FINANCIAL SECTOR REFORMS AND THE BALANCE SHEET OF THE RESERVE BANK OF INDIA

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The conduct of the Reserve Bank of India's monetary policy in the 1990s has shaped and in turn, been shaped by the programme of financial sector reforms. The operating procedure of monetary policy had to be comprehensively recast to enable the shift from direct to indirect monetary policy instruments in consonance with the increasing market orientation of the economy. This paper examines the impact of financial sector reforms on the balance sheet of the Reserve Bank. In the wake of the financial sector reforms, we find that a regime switching has taken place in the Reserve Bank's asset size as well as in the size of its surplus. Moreover, the Reserve Bank's balance sheet has become more transparent in line with international accounting standards.

I. Introduction

Financial sector reforms in India are traditionally seen in the context of changes in the regulatory regime and performance of the constituents of the financial sector. The domain of constituents is taken to be fairly wide and the canvass of enquiry quite large. Along with commercial and co-operative banks, the changes in the health and efficiency pattern of development financial institutions as well as non-banking financial companies are usually taken into account. Yet a neglected issue in these discussions is the behaviour of the regulator(s). Evidently, as long as the regulatory functions undergo a transformation during the process of financial sector reforms, the behaviour of the regulators also merits due attention. It is in this context that this paper seeks to address the behaviour of a major Indian regulator, *viz.*, the Reserve Bank of India.

This raises an important question: how do we measure the behaviour of the Reserve Bank? The behaviour of any economic entity could be quite multi-dimensional – this may involve the interaction amongst regulated entities, as well as the trajectory of a number of variables capturing the regulator's own inter-temporal behaviour. As far as the present paper is concerned, we take a more hedonistic, *albeit* focused, view and define the behaviour of the Reserve Bank entirely in terms of its balance sheet. Has the balance sheet of the Reserve Bank changed in recent years? How far have financial sector reforms influenced the balance sheet of the Reserve Bank? What have been the ramifications of such changes? The present paper seeks to explore some of these questions.

The rest of the paper is organised as follows. Section II presents the basic features of the balance sheet of a central bank and their 'typical' evolution. In this light, the specific features of the Reserve Bank's balance sheet in recent years are traced in Section III. Section IV poses the question: has there been a regime switching in the Reserve Bank's balance sheet in early 1990s? The answer to this is sought to be examined in terms of trends in two key variables, *viz.*, balance sheet size and the surplus transferred to the Government. Section V concludes.

II. Framework of a Central Bank's Balance Sheet

A central bank is the national financial institution that exercises control over key aspects of the financial system (IMF, 2000). The evolutionary process of central banking, while shaped by the economy-specific history, can nevertheless be mapped generally into a standard pattern. Commencing operations as banker to the government, central banks have progressed to assume monopoly of issuance of currency and *ipso facto*, in course of time, by the virtue of centralising reserves, logically diversified to banker to banks. Naturally, the structure of central bank balance sheets have also metamorphosed apace reflecting these developments.

The main items on the liability side of a central bank balance sheet include currency and bank reserves. The size of bank deposits held with the central bank depends on the three constituents of required reserves, settlement balances and excess reserves. Governments typically park their cash balances with the central bank, which is usually their only banker. The capital account comprises paid-up capital - often fully state-subscribed and reserves, kept for contingency and prudential purposes besides revaluation accounts. Miscellaneous liabilities, such as bills payable, are grouped together under 'other liabilities'.

On the asset side, most central banks continue to hold "monetary" gold. The quality of the assets backing the national currency is further reinforced by restricting investments in terms of sovereign papers of the domestic government and foreign governments, often in foreign currency. Although some do accept commercial paper, most central banks prefer to deal in gilts because of the concomitant absence of market risk (Zelmer, 2001). Central banks also offer lines of credit to their governments and to banks (especially, refinance), as their banker and sometimes also, liquidity support to rest of the financial sector. Non-financial assets, such as land and buildings and bills receivable, are shown under 'other assets'.

Central Bank Balance Sheet and the State of the Economy

The structure of a central bank balance sheet has tended to change with the evolution of economies (Van't dack, 1999). A stylised story typically runs as follows: as the economy monetises through deepening of banking intermediation and there is a progressive switch away from demand for cash to bank deposits, bank reserves enlarge for inter-bank settlement and out of prudential and policy considerations. The gradual development of financial markets enables the central bank to pare down required reserves and operate through indirect instruments of monetary policy, such as open market operations. Besides, as the payment and settlement systems mature to open up the possibilities of alternate deregulated clearing networks, the requirement of

settlement balances declines. The lower requirement of bank reserves, together with lower cash demand, ends up shrinking the size of the central bank balance sheet. On the asset side, passive accommodation of government budget deficits and relative scarcity of foreign currency in emerging market economies till the 1980s resulted in a preponderance of government paper. The subsequent onset of globalisation, however, changed the picture of the central bank balance sheet dramatically with a sharp increase in the ratio of foreign assets to domestic assets.

Central bank balance sheets also tend to reflect the inter-relationship between the monetary authorities and their respective governments (Hawkins, 2003). Quite clearly, central banks are mostly owned by their governments either entirely or with restrictions on public shareholding. Governments have, in turn, tended to benefit from their capacity as owners by not only in terms of monetising their budget deficits but also by statutorily garnering a dominant share of profits of their central banks. The unsustainability of budget deficits and the implications for inflation, however, underscored the need for at least an instrument independence for the central bank to manage its balance sheet, autonomous of government interference, in their pursuit of price stability. Accordingly, the burgeoning literature on central bank autonomy that emerged during the 1980s stressed the need for the ability of an independent central banker to neutralise political business cycles. Many countries have passed fiscal responsibility legislations, which eliminate – or at least, limit – monetisation of fiscal deficits. Reflective of this, the share of credit to the government has been shrinking in most central bank balance sheets.

The changes in the central bank balance sheets have also mirrored the evolving role of the central banks *vis-à-vis* their banking systems. The need to neutralise the monetary impact of a central bank's accommodation of government budget deficits initially required a hike in required reserves. The accent on fiscal discipline enabled a change in policy preference towards a reduction of the statutory reserve ratios, subsequently thereby dampening the expansion of central bank balance sheets. The need to raise the reserve ratios

have, however, resurfaced in the recent years as the surest instrument for sterilising the monetary impact of a pouring of external capital inflows as also to control the ability of banks to overextend bank credit after exercising all the other instruments of monetary policy. The development of financial markets have also enabled central banks to substitute traditional administered standing refinance support to banks with market-determined pricing of primary liquidity.

Against this background, we turn to the specific case of the impact of Indian financial sector reforms in the 1990s on the Reserve Bank's balance sheet.

III. Reserve Bank of India's Balance Sheet: Structure, Accounting Policies and Changing Monetary Policy Framework

Structure of the RBI's Balance Sheet

The structure of the balance sheet of the Reserve Bank conforms broadly to the standardised framework except for one notable difference. In pursuance of the Hilton Young Commission's recommendation in 1926, the accounts of the Reserve Bank, under Section 23(1) of the Reserve Bank of India Act, 1934, are bifurcated into the Issue and Banking departments. A separately carved balance sheet for the issue function was intended to ensure the full backing of issuance of currency by high quality assets such as gold coin and bullion, eligible foreign securities, Government of India Rupee securities, Rupee coins and eligible internal bills of exchange and other commercial paper (not yet held) to "inspire full confidence in the new note". The Issue department is further statutorily stipulated to maintain a minimum of Rs. 200 crore in foreign securities and gold with at least Rs. 150 crore to be kept in gold.[1]

The Banking department's balance sheet essentially captures the Reserve Bank's functions as banker to the Government and the banking system. The Government parks interest-free Government deposits subject to a mutually agreed minimum with the Reserve Bank and receives, in return, Ways And Means Advances (WMA) of three-month maturity to essentially enable it

[1] See Jadhav *et al* (2003), and RBI (1983) for details.

to meet temporary mismatches in fund flows. As the public debt manager, the Reserve Bank manages the issuances of Government papers and, in absence of market appetite, if required, takes devolvements or private placements in its own investment portfolio.[2] Paper with contingent obligations, such as repurchase agreements under the Liquidity Adjustment Facility (LAF) are parked in the Banking department. Effective April 2004, with a view to absorbing the liquidity overhang on a durable basis, the Government is also parking the proceeds of its issuances of securities under the Market Stabilisation Scheme (MSS) in the Banking department, to be kept frozen till redemption.

Reflecting its function as banker to banks, the Reserve Bank incurs liabilities in the form of bank reserves including a statutorily required cash reserves ratio (CRR) component, settlement balances and excess reserves. Liquidity support to banks has been progressively rationalised by replacing most of the administratively priced standing refinance facilities (export credit refinance remains the sole such facility) with the LAF. Prevailing surplus liquidity conditions have also meant that, in recent years, banks' recourse to standing facilities have been progressively going down.

The Reserve Bank's capital account, strictly speaking, comprises the paid-up capital of Rs. five crore contributed entirely by the Central Government since January 1, 1949 and reserves.[3] Besides, the Reserve Bank has also built up a Contingency Reserve (and Asset Development Reserve) earmarked from the disposable surplus prior to the annual profit transfer to the Central Government and also maintains revaluation accounts, including the Currency and Gold Revaluation Account (CGRA), which are all parked in 'Other Liabilities' of the Banking department.

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[2] This practice of subscription to primary auctions of Government securities, however, would be discontinued, except under exceptional circumstances, effective April 2006 under the Fiscal Responsibility and Budget Management (FRBM) Act, 2003.

[3] This was the initial contribution of Rs. five crore by the Central Government in terms of Government securities and transfers following gold revaluation up to October 1990.

Accounting Policies

The Reserve Bank has always followed the most conservative canons of central bank accounting. The growing emphasis on strengthening central bank balance sheet practices in consonance with the increasing accent on the credibility of monetary policy in a period of financial liberalisation thus found the Indian central bank reasonably well prepared. The lacunae really were in the arena of transparency. The post-reform period was, accordingly, marked by a number of initiatives to enhance balance sheet disclosures, well-supported by intra-year release of data on central bank operations. The Advisory Group on Transparency in Monetary and Financial Policies (Chairman: Shri M. Narasimham), set up by the Standing Committee on International Financial Standards and Codes (Chairman: Dr. Y.V. Reddy), reported that the Reserve Bank, by and large, complied with the international central bank data dissemination standards (RBI, 2000).

An assessment of the Reserve Bank's accounting standards needs to be viewed in the context of the recent literature on the health of central bank balance sheets (Kurtzig and Mander, 2003). It was long argued that central bank accounting practices cannot be benchmarked to the usual accounting standards because the central bank is itself a unique entity. There is, however, a growing consensus that the adoption of the international best accounting standards, if necessary with some national adaptations, could impart a greater credibility to the conduct of monetary policy itself in an era of financial liberalisation. Most central banks are now beginning to adopt some variant of one of the three accounting standards - the International Accounting Standards (IAS), adopted by the International Monetary Fund's (IMF) central bank safeguard assessments standard, US Generally Accepted Accounting Principles (US GAAP) and the European Central Bank GAAP (ECB GAAP) (Catsambus and Hemus, 2003).

How do the Reserve Bank's accounting standards compare with the international best practices? The Reserve Bank indubitably satisfies the basic requirements of income recognition on accrual basis, periodic revaluation of

the investment portfolio and annual external audit. This has been augmented by several steps to further consolidate its balance sheet in the post-reform period (Tarapore, 1997). Foreign currency assets, for example, are valued every week for exchange rate changes since 1995-96.

A critical difference between the Reserve Bank's accounting practices and the international accounting standards, nevertheless, lies in the treatment of unrealised revaluation gains. Most accounting standards now favour that asset revaluation – realised and unrealised – should pass through the income statement in the interest of fair valuation. The Reserve Bank, like many other central banks, follows the even stricter norm of marking its investments at the lower of book or market value, thereby adjusting unrealised losses against income without recognising unrealised gains. In case of foreign currency assets, revaluation arising out of exchange rate changes is symmetrically transferred to an adjustment account, denominated as the Currency and Gold Revaluation Account. Many central banks are, in fact, wary of recognising exchange rate revaluation, as income because fiscal pressures to arrogate unrealised gains could have monetary implications in case of future exchange rate appreciation.

Although there is no explicit provision for maintaining reserves in the Reserve Bank of India Act, 1934, the Reserve Bank had created a number of reserves under the enabling provisions of Section 47. A medium-term target of achieving Contingency Reserves of 12 per cent of assets by June 2005 was adopted in 1996-97 (Reddy, 1997). This is in line with the recommendations of the Informal Group (Chairman: V. Subhramanyam) which proposed a cover of five per cent of balance sheet, for risks for a 10 per cent volatility in prices of domestic assets and foreign securities because of monetary /exchange rate policy compulsions; five per cent, for revaluation of foreign assets and gold; and two per cent, for systemic risks and requirements relating to central bank development functions. An Asset Development Reserve was also instituted in 1997-98, within the ambit of the 12 per cent target, in order to meet the internal

capital expenditure and investments in its subsidiaries and associated institutions.

It is once again necessary to place the Reserve Bank's initiatives in the context of international trends. An integral part of the debate over central bank accounting standards is the issue of central bank reserves. Well-capitalised central banks are increasingly thought to enjoy greater credibility as the conduct of monetary policy is not hamstrung by balance sheet considerations (Stella, 1997 and 2002; Sullivan, 2003). A counter-point is that the commercial viability of central banking is hardly an issue when most of the central banks are owned by the Government (Zhu, 2003). Like the Reserve Bank, central banks in emerging market economies are now building up reserves, especially as their fiscal positions are often not strong enough to protect central bank balance sheets.

A natural corollary is the issue of the partition of the central bank surplus between central bank reserves, the Government and non-Government owners, if any. Unlike in case of the Reserve Bank of India Act, 1934, central bank legislation in most economies usually specify the allocation for each entity. A survey of country practices demonstrates that although the Government usually enjoys the dominant share for having farmed out the right of note issue, central bank reserves enjoy the first charge (Pringle and Courtis, 1999). Central bank reserves in many countries are statutorily mandated at a proportion of the surplus, paid-up capital, money supply or even national output.

The foundations of balance sheet transparency in the case of the Reserve Bank were always strong. The Reserve Bank central board has to statutorily submit annual audited accounts, together with a report on its working to the Central Government within two months of the end of the accounting year (*i.e.*, June 30). Besides the annual accounts, a *Weekly Statement of Affairs* (WSA) of the Issue and Banking departments, as at close of business on Friday, is not only statutorily transmitted to the Central Government but also published by the following Saturday. In view of the growing importance of the strength of

the central bank balance sheet with financial liberalisation, the 1990s witnessed a flurry of balance sheet disclosures, including prior commitment to certain balance sheet allocations, such as, the transfers to the central bank reserves (RBI, 2004a). Beginning with the notes to accounts in the 1991-92 *Annual Report*, the Reserve Bank has steadily enlarged the information base on its own operations encompassing details regarding its income from domestic (including open market operations (OMO)) and foreign sources, expenditure, interest payments, other assets/liabilities, contingency reserves, investments in subsidiaries/associate institutions and even unrealised gains in foreign currency assets. This is reinforced by data on forward assets/liabilities, on a monthly basis and money market operations and now bank reserves, on a daily basis.

How do the Reserve Bank's disclosure standards compare with international best practices? There appear to be four areas of differences. First, most central banks publish a consolidated balance sheet of all its functions. The Reserve Bank, in contrast, still follows the Bank of England, in publishing separate balance sheets for its issue function and other functions. While the treatment of the issue function as a separate accounting entity, with statutory restrictions on assets eligible, does impart an additional solidity to the Rupee, it could be argued that such restrictions are also possible within the ambit of a consolidated balance sheet. Second, most international accounting standards prescribe the preparation of a cash flow statement in addition to the other financial statements such as a balance sheet, profit and loss account, statements of recognised gains and losses and accounting policies. The Reserve Bank, like many other central banks, including the US Federal Reserve and the European Central Bank system of Central Banks, does not prepare a cash flow statement. Thirdly, in the Reserve Bank Balance Sheet, the bulk of its contingency reserves are accounted under the balance sheet head of 'other liabilities' rather than 'reserves', which includes only the original Government contribution of Rs.five crore and the periodic gold revaluation up to October 1990. Annual data on each of such reserves are, however, published in the Reserve Bank's *Annual Report*. Besides, fortnightly data on the Reserve Bank's consolidated

capital account is published in the Reserve Bank Survey, recommended by the Working Group on Money Supply (Chairman: Y. V. Reddy) in the Reserve Bank *Bulletin* (RBI, 1998). Finally, central banks, such as the Bank of England or the Reserve Bank of New Zealand, publish value at risk data. Some central banks, including the Banks of England and Canada and the Reserve Bank of New Zealand, also publish expenditure profiles by function.

The balance sheet of any entity is linked to its strategic operations. The management literature has shown that there is an organic relationship between operations, marketing and financial decisions of any firm as well as the external operating environment. The structure of balance sheet of a firm would, thus, be reflective of not just its financials but all the three basic strands of management, *viz.*, operations, strategy and finance. Central banks are no exception to this general rule. Thus, having described the structure and accounting policies of the Reserve Bank's balance sheet, let us now proceed to link it to its operations, *viz.*, implementing monetary policy.

Changing Monetary Policy Framework and Balance Sheet Management of the RBI[4]

A key feature of monetary reforms has been to impart flexibility to the Reserve Bank's conduct of by attenuating fiscal dominance and enabling a switch towards a more market-oriented monetary policy operating procedure (Jadhav, 2003). The growing fiscal deficit during the pre-reform period was financed essentially through a statutory pre-emption of resources of banks and monetisation. In terms of analysing money supply by the consolidated balance sheet approach framework for the banking sector as a whole (Reserve Bank and the banking system) followed in the 1960s and the 1970s, this meant that the expansionary fiscal impact on the money supply had to be assuaged by restricting commercial credit creation and dovetailing the allocation of scarce bank credit by the Reserve Bank's sector-specific refinance support to check inflation. Transiting from a credit targeting to a monetary targeting framework

[4] For details on monetary operations and central bank's balance sheet as well as on approaches for analysing the Reserve Bank's balance sheet, see Schaechter (2001) and Jadhav *et al* (2003).

in the 1980s brought in vogue an analysis of money supply through the money multiplier approach, whereby the focus shifted towards a management of the Reserve Bank's 'monetary' liabilities (or, reserve money). Typically, this entailed muting the monetary impact of high powered monetary accommodation of the Government by raising the cash reserve ratio (CRR) leading to a fall in the value of money multiplier.

Monetary and financial sector reforms since the 1990s freed the process the price discovery in the financial markets, which in turn, required an increasing market orientation of monetary policy. Accordingly, monetary policy evolved apace from a monetary targeting to a multiple indicator approach with policy formulation being based on a wider range of information variables including money supply and a more proactive application of indirect tools of monetary policy. The LAF has emerged as the principal tool of managing liquidity and stabilising short-term interest rates. In addition, the Reserve Bank combines OMO with private placements/devolvements in government securities auctions to insulate the price of public debt from the temporary fluctuations in liquidity. The dynamics of the Reserve Bank's balance sheet management captures the changing relationship of the Reserve Bank with the Government, as well as the banking and the rest of the commercial sector since the 1990s.

The Reserve Bank's net credit to the Central Government has progressively reflected market operations through a combination of private placement and open market (including repo) operations rather than direct accommodation through Ways And Means Advances. Similarly, with the medium term objective of aligning the CRR with the statutory minimum, rationalisation of standing refinance support for banks and primary dealers coupled with operation of the LAF, the Reserve Bank's interaction with the banks and other institutions has progressively reflected market-based pricing.

The movements in the net foreign assets of the Reserve Bank reflect its foreign currency operations for building foreign exchange reserves and stabilising the foreign exchange market, aid receipts by the Government and

income generated by foreign currency assets. The purchase/sale of foreign currencies from Authorised Dealers (essentially banks) initially increase/decrease the foreign currency assets of the Reserve Bank with a corresponding increase/decrease in bank reserves which would raise/reduce reserve money and increase/decrease bank liquidity. In the case of aid receipts, since the Reserve Bank routes the Rupee equivalent of aid receipts to the Government while adding the foreign currency to the foreign exchange reserves, there is no direct monetary effect. Similarly, the income on foreign currency assets also add to foreign exchange reserves but do not have a direct monetary impact as they are appropriated into the non-monetary Other Liabilities account, which is a claim of the Reserve Bank on itself. The revaluation in foreign currency assets arising from fluctuations in exchange rates is money-neutral reflecting transfer to the Currency and Gold Reserve Account (CGRA), again a claim of the Reserve Bank on itself. The revaluation of foreign securities arising out of changes in market prices, is adjusted against current income in case of depreciation while appreciation is not provided for – there is thus, no monetary impact, although the size of the balance sheet could be altered. In case of gold, the entire change in value, because of either price or exchange rate changes, is transferred to the CGRA, affecting the size of the balance sheet without impacting either reserve money or profitability.

Dismantling of administered interest rates in money and other financial markets in the reform period necessitated developing a third and more recent paradigm of monetary policy which links the movements in the central bank balance sheet to the determination of interest rates through bank reserves (RBI, 2000). In this approach, flows in bank reserves are analysed by partitioning the Reserve Bank's balance sheet in terms of components under policy control (changes in reserve requirements, standing refinance support and OMO) and those autonomous of this control (rest of the balance sheet items like currency, ways and means and advances to the Government and so on). In an alternative variant of the bank reserves approach, the balance sheet analysis also distinguishes items by an additional criterion of their amenability for drawing

credible forecasts from those that cannot be projected with certainty so as to judge the influence of bank reserves on short-term interest rates (RBI, 2002).

IV. Regime Switching in the Reserve Bank's Balance Sheet

In the above perspective, a pertinent question is whether there had been any significant change in the Reserve Bank's balance sheet since the initiation of reforms? Building on Jadhav *et al* (2003), we try to seek this separately in terms of two crucial variables, *viz*., (a) size of the balance sheet, and (b) the surplus transferred by the Reserve Bank to the Government.

Methodology of Detecting Regime Switching Points

Econometricians have been interested in various types of generalised models which admit different, discretely changing parameter values at different time periods – these are termed as regime switching models - since the beginning of the 1970s. These can roughly be categorised into two broad groups, *viz*., (a) models where the change of regime is determined by an observed variable, and (b) models where the change of regime cannot be observed directly. In particular, when the generating principle of the switching process is not known, it needs to be modelled independently from the observed variables. In all such cases, two specifications are prominent in the literature, *viz*., (a) models where the current state is independent of the other states and the probability of a certain state does not change over time, and (b) models where the current state depends only on the previous state, *i.e.*, the states follow a Markov chain.[5] In the cases that follow, we have taken the time trend of size and surplus of the Reserve Bank [of the form $\log(x) = a + bt$] and computed the maximum likelihood switch date for a deterministic change using the procedure suggested by Goldfeld and Quandt (1973). This test of regime switching can broadly be placed under the second group of models of Markov chains. A main advantage of the procedure is that it does not assume a pre-assigned regime

[5] See Hamilton (1992) for a detailed discussion on the Markov-switching Models.

switching date and is based on the likelihood function the programme detects the break point endogenously.[6] The algorithm works as follows:

Consider two regimes, 1 and 2. At any point of time, nature selects regime 1 or 2 at the i^{th} trial, independent on what regime the system was on the previous trial. Let y_i be variable which takes the following form: $y_i = \sum_{i=1}^{k} b_{1j} x_{ji} + u_{it}$ in regime 1, and $y_i = \sum_{i=1}^{k} b_{2j} x_{ji} + u_{2t}$ in regime 2. Let the probability vector that the system in one regime or the other be $\lambda_i = (\lambda_{1i}, \lambda_{2i})$. Then at each point of time (*i.e.*, i), the algorithm computes the maximum likelihood of shifting from regime 1 and regime 2 and accordingly calculates the posterior probability of a regime shift. The most probable date is then detected by the global maximum of the maximised likelihood values.

Size of the Reserve Bank Balance Sheet

It is pertinent to appreciate that the size of the Reserve Bank's balance sheet is governed by two sets of macroeconomic factors. First, the use of cash in transactions demand, itself a function of the relative spread of banking systems, determines the scale of the note issue operation. Second, the choice of monetary policy instruments, *viz.*, reserve requirements or OMO, again often a function of the development of financial markets, also influences the size of the central bank balance sheet. The size of the Reserve Bank's balance sheet, in relation to GDP at current market prices, continued to enlarge steadily throughout the pre-reform period. This trend reversed in the latter half of the 1990s, when the Reserve Bank Balance Sheet began to shrink in relation to nominal output (Chart 1 and Table 1). This break essentially reflects the switch from direct instruments of monetary control to indirect instruments which lay at the heart of the financial sector reforms undertaken in the 1990s.

[6] This was computed using the RATS procedure SWITCH.SRC, available at www.estima.com

Chart 1: Size of the Reserve Bank's Balance Sheet

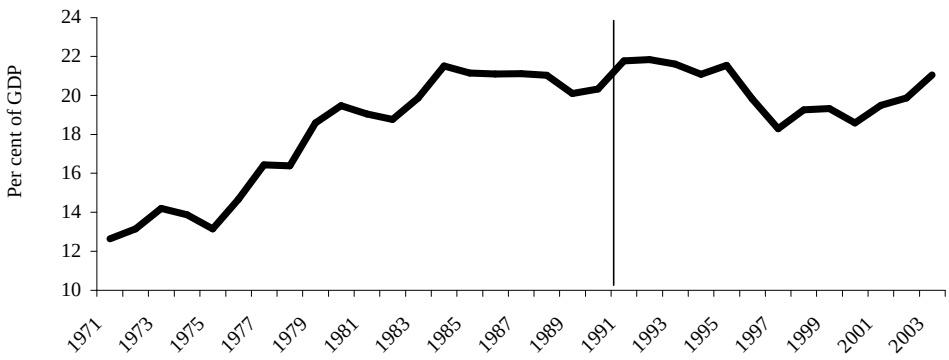


Table 1: The Reserve Bank's Balance Sheet: Summary Statistics

Ratio	1970s	1980s	1990s	1992-97	1997-2004
1	2	3	4	5	6
Balance sheet to GDP (per cent)	15.3	20.4	20.3	20.5	19.9
Notes in circulation to balances of scheduled commercial banks	9.3	2.3	2.2	2.0	3.4
Capital account to total balance sheet size	14.7	19.6	17.6	14.1	20.9
Size of the balance sheet of the Issue Department to the Banking Department	2.0	1.0	1.1	1.1	1.3
Foreign Assets to Domestic Assets (per cent)	25.6	22.8	29.8	24.5	143.0
Surplus transferred to the Government (per cent of balance sheet size)	1.4	0.4	1.5	1.5	1.9
Memo					
Currency to M_3 (per cent)	32.2	21.7	19.0	19.6	16.9
Cash Reserve Ratio (end period) #	6.0	15.0	9.0	10.0	5.0

Per cent of eligible net demand and time liabilities excluding additional requirements or release/exemption on incremental NDTL.

Source: RBI Annual Report, various issues.

Note: Following the recommendations of the Working Group on Money Supply: Analytics and Methodology of Compilation (Chairman: Y. V. Reddy), the RBI's capital account is defined as the sum of the capital paid-up, reserve fund, national funds, contingency reserves (including the Asset Development Reserve), exchange fluctuation reserves (renamed Currency and Gold Revaluation Account), and exchange equalisation account. As data on each account head are not separately available till the mid-1990s, we take other liabilities of the RBI as a proxy for the balances in the contingency reserves, exchange fluctuation reserves and the exchange equalisation accounts.

To begin with, we looked into the size of the Reserve Bank's balance sheet. Since the Reserve Bank maintains a separate balance sheet for the Issue

and Banking departments, for the purpose of finding breaks, we have defined the aggregate assets (A) as simply the sum of assets kept in the two departments. Following Goldfeld and Quandt (1973), we then proceeded to find the likelihood of the function Log(A) = a + bt, over the interval [1971, 2004] and looking at the posterior probability tried to detect the date of regime switching. The results are reported in Table 2. The tests *a priori* indicate a break at 1991.

Table 2: Results from Regime-Switching Test for Reserve Bank's Assets

Possible Date of Regime Shifts	Log Likelihood	Posterior Probability
1	2	3
1980	105.03010	0.00000
1981	106.65497	0.00001
1982	108.77659	0.00012
1983	110.34494	0.00057
1984	108.37627	0.00008
1985	108.71471	0.00011
1986	109.26209	0.00019
1987	109.73945	0.00031
1988	110.46415	0.00064
1989	112.52810	0.00507
1990	117.58037	0.79288
1991	**117.81245**	**1.00000**
1992	117.52788	0.75234
1993	117.05937	0.47091
1994	116.22735	0.20493
1995	117.77104	0.95944

The strategy of "social banking" in the pre-reform years seemed to have exerted two offsetting pressures on the size of the Reserve Bank Balance Sheet. The hike in reserve requirements to contain the monetary (and inflationary) impact of the increasing order of deficit financing, a natural corollary of the increasing scale of government, obviously expanded the Reserve Bank's balance sheet. This was only partially offset by the contractionary effect of a reduction in the ratio of cash to bank deposits, emanating from the spread of 'banking habits' following the extension of the branch network after the nationalisation of 14 banks in 1969.

The size of the Reserve Bank Balance Sheet, in fact, continued to expand in the first half of the 1990s. The monetary impact of the accretion to the Reserve Bank's foreign assets was initially also sought to be neutralised by the increase in reserve requirements, by and large, in an extension of the earlier strategy of similarly containing monetary impact of the monetised deficit. It is only since the mid-1990s that the re-introduction of OMO and parallel development of a Government securities market enabled the Reserve Bank to insulate its balance sheet from the switches in capital flows by trading the surpluses on the external account with the deficit on the Government account. This simultaneously allowed the Reserve Bank to pursue its medium-term goal of paring reserve requirements to the statutory minimum of 3.0 per cent of banks' net demand and time liabilities, especially as the parallel slowdown in economic growth necessitated the easing of liquidity conditions. As a result, the Reserve Bank Balance Sheet, thus, began to shrink in the latter half of the 1990s.

Beyond size effects, the changes in the operating procedure of monetary policy are mirrored in changes in the composition of assets and liabilities of the Reserve Bank's balance sheet (RBI, 2004a). Reflecting the changes in the monetary strategy, the ratio of currency to bank reserves, which declined steadily during the pre-reform years and the first half of the 1990s, began to rise since the latter half of the 1990s – even though the share of cash in broad money continues to decline. The share of the capital account - the other major component of the Reserve Bank's liabilities - has fluctuated in the 1990s with the deregulation of the financial prices. As a result, the share of the issue function in the Reserve Bank Balance Sheet (proxied by the ratio of the balance sheet size of the Issue department to that of the Banking department) followed a U curve, bottoming out in the mid-1990s.

The changes in the Reserve Bank's asset composition have been undeniably the most dramatic. Barring the few years of strong remittances and non-resident deposit inflows in the mid-1970s and early 1980s, the Reserve Bank's asset base was almost entirely dominated by domestic assets either in

the form of its net credit to the Government or sector-specific refinance facilities. Foreign exchange reserves, in fact, dipped to a mere US $ 0.8 billion in August 1991, symptomatic of a balance of payments crisis.

A distinctive feature of the post-reform period was the growing influence of capital flows on the Indian monetary dynamics. This called for a monetary strategy of counter-balancing the domestic and external sources of monetisation to pursue the overall objective of price stability, on the one hand and maintaining the external competitiveness of the economy, on the other. In the process of sterilisation, the finite stock of Government paper with the monetary authority emerged as a constraint, especially as the parallel cuts in the CRR was often mirrored in equivalent OMO. It is in this context that the Reserve Bank's Working Group on Instruments of Sterilisation recommended the institution of a Market Stabilisation Scheme (MSS) (RBI, 2004). Under the scheme, operationalised in April 2004, the Government mops up the Rupee liquidity released by the Reserve Bank's purchases in the foreign exchange market by issuing Government paper and parks the proceeds with the central bank (and thereby draws down its net credit from the monetary authority). The MSS, thus, immobilises the Rupee liquidity released by the Reserve Bank's operations in the foreign exchange market within the Reserve Bank Balance Sheet, in contrast to the parallel offloading of domestic assets in the case of conventional open market operations. The resultant increase in the size of the Reserve Bank Balance Sheet moderates the increase in the ratio of foreign assets to domestic assets.

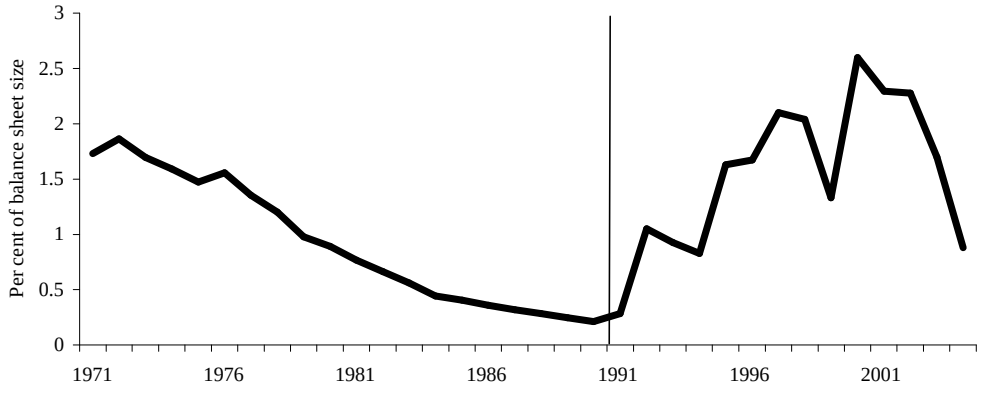
Surplus transferred to the Government

The Reserve Bank's rate of surplus, it will be recognised, is essentially a function of two factors: profitability and the proportion of that profit which would be retained in its balance sheet. Although Indian monetary policy certainly never targeted a level of central bank profitability, in the event, both the rate of profit and the proportion of retention are usually governed by the contemporary macroeconomic circumstances. The rate of profit, for example,

has depended on the particular regime of financial pricing. The degree of retention, has depended on the apportionment of the quasi-fiscal costs of monetary policy, on the one hand, and the strategy of risk management, on the other.

The Reserve Bank's rate of surplus transferred to the Government, in relation to the size of the balance sheet, recorded a sustained decline during pre-reform years (Chart 2 and Table 1). In the post-reform period, in contrast, the rate of the Reserve Bank's surplus fluctuated along an increasing trend. As in case of the size of the Reserve Bank Balance Sheet earlier, this break was also brought about by the transformation in the monetary regime in the 1990s. It is in this context that the rate of surplus itself emerges as an indicator of the monetary policy strategy.

Chart 2: Reserve Bank's Rate of Surplus



As earlier, we looked into the size of surplus of the Reserve Bank transferred to the Government through the likelihood of the function log (Surplus) = a + bt, over the interval [1971, 2004] through the posterior probability tried to detect the date of regime switching. The results are reported in Table 3. The tests ***a priori*** indicate a break at 1992.

Table 3: Results from Regime-Switching Test for RBI's Surplus

Possible Date of Regime Shifts	Log Likelihood	Posterior Probability
1	2	3
1980	38.87548	0.00001
1981	39.65758	0.00002
1982	40.23904	0.00003
1983	40.66717	0.00005
1984	40.93872	0.00007
1985	41.05841	0.00008
1986	41.07293	0.00008
1987	41.09252	0.00008
1988	41.30584	0.00010
1989	42.03649	0.00020
1990	44.04463	0.00151
1991	46.91896	0.02667
1992	**50.54316**	**1.00000**
1993	41.77808	0.00016
1994	29.90994	0.00000
1995	25.74282	0.00000

The steady decline in the Reserve Bank's rate of surplus in the pre-reform period reflected the imperatives of the social control of banking. First, the Reserve Bank's asset base came to be heavily loaded in favour of *ad hoc*s as deficit financing emerged as a principal source of financing the fiscal deficit. The need to contain the interest cost of the soaring burden of public debt pegged the interest rate on *ad hoc* Treasury Bills at 4.6 per cent since July 1974, notwithstanding an average inflation of around 8.0 per cent. Secondly, the Reserve Bank, as noted earlier, had to raise reserve requirements in order to contain the monetary impact of deficit financing. At the same time, the rate of interest on required reserves beyond the mandatory minimum of 3.0 per cent of banks' demand and time liabilities was raised steadily to 10.5 per cent by March 1990 from 4.75 per cent in June 1973, to cushion the impact of the impounding of resources in the Reserve Bank's balance sheet. Given the virtually unchanged rate of income, this began to naturally eat away into the Reserve Bank's profitability. Finally, the Reserve Bank increased its allocations to the national funds to fund commitments of development central banking. The rate of surplus in the pre-reform years was thus squeezed on both

accounts, *viz*., lower profitability as well as higher retention in the Reserve Bank's balance sheet.

The Reserve Bank's rate of surplus began to climb up during the 1990s, in response to the various structural shifts in the operating procedure of monetary policy. The influence of monetary reforms is, however, in a sense, non-linear, primarily because the programme of financial liberalisation is essentially about removing the cross-subsidies, which obfuscated the process of price discovery. What is important to appreciate is that the various drivers, irrespective of their diverse impact, have in common, an organic link with monetary reforms.

First of all, the deregulation of financial markets exposes the Reserve Bank's income to fluctuations in interest rates, especially in the context of the introduction of auctions of government securities auctions and OMO at market-related prices in 1992-93 and the phasing out of 4.6 per cent fixed rate *ad hoc* and tap Treasury Bills. The income profile strengthened in the early 1990s with the acquisition of Government paper at market-related interest rates, especially as the weighted average interest rate on Government borrowing rose to 13.8 per cent by 1995-96. Since the Reserve Bank follows the conservative accounting norm of marking its investment portfolio at the lower of book or market value, the subsequent softening of interest rates, which pulled the weighted average interest rate on government borrowing down to 5.7 per cent by 2003-04, ended up dampening income. The upturn in the interest rate cycle in the first quarter of 2004-05, on the other hand, resulted in a depreciation of the investment portfolio, which drove down the Reserve Bank's rate of surplus during 2004-05 to 0.9 per cent from 1.5 per cent during 1991-2004.

Secondly, the build-up of foreign exchange reserves, since the early 1990s, resulted in the substitution of relatively high-yielding government Rupee securities with relatively low-yielding foreign currency assets. Besides, the opening up of the economy in the 1990s, also saw regular switches in capital flows, which were, in turn, mirrored in changes in domestic liquidity conditions. As the Reserve Bank had to operate in the money, Government

securities and foreign exchange markets in order to ensure orderly conditions, profits from open market operations fluctuated in a range as wide as 0.4 – 20.7 per cent of domestic income between 1997-98 to 2003-04. The imperative of warding off speculative pressures during bouts of volatility in the foreign exchange markets forced the Reserve Bank to absorb liquidity through high-cost reverse repo operations, such as during July-August 2000, with a further hit on domestic income.

Thirdly, the shift to indirect instruments as part of the increasing market orientation of monetary policy allowed the Reserve Bank to reduce interest payments on required reserves. The rate of interest paid on eligible CRR balances was gradually scaled down in the early 1990s. This was reinforced by the sustained cut in the cash reserve ratio itself since 1997-98.

The determinants of the transfer of the Reserve Bank's surplus to the Government was also influenced by the structural transformation in the monetary system. The Reserve Bank transferred the commitments in terms of the exchange rate guarantee for FCNR(A) deposits the Government books effective July 1, 1993. In order to compensate the fisc for the exchange losses arising from the depreciation of the Rupee, the Reserve Bank transferring a correspondingly larger surplus between July 1993-August 1997.

Besides, allocations to national funds were discontinued (apart from a token contribution of Rs.1 crore for each fund every year pending the amendment of the Reserve Bank of India Act, 1934), effective June 1992, in order to cut back on concessional finance, in line with the process of financial liberalisation. The bulk of these funds were also transferred to the Government books in return for an equivalent amount of government paper to strengthen the sovereign backing to the Reserve Bank Balance Sheet. The resultant jump in the Reserve Bank's rate of surplus was, however, tempered by the need to build up internal reserves, especially in the context of the deregulation of financial prices.

The composition of the Reserve Bank's income has changed dramatically in recent years in alignment with the changing composition of the

asset base. The sharp increase in the ratio of foreign assets to domestic assets has resulted in a corresponding increase of ratio of income from foreign sources to the income of domestic sources, although partly moderated by the interest differential between the domestic and international interest rates (Table 4). Besides, the Reserve Bank's income from domestic sources is growing increasingly sensitive to OMO profitability.

Table 4: Composition of the Reserve Bank's Income

(Rs.crore)

Year	Domestic Income		Foreign Income	Interest Rates on Government Borrowing (Per cent)
	Total	OMO Profits		
1	2	3	4	5
1997-98	8,396	540	5,687	12.01
1998-99	12,914	1,155	6,307	11.86
1999-2000	15,446	3,281	6,515	11.77
2000-01	11,763	82	10,086	10.95
2001-02	14,704	3,060	9,986	9.44
2002-03	13,359	4,798	9,827	7.34
2003-04	5,220	2,323	9,104	5.71
Memo Item:				
Average as per cent of total	57.7	10.6	42.3	

Source: RBI Annual Report, various issues.

An even more interesting pattern emerges from the analysis of Reserve Bank's capital account, the composition of which too has undergone a substantial change reflecting the imperatives of financial liberalisation (Table 5). The principal components of the capital account, *viz.*, the Exchange Equalisation Account and the national funds, in the pre-reform years reflected the dictates of social banking. The Exchange Equalisation Account was largely built up to provide for the exchange rate guarantee offered by the Reserve Bank under the Foreign Currency Non-Resident Account (FCNRA) Scheme. National funds, as explained earlier, provided concessional refinance to financial institutions. In tune with the spirit of financial liberalisation, the Reserve Bank has stopped offering guarantees for non-resident deposit schemes and practically done away with the concessional funding of financial institutions. It is necessary to appreciate that the need to maintain a strong

central bank balance sheet is actually accentuated by the process of financial liberalisation because of the greater exposure to fluctuations in financial prices. This was recognised by the Reserve Bank early on. It is for this reason that it has now built a large *corpus* to meet unforeseen contingencies essentially arising from market risks.

Table 5: Reserve Bank's Capital Account

			(Per cent to total assets)
	1971	1991	2004
Capital & Reserves	2.7	5.2	1.1
Contingency Reserves	--	4.5	10.2*
Exchange Fluctuation Reserve	--	2.9	10.2
Exchange Equalisation Account	--	4.4	0.0
Total	2.7	17.0	21.5@
Memo Item:			
National Funds	6.3	4.7	0.0

* Including Asset Development Reserve
@ Includes previous balances under the National Industrial Credit (Long-Term Operations) Fund.
Source: RBI Annual Report, various Issues.

V. Concluding Observations

At the risk of broad generalisation, one can discern the following three trends in the impact of financial sector reforms on Reserve Bank's balance sheet. First, the uptrend in the size of the Reserve Bank Balance Sheet has halted reflecting a switch to indirect monetary policy instruments. There has also been a change in the composition of Reserve Bank's balance sheet. With cessation of automatic monetisation on the one hand and abundance of capital flows on the other, there has been a clear shift in favour of foreign currency assets. Secondly, the sustained decline in the rate of surplus of the Reserve Bank transferred to the Government has also reversed. In both these crucial variables, there is, in fact, evidence of endogenous break points in the early 1990s. Thirdly, the Reserve Bank's balance sheet had become more transparent in line with international accounting norms. Would these developments get magnified? If past trends are any indication then it is likely that these trends will get accentuated in the near future.

[The paper reflects personal views of the authors and not of the institution to which they belong. We thank Siddhartha Sanyal for comments on an earlier draft with the usual disclaimer. Address for Correspondence: narendrajadhav@rbi.org.in]

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