (term deposits and certificates of deposit), v) other borrowings (from banks, other financial institutions, the Reserve Bank, by way of inter-corporate deposits, *etc.*) which may be classified as having contractual maturity of one year or less (short-term) or having contractual maturity of over one year (long-term) and vi) other liabilities. It may be noted that FIs raise resources from the international capital markets by way of bonds/debentures/notes/syndicated loans, *etc.* Raising of resources by each financial institution through selected instruments such as CDs, term money market borrowings, term deposits and ICDs (in case of select FIs) is, at present, linked to its net owned funds (NOF) as at end-March 1997.

2.69 These institutions are prohibited by the Reserve Bank from issuing any instrument with less than one-year maturity except for borrowings from the term money market in a maturity range of 3-6 months. Hence, most liabilities of FIs are of medium to long-term in nature. Thus, term deposits by FIs

have a maturity range of 1-5 years, CDs have a maturity range of 1-3 years, bonds are generally of long-term in nature *i.e.* above 5 years (though some bonds of 1-3 years have also been issued). The maturity of foreign currency borrowings through loans/bonds is generally long term (over 5 years). A minimum amount has been stipulated for CDs and term deposits each at Rs.10 lakh and Rs.10,000 respectively.

Assets

2.70 The assets of financial institutions comprise i) loans and advances (short-term and long-term) in rupees and foreign currency to corporate bodies/state-level financial institutions/RRBs/co-operative banks/housing finance companies, ii) investments (long-term) - in government and other trustee securities, and in shares/debentures of banks/other FIs/corporate bodies, and (short-term) - in call/notice money, bills discounted/rediscouted, commercial paper, CDs of banks, Treasury Bills, *etc.*, iii) deposits - with banks, CDs of FIs and with others, iv) fixed assets, v) cash and bank balances - in India and abroad, and vi) other assets. It may be noted that loans and advances comprise bulk of the assets of term-lending institutions.

2.71 The reporting format for FIs is furnished in *Annexure II.8*. The Group proposes that FIs may furnish the information on a monthly basis within three weeks from the month to which the information relates to.

II.9 Investment Institutions (Insurance Corporations)

Liabilities

2.72 The liabilities of investment institutions in India consist of i) paid-up capital, ii) reserves and reserve fund, iii) life/general insurance fund and iv) other liabilities - in India and outside. The main source of funds is the premia collected on insurance policies. These institutions

generally do not resort to any borrowing.

Assets

2.73 Investments constitute bulk of assets of investment institutions, mostly in Government and other trustee securities. The classification of assets for investment institutions is identical to that for term lending institutions.

2.74 The reporting format for investment institutions (insurance companies) is furnished in *Annexure II.8*. The periodicity of returns will be quarterly as these institutions are not in a position to furnish the data on a monthly basis due to very wide network of their branches. The investment institutions may furnish the information within four weeks from the quarter to which the information relates to. As data on some liability items and asset items are available only after the finalisation of the annual accounts, they are at present able to collect data on their major asset items on a quarterly basis and those on liability items on annual basis. However, it is essential that these institutions improve their data collection and reporting system in order to contribute to efficient policy decisions and better risk management.

II.10 Liabilities and Assets of Mutual Funds

Liabilities

2.75 The liabilities of mutual funds consist of i) initial capital, ii) reserves and reserve fund, iii) value of unit capital and iv) other liabilities. The main source of funds is the funds mobilised under various schemes - domestic (open-ended, closed ended and money market) and offshore funds. These institutions generally do not resort to any borrowings.

Assets

2.76 Investments constitute bulk of assets of mutual funds, largely in shares and debentures of

corporate bodies. The classification of assets for mutual funds is identical to that for term lending institutions.

2.77 The reporting format for mutual funds is furnished in *Annexure II.8*. The periodicity of returns would be on monthly basis. The mutual funds may furnish the information within three weeks from the month to which the information relates to.

II.11 Valuation of Securities

2.78 Ideally, the valuation of securities should be as close to market rates as possible. However, in view of the difficulties expressed by FIs in following different sets of norms from what they are already following for furnishing data for money supply purposes, different categories of FIs (including mutual funds) may submit the returns based on the existing valuation norms being followed by them; however, they would be advised to gradually move over to the international norm of valuation of securities, since this is essential for evolving their own risk management strategies over time.

II.12 Non-Banking Financial Companies (NBFCs)

2.79 Non-banking financial companies (NBFCs), comprising hire purchase finance companies, equipment leasing companies, housing finance companies, investment companies, loan companies, mutual benefit finance companies, chit fund companies, miscellaneous finance companies, residuary non-banking companies *etc.*, provide variety of services similar to those of commercial banks, although they do not provide chequeable facility to their customers. Hence, a part of their deposit liabilities which directly compete with those of the banking system (*viz.*, public deposits, a

component of regulated deposits⁶) and which bypass the intermediation process of the banking system is considered by the Group for inclusion in the broad measure of liquidity.

2.80 The liabilities of NBFCs comprise i) public deposits, ii) borrowings from banks, corporates (through ICDs), foreign governments, authorities, individuals *etc.*, iii) resources raised through issue of convertible or secured debentures, iv) other liabilities (if any). Assets comprise i) investments in government securities and in shares, bonds, debentures, CPs *etc.*, of corporates including PSUs, ii) loans and advances, iii) hire purchase, equipment leasing and bills discounting, iv) overseas lending and v) other assets (if any).

2.81 The major NBFCs are concentrated in six States - West Bengal, Maharashtra, Tamil Nadu, Uttar Pradesh, Karnataka and Delhi. The Group proposes that data on selected items of liabilities and assets can be collected from about 150 large companies (currently to be defined as those having public deposits of Rs.20 crore or above) which account for over 90 per cent of the total public deposits on a quarterly basis, to begin with, which could be improved upon, subsequently (*Annexure II.9*).

II.13 Flow of Funds Accounts of the Financial Sector

2.82 The FSS as envisaged would broadly correspond to the sectoral balance sheet of the financial sector within the SNA or flow of funds (FoF) accounts. In India, flow of funds accounts are prepared on an annual basis with a considerable time lag. While there is little scope for quarterly flow of funds accounts given the reporting system for the real sector, the quarterly flow of funds account of the financial sector could bring out apart from the structure and behaviour of the financial sector, the relationship between the financial activities and the non-financial domestic economy and the rest of the world.

⁶ The other constituents are ICDs, non-convertible debentures, deposits received from shareholders and Directors.

CHAPTER III

COLLECTION AND DISSEMINATION OF MONETARY DATA

3.1 The Reserve Bank of India, as the monetary authority of the country, is the primary source of monetary statistics. The need to construct reliable and up-to-date monetary statistics in order to provide inputs for the formulation and monitoring of monetary policy measures is well recognised all over the world; this is particularly significant where monetary targeting is regarded as an important characteristic of monetary policy. Dissemination of monetary aggregates with the minimal time lag is important to lend transparency to the central bank's operations and influence expectations of economic participants. It also helps to create opportunities for wider debate and to facilitate analysis and research in monetary and financial economics.

III.1 Current Dissemination Practices

3.2 At present, the Reserve Bank disseminates four monetary aggregates through its various publications, besides the reserve money or central bank money. 'Reserve money' (M_0) is compiled on a weekly basis from the Weekly Statements of Affairs of the Reserve Bank of India which are available on each Friday as prescribed by Section 53(1) of the RBI Act, 1934. Data on reserve money are published in the Weekly Statistical Supplement (WSS) to the RBI Bulletin within a fortnight from the reporting Friday under reference. The narrow and broad money aggregates (M_1 and M_3) are compiled fortnightly, primarily based on the Weekly Statements of Affairs of the RBI as well as Section 42(2) returns which are filed by scheduled banks with the RBI on alternate Fridays beginning March 29, 1985. Data on broad money (M_3) are published in the WSS within three weeks from the reporting Friday under reference. Monetary data (M_1 and M_3) for reporting Fridays are also published in detail in the RBI Bulletins. The RBI Bulletins also publish

two other monetary aggregates (M_2 and M_4) including deposits with the post office savings bank *albeit* with a lag. In the Reports on Currency and Finance, monthly data for the financial year are published. The data on three monetary aggregates (M_0 , M_1 and M_3), on a financial year basis, are published in the RBI Annual Reports. Furthermore, data on select monetary ratios and on the income velocity of money are published in the Bank's Annual Reports as well as the Reports on Currency and Finance. These two publications also carry exclusive chapters analysing monetary developments for the year concerned and the rationale of policy initiatives during the course of the year.

Changes in Reporting Format

3.3 In view of proposed changes in the reporting format, monetary data would need to be more detailed, based on the information furnished by banks. Moreover, with the enlargement of the scope and coverage of the Section 42(2) returns, data on such items as certificates of deposit (CDs) issued by banks, external liabilities of banks and banks' investments in 'other securities' would now be available to the public at a higher frequency.

Periodicity of Monetary Data

3.4 The Group proposes compilation of four monetary aggregates, three liquidity measures and a comprehensive Financial Sector Survey (FSS). The frequency of each aggregate and the proposed manner of dissemination are indicated in Table 3.1. The Group proposes that the present practice of compiling monetary base on a weekly basis and monetary aggregates on a fortnightly basis should continue. Data on reserve money and monetary aggregates should be published in the WSS and in

other publications of the Bank, as has been the present practice, and should be placed on the RBI Website.

3.5 The Group recommends that measures of liquidity L_1 and L_2 should, however, be compiled on a monthly basis and published in the RBI Bulletin. It is proposed to publish data on L_3 and FSS on a quarterly basis in the RBI Bulletin. The financial sector survey may be accompanied by a review of the developments in the financial sector during the quarter under reference, to bring to the fore the dynamic interlinkages in the financial sector which could be useful in providing important policy inputs.

returns could be discontinued. However, the Group is of the view that the same for the last Friday of March (not being a reporting Friday) may be continued in order to capture useful information on portfolio shifts of banks. This is in line with the recommendations of the Chakravarty Committee (1985) which suggested rationalisation of these bases.

Treatment of Year-end Data

3.7 The treatment of year-end data for scheduled commercial banks in money supply needs special mention. It has been found that financial year-end monetary aggregates based on their data relating

Table 3.1 : Dissemination of Proposed Monetary Aggregates

Sl. No.	Monetary/Liquidity Aggregates	Frequency of Compilation	RBI Publications				RBI Website
			WSS ¹	RBI Bulletin	RBI Annual Report	RCF ²	
1	2	3	4	5	6	7	8
I.	Monetary Aggregates						
	i) M_0	Weekly	✓	✓	✓	✓	✓
	ii) M_1	Fortnightly ³	✓	✓	✓	✓	✓
	iii) M_2	Fortnightly ³	✓	✓	✓	✓	✓
	iv) M_3	Fortnightly ³	✓	✓	✓	✓	✓
II.	Liquidity Aggregates						
	i) L_1	Monthly	-	✓	-	✓	✓
	ii) L_2	Monthly	-	✓	-	✓	✓
	iii) L_3	Quarterly	-	✓	-	✓	✓
III.	Financial Sector Survey	Quarterly	-	✓	✓	✓	✓

¹ Weekly Statistical Supplement to the RBI Bulletin.

² Report on Currency and Finance.

³ On alternate Fridays beginning March 29, 1985.

Presentation of Data

3.6 At present, money supply is compiled on a reporting Friday basis as well as on the last Friday of the month, in case the Friday is not a reporting Friday. However, monetary aggregates as on the last Friday of the month do not seem to carry much economic significance, given that the random nature of such Fridays make any meaningful statistical comparison difficult. The Group, therefore, proposes that monetary data based on last Friday

to the last reporting Friday of the year *vis-à-vis* those with end-March base have shown substantial variability (Table 3.2) depending on the closeness of the last reporting Friday to the last working day of the month. This is because the last working day of March is the balance-sheet date of scheduled commercial banks, which typically show a year-end bulge in deposits and credit. Moreover, the accounting year-end data (end-March) for both commercial and co-operative banks are obtained through a special return with a considerable lag

unlike those for the reporting Friday data. Hence, as a matter of operational expediency, the Group is of the view that the year-end monetary data should consist of commercial as well as co-operative banks' data for the last reporting Friday of March, and RBI data as of end-March unlike the earlier practice when co-operative banks' data for end-March were considered. However, the year-end monetary data with scheduled commercial banks' data for the balance sheet date (*i.e.*, last working day of March) should continue to be published as a special table in the RBI Bulletin as has been the present practice.

3.8 While March-end data has special economic significance, a proper assessment of monetary conditions in the economy could be made by averaging the data for the fortnights during the financial year. This would insulate the annual flow of information from the computational vagaries that point estimates are subjected to. As may be seen from Table 3.3, while the long-term trend is more or less the same, the financial year growth rates based on average fortnightly figures are much more stable.

III.2 Seasonality in Monetary Data

3.9 The monetary trends at times may deviate significantly from the desired trajectory on account of strong seasonal movements. In view of this, many central banks publish data on seasonally adjusted monetary aggregates¹. Seasonality in Indian monetary data essentially arises out of i) seasonal demand for transactions balances and ii) operational practices of the banking system. This implies that the seasonal patterns of the two principal components of the money supply series, *viz.*, currency with the public and bank deposits should be assessed carefully. Presentation of monetary aggregates as such may not clearly portray the true monetary situation, as the seasonal factors behind

¹ Among central banks that publish deseasonalised aggregates are those of Australia, Canada, Japan, New Zealand, the Netherlands, Spain, the U.K. and the U.S.A.

Table 3.2 : Variations in Broad Money (M₃)

Year	M ₃ Growth Rates (Per cent)		Days between the last reporting Friday and March 31@	M ₃ growth between March 31 and the last reporting Friday (in Rupees crore)
	SCB as on last reporting Friday	SCB as on March 31		
1	2	3	4	5
1988-89	17.8	21.9	6	6,752
1989-90	19.4	19.4	7	8,234
1990-91	15.1	16.1	8	11,775
1991-92	19.3	18.1	10	10,913
1992-93	15.7	15.5	11	12,053
1993-94	18.4	19.3	12	17,778
1994-95	22.3	17.5	0	0
1995-96	13.7	14.2	1	2,768
1996-97P	16.0	16.5	2	6,295
Memo Items				
i. Average	17.5	17.6	—	—
ii. Coefficient of Variation (%)	14.3	12.6	—	—

@ Excluding Sundays. P Provisional.
SCBs : Scheduled Commercial Banks.

Table 3.3 : Financial Year Growth Rates of Broad Money(M₃)
(Per cent)

Year	March-end basis \$	Average basis
1	2	3
1988-89	17.8	17.3
1989-90	19.4	19.0
1990-91	15.1	16.7
1991-92	19.3	17.1
1992-93	15.7	18.7
1993-94	18.4	15.9
1994-95	22.3	19.8
1995-96	13.7	15.7
1996-97P	16.0	16.1
1997-98P	17.0	16.6
Memo Items		
i. Average	17.5	17.3
ii. Coefficient of Variation (%)	15.6	7.7

P Provisional.

\$ With commercial banks' data for the last reporting Friday of March.

monetary movements are not always transparent to the public. It is, therefore, necessary to deseasonalise the monetary data component-wise and then aggregate the resultant components to obtain the deseasonalised monetary aggregates.

Currency with the Public

3.10 An analysis of the average seasonal factors of currency with the public shows that currency demand follows a V shape dipping in the middle of financial year (*i.e.*, September). The demand for transactions balances is usually very high during the first quarter of the financial year (peaking in May), bottoms out by the end of the second quarter and picks up again during the second half of the year. The high currency demand during the first quarter of the year essentially emanates from the realisation of proceeds from the wheat harvest primarily because the entire quantum of wheat procurement takes place during April-June (with May usually accounting for the bulk of total procurement). Transactions demand picks up around October with the festival season and is sustained till March reflecting, *inter alia*, i) rice procurement and ii) pick-up in industrial activity during the second half of the year.

Bank Deposits

3.11 The seasonal behaviour of aggregate bank deposits is largely dictated by quarter-end interest applications, the year-end bulge on the balance sheet date (end-March) and the subsequent 'unwinding' of deposits especially during the first quarter of the financial year. The average seasonal factors of demand deposits decline during the first half of the year till August and thereafter pick up till March reflecting the increase in the economic activity during the second half of the year. The sharp enlargement of seasonal factors for March partly reflects the window dressing by banks. Time deposits on the other hand follow the reverse trend by rising during the second quarter (July-September) and declining thereafter till February.

Underlying Seasonal Factors

3.12 While the underlying seasonal factor for

currency is governed by economic factors, the seasonal factor for deposits, though generally influenced by non-bank non-government sectors' portfolio considerations, has also been affected by the accounting practices of the banking system such as interest applications on time liabilities during the quarter ended September and March of every year. It is, therefore, essential to identify such underlying dynamics in the data series to extract an appropriate set of seasonal factors. As regards breaks in the series, it is worthwhile to note that the seasonal factors for deposits data after the year 1989 are different from those for the earlier period as the banking sector switched over to the financial year (April-March) basis of closing of accounts from the calendar year basis in that year. It is, therefore, essential that the data series for estimation of seasonality should not be too long such that the structural breaks, if any, are identified (Box III.1).

3.13 The average seasonally adjusted factors computed on the basis of X-11 method show that broad money follow a kind of U curve bottoming out around the middle of the financial year while for currency it peaks at the beginning of the financial year. The seasonal factor for aggregate deposits declines during the first quarter of the year and thereafter gradually increases till the end of the year (Table 3.4).

3.14 Considering the importance of deseasonalised data, more so in a monetary targeting framework, the Group recommends that the deseasonalised monetary aggregates be published in the WSS on a regular month-end basis with April 1989 as the base date for analysis of seasonality. The base month has been so chosen on account of change of accounting year of the banking system from end-December to end-March since 1988-89.

Box III.1: Seasonal Adjustment of Monetary Data

The *IMF Manual on Monetary and Financial Statistics* emphasises the importance of seasonal adjustment of series used in current monetary policy. The seasonal adjustment series must be long enough to provide enough observations (six to ten years) but very long series may be unsuitable for adjustment as they incorporate structural shifts in series. The 1988 Hilbert Report on the seasonal adjustment of monetary statistics in the U.K. referred to the US Census X-11 as the *de facto* international standard. At present, the X-11 ARIMA package developed by Statistics Canada is perhaps the most widely used by statistical offices. The Group, however, recommends the use of X-12-ARIMA², relatively a much more powerful deseasonalisation package developed recently by the US Census Bureau. The decision to adjust totals or components is usually made on a case-by-case basis considering the analytical importance of the components relative to the importance of the total³.

Table 3.4 : Average Seasonal Factors of Broad Money (M₃)

Month	Broad Money	Currency with the Public	Aggregate Deposits	Demand Deposits	Time Deposits
1	2	3	4	5	6
April	101.24	103.99	100.70	102.21	100.32
May	101.25	106.17	99.96	101.09	99.70
June	100.57	103.25	99.76	100.54	99.61
July	100.08	99.40	99.89	99.00	100.02
Aug.	99.17	97.57	99.39	97.28	100.03
Sept.	99.19	95.65	99.77	97.82	100.38
Oct.	99.86	97.70	100.22	98.76	100.58
Nov.	99.87	98.75	100.01	100.00	100.01
Dec.	99.77	98.45	100.36	100.04	100.26
Jan.	99.55	99.25	99.80	99.83	99.89
Feb.	99.43	100.21	99.53	99.92	99.43
March	100.02	99.68	100.61	103.54	99.76

Note: Based on data from 1988 April through 1996 March.

III.3 Collection of Monetary Data**3.15 The data collection process is crucial for**

² Blanchi, Marco (1997), "X-12-ARIMA", in *Software Reviews, Economic Journal*, September.

³ Hein, Scott E. and Mack Ott, (1983), "Seasonally Adjusted Money: Procedures, Problems and Proposals", *Federal Reserve Bank of St. Louis Review*, November.

⁴ The data required from FID and DNBS are given by way of an illustrative proforma returns in *Annexures* to Chapter II.

timely compilation and quick dissemination of monetary aggregates. Presently, the required basic data are made available to the Reserve Bank by banks essentially through hard copies which are processed at various levels using up considerable amount of man-hours. The Group proposes that scheduled banks may be encouraged to forward Section 42(2) returns to the Regional Offices of the Department of Banking Operations and Development (DBOD), Rural Planning and Credit Department (RPCD) and Urban Banks Department (UBD), as the case may be, utilising the VSAT network. The regional offices of DBOD, RPCD and UBD would, in turn, transmit banking data electronically *via* the VSAT network to their respective central offices which, after due scrutiny, would forward the data to the Department of Economic Analysis and Policy (DEAP). Over time, however, the data should be made available by the reporting financial institutions on an on-line basis to the Reserve Bank which in turn has to equip itself with wider area networks.

3.16 With the enlargement of the scope and coverage of monetary/financial aggregates to encompass public financial institutions, investment institutions, mutual funds and non-banking financial companies, the Financial Institutions Division (FID) and Department of Non-Banking Supervision (DNBS) would also have to take necessary steps to put in place a system of regular reporting of relevant statistics to DEAP⁴.

3.17 The increase in the number of aggregates on which data need to be disseminated would entail that DEAP is geared to quickly handle the additional flow of information. The Group proposes that the data gathering work should be completely computerised in DEAP on user friendly and versatile information technology platforms. The relational data base management system (RDBMS) is one such available at present. This could be considered by the Reserve Bank with reference to all its activities where data are large and divergent, and have to be gathered on a frequent basis.

3.18 Monetary data should continue to be disseminated through various publications of the Reserve Bank as well as in electronic form. At present, monetary data are available on the Internet in the RBI Home Page as part of the WSS and other reports.

Revised Reporting System

3.19 In view of the change in the reporting format prescribed particularly for the commercial and co-operative banks, financial institutions and mutual funds, the Group proposes that a structured calendar for each data category may be set in place for smooth transition to the new system of reporting as given in Table 3.5.

The New Official Series

3.20 Based on the data available from October 1998, it should be possible to publish new official series of monetary aggregates from early 1999.

3.21 The Group proposes that both the existing and proposed monetary aggregates may initially be published for at least a year in the relevant Reserve Bank publications in order to facilitate an understanding of the elements underlying the shift to the proposed aggregates.

Table 3.5 : Schedule for Collection of Statistics

Sl. No.	Sector	Department(s) of RBI to initiate the work	Revised Reporting to start from
1	2	3	4
1.	Reserve Bank of India	DGBA	October 1998
2.	Scheduled Commercial Banks	DBOD	First Reporting Friday of October 1998
3.	Co-operative Banks	RPCD and UBD	October 1998 / First Reporting Friday of October 1998
4.	Non-Bank Financial Companies	DNBS	October 1998
5.	All categories of Financial Institutions	FID	October 1998

CHAPTER IV

ANALYTICS OF MONETARY AGGREGATES

4.1 Monetary statistics are required not only for theoretical research but also for formulation, implementation and monitoring of financial and monetary policy. Of the maze of monetary statistics, monetary aggregates are often used in many countries either as indicators or direct targets of policy. As pointed out in Chapter II, monetary aggregates are compiled on the basis of consolidated balance sheet of the banking sector. In the process of consolidation, the intra-sectoral holdings of assets and liabilities get netted out, yielding in the event simple sum monetary aggregates. For example, currency with the public is added to bank deposits to obtain broader monetary aggregates. The traditional simple sum monetary aggregates assume perfect substitutability amongst their components. This aspect attracted theoretical as well as empirical criticisms from several quarters. Notwithstanding these criticisms, simple sum monetary aggregates are compiled and published by all the central banks of the world as they are easily understood and are relatively easily and quickly compiled.

IV.1 The Money Supply Process

Weighted Monetary Aggregates

4.2 Research in monetary economics gave rise to a number of alternative monetary aggregates, popularly known as 'superlative monetary indices', or 'weighted monetary aggregates' (WMA) but these are generally found in academic/research journals. Theoretically, the superlative aggregates are shown to provide significant improvement over the simple sum counterparts in measuring the flow of 'money services' in the economy. This is achieved by weighting the quantity of each component asset with its unique rental price which reflects its relative moneyiness. The respective weights of components

in weighted monetary indices are derived from the interest returns on the components. The weight of each component is calculated as the difference between interest return on a 'benchmark' instrument that is held primarily for investment earnings and the instrument under consideration. Currency and non-interest bearing demand deposits have largest weight in the aggregate because they attract no interest. Other highly liquid, low-interest instruments are also given larger weights in comparison with instruments that have high interest returns.

4.3 The Group, therefore, undertook an exercise to examine some of the superlative monetary aggregates such as Divisia, Linear, Fisher, Geometric and Currency Equivalent indices using annual data for the period 1978-1997 with the dividend on Unit Trust of India (UTI) Unit 64 scheme as the 'benchmark' rate. The weighted monetary aggregates were evaluated in terms of their information content with respect to the goal variable (real output) *vis-a-vis* the simple sum aggregates. The empirical results suggested that Divisia and Linear indices were slightly superior to the simple sum aggregates in terms of their information content. Evaluated in the context of money demand analysis, these two indices also performed better in terms of their output and interest rate sensitiveness.

4.4 The weighted monetary aggregates, however, are criticised on the grounds that the weights depend on the choice of benchmark instrument and the indices assume a 'normal' relationship between short-term and long-term interest rates which may not hold in practice. Moreover, the assumption that liquidity is inversely related to the rate of return on a financial instrument has been eroded by financial innovations. Practical problems concerning the

targeting potential of the superlative aggregates and their linkages to the goal variables still remain formidable. For instance, questions like what is the supply function of Divisia M_3 and how to establish its relationship with monetary base are not easily answerable. Moreover, how could one define and measure a Divisia M_3 multiplier? How do the operating instruments of monetary policy influence the ratios involved in these multipliers? Furthermore, there is always an element of judgement involved in the choice of a 'benchmark' rate. In view of these practical difficulties and lack of a potential policy role that the weighted monetary aggregates could have, the Group did not favour compilation and dissemination of weighted monetary aggregates. Moreover, an extensive cross-country survey of 29 countries revealed that except for the United Kingdom (U.K.) no other country publishes weighted monetary aggregates.

Money Multiplier

4.5 Money supply determination is essentially viewed in terms of a relationship between the central bank money and monetary liabilities of the banking system as a whole. The relationship is denoted by money multiplier (m). The monetary base consists of currency and bankers' deposits with the central bank which provides a foundation for expansion of money and credit in the economy. The monetary base is important because it is at times considered an intermediate policy target controlled by authorities that can have measurable impact on income and prices.

4.6 In the Indian context, since broad money is used as a policy target, the Group proposed to

consider the stability and predictability of broad money multiplier in order to determine the usefulness of money supply as a concept. The broad money multiplier (m_b) can be expressed as follows:

$$M_3 = m_b \cdot (M_0) \dots\dots (1)$$

In its simplest form, m_b can be unscrambled as a function of its two proximate determinants, viz., currency-deposit ratio (c) and reserve-deposit ratio (r)¹:

$$m_b = \frac{1+c}{c+r} \dots\dots (2)$$

Both 'c' and 'r' are less than unity.

4.7 The currency-deposit ratio is a behavioural relationship and depends upon the societal preference for currency *vis-a-vis* deposits. It also depends on institutional factors such as the spread of banking habits and the payments system. The reserve-deposit ratio on the other hand is a policy parameter governed by the prescription of statutory minimum reserve requirements on bank deposits.

4.8 It is important to note that the value of the multiplier varies inversely with both 'c' and 'r'. The monthly data on broad money multiplier for the period 1970-71 to 1996-97 show that it varied in the range of 2.17-3.72 with a mean value of 3.0. The multiplier has exhibited an upward trend over time: this would be apparent from the fact that the mean value of the multiplier increased from 2.67 in the 1970s to 3.12 in the 1980s and further to 3.24 in the 1990s so far. The volatility of the multiplier, measured by its standard deviation,

¹ The derivation of money multiplier in its simplest form is as follows:

$$\begin{aligned} M_3 &= m_b M_0 \\ \text{or } m_b &= M_3 / M_0 \\ &= \frac{C+D}{C+R} = \frac{C/D+D/D}{C/D+R/D} = \frac{1+c}{c+r} \end{aligned}$$

where, C : Currency in Circulation.

D : Aggregate Deposits

R : Banks' Reserves with the Central Bank.

which had declined during the 1980s from the 1970s, however, increased in the 1990s mainly due to frequent changes in the cash reserve ratio (Table 4.1).

Table 4.1 : Broad Money Multiplier

Period	Maximum	Minimum	Mean	Standard Deviation
1	2	3	4	5
1970-1997	3.72	2.17	3.00	.323
1970s	3.07	2.17	2.67	.269
1980s	3.37	2.83	3.12	.119
1990s	3.72	2.96	3.24	.193

4.9 Keeping in view the movements in the multiplier, the key question is how stable is the multiplier which could explain the long-run relationship between broad money and the monetary base. In order to focus on this issue, the multiplier equation can be expressed after a logarithmic transformation as follows:

$$\ln(M_3) - \ln(M_0) = \ln(m_b) \dots\dots (3)$$

If the right hand side of the expression can be demonstrated to have been integrated of the order zero, *i.e.*, if it is an $I(0)$ process, then the multiplier could be assumed to be stable in the long run. This would mean that cointegrating long-run relationship between $\ln M_3$ and $\ln M_0$ ought to exist, *i.e.*, both $\ln M_3$ and $\ln M_0$ should be integrated of the same order.

4.10 The cointegration exercise between $\ln M_3$ and $\ln M_0$ was undertaken by checking for unit root using Stock-Watson test statistics for unit root. The Stock-Watson procedure was preferred to the usual Dickey-Fuller test due to presence of higher order autocorrelation in the error residuals. On

confirmation that both $\ln M_3$ and $\ln M_0$ are $I(1)$ processes, Johansen cointegration technique was used to estimate the long-run equation which was estimated as indicated below:

$$\ln(M_3) = 1.475 + 1.0881 \ln(M_0) \dots\dots (4)$$

It can be seen that the long-run elasticity of M_0 is close to unity. Even with a restriction of unit elasticity on monetary base the cointegrating vector could be established pointing to a long-run stable relationship between monetary base and broad money. The process was corroborated by testing for unit root in the multiplier series itself. The Dickey-Fuller test confirmed that $\ln(m_b)$ is trend stationary.

4.11 Thus, given the long-run stability of the multiplier, the money multiplier framework could be utilised for policy purposes. However, the money multiplier approach to money supply is subject to criticism on the grounds that it presupposes a mechanistic relationship. Moreover, with gradual deemphasis on cash reserve ratio (CRR) as a policy instrument, the multiplier approach may not be an appropriate framework to view the money supply process. Nevertheless, the fact that reserve ratios can be effectively used to influence money supply in the short run would need to be recognised.

4.12 In order to evaluate the relative importance of the proximate determinants, the multiplier relationship was reformulated as follows:

$$\ln M_3 = f(\ln M_0, c, r) \dots\dots (5)$$

The regression equation was estimated using Ordinary Least Square (OLS) technique for the entire period (1970-71 to 1997-98) and for the latest

Table 4.2: Regression Results of Broad Money (M_3) Multiplier

No.	Period	Intercept	lnMo	c	r	$\bar{R}^2$	DW
1	2	3	4	5	6	7	8
1.	1970April-1998 March	1.794* (.0555)	1.0022* (.0046)	-1.399* (.0364)	-2.3934* (.0428)	.99	2.19
2.	1991April-1998 March	1.856* (.1657)	1.0093* (.0135)	-1.924* (.1797)	-2.515* (.1187)	.99	2.17

Parenthetic figures indicate standard errors.

* Significant at 1 per cent level.

period of the 1990s so far (Table 4.2).

4.13 The regression results show that monetary base has unit elasticity in respect to broad money and both 'c' and 'r' have the desired negative signs. The semi-elasticities for 'c' and 'r' indicate that the latter has a larger influence in the determination of the multiplier.

4.14 The predictive power of the multiplier equation was found to be quite robust. The out of sample forecast of broad money generated for the twelve month period of the year 1997-98 based on fixed initial value of 'c' yielded very low Root Mean Sum of Squares Prediction Errors (RMSPE). We varied the sample size to see if we could get different outcomes. RMSPE, however, remained bound in the narrow range of 2.3-2.9 per cent reflecting the robustness of the prediction. The result is very significant in the sense that it shows that variations in cash reserve requirements would have predictable impact on money supply notwithstanding the movements in the behavioural currency-deposit ratio.

4.15 In order to gauge the impact of changes in CRR on the multiplier and hence the broad money, the impulse response function for 1.0 percentage point change in CRR was estimated. The response of the multiplier to 1.0 percentage point sustained increase in CRR was a decrease of 0.7 percentage point in the long run. Moreover, it takes around two quarters for a sustained increase in CRR to exert its full effect on the multiplier close to its long-run value. The CRR thus could be considered

an effective instrument of modulating variations in money supply.

IV.2 Demand for Money

4.16 In order to ascertain whether money as defined is demanded in relation to the overall transactions in the economy, it would be necessary to relate the chosen monetary aggregate to some macroeconomic indicator such as GDP or GNP. The literature attempts to find out which of the monetary aggregates, namely narrow money or broad money, is closely correlated with real activity. It is in this context, the demand for money in real terms is sought to be determined by postulating a function wherein real money demand is dependent upon a scale variable (income) and an opportunity cost of money (interest rate).

4.17 The broad money demand equation was examined on the basis of annual data for the period 1970-71 to 1996-97. The choice of annual data was unavoidable due to non-availability of quarterly data series on income (GDP). The nominal money demand equation showed a long-run price elasticity close to unity when the Wholesale Price Index (WPI) is taken as the indicator of price level and an income elasticity of 1.5-1.6.

4.18 Given that the long-run price elasticity is close to unity, two alternate specifications of real demand for broad money equation were estimated with a scale variable and an opportunity cost variable as the explanatory factors. The interest

rate as proxied by the call money rate was not significant though it had the desired negative sign. Even when the GDP deflator was taken as the indicator of price level to derive real money balances, there was no significant change in the estimated income elasticity of demand for broad money. The long-run income elasticity of demand for broad money from the alternate specifications worked out in the narrow range of 1.5 - 1.6 after correction for auto-correlation (Table 4.3).

4.19 The real broad money balances and

period were tested by employing cusum and cusum of square techniques (CUSUM and CUSUMSQ). These tests based on recursive residuals are more suited to detect gradual changes. Both these tests pointed to parameter stability. The CUSUM and CUSUMSQ tests were supplemented by using recursive least square (RLSQ) approach which showed that the paths of the parameter generally did not cross the two standard error bands suggesting that they were fairly stable in the long run. However, the parameter paths were not exactly horizontal

Table 4.3 : Money Demand Equations

No.	Equation	Intercept	ln WPI	ln WPI ₋₁	ln GDPC	ln CMRT	$\bar{R}^2$	DW	ADF Test on Co-integration
1	2	3	4	5	6	7	8	9	10
1.	LnM ₃	-11.39 (-4.50)	1.08 (7.16)	-	1.48 (5.57)	-	.99	1.50	
2.	LnM ₃	-11.89 (-2.66)	-	1.04 (3.73)	1.55 (3.23)	-	.99	1.73	
3.	LnRM ₃	-12.02 (-8.29)	-	-	1.57 (12.91)	-0.03 (-.77)	.99	1.71	
4.	LnRM ₃	12.31 (-9.44)	-	-	1.59 (14.52)	-	.99	1.59	Co-integrated
5.	LnRM ₃ *	-10.93 (-8.60)	-	-	1.45 (13.84)	-0.016 (-.44)	.99	1.88	
6.	LnRM ₃ *	-11.05 (-9.34)	-	-	1.46 (14.74)	-	.99	1.82	Co-integrated

Parenthetic figures indicate t statistics.

* Deflated with GDP Deflator (GDPDF).

M₃ : Nominal Broad Money Stock.

RM₃ : Real Broad Money Stock.

WPI : Wholesale Price Index.

GDPDF : GDP Deflator.

GDPC : GDP at factor cost at constant (1980-81) prices.

CMRT : Call Money Rate.

aggregate income were found to be cointegrated reflecting a long-run equilibrium relationship between real broad money (M₃) and real GDP. However, in order for the broad money demand equation to be adequately used for policy purposes, the stability properties are very critical. In view of the cointegrating relationship, while the stability of the model was ensured, the variations in the parameters within the sample

indicating that they were not constant over time.

4.20 Besides the parameter stability, the predictive stability of the equation is equally important for its use for policy purposes. In order to evaluate the predictive stability, the reduced form money demand equation was estimated for the period 1970-71 to 1992-93 to generate out of sample forecast for the post reform period covering

1993-94 to 1996-97. The actual and predicted values indicated that the equation consistently overpredicted the demand for money (Table 4.4) and the Root Mean Sum of Squares Prediction Error (RMSPE) was relatively high at about 16 per cent. This would imply that there has been an unidirectional short-term deviation from the long-run equilibrium path which needs to be captured in terms of other relevant variables to ensure predictive accuracy. This would also mean that monetary policy exclusively based on the demand function for money could lack precision.

Table 4.4 : Dynamic Forecast of Broad Money (M_3)

Years	$\ln M_3$ (Actual)	$\ln M_3$ (Predicted)	Error
1	2	3	4
1993-94	7.3920	7.4496	-.05761
1994-95	7.4696	7.5932	-.12359
1995-96	7.5412	7.7222	-.18098
1996-97	7.6292	7.8544	-.22519

4.21 It is necessary to emphasise that linkages between monetary aggregates and economic activity have not remained constant over the years. The changing character and content of financial markets over the years have, mainly, been responsible for the earlier revisions and updating of the simple-sum monetary aggregates in India. Since the mid-'seventies, the stability property of the money demand function has come under close scrutiny. Most of the studies in India have addressed this issue of stability in long run relationship, broadly, in two ways: structural stability (model stability) and parameter stability of the structural long-run equations. Since the structural equation represents steady state equilibrium condition, it would have only static stability. Therefore, an appropriate framework of examining this issue could be to study the dynamic stability of an error correction model (ECM) rather than the original structural equation. However, availability of only annual data on GDP and the short period for which the data on other related variables are available following the reforms of the financial sector, posed serious difficulties for empirical estimation of a robust ECM model.

IV.3 New Monetary Aggregates

4.22 In order to evaluate the performance of the new monetary aggregates proposed by the Group, an exercise of estimating the three monetary aggregates (M_1 , M_2 and M_3) and two liquidity aggregates (L_1 and L_2) was undertaken on a monthly basis for the period April 1993 to March 1997 (*Annexures IV.1 and IV.2*). The information content of these new aggregates was tested econometrically by using non-nested models with the index of industrial production and wholesale price index (WPI) as goal variables. The non-nested tests favoured M_2 to both M_1 and M_3 reflecting that M_2 has the potential of emerging as an important aggregate which could be useful for policy purposes. But in a model with M_1 and M_3 the latter was favoured. In a comparison between broader monetary aggregates and liquidity aggregates, the latter seem to perform better. However, given the short sample period and the inherent limitation of taking industrial production as a proxy for overall economic activity, it may yet be premature to derive definitive conclusions.

4.23 In order to capture the emerging dynamics, the monthly data on the new broad money aggregate (M_3) for the period 1993-94 to 1996-97 were reformulated in a money demand function which was estimated following Johansen's cointegration approach. The estimated cointegrating vector is indicated below:

$$\ln RM_3 = 2.81 + 0.78 \ln SIIP - .052 \ln G91 + .10 \ln REERT \dots (6)$$

where,

RM_3 : Real broad money (as proposed by the Group)

SIIP : Seasonally adjusted index of industrial production

G91 : Yield rates of 91-day Treasury Bills

REERT : Trade weighted real effective exchange rate

It would appear that interest rates and exchange rate have become important determinants in

explaining the money demand equation in the recent period. Although this exercise has its own limitations in terms of the short sample period and specification of the scale variable in terms of the index of industrial production, it does point to the emerging dynamics and the alternate channels through which monetary policy could affect the goal variables.

4.24 The cointegrating relationship between real money balances and a set of variables does not, however, necessarily reflect the direction of causation. The issue of causation is, therefore, addressed by examining the causality and the transmission mechanism of monetary policy.

IV.4 Causality among Money, Output and Prices

4.25 The tests of Granger's Causality between nominal money and nominal income carried out in a two variable vector autoregression (VAR) framework showed a bi-directional causality, *i.e.*, while nominal money causes nominal income, the latter also causes the former at an acceptable level of significance. However, when shocks were given to nominal income and nominal money, the forecast error variance decomposition showed that the impact of shock to nominal money on nominal income was much larger and more persistent than the impact of shock to nominal income on nominal money. The causal analysis between real money and real output showed that there is a strong unidirectional causation running from real output to real money. It could be inferred from the causality analysis that an expansionary monetary policy unaccompanied by an increase in real output could only result in increase in nominal income and hence prices. The question of how exactly monetary policy influences output could be addressed effectively by examining the transmission mechanism.

IV.5 Transmission Mechanism of Monetary Policy

4.26 There are at least four distinct monetary transmission channels that one finds in the literature as of concern for policy makers. They are : a) the quantum channel, especially relating to money supply and credit; b) the interest rate channel; c) the exchange rate channel, and d) the asset prices channel. Monetary policy impulses under the quantum channel affect the real output and price level directly through changes in either reserve money, money stock or credit aggregates. The remaining channels are essentially indirect as the policy impulses affect real activities through changes in either interest rates or the exchange rate or asset prices. In an environment where interest rates and the exchange rate are regulated, the quantum channel is the most important channel of transmission of monetary impulses. The quantum channel, however, tends to lose some of its pre-eminence in the deregulated environment. This is not to say that the quantity variables are not important in the determination of the goal variables. The quantum variables, however, tend to become more sensitive to the price mechanism and respond to changes in the interest rates and the exchange rate. It is, however, important to note that none of the channels of monetary transmission operate in isolation. There are, in fact, considerable feedbacks and interactions, which need to be carefully sifted for a proper understanding of the transmission mechanism. Gradual liberalisation of the financial markets from administrative controls, increasing use of interest sensitive funds, globalisation of financial markets and above all, rapid diffusion of financial innovations accentuate the complexity of the monetary transmission process.

4.27 In the Indian context, earlier studies did not find any definitive evidence of a unique transmission process as both money supply and interest rate channels were found to transmit the monetary impulses in the economy. In recent times significant changes have taken place in the financial system. The market determined exchange rate system has been in place since March 1993. In the money market, the overnight (call) rates were freed from

the ceiling of 10 per cent in May 1989 and since then the number of participants in the call money market has increased. The interest rate ceilings on rediscounting of commercial bills were also withdrawn in May 1989. Commercial Paper (CP) was introduced in 1990 and the provisions governing the issuance of CPs have been made more liberal over time. The instrument of Certificates of Deposit (CDs) was introduced in June 1989 and scheduled commercial banks as well as public financial institutions were allowed to set up money market mutual funds (MMMFs) in April 1992. However, more significant have been the changes initiated in the government securities market with steps taken to develop Treasury Bills as money market instruments. New instruments of 364-day auction Treasury Bills (fortnightly) and 91-day auction Treasury Bills were introduced in April 1992 and January 1993, respectively. Recently, 14-day auction Treasury Bills have been introduced in June 1997. Furthermore, the Central Government's market borrowings in dated securities have been put through an auction process since 1992-93. The short-term liquidity management has been undertaken by conducting repos, an instrument introduced in December 1992, and after a period of repose, reactivated since November 1996. The Reserve Bank initially conducted repos for a maturity of upto 14 days which is the cycle for reserve requirements. More recently, the Reserve Bank has been conducting three-day repos to absorb short-term liquidity and even out money market rates. The Reserve Bank has also commenced daily fixed rate repos for a maturity of three days². These developments have not only given a market orientation to the government securities market but the introduction of a variety of financial instruments has facilitated better cash management of various

segments of the economy. Moreover, broadening and deepening of money market has contributed to the development of interlinkages, facilitating liquidity pass through across various segments of the money market.

4.28 In regard to bank lending rates, scheduled commercial banks were given freedom to fix their prime lending rates (PLRs) for credit limits of over Rs.2 lakh from October 1994. The lending rates for credit limit of up to Rs.2 lakh were administered although the element of cross subsidisation between the commercial rates and concessional rates have declined³. However, the outstanding amount of loans below Rs.2 lakh are quite substantial accounting for about 28.0 per cent of total loans by scheduled commercial banks as at the end of March 1995. Another dimension that has had a strong bearing on the lending practices of banks is the institution of prudential norms of income recognition, asset classification and provisioning which have revealed large non-performing assets. As a result, the commercial banks have become more sensitive to credit risk. The large volume of non-performing assets has also kept the spreads high imparting a degree of stickiness to the bank lending rates. The focus of the banks on their prime borrowers during periods of credit squeeze raises the borrowing cost of non-prime borrowers. The PLRs, however, generally responded to the changes in the Bank Rate since April 1997 when the Reserve Bank linked it to all its lending rates. In an important sense, the Bank Rate has been seen as signalling the stance of monetary policy. Interest rates at the shorter-end of the market have generally followed the direction of the Bank Rate, but the effect of Bank Rate changes on long-term interest rates is not yet very clear.

4.29 The emerging evidence on transmission channels was examined for the period April 1993 to March 1997 in a vector autoregression (VAR) model with broad money (M_3 as estimated by the present Group), index of industrial production (used as a proxy for output), non-food bank credit and

² The Reserve Bank has announced on April 29, 1998 that it would soon introduce daily repos on both fixed interest rate and auction basis.

³ The present position in this regard is that effective April 30, 1998, these rates could vary, subject to the ceiling of PLR.

yields on 91-day Treasury Bills (proxy for interest rates). The response of output to one standard deviation shock to money in the short run (12 months horizon) was analysed through two alternate channels, viz., interest rate and credit channel. The results indicated that an expansionary monetary policy reduces interest rate and tends to improve output. Similarly, an expansionary monetary policy increases credit and output. However, output response to expansionary monetary policy operating through interest rate was found to be stronger and more persistent than that of the credit channel. In the deregulated environment, the rate channel appears to have the potential of emerging as a critical variable influencing the credit aggregate.

4.30 An alternate specification of VAR model was set up to examine the impact of money, interest rates and nominal exchange rate on inflation. The results showed that an expansionary monetary policy would reduce the interest rate and depreciate the exchange rate and would ultimately show up in an increase in inflation. The impact of an expansionary monetary policy on inflation was found to be more

pronounced through interest rates as against the exchange rate. The comparatively weak influence of exchange rate may have to be duly taken note of, given the relatively low level of openness of the economy and prevalence of external capital controls.

4.31 The details of empirical results are given in the *Technical Attachment* at the end of this Chapter.

4.32 In light of the incipient empirical evidence, the Group felt that while financial sector reforms would help address the imperfections in various segments of the financial system, it is necessary to formulate appropriate monetary and credit measures to explain the nature of the interface between the real and financial sectors of the economy. The efficacy of monetary policy would hinge critically on the effectiveness of the transmission mechanism in which the rate as well as quantum variables would have decisive roles to play. Monetary and credit measures, therefore, need to be monitored for policy purposes and utilised in the overall financial management for improving the allocative efficiency in the system.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

5.1 The Reserve Bank of India has a long tradition of compilation and dissemination of monetary statistics, dating back to July 1935. However, the rationale and analytical foundations behind the compilation of monetary aggregates were provided to the public only in 1961 through the report of the First Working Group on Money Supply (FWG), which were further refined and broadened by the Second Working Group (SWG) in 1977. Far-reaching changes have since taken place in the macro-economic and financial environment necessitating a fresh look at the compilation of monetary aggregates (*Paras 1.1-1.2*).

5.2 The behaviour of monetary aggregates reflects variations in aggregate demand in a medium- to long-term perspective, in situations typical of underdeveloped economies, where households' savings are held to an overwhelming extent in the form of currency and deposits. The implementation of a series of liberalisation measures in India since the late 1980s provided considerable manoeuvrability to banks and financial institutions in the choice of their portfolios. As a result, banks have been, particularly in the last three years, under increasing competitive pressure to seek resources from sources that go beyond their traditional areas. Yet another issue that has been increasingly becoming apparent is the gradual blurring of distinctions in the operations among the institutions, viz., commercial and co-operative banks, development financial institutions and non-banking financial companies. These operations tend to affect the efficacy of the existing monetary aggregates, and efforts are, therefore, required to be made to capture these developments, in order to appropriately capture the changes in aggregate spending (*Paras 1.6-1.8*).

5.3 Besides there is a need to ensure that the

Indian standards in this regard are close to the international ones. The Manual, now available in draft form, on *Monetary and Financial Statistics (MFS)* by the International Monetary Fund (IMF) provides the benchmark for such comparison. Apart from the usefulness in mimicking relevant provisions of the *MFS Manual*, the ongoing financial liberalisation and the gradual move towards indirect instruments of monetary control would make it imperative to collect and prepare a comprehensive set of accounts of the entire financial sector at regular intervals for policy purposes (*Paras 1.11-1.12*).

5.4 There is no unique definition of 'money', either as a concept in economic theory or as measured in practice. Money is a means of payment and is thus a lubricant that facilitates exchange. Money also acts as a store of value and a unit of account. In the real world, however, money provides monetary services along with tangible remuneration. It is for this reason, money has to have relationship with the activities that economic entities pursue. Money can, therefore, be defined for policy purposes as the set of liquid financial assets, the variation in the stock of which could impact on aggregate economic activity. As a statistical concept, money could include certain liquid liabilities of a particular set of financial intermediaries or other issuers (*Paras 2.1-2.3*).

5.5 With regard to the sectorisation issue the Group decided that, in the Indian context, even though the development financial institutions and non-banking financial companies are allowed to accept deposits from the 'public', it may not be appropriate to treat these institutions as 'depository corporations' in view of the restrictions prevalent on their deposit taking activities and the relatively small share of their deposit liabilities to total

liabilities. For the purpose of money supply compilation, the Group proposes to restrict the coverage of 'depository corporations' only to the banking sector (*Para 2.5*).

5.6 Analogous to the notion of the 'depository corporation' and keeping in view the prospective availability of information on the rest of the organised financial sector, the Group proposes to use the concept of financial corporations sector, and define it to include the following institutional categories, viz., 'banking sector', 'development financial institutions, which include term lending institutions and refinancing institutions (FIs)', 'insurance corporations', 'mutual funds' and 'non-banking financial companies accepting deposits from the public' (*Para 2.7*).

5.7 The money issuing sector is considered as part of the financial corporation sector, viz., the banking sector. The money holding sector on the other hand comprises resident units outside the money issuing sector. The money holding sector is defined as the 'commercial sector', alternatively defined as 'public', which includes households, non-financial commercial sector and non-depository financial corporations (*Para 2.9*).

5.8 Residency essentially relates to the country in which the holder has a centre of economic interest. Currency and deposits held by the non-residents in the rest of the world sector would presumably be related to balance of payments considerations such as international capital flows rather than to the domestic demand for monetary assets or to the use of money in domestic transactions. While there is a need to categorise deposit liabilities by residency it may not be appropriate to exclude all categories of non-resident deposits from domestic monetary aggregates as non-resident rupee deposits are essentially integrated into the domestic financial system. The Group, therefore, proposes that only non-resident repatriable foreign currency fixed deposits should be excluded from deposit liabilities and treated as

external liabilities. Accordingly, from among the various categories of non-resident deposits at present only FCNR (B) deposits may be classified as external liabilities and excluded from the domestic money stock (*Paras 2.10-2.11*).

5.9 On review of the monetary aggregates now being published, the Group recognised that from among the four measures of money, M_1 and M_3 are the two measures which are extensively used both for policy purposes and in academic exercises. Use of data on M_2 and M_4 are conspicuous by their near-absence. The introduction of M_2 and M_4 as money stock measures seems to have been prompted by the fact that during the pre-1969 period, post offices catered banking facilities in many places where banks were not in existence. The strength of this reasoning has lost much of its sharpness with the strong growth of the banking network in rural and semi-urban areas since then. As between M_1 and M_3 , the latter captures the balance sheet of the banking sector, the institutional category which has been the focus of policy. In India as in many countries, the broad money concept has been found to be operationally useful because of better correlation with aggregate economic activity (*Paras 2.17-2.18*).

5.10 The Group is of the view that the present set of monetary aggregates are not in conformity with the largely followed norm of progressivity in terms of liquidity. Moreover, the treatment of postal deposits as monetary aggregates may not be in harmony with the notion of 'depository corporation', since the postal department is a part of general government. It was felt that as part of financial innovations, while financial institutions may issue financial assets closely resembling bank deposits, it may not be appropriate to treat them as monetary assets unless the institutions provide services similar to that of the banks. In fact, many countries have dealt with this issue by constructing measures broader than 'broad money' (sometimes called very broad money, or extended money supply, or liquidity and denoted by 'L', M_2+ , M_3 extended

or M3E, MCT, ALP, etc.). Liquidity measures generally include instruments that are considered to be good substitutes for broad money, or include a range of instruments that may be empirically related to overall economic activity or prices. Such instruments, which compete with broader monetary aggregates could, therefore, be treated as part of liquidity measures. Thus, the Working Group sought to differentiate monetary aggregates from other financial aggregates not so much on the basis of the attributes of the instruments themselves as on the nature and functioning of institutions issuing such instruments (*Paras 2.19-2.20*).

5.11 In this context, the comparison of monetary aggregates across countries is useful in the evaluation of our own monetary statistics. A survey of 29 countries reveals that there is a wide diversity in the definition of monetary aggregates depending on the development of money substitutes although the basic definition of money supply – the narrow money (M_1) – has remained relatively unchanged. As regards broader monetary aggregates, apart from currency and deposits, the following instruments merit consideration for inclusion: i) other (outside the ‘depository corporations’) call/term funding and ii) non-convertible debentures (NCDs) issued by banks. While banks in India are yet to issue NCDs, banks rely on call funding from non-bank financial institutions which could be included in broader monetary aggregates (*Para 2.21*).

5.12 While the Group is of the opinion that the consolidated account of the banking sector may be considered for compilation of monetary aggregates, it proposes that the items of liabilities of non-banking financial institutions which are predominantly held with the public and which compete with broad money aggregates may be included in various measures of liquidity. One such item is post office deposits on which monthly data are available albeit with some time lag. There are, however, other instruments which could be included in the broad measure of liquidity: i) public deposits

and certificates of deposit of financial institutions as these liabilities directly compete with the liabilities of the banking sector and ii) those liabilities of non-banking financial companies (NBFCs) such as public deposits (a component of regulated deposits) which are competitive to deposits with commercial banks and bypass the process of bank intermediation. Some countries include Commercial Papers and Treasury Bills under the broad liquidity measure. In the Indian context, these two instruments are predominantly held by banks and financial institutions and hence should not form a part of liquidity of the non-financial non-government sector. Keeping in view the negligible presence of money market mutual funds (MMMFs) at present, the Group did not favour inclusion of MMMFs in monetary or liquidity aggregates, which instead could be classified under ‘non-depository financial corporations’. Accordingly, the Group recommends compilation of four measures of monetary aggregates, and three measures of liquidity aggregates besides a comprehensive financial sector survey (Box II.3, Page 17) (*Paras 2.22-2.24*).

5.13 M_0 is essentially the monetary base, compiled mainly from the balance sheet of the Reserve Bank of India; M_1 purely reflects the non-interest bearing monetary liabilities of the banking sector, M_2 includes besides currency and current deposits, saving and short-term deposits reflecting the transactions balances of entities. M_3 has been redefined to reflect additionally to M_2 the call fundings that the banking system obtains from other financial institutions (*Para 2.26*).

5.14 Bank credit is often specifically referred to in several writings in monetary economics, as a critical variable affecting consumption and capital formation in a direct manner. As such it is often regarded as a more useful indicator of real sector activity than money supply. In India, one of the objectives of monetary policy is clearly stated in official documents as one of ensuring adequate flow of credit to the productive sectors of the economy.

But as changes in bank credit are treated as impacting wholly on money supply in the absence of a movement in foreign exchange assets, credit aggregates were hitherto not considered as important. This situation, however, may not continue for long in view of growing openness of the economy. Hence there is, a clear need for having comprehensive measures of credit. At present while credit to government from the banking system is clearly identified, bank credit to the commercial sector, in the conventional sense, includes only advances in the form of loans, cash credit, overdrafts, bills purchased and discounted and investments in approved securities other than government securities. However, commercial banks have in recent years been investing in securities such as commercial paper, shares and debentures issued by the commercial sector which are not reflected in the conventional credit aggregates. The Group, therefore, proposes to broaden the definition of bank credit to the commercial sector by including all these investments in the conventional credit aggregates. Another major problem in the present reporting system has been that there is no estimate of credit flow from the entire financial system either to the government or the commercial sector. The Group proposes to address this lacunae by recommending preparation of a comprehensive financial sector survey on a quarterly basis which would throw up estimates of credit from the financial sector to: i) government and ii) non-financial commercial sector (*Paras 2.27-2.29*).

5.15 The monetary aggregates thus defined can essentially be presented in a balance sheet framework by consolidation of the accounts of the banking sector. The components derived from the liabilities side could be matched with those on the assets side of the consolidated balance sheet of the banks. The sources (assets) side can functionally be depicted by i) domestic credit, ii) net foreign assets, iii) capital account and iv) other items (net). The break up of domestic credit would include i) net credit to the government and ii) credit to commercial sector. Bank credit to the commercial

sector would also include banks' investments in shares, debentures, bonds, commercial paper *etc.* which would enhance the value of the commercial credit aggregate as an important informational variable (*Paras 2.31-2.32*).

5.16 Net foreign exchange assets (NFA) of the banking sector comprise the RBI's net foreign exchange assets and the net foreign currency assets of the banking system. While there is no change in the composition of net foreign exchange assets of the RBI, net foreign currency assets of the banking system should comprise their holdings of foreign currency assets net of i) their holdings of non-resident repatriable foreign currency fixed deposits which is presently defined to include FCNR(B) deposits and ii) overseas foreign currency borrowings. The capital account of the banking system, the net unclassified assets and liabilities have hitherto been classified under the omnibus head of net non-monetary liabilities (NNML) of the banking sector. Of late unexplained changes in NNML have been a major source of variations in monetary aggregate. The Group proposes to do away with the present concept of NNML in the presentation of the monetary survey; instead, the balancing items could be: i) capital accounts and ii) other items (net) which would be in conformity with the international practice (*Paras 2.33- 2.34*).

5.17 In India, an increasing volume of purchases is being made on credit cards. The Group, therefore, debated on the treatment of transactions undertaken through credit/debit cards. In so far as credit-card purchases and the elimination of physical bank cheques merely provide more convenient and efficient means of transferring demand deposits, they do not call for any redefinition of the money stock – although they may lead to a higher velocity of circulation. The *MFS Manual* is also of a similar view that contingent instruments, such as lines of credit on credit cards, are not financial assets and are not recorded in monetary and financial data, regardless of whether they are electronic in nature or not. Similarly, debit cards which use remote

terminals to debit user's deposit account and immediately credit vendors' accounts does not necessitate a redefinition of monetary aggregates as the transaction serves the same function as cheque, but the transfer is immediate (*Para 2.38*).

5.18 Several new technologies are under development to make payments *via* computer chips, through computer networks, or across the worldwide Internet. It has been suggested that electronic equivalents will be developed for all major payments methods : currency, cheques, debit cards, credit cards and travellers' cheques. For example, electronic currency issued by commercial banks appears to have characteristics of a private currency that can compete with the official national currency. These may develop rapidly and have a variety of as yet undetermined, but possibly large, effects on monetary and financial system. If these systems establish themselves, new statistical definitions, classification systems and reporting procedures may be needed (*Para 2.39*).

5.19 Derivatives have grown enormously in recent years in many industrial countries and have made a noticeable presence in some of the major emerging economies with increasing participation by banks. In India, as market trading in derivatives is yet to be introduced and transactions in derivatives are privately-arranged, these are treated as off-balance sheet items. The Group is of the view that derivatives may not have any immediate significance in the compilation of monetary aggregates. However, developments in the area of derivatives should be periodically monitored as monetary transmission mechanisms may be affected if large volumes of derivatives hedge a variety of market exposures (*Para 2.40*).

5.20 The Group felt that a survey of the Reserve Bank of India's balance sheet with the focus on the monetary base or reserve money (M_0) may continue to be prepared *albeit* with certain modifications on a weekly frequency on the basis of the Weekly Statement of Affairs of the RBI

prepared on each Friday under Section 53(1) of the RBI Act 1934 (*Para 2.41*).

5.21 The Group proposes a comprehensive Commercial Bank Survey (CBS) on the lines of the *MFS Manual* on the basis of the scheduled banks' summary statements on their demand and time liabilities and selected assets as at close of business on every alternate Friday on the basis of returns filed with the RBI in terms of Section 42(2) of the RBI Act beginning March 29, 1985 supplemented by additional items of liabilities and assets as proposed by the Group essentially to reflect the changing scope of their activities (*Para 2.51*).

5.22 In view of the difficulties in obtaining data from major categories of co-operative banks and the time lags in their reporting, the Group felt that a sample survey of major co-operative banks for only the items of liabilities and assets which have a direct bearing on the monetary survey may be reported at a monthly frequency followed by a population survey. In no case should the reporting delays of the larger of these banks be in excess of one month from the month of reference. For other banks, such reporting delays should not exceed three months. Efforts should, however, be made to encourage these banks to quickly put in place mechanisms to improve their reporting methods so that the reporting system could be current by 2000 AD. 'Sunset' provisions may be set in place to ensure that reporting by non-scheduled co-operative banks is complete by 2000 AD (*Para 2.64*).

5.23 Apart from the compilation of monetary aggregates and broader liquidity aggregates, the Group proposes the compilation of a comprehensive financial sector survey (FSS) to capture the dynamic interlinkages between the 'depository corporations' and the rest of the organised financial sector (*Para 2.67*).

5.24 The Group proposes that data on selected items of liabilities and assets can be collected from

about 150 large NBFCs (currently to be defined as those having public deposits of Rs.20 crore or above) which account for over 90 per cent of the total public deposits of all NBFCs on a quarterly basis, to begin with, which could be improved upon, subsequently (*Para 2.81*).

5.25 The FSS as envisaged would broadly correspond to the sectoral balance sheet of the financial sector within the SNA or flow of funds (FoF) accounts. In India, flow of funds accounts are prepared on an annual basis with a considerable time lag. While there is little scope for quarterly flow of funds accounts given the reporting system for the real sector, the quarterly flow of funds account of the financial sector could bring out apart from the structure and behaviour of the financial sector, the relationship between the financial activities and the non-financial domestic economy and the rest of the world (*Para 2.82*).

5.26 The Reserve Bank of India, as the monetary authority of the country, is the primary source of monetary statistics. The need to construct reliable and up-to-date monetary statistics in order to provide inputs for the formulation and monitoring of monetary policy measures is well recognised all over the world; this is particularly significant where monetary targeting is regarded as an important characteristic of monetary policy. Dissemination of monetary aggregates with the minimal time lag is important to lend transparency to the central bank's operations and influence expectations of economic participants. It also helps to create opportunities for wider debate and to facilitate analysis and research in monetary and financial economics (*Para 3.1*).

5.27 In view of proposed changes in the reporting format, monetary data would need to be more detailed, based on the information furnished by banks. Moreover, with the enlargement of the scope and coverage of the Section 42(2) returns, data on such items as certificates of deposit (CDs) issued by banks, external liabilities of banks and banks'

investment in 'other securities' would now be available to the public at a higher frequency (*Para 3.3*).

5.28 The Group proposes compilation of four monetary aggregates, three liquidity measures and a comprehensive Financial Sector Survey (FSS). The frequency of each aggregate and the proposed manner of dissemination are indicated in Table 3.1 (Page 52). The Group proposes that the present practice of compiling monetary base on a weekly basis and monetary aggregates on a fortnightly basis should continue. Data on reserve money and monetary aggregates should be published in the WSS and in other publications of the Bank, as has been the present practice, and should be placed on the RBI Website (*Para 3.4*).

5.29 The Group recommends that measures of liquidity L_1 and L_2 should, however, be compiled on a monthly basis and published in the RBI Bulletin. It is proposed to publish data on L_3 and FSS on a quarterly basis in the RBI Bulletin. The financial sector survey may be accompanied by a review of the developments in the financial sector during the quarter under reference, to bring to the fore the dynamic interlinkages in the financial sector which could be useful in providing important policy inputs (*Para 3.5*).

5.30 At present, money supply is compiled on a reporting Friday basis as well as on the last Friday of the month when it is not a reporting Friday. However, monetary aggregates as on the last Friday of the month do not seem to carry much economic significance, given that the random nature of such Fridays make any meaningful statistical comparison difficult. The Group, therefore, proposes that monetary data based on last Friday returns could be discontinued. However, the Group is of the view that the same for the last Friday of March (not being a reporting Friday) may be continued in order to capture useful information on portfolio shifts of banks (*Para 3.6*).

5.31 The treatment of year-end data for scheduled commercial banks in money supply needs special mention. It has been found that financial year-end monetary aggregates based on their data relating to the last reporting Friday of the year *vis-a-vis* those with end-March base have shown substantial variability depending on the closeness of the last reporting Friday to the last working day of the month. This is because the last working day of March is the balance-sheet date of scheduled commercial banks, which typically show a year-end bulge in deposits and credit. Moreover, the accounting year-end data (end-March) for both commercial and co-operative banks are obtained through a special return with a considerable lag unlike those for the reporting Friday data. Hence, as a matter of operational expediency, the Group is of the view that the year-end monetary data should consist of commercial as well as co-operative banks' data for the last reporting Friday of March, and RBI data as of end-March. However, the year-end monetary data with scheduled commercial banks' data for the balance sheet date (*i.e.*, last working day of March) should continue to be published as a special table in the RBI Bulletin as has been the present practice (*Para 3.7*).

5.32 While March-end data has special economic significance, a proper assessment of monetary conditions in the economy could be made by averaging the data for the fortnights during the financial year. This would insulate the annual flow of information from the computational vagaries that point estimates are subjected to (*Para 3.8*).

5.33 The monetary trends at times may deviate significantly from the desired trajectory on account of strong seasonal movements. In view of this, many central banks publish data on seasonally adjusted monetary aggregates. Seasonality in Indian monetary data essentially arises out of i) seasonal demand for transactions balances and ii) operational practices of the banking system. This implies that the seasonal patterns of the two principal components of the money supply series, *viz.*,

currency with the public and bank deposits should be assessed carefully. Presentation of monetary aggregates as such may not clearly portray the true monetary situation, as the seasonal factors behind monetary movements are not always transparent to the public. It is, therefore, necessary to deseasonalise the monetary data component-wise and then aggregate the resultant components to obtain the deseasonalised monetary aggregates (*Para 3.9*).

5.34 The data collection process is crucial for timely compilation and quick dissemination of monetary aggregates. Presently, the required basic data are made available to the Reserve Bank by banks essentially through hard copies which are processed at various levels using up considerable amount of man-hours. The Group proposes that scheduled banks may be encouraged to forward Section 42(2) returns to the Regional Offices of the Department of Banking Operations and Development (DBOD), Rural Planning and Credit Department (RPCD) and Urban Banks Department (UBD), as the case may be, utilising the VSAT network. The regional offices of DBOD, RPCD and UBD would, in turn, transmit banking data electronically *via* the VSAT network to their respective central offices which, after due scrutiny, would forward the data to the Department of Economic Analysis and Policy (DEAP). Over time, however, the data should be made available by the reporting financial institutions on an on-line basis to the Reserve Bank which in turn has to equip itself with wider area networks (*Para 3.15*).

5.35 With the enlargement of the scope and coverage of monetary/financial aggregates to encompass public financial institutions, investment institutions, mutual funds and non-banking financial companies, the Financial Institutions Division (FID) and Department of Non-Banking Supervision (DNBS) would also have to take necessary steps to put in place a system of regular reporting of relevant statistics to DEAP (*Para 3.16*).

5.36 The increase in the number of aggregates on which data need to be disseminated would entail that DEAP is geared to quickly handle the additional flow of information. The Group proposes that the data gathering work should be completely computerised in DEAP on user friendly and versatile information technology platforms. The relational data base management system (RDBMS) is one such available at present. This could be considered by the Reserve Bank with reference to all its activities where data are large and divergent, and have to be gathered on a frequent basis (*Para 3.17*).

5.37 At present, monetary data are available on the Internet in the RBI Home Page as part of the WSS and other reports. Monetary data should continue to be disseminated through various publications of the Reserve Bank as well as in electronic form (*Para 3.18*).

5.38 In view of the change in the reporting format prescribed particularly for the commercial and co-operative banks, financial institutions and mutual funds, the Group proposes that a structured calendar for each data category may be set in place for smooth transition to the new system of reporting as given in Table 3.5 (Page 56) (*Para 3.19*).

5.39 Based on the data available from October 1998, it should be possible to publish new official series of monetary aggregates from early 1999 (*Para 3.20*).

5.40 The Group proposes that both the existing and proposed monetary aggregates may initially be published for at least a year in the relevant Reserve Bank publications in order to facilitate an understanding of the elements underlying the shift to the proposed aggregates (*Para 3.21*).

5.41 Monetary statistics are required not only for theoretical research but also for formulation, implementation and monitoring of financial and monetary policy. Of the maze of monetary statistics,

monetary aggregates are often used in many countries either as indicators or direct targets of policy. Research in monetary economics gave rise to a number of alternative monetary aggregates, popularly known as ‘superlative monetary indices’, or ‘weighted monetary aggregates’ (WMA) but these are generally found in academic/research journals. The WMA, however, are criticised on the grounds that the weights depend on the choice of benchmark instrument and the indices assume a ‘normal’ relationship between short-term and long-term interest rates which may not hold in practice. In view of these practical difficulties and lack of a potential policy role that the WMA could have, the Group did not favour compilation and dissemination of WMA (*Paras 4.2-4.4*).

5.42 Money supply determination is essentially viewed in terms of a relationship between the central bank money and the monetary liabilities of the banking system as a whole by money multiplier. In the Indian context, since broad money is used as a policy target, the Group proposed to consider the stability and predictability of broad money multiplier. The predictive power of the multiplier equation was found to be quite robust. The result is very significant in the sense that it shows that variations in cash reserve requirements would have predictable impact on money supply notwithstanding the movements in the behavioural currency-deposit ratio (*Paras 4.5-4.14*).

5.43 The response of the multiplier to 1.0 percentage point sustained increase in CRR was a decrease of 0.7 percentage point in the long run. Moreover, it takes around two quarters for a sustained increase in CRR to exert its full effect on the multiplier close to its long-run value. The CRR thus could be considered an effective instrument of modulating the variations in money supply (*Para 4.14*).

5.44 In order to ascertain whether money as defined is demanded in relation to the overall transactions in the economy, it would be necessary

to relate the chosen monetary aggregate to some macroeconomic indicator such as GDP or GNP. The real broad money balances and aggregate income were found to be cointegrated reflecting a long-run equilibrium relationship between real broad money (M_3) and real GDP. However, in order for the broad money demand equation to be adequately used for policy purposes, the stability properties are very critical. The tests for predictive stability showed that there has been an unidirectional short-term deviation from the long-run equilibrium path which needs to be captured in terms of other relevant variables to ensure predictive accuracy. This would also mean that monetary policy exclusively based on the demand function for money could lack precision. Therefore, an appropriate framework of examining this issue could be to study the dynamic stability of an error correction model (ECM) rather than the original structural equation. However, availability of only annual data on GDP and the short period for which the data on other related variables are available following the reforms of the financial sector posed serious difficulties for empirical estimation of a robust ECM model (*Paras 4.16-4.21*).

5.45 In order to evaluate the performance of the new monetary aggregates proposed by the Group, an exercise of estimating the three monetary aggregates (M_1 , M_2 and M_3) and two liquidity aggregates (L_1 and L_2) was undertaken on a monthly basis for the period April 1994 to March 1997. The information content of these new aggregates favoured M_2 to both M_1 and M_3 reflecting that M_2 has the potential of emerging as an important aggregate which could be useful for policy purposes (*Para 4.22*).

5.46 In order to capture the emerging dynamics, the monthly data on the new broad money aggregate (M_3) for the period 1993-94 to 1996-97 were reformulated in a money demand function which was estimated following Johansen's cointegration approach. It would appear that interest rates and exchange rate have become important determinants

in explaining the money demand equation in the recent period. Although this exercise has its own limitations in terms of the short sample period and the specification of the scale variable in terms of the index of industrial production, it does point to the emerging dynamics and the alternate channels through which monetary policy could affect the goal variables (*Para 4.23*).

5.47 The cointegrating relationship between real money balances and a set of variables does not, however, necessarily reflect the direction of causation. The issue of causation is, therefore, addressed by examining the causality and the transmission mechanism of monetary policy (*Para 4.24*).

5.48 The tests of Granger's Causality between nominal money and nominal income showed a bi-directional causality with the impact of nominal money on nominal income being much larger and more persistent. The question of how exactly monetary policy influences output could, however, be addressed effectively by examining the transmission mechanism (*Para 4.25*).

5.49 An examination of transmission channels for the period April 1993 to March 1997 found output response to expansionary monetary policy operating through interest rate to be stronger and more persistent than that of the credit channel. In the deregulated environment, the rate channel appears to have the potential of emerging as a critical variable influencing the credit aggregate (*Paras 4.26-4.29*).

5.50 An alternate specification was set up to examine the impact of money, interest rate and nominal exchange rate on inflation. The results showed that an expansionary monetary policy would reduce interest rate and depreciate exchange rate and would ultimately show up in an increase in inflation. The impact of an expansionary monetary policy on inflation was found to be more pronounced through interest rates as against the

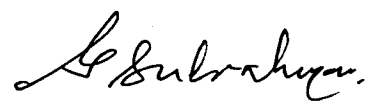
exchange rate. The comparatively weak influence of exchange rate may have to be duly taken note of, given the relatively low level of openness of the economy and prevalence of external capital controls (*Para 4.30*).

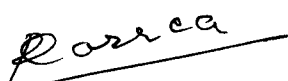
5.51 In light of the incipient empirical evidence, the Group felt that while financial sector reforms would help address the imperfections in various segments of the financial system, it is necessary to formulate appropriate monetary and credit

measures to explain the nature of the interface between the real and financial sectors of the economy. The efficacy of monetary policy would hinge critically on the effectiveness of the transmission mechanism in which the rate as well as quantum variables would have decisive roles to play. Monetary and credit measures therefore need to be monitored for policy purposes and utilised in the overall financial management for improving the allocative efficiency in the system (*Para 4.32*).


(Y.V. Reddy)


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उप गवर्नर
DEPUTY GOVERNOR

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केन्द्रीय कार्यालय,
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RESERVE BANK OF INDIA
CENTRAL OFFICE,
SHAHEED BHAGAT SINGH ROAD,
MUMBAI - 400 001. INDIA.

The Governor,
Reserve Bank of India,
Mumbai.

June 23, 1998

Dear Sir,

I have great pleasure in forwarding the *Report of the Working Group on Money Supply: Analytics and Methodology of Compilation*, set up on December 3, 1997.

I would like to place on record our grateful thanks to Dr. C. Rangarajan who visualised the need for a fresh look at monetary aggregates and to Dr. Bimal Jalan for setting up the Working Group and for taking keen interest in its work.

The Report examines the analytical aspects of monetary survey in the light of the changing dimensions of the financial sector consequent to the implementation of financial sector reforms in India. The Report makes a number of suggestions to strengthen the statistical system in order to enlarge the coverage of financial statistics beyond the traditional confines of the banking sector. Accordingly, the Report proposes compilation of comprehensive analytical surveys of the Reserve Bank of India, commercial and co-operative banks and the organised financial sector at regular intervals. The Report proposes compilation of four monetary aggregates, three liquidity aggregates and comprehensive measures of credit aggregates to effectively capture the dynamics of the monetary and financial system. The conceptual framework of the Report is in consonance with various country practices.

The Report captures the essentials of the academic and the real world problems faced by practitioners in money and finance. The Report, therefore, reflects inputs from the academics and the concerned departmental heads of the Reserve Bank and a number of professionals in the financial sector.

The Group places on record its high appreciation for the views provided by distinguished experts in the area, in particular Shri S. Venkitaramanan, Shri V.B. Kadam, Shri M.G. Bhide, Mr. S.M. Fish, Dr. N.A. Mujumdar, Mr. Kevin W.O'Connor and Mr. R. Krueger.

The Group also immensely benefited from the technical material received from a number of central banks and international organisations such as BIS and IMF.

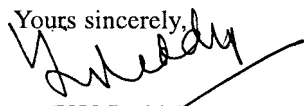
The compilation of the Report has been immensely facilitated by the keen interest evinced and valuable contributions by Professor Ganti Subrahmanyam, Professor Romar Correa and Dr. B.K. Bhoi, Members of the Group.

The Group specially expresses profound thanks to Sarvashri A. Sardar, A.K. Mitra, Indranil Sengupta, S.R. Gokhale, S.N. Mitra and Dr. Sarat Dhal, for putting in hard work in compiling data and literature and for assisting in the drafting of the Report.

On my part, I would like to express my deep appreciation of the contribution of Dr. A. Vasudevan, Vice-Chairman of the Group, especially on technical aspects.

Finally, the Group expresses pleasure in acknowledging the painstaking, thorough, timely and outstanding work done by Shri Deepak Mohanty, Member-Secretary of the Group.

The Group trusts that the Report would be of value not only to the practitioners but also to the academic community and interested public at large.

Yours sincerely,

(Y.V. Reddy)
Chairman