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Financial Stability: A Survey of the Indian Experience

Michael Debabrata Patra & Sunando Roy*

Drawing from recent experiences in India and abroad, the paper assesses the Indian approach to reinforcing financial stability. In the context of macroeconomic, macro- and micro-prudential policies undertaken in India, the paper empirically evaluates the responses of various constituents of the banking system and finds differential responses.

Introduction

A consensus on the definition of the term 'financial stability' remains elusive even today. But visitations of financial distress have occurred periodically, each recurrence more intense, adding to the watchlist of areas of potential financial fragility which have to be monitored by authorities. As a consequence, a wealth of evidence has been turned over in efforts to trace the sources of financial instability, the policy responses and the macroeconomic costs of dealing with instability. The Working Party on Financial Stability in Emerging market Economies (1997) placed the cumulative costs of bank restructuring in the eighties and nineties at around 10-15 per cent of GDP, going up to as much as 30 per cent for Chile in 1981-87. A survey of banking problems over the period 1980-1996 classified three-quarters of the membership of the International Monetary Fund (IMF) as having had significant stress levels in their banking systems in terms of high shares of non-performing assets (NPAs), erosion of capital bases, liquidity and solvency gridlocks, failures and fiscal and quasi-fiscal rescue operations (Llewellyn, 1997). Of these, as many as 36 countries encountered financial crises, 5 of them repetitively. Furthermore, financial instability has often been the counterpart of fluctuations

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in economic activity, reflected in oscillations in financial asset prices and the adaptation responses of financial institutions.

Quite naturally, the first definition of financial stability that comes closest to obtaining practitioner acceptance is the obverse of it *i.e.*, the absence of financial instability, and financial instability is a situation in which economic performance is potentially impaired by fluctuations in the price of financial assets or in the ability of financial intermediaries to meet their contractual obligations (Crockett, 1997). While financial stability involves the smooth functioning of both institutions and markets, the role of policy intervention to smoothen market instability is preferred as minimalist and required only in the event of structural imperfections, market failure and contagion, since the difficulty for policy makers lies in identifying which part of "a given change in prices is justified by changes in fundamentals" (Crockett, 1997).

In India, the pursuit for financial stability intensified in 1992-93, in the aftermath of a severe balance of payments crisis. Financial sector restructuring and fortification was undertaken well in advance of the financial crisis of 1997-98, a factor grossly underemphasised in the explanations available in the literature as to why India remained insulated from the contagious turmoil in the neighbourhood. The first phase of reforms which were inspired by the recommendations of the Committee on the Financial system [Government of India (GOI), 1991], emphasised functional autonomy, competitive efficiency and greater transparency and accountability of the financial system so as to achieve global standards for a robust and stable financial system. The focus of the second phase of financial sector reforms, which essentially carry forward the progress achieved so far on the basis of the recommendations of the Committee on Banking Sector Reforms (GOI, 1998), is on fortifying the organisational efficiency of banks in an environment characterised by specialisation, technological advancement, growing openness and a blurring of the boundaries between banks and non-banks. The Indian experience suggests that financial stability can be defined in a "compound" sense. Five elements of financial stability are systematically evaluated in the rest

of the paper through a comparison of policies against performance in the Indian context. After a brief overview of the historical context within which the responsibility for financial stability has evolved in Section I, Sections II and III deal with the major elements of financial stability. Section II deals with macroeconomic policies for financial stability; which include the fiscal, monetary and external sector policies. Section III evaluates the progress made in the ongoing restructuring and improvements in the efficiency of the financial sector; and analyses of the impact of financial sector restructuring on the performance of Indian Banks. The section addresses the efforts to build the infrastructural framework of institutions, markets, payment and settlement systems and provides a few Indian perspectives on the fifth element of financial stability, the appropriate international financial architecture. Section IV elabrates the impact of financial sector reform on the performance of Indian banks with the help of panel regressions.

Section I

A Historical Overview of the Indian Context

The pursuit of both monetary stability and financial stability has been traditional reasons for the establishment of central banks. Globalisation of financial markets over the past two decades has added an international dimension to these responsibilities. Central banks have recognised that there are common elements in the causes of price inflation and deflation, and financial fragility. There are also significant trade-offs, raising concerns among central banks about the extent to which the pursuit of financial stability affects the conduct of monetary policy. Strong supervision, for instance, could lead inadvertently to a downturn of activity. On the other hand, monetary easing to relieve financial stress could lead to inflation and depreciation of the currency or even asset bubbles in volatile segments of the financial markets. Faced with the "inbuilt conflict between the imposition of generalised prudential regulations and macro-monetary stability" (Goodhart, 1995), the responsibilities for monetary and financial stability have been separated as in the nativity of central banking, the UK, this has necessitated formalisation through legislation. The need to consider the costs of such

separation has been offered as a sobering thought (Morris and Parrish, 1997). Moreover, despite the academics' advocacy for separation of functions on the grounds of 'conflict of interest' and 'moral hazard', there is no evidence of central banks becoming more willing to accept failures. Consequently, even though a formal separation of functions may now become more common among countries than in the past, there remains a question whether that change would make much difference to the practical realities (Goodhart, op.cit).

The Indian financial system was reasonably developed and vibrant well before the establishment of the Reserve Bank of India (RBI) in 1935. In 1861, the government acquired the monopoly of note issue. Until that period, indigenous bankers dominated the scene, financing trade and performing agency functions such as banking for the East India Company, collecting revenue, transferring funds and changing money. They were joined by the Presidency banks (later to amalgamate and form the Imperial Bank of India), private joint-stock banks, cooperative banks and a few foreign banks which specialised in exchange business and agency services. Life insurance activity has existed in India since 1818. In fact, even after Independence up to 1956, there were 245 insurance companies; there were also Provident Societies. A treasury bill market came into being in 1917 to mobilise resources for the War and the Bombay Stock Exchange has been in operation since 1857 (Bhole, 1999). The formal financial system was integrated with informal markets which equilibrated with considerable reach and efficiency (Bery, 1994).

Reflecting the ethos surrounding it, the twin concerns for monetary and financial stability were wrought into the preamble of the RBI Act of 1934, requiring the RBI "to regulate the issue of bank notes and the keeping of reserves with a view to securing monetary stability in India and generally to operate the currency and credit system of the country to its advantage." The underlying mandate placed with the RBI is to maintain financial stability and to ensure the development of the financial infrastructure of markets and institutions so that monetary stability could be attained (Bhole,

op.cit.). The RBI has devoted substantial efforts to derive synergies from the linkages between monetary stability and financial stability. Policies for financial stability have been enunciated from within the dynamics of monetary policy.

There was a clear recognition from the beginning that the banking system would provide the core intermediation requirements of a developing economy. Within two years of Independence, the legal framework empowering the RBI to build and regulate a sound and well diversified banking system was put in place through the Banking Regulation Act in 1949. Over the next four decades *i.e.,* up to the 1980s, the RBI either set up or assisted in the establishment of a well differentiated structure of financial institutions to widen the availability of term finance to agriculture and industry. The insurance business was amalgamated and nationalised as early as 1956 and deposit insurance was in place by 1962. Alongside the building of institutions, the RBI undertook to develop financial markets all along the maturity spectrum in various classes of financial assets. In the 1990s, even as the emphasis has shifted from setting up institutions to efficiently supervising them, the Reserve Bank continues to widen and deepen various segments of the financial market continuum and to provide the wherewithal for orderly market play. The process of financial development in India is essentially the progressive disembodiment of functions primarily undertaken by the Reserve Bank.

In a fundamental sense, the severity of recent financial crises has brought about a revision in the paradigms of the capital accumulation process of development. In the 1970s and the 1980s, the McKinnon-Shaw-Maxwell Fry hypothesis brought the financial system out of the confines of being first, the classical 'veil' and later, the Keynesian prisoner of the money illusion. Despite the spirited neo-structuralist attack (Taylor, 1983, *et al*), several developing countries adopted the McKinnon-Shaw-Fry approach to implement financial liberalisation as part of structural reform. By 1990, the lessons of experience suggested that this theoretical work failed to pinpoint at least two prerequisites for successful financial liberalisation – macroeconomic stability and adequate prudential

supervision (Fry, 1990). In the aftermath of the global financial crises of 1997-98, developing countries are confronted with the nemesis of the activist premonition that financial markets are vulnerable to market failures more than any other market and that there exist forms of government intervention that will not only make these markets function better but will also improve the performance of the economy (Stiglitz, 1997). There is now a clearer recognition that an efficient and robust financial system is a necessary condition of sustainable development, though not a sufficient condition.

Up to the 1980s in India, the dominant fear of market failure provided the rationale for intervention in various spheres of economic activity including in the financial system. The absence of several segments and the colonial structure of existing ones raised misgivings about the ability of markets to efficiently allocate resources or to exploit economies of scale associated with particular mixes of investment decisions. Consequently, the State assumed the role of the Walrasian auctioneer and the financial system was viewed as an instrument for raising the financial resources for growth targets envisaged in Five Year Plans. The Keynesian revolution provided the rationale for the institutionalisation of financial repression, as in a number of developing countries. The nationalisation of banks intensified the social objectives placed on the financial intermediation function; in retrospect, it rapidly became the vehicle for the preemption of the financial saving of the community.

By the end of the 1980s, the financial system was in a state of considerable stress. Bank nationalisation had undoubtedly resulted in a diversified banking system comprising 65000 bank offices, including 42 foreign banks, with a wide geographical spread; indicators of financial development (Table I) attest to the broadening and deepening of financial intermediation. At the same time, it had also allowed for inefficiencies to creep into the provision of banking services which was reflected in rising intermediation costs. Financial repression took the forms of an administered interest rate structure with a large measure of built-in

cross subsidisation, preemptions by way of primary and secondary reserve requirements which accounted for 63.5 per cent of incremental deposits of banks in 1990-91, directed credit which absorbed 40 per cent of total bank loans and advances, quantitative restrictions (branch licensing, restrictions on areas of operation) and management structures which greatly restricted the functional independence of banks and eroded their profitability. As the quality of asset portfolios of banks progressively deteriorated, it was evident that the capital of the banking system at less than 3 per cent of deposits in 1990-91 was grossly inadequate and drastic corrections were overdue. The threat to risk-sharing on account of financial instability underscored by the Diamond-Dybvig model (1983), however, provided the rationale for public intervention in the form of deposit insurance. A Deposit Insurance and Credit Guarantee Corporation (DICGC) was established as a fully owned subsidiary of the Reserve Bank in 1971 to insure deposits up to Rs 1,00,000 and also provides credit guarantee for small loans to the directed credit sectors.

Table 1 : Indicators of Financial Development in India

Ratios	1951-52	1970-71	1980-81	1990-91	1995-96
Finance Ratio	0.015	0.097	0.194	0.231	0.290
Financial Inter-Relation Ratio	0.11	1.38	1.93	1.75	2.26
New Issues Ratio	0.17	0.83	1.28	1.01	1.33
Intermediation Ratio	-0.38	0.66	0.68	0.74	0.70

Source : Reserve Bank of India (2000) : Flow of Funds Accounts of the Indian Economy : 1951-52 to 1995-96.

The unprecedented balance of payments crisis which followed in the wake of the Gulf war of 1990 rapidly brought forward the imperatives for financial sector strengthening. Although these reforms were also provoked by the diffusion of the Basle (1988) norms, there is a distinct Indian flavour in their pace and sequencing. First, we chose the gradualist approach over more dramatic

liberalisation strategies. While this decision was largely motivated by the sheer dimension of the country-specific situation, there is considerable empirical evidence now that the gradual approach is at least less prone to crashes (World Bank, 1989). In the more recent period, this gradual approach has been credited with crisis-proofing the economy in the face of the Asian contagion. Secondly, we chose to undertake stabilisation and liberalisation simultaneously, mainly to harness the stabilising influence associated with some measures of liberalisation. Thirdly, we made macro-economic stability a concurrent pursuit. Fiscal policy and balance of payments management supported monetary policy in maintaining the overall macro-economic balance (Rangarajan, 1998). Prudential regulations were put in place during the reform process to support monetary control. The regulatory framework is reinforced with strong incentives for prudential behaviour among market participants. Fourthly, wide-ranging reforms were simultaneously implemented in the real sectors of the economy so that financial intermediation kept pace with underlying activity and did not produce either bubbles or disintermediation during the fragile period of transition. And finally, we chose to exploit the close linkages between monetary stability and financial stability: we set up the Board for Financial Supervision within the Reserve Bank to deal exclusively with supervisory issues.

Although India escaped relatively unscathed from the pervasive impact of the recent financial crises, the lessons that emerged from a ring-side view of the epicentre dominate the ensuing debate on the course of the country's development. For the first time, efficiency in financial intermediation came to be explicitly as a crucial concomitant of growth in the Ninth Plan (1997-2002) document; all preceding Plans had, by and large, ignored the role of the financial system in the development process. The ascendancy of financial stability in the hierarchy of policy objectives is pensively reflected in the Reserve Bank's Annual Report for the year ending in June, 1999: "Successful monetary management requires an optimum blend of regulatory and market discipline and a correct dose of supervisory controls necessary to maintain financial stability… There are no theoretical criteria for

determining the optimal mix of regulation and oversight but the markets need to believe that the action of policy makers are credible for economic management to be effective."

Section II

Macroeconomic Policies for Financial Stability

While the weight of recent evidence traces the sources of financial instability to microeconomic and institutional fragility, it is almost invariably in an unstable macroeconomic environment that these weaknesses give way to 'demand-driven' financial crises, especially during a phase of structural transformation. Macroeconomic instability contributes to sudden swings in asset prices and misallocation of resources; the choice and sequencing of policy instruments can exacerbate this volatility. Thus, there is a strong complementarity between financial stability and macroeconomic stability (BIS, 1998).

In India, the institution of financial sector reforms had to be preceded by a more sustainable balance between aggregate demand and supply. The policy response was partly orthodox and directed at the usual suspects; the fiscal deficit, monetary accommodation of fiscal profligacy and the overvaluation in the administered exchange rate. Simultaneously, it was necessary to minimize the macroeconomic losses of adjustment and the real sector was cautiously liberalized to generate new impulses of growth, apace with the structural changes in the financial system.

Fiscal Policy

While substantial fiscal correction was achieved in the early years of reform, with the public sector deficit of the Centre declining to below 5 per cent of GDP in 1996-97, the cyclical downturn in economic activity in the ensuing years and the need to provide a fiscal stimulus to a recessionary economy brought pressures to bear. Budgetary slippages have occurred at national and sub national levels. The resulting size of fresh public debt issues has imposed upward pressures on interest rates and constrained the conduct of monetary policy for ensuring an interest

rate regime conducive to rapid revival of growth. On the other hand, the experience of the Asian financial crises suggests that conventional policy responses based on 'simple indicators – like of the size of the fiscal deficit – will not be a useful tool for assessment of progress' (Stiglitz, 1997). Furthermore, the emphasis of fiscal rectitude deprived the affected countries of a potential instrument for managing surges in capital inflows.

In India, the correction of the fiscal imbalance did provide the environment for undertaking policies for financial stability over a wide range. In particular, the freeing of monetary policy from the passive monetisation of budget deficits enabled the building of the institutional framework for financial stability. However, the more recent experience has shown that there are limits to the quantitative approach to fiscal correction which ultimately runs up against a 'quality' constraint. The actual fiscal outturn, however, points to a deterioration in the quality of fiscal adjustment. Expenditure reductions have occurred almost exclusively under capital outlays. The continuous decline in the public sector's capital formation has adverse long term implications for the growth of the economy. Imposing market rates of interest on public sector borrowings did not bring about a tangible reduction in the size of the fisc's preemption of the market's lendable resources; on the other hand, interest payments rose sharply. The tax effort has concentrated on a reduction of rates rather than an expansion of the tax base; as a consequence, the tax/GDP ratio has steadily declined and the structure of the economy has tilted towards the non-taxed segments: agriculture, exports, services. There is now growing evidence that the federal-centric process of fiscal consolidation has resulted in fiscal pressures turning sub-national, reflected in a worrisome rise in the GFD of the state governments taken together. In the provinces State where public finances have a direct bearing on the quality of life, there has been a rise in consumption expenditures and an erosion in capital outlay (Table 2).

Table 2 : Indicators of Fiscal Adjustment

Year	Centre's GFD/ GDP	Internal Liabilities/ GDP, Centre	Centre's Interest Payment/ GDP	Centre's Capital Outlay GDP	Tax/ GDP@	States/ GFD/ GDP	Combined GFD
1990-91	7.7	54.0	3.7	2.1	15.0	3.2	10.0
1996-97	4.7	47.9	4.2	1.0	14.2	2.6	6.4
1997-98	5.7	49.8	4.2	1.1	13.9	2.8	7.3
1998-99	5.9	49.8	4.4	1.1	13.9	4.3	8.9
1999-2000 *	4.0	49.6	4.4	1.2	14.5	4.0	9.9

Note : The years are fiscal years i.e., April-March.
@ : Centre and States combined: Revised Estimates.
* : Revised Estimates.
Source : Annual Report, RBI, various issues.

Monetary Policy

Financial stability considerations have always been important for the conduct of monetary policy in India. In fact, price stability and financial stability are viewed as 'mutually reinforcing goals' (Mishkin, 1998). In the 1990s, several factors impacted upon the stance and structure of monetary policy in India, redefining the pursuit of its traditional objectives in a fundamental sense: phasing out of automatic and passive monetisation of the Central government's budget deficits, exchange market considerations from the second half of 1993 onwards, development of a market for gilts of various maturities and an active debt management policy, to indirect instruments of monetary policy, viz., open market operations, repos, refinance, debt management and foreign exchange operations with corridors for various key financial prices. The wielding of monetary policy enabled the establishment of monetary conditions which allowed for an easier interest rate regime as well as orderly nominal exchange rate corrections for overvaluation (Table 3).

Table 2 : Selected Monetary Indicators

(per cent, wherever specified)

Year	Broad Money Growth (%)	Real Output Growth (%)	Inflation (Year on Year in %)	Money Multi-plier	Credit/ Deposit Ratio	Interest Rate (91 Day T. Bills) (%)	NEER varia-tions@ (%)
1990-91	15.1	5.4	12.1	2.98	0.60	4.60	-6.9
1991-92	19.3	0.8	13.6	3.16	0.54	4.60	-21.9
1992-93	15.7	5.1	7.0	3.29	0.57	10.04	-17.2
1993-94	18.4	6.3	10.8	3.11	0.52	8.90	2.8
1994-95	22.3	7.8	10.4	3.12	0.55	9.16	-3.0
1995-96	13.7	7.6	4.4	3.08	0.59	12.67	-8.4
1996-97	16.2	7.8	5.4	3.48	0.55	9.67	-1.9
1997-98	18.0	5.0	4.5	3.63	0.46	6.80	2.6
1998-99	19.4	6.8	5.3	3.75	0.39	9.51	-9.2
1999-2000	13.9	6.4	6.5	3.99	0.53	8.34	-2.4

Notes: * : Net of Resurgent India Bonds.
@ : NEER refers to 36-country Trade Weighted indices of nominal exchange rates with (-) indicating depreciation.

Source : RBI Annual Report, various issues.

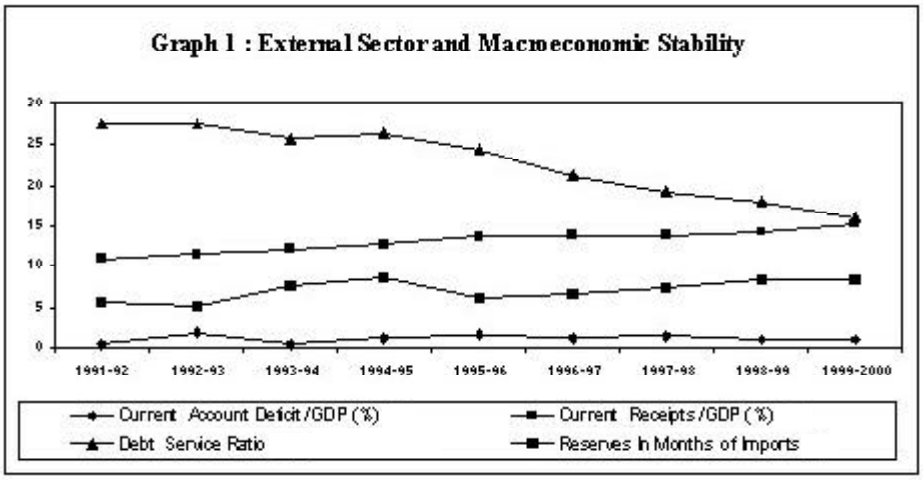
II.3 External Sector Policies

The Mexican crisis of 1995 and the more recent Asian crisis showed that a large current account deficit was a common denominator (Feldstein, 1998). In India the crisis of 1990 showed that a current account deficit exceeding 3 per cent of GDP proved unsustainable in the Indian context. External sector policies to ensure a viable balance of payments over the medium term centered on the axiom of sustainability. As the current receipts to GDP rises, it is possible to raise the current account deficit to GDP ratio; per contra, if the current receipts to GDP ratio falls, it is necessary to reduce the current account deficit to GDP ratio, ensuring in both cases that the debt service ratio never exceeds 20 per cent of current receipts. (RBI, 1997) (Table 4 and Graph 1)

Table 3 : Indicators of External Sector Sustainability

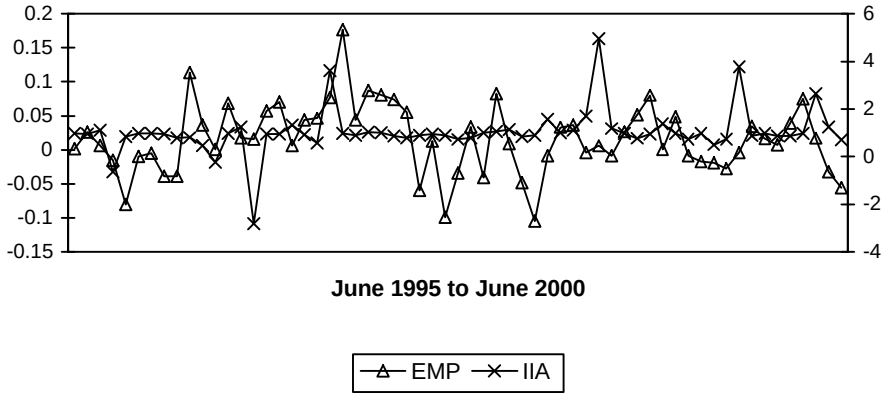
Year	Current Account Deficit/ GDP (%)	Current Receipts/ GDP (%)	Debt Service Ratio	Reserves In Months of Imports
1990-91	3.2	8.5	35.3	2.7
1991-92	0.4	10.9	27.5	5.6
1992-93	1.8	11.4	27.5	5.1
1993-94	0.4	12.0	25.6	7.5
1994-95	1.1	12.7	26.2	8.5
1995-96	1.6	13.7	24.3	6.1
1996-97	1.2	13.9	21.2	6.6
1997-98	1.3	13.9	19.1	7.3
1998-99	1.0	14.3	18.0	8.2
1999-00	0.9	15.2	16.0	8.2

Source : Annual Report, RBI, various issues.



The conduct of exchange rate policy in India has attracted close scrutiny and evaluation especially in the time of financial crises when one emerging market after another suffered the domino consequences of offering targets to speculators. Since 1975, the exchange rate was linked to a basket of currencies comprising India's major trading partners. A devaluation of 20 per cent in 1991 followed by a learning period of dual exchange rates paved the way for the institution of a market based exchange rate system in March, 1993. The experience with alternating movements in capital flows since then suggests that under the regime of managed float, interventions in the market can be guided by the need to ensure orderly market conditions without any predetermined target or band around the exchange rate. Movements in indices of Exchange Market Pressure (EMP) and Intervention Activity (IIA) [updated up to June 2000 from Patra and Pattanaik, 1998] developed within the framework of the asset market approach to exchange rate determination suggests that actual exchange rate movements would have been mostly in the opposite direction than what prevailed under intervention. (Graph - 2).

Graph 2 : Exchange Market Pressure(EMP) and Indicator of Intervention Activity(IIA)



Note : The EMP is defined in terms of nominal exchange rate changes plus the exchange rate equivalents of interventions. Interventions are converted into exchange rate equivalents by multiplying with the inverse of the sum of the exchange rate elasticity with respect to domestic prices and the interest rate elasticity of money demand. The IIA is the ratio of the exchange rate equivalent of interventions and the EMP.

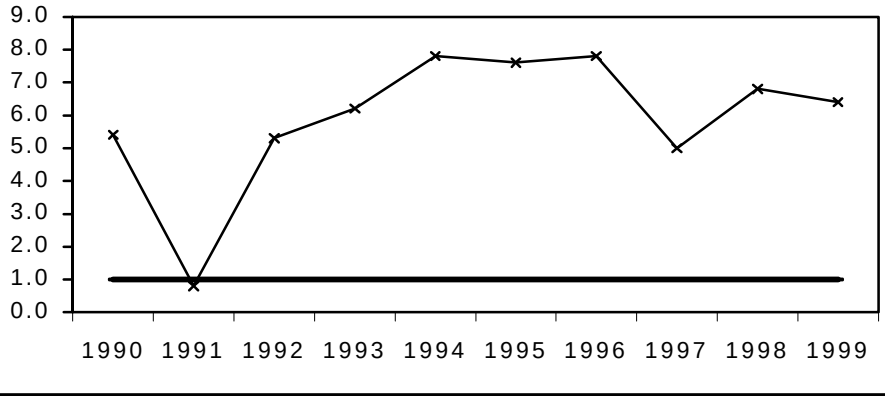
II.4 Leading Macro Economic Indicators of Financial Fragility

In the wake of the recent global financial crises, there has been a proliferation in the literature on early warning indicators of financial crises especially in emerging markets. Interest in developing early warning indicators emerges from the huge costs that crises impose on affected economies and the persistence of their after effects so that authorities can recognise vulnerability to a crises beforehand and take preemptive action. Drawing from the work of Goldstein (1997), with Reinhart (1997) and earlier with Turner (1996), 'consensus' indicators are identified for India - real GDP growth, inflation rate, broad money to international reserves ratio, money multiplier and export growth – and tracked over the nineties. Following Goldstein albeit in a country specific setting, optimal thresholds for each indicator are obtained through an iterative procedure. This consists of pooling observations on each indicator over a thirty year time period and selecting a threshold as the upper or bottom tail (as the case may be) of the distribution which contains the worst levels of the indicator in question over the time period considered here. The profile of these indicators during the nineties in relation to their optimal thresholds, presented in Graph 3-7 indicates relatively lower vulnerability to financial instability (Table 5).

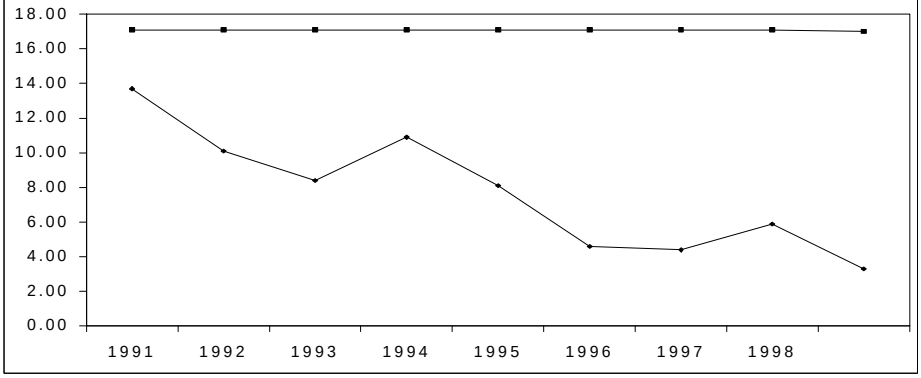
Table 5 : Optimal Thresholds of Financial Stability in India

Indicator	Optimal Threshold
Real GDP Growth (%)	1.0
Inflation Rate (%)	17.1
Broad Money/International Reserves (%)	21.4
Money Multiplier (Number)	3.19
Export Growth in Dollar terms (%)	2.58

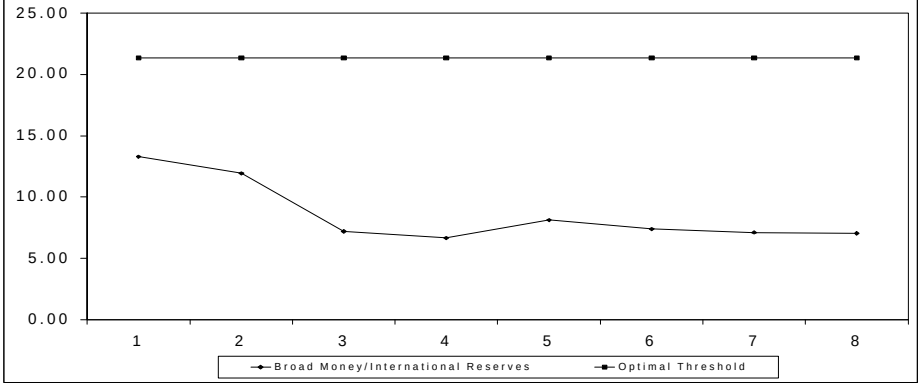
Graph 3 : GDP Growth 1990-91 to 1999-2000

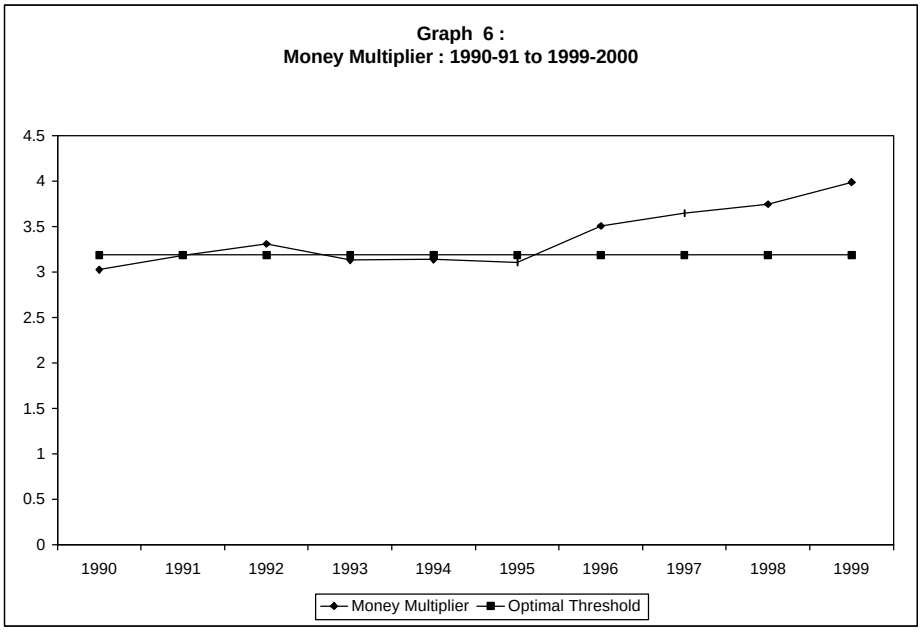


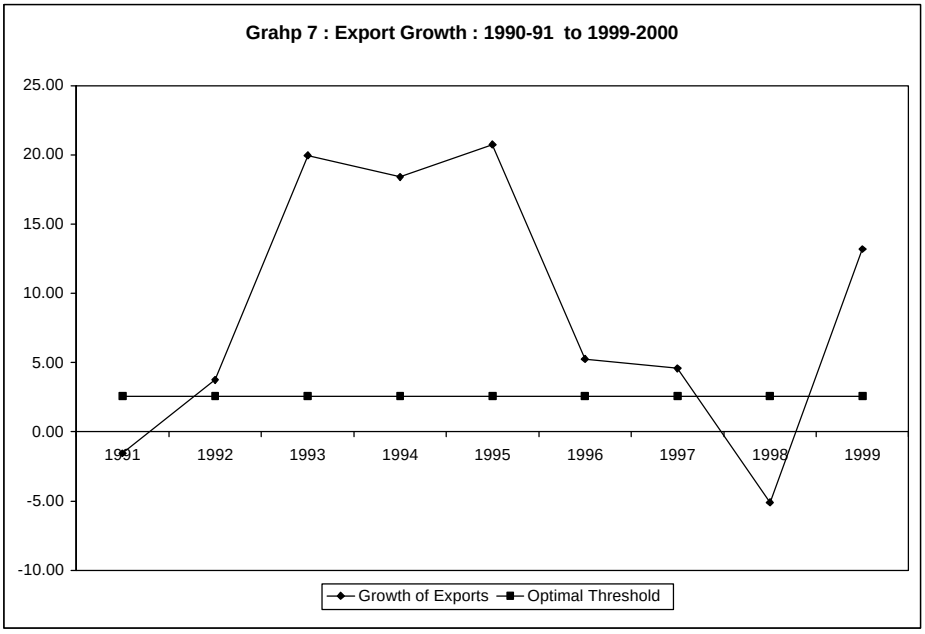
Graph 4 : Inflation Rate : 1991-92 to 1999-2000



Graph 5 : Ratio of Broad Money to International Reserves




Graph 6 :
Money Multiplier : 1990-91 to 1999-2000
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
Money Multiplier
Optimal Threshold


Grahp 7 : Export Growth : 1990-91 to 1999-2000
25.00
20.00
15.00
10.00
5.00
0.00
-5.00
-10.00
1991
1992
1993
1994
1995
1996
1997
1998
1999
Growth of Exports
Optimal Threshold

Section III

Restructuring the Financial Sector

III.1 Shifts in the Policy Environment

The first phase of financial sector reforms were guided by the recommendations of the Committee on the Financial System : "issues of competitive efficiency and profitability are ownership neutral. It is how the institutions function or are allowed to function that is more important" (GOI, 1991). In India, the policy environment adversely affected the operational and allocational efficiency of the financial system (Rangarajan, 1998). This was reflected in high transaction costs and poor quality and speed of financial services which, in turn resulted in low profitability, deteriorating quality of assets and erosion in the capital base. Furthermore, policy instruments had considerably fragmented the financial markets, constricting the operation of financial institutions and impeding the development of a continuum. Consequently, removal of policy constraints on the functioning of the financial system through suitable modifications in the policy framework within which the financial system operates was assigned priority in the sequencing of financial sector reforms (Table 6)

A major element of financial sector reforms in India has been a set of micro prudential measures aimed at imparting strength to the banking system as well as ensuring safety and soundness on a prospective basis through greater transparency, accountability and public credibility. While these prudential norms emerged out of the diffusion of the Basle 1988 accord, the emphasis in the recent period has been on tightening the norms even beyond the Basle 1988 levels, contemporaneous with a search for prudential regulations based on internal control mechanisms (Table 7).

Table 6 : Major Policy Reforms in the Financial Sector

Year	Barriers to Entry	Deposit Rates	Lending Rates	Directed credit	Cash Reserve Requirements	Statutory Liquidity Ratio	Quantitative restrictions	Forex Exposures
Pre – Liberalisation	Entry of foreign banks restrictive; branch licensing for domestic banks.	Administered interest rate structure; regulation on premature deposit withdrawal	Lending rate structure consisted of 6 categories based on size of advances; minimum (floor) lending rate prescribed.	Directed credit for agriculture,SSI, small transport operators, small business etc. Target : Indian banks-40%,,foreign banks-15% by 1992 including exports.	15% of NDTL incremental CRR of 10% of NDTL over the level NDTL a on May3, 1991.	38.5% on domestic liabilities & 30% on Non resident.lialilities Effective SLR 37.4%	System of Credit Authonsation Scheme (CAS) in existance,regulations on calculation of Maximum. Permissible Bank Finance (MPBF), selective credit control on sensitive commodities, Consortium lending mandatory.	Uniform limit of US $1 mn on overnight position. A limit of US $100 mn or 6 times of Net Owned Funds on aggregate gap limits.
1991-92	Status quo	Structure simplified by reducing slabs	Structure simplified by reducing slabs	Export credit subtarget of 10% introduced	15%	Phased reduction in SLR		
1992-93	Branch Licensing removed effective April 1992 Permission to set up Private banks with min.capital of Rs. 1000 mn (US $ 30 mn).	One ceiling rate for deposit rates.		Foreign bank target revised to 32%	14.5-15.0%	Phased reduction in SLR		
1993-94	|New banks set up in private sector Foreign Banks/ financial institutions allowed 20 per cent stake in private banks.	Banks permitted to issue Certificate of Deposits (CDs); banks permitted to offer foreign currency deposits to NRIs with exchange risk borne by banks.		Definition of priority sector enlarged.	14.5-15.5%	Phased reduction in SLR	Banks given freedom to decide own levels of holdings of inventory & receivables, threshold limits of obligatory consortium lending raised to Rs.500mn fromRs.50mn	

(Contd.)

Table 6 : Major Policy Reforms in the Financial Sector (Contd.)

Year	Barriers to Entry	Deposit Rates	Lending Rates	Directed credit	Cash Reserve Requirements	Statutory Liquidity Ratio	Quantitative restrictions	Forex Exposures
1994-95	Nine new banks set up in private sector; one co-operative bank allowed to convert to private bank.	Cooperative Banks' deposit rates freed	Minimum lending rate for loans over Rs. 2 lakhs (US $ 4500) freed. Cooperative Banks' lending rates freed. Banks allowed to fix PLR for advances over Rs.2 lakh	Definition of priority sector enlarged.	14.0-14.5%	Incremental SLR reduced to 25 per cent; base level SLR reduced to 33.75 per cent.		Limit on open position enhanced to Rs. 15 crores.
1995-96	WTO commitments made.			Definition of priority sector enlarged.	10.0-14.0		Loan System for Delivery of bank credit for working capital introduced, cash credit component reduced to 22.5%, banks in consortium permitted to frame ground rules	Limits on Open positions and gap limits removed and both linked to capital. Method of calculation changed to international short hand method. Cross currency transactions brought into open positions.
1996-97	Guidelines issued for setting up Local Areas Banks with minimum paid up capital of Rs.50	Banks given freedom to fix deposit rates for term deposits above one year maturity		Definition of priority sector enlarged. Export Credit sub target increased to 12 %	10.0	Inter Bank Liabilities Exempted;	MPBF withdrawn, banks to have own methods of working capital assessment, credit monitoring arrangement withdrawn; Selective credit controls abolished except for sugar.	

(Contd.)

Table 6 : Major Policy Reforms in the Financial Sector (Contd.)

Year	Barriers to Entry	Deposit Rates	Lending Rates	Directed credit	Cash Reserve Requirements	Statutory Liquidity Ratio	Quantitative restrictions	Forex Exposures
1997-98		Interest rates on short term deposits linked to bank rate and then freed. Interest Rate on foreign currency deposits linked to	Ceilings on loans below Rs.25000 fixed at PLR of banks.	Definition of priority sector enlarged.	11.0	SLR reduced to 25 per cent on entire NDTL.	Consortium and term loan limits withdrawn.	Banks allowed to borrow and invest overseas upto 15 per cent of Tier I capital.
1998-99		Minimum period of maturity of term deposits reduced to 15days from 30days; Banks given freedom to offer differential rate of interest based on deposit size of Rs.15lakhs & above.	Banks provided freedom to operate tenor linked PLR ie PLR for different maturities	Definition of priority sector enlarged.	10.5-11.0			Banks allowed to offer forward cover to foreign institutional investors.
1999-2000	With the enactment of the Securities (Amendmant) Act, 1999, legal restrictions towards derivatives trading were removed. Scheduled Commercial Banks (Excluding RRBs) allowed to undertake Foreward Rate Agreements (FRAs) and Interest Rate Swaps (IRS)	Savings deposit rates reduced from 4.5 to 4 per cent. Banks allowed to offer all loans on fixed or floating rate basis provided PLR stipulation are adhered to.	Floor rate on Export Bills withdrawn		9.0-10.0			

(Contd.)

Table 6 : Major Policy Reforms in the Financial Sector (Concld.)

Year	Barriers to Entry	Deposit Rates	Lending Rates	Directed credit	Cash Reserve Requirements	Statutory Liquidity Ratio	Quantitative restrictions	Forex Exposures
2000-2001 (upto October, 2000)	—	Banks permitted to offer differential interest rate on NRE and FCNR(B) deposits.	Freedom for Banks to charge interest rate without refinance to PLR for certain loans. Banks allowed to offer fixed rate term loans, subject to ALM guidelines.	States Quo	8.0-8.5 requirement of minimum balance in CRR holdings on daily basis reduced from 85 to 65 per cent	States Quo	—	Foreign Exchange Regulation Act (FERA) was replaced by Foreigh Exchange Management Act (FEMA)

Table 7 : Changes in the Regultory Framework

Norms	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-2000	2000-01
I. Capital Adequacy (per cent of risk weighted assets									
Domestic Banks with international Business	4	8	8	8	8	8	8	9	9
Other Domestic Banks	4	4	4	8	8	8	8	9	9
II. Non Performing Assets									
Past Due Period (No. of Quarters)	4	3	2	2	2	2	2	2	2
III. Provisioning Requirements (per cent)									
Small Loans	2.5	5.0	7.5	10.0	15.0	—	—	—	—
Sub Standard Assets	10	10	10	10	10	10	10	10	10
Doubtful Assets Secured Portion	20-50	20-50	20-50	20-50	20-50	20-50	20-50	20-50	20-50
Doubtful Assets Unsecured Portion	100	100	100	100	100	100	100	100	100
Loss Assets	100	100	100	100	100	100	100	100	100
IV. Mark-toMarket requirements for Gilts and Other Approved Securities (per cent)	30	30	30	30	30	30	30	30	30

Source : Reserve Bank of India, Report on Trend and Progress of Banking in India, various years.

Along with the strengthening of the regulatory framework, steps have been taken to improve the functioning of financial market segments. The main focus of architectural policy efforts has been on the principal components of the organised financial markets spectrum : the money market, credit market, capital market, government securities market and the foreign exchange market. The ongoing efforts for market development have a prospective focus with a clearly articulated agenda for the future (Reddy, 1997).

In recognition of the crucial role of the payment and settlement system in improving the efficiency of financial markets, measures are being taken to move towards an integrated payment and settlement system in the form of an increased utilisation of electronic clearing and funds transfer, the development of a satellite based Wide Area Network, upgradation of cheque clearing and processing facilities, putting in place of a VSAT based network with messaging standards and common applications for both funds-based and non-funds based business and efforts are on to set up a system of real time gross settlement.

III.2 Impact

The impact of these fundamental policy changes began to be reflected in the accounts of the banks from the first year itself. Significant weaknesses were reported and out of 28 public sector banks 13 were forced to report losses amounting to approximately US$ 1 billion. By 1997-98, i.e., the sixth year of financial sector reforms, there was a significant improvement in the performance of the banking system. There was a distinct improvement in the profitability of banks measured in terms of operating profits (from Rs 3893 crores in 1992-93 to Rs 18423 crores in 1999-2000) as well as in terms of net profits to total assets (from losses in 1992-93 to 0.66 per cent in 1999-2000). There has also been a decline in the spreads between borrowing and lending rates as measured by the ratio in the net interest income to assets. The most critical area of improvement is the reduction in non-performing assets (NPAs). Gross NPAs of public sector banks as a proportion of total loan assets declined from about 23 per cent at the end of March 1993 to 13 per cent by March 2000. After adjusting for provisioning, net NPAs as a proportion of net advances declined from nearly 11 per cent in March 1995 to 8 per cent in March 2000. Capital adequacy ratios for the public sector banks as a whole rose from around 2-3 per cent in the pre-reform years to about 11.5 per cent in 1997-98. The profile of assets with public sector banks is rapidly changing with 84 per cent of total assets in the ‘standard’ category and less than 2 per cent remaining in the ‘loss assets’. In the categories of ‘sub-

standard' and 'doubtful' asset categories there is a perceptible reduction. Significant improvements are also visible for private and foreign banks in recent years. The present health profile of the Banking System demonstrates significant improvements.

III.3 The International Financial Architecture

Existing international institutional arrangements have proved inadequate in terms of mitigating the macro economic costs of crises and in equitably distributing the burden of their resolution. Developing countries have been articulating these concerns. There are substantive reasons for this trepidation, quite apart from the pervasive impact of financial perturbations emanating in the developing world. First and foremost, effective participation in the international financial system involves a responsibility for financial stability. The inevitable incidence of the costs of market failures on the sovereign prognosticates that the state will have a greater role in regulating markets in the near future. Second, there is a fundamental asymmetry in the international financial system whereby irresponsible borrowing is punished whereas irresponsible lending goes scot-free. Both are, in fact, two sides of the same coin. Third, there are serious concerns about the diagnostic capabilities of the international financial institutions and the lags in their reaction functions. There is also a rising crescendo for public accountability of international credit rating agencies.

India has been an involved participant in the ongoing debate on the international financial architecture, especially in articulating the concerns of developing countries. Indian perspectives on the approach to the international financial architecture are succinctly set out in Jalan (1999) :

- Proactive strengthening of financial institutions by appropriate processes which ensure discipline while reinforcing capital, unencumbering balance sheets and eschewing moral hazard. This involves the State, the institutions and markets as well as market players. The three pre-requisites for the efficient functioning of the financial sector are : a well designed

infrastructure, effective market discipline and supervisory framework.

- The stance and structure of macro-economic policies must reinforce the responsibility for financial stability. Macro economic stability creates the environment for financial stability.

- An extremely cautious approach towards both short term flows and capital account liberalisation to enable the management of the irreconcilable trinity of an independent monetary policy, a flexible exchange rate and an open capital account (Krugman, 1998).

- A greater role for developing countries in the emerging international financial architecture.

Section IV

Impact of Policies for Financial Stability on Bank Performance

In this section, an attempt is made to empirically examine the response exhibited by banks to the structural changes in the financial system induced by shifts in the policy regime. Since 1995-96, the RBI has been releasing bank wise information on various indicators of health, efficiency and financial performance (Table 8). These data provide invaluable insights into the differential reactions of banks to changes in the policy environment, reflecting *inter alia*, different risk profiles and varying reaction lags. Such disaggregated information enables comparative evaluation of different constituents of the Indian banking system through panel regressions estimated on these primary bank-wise data for all scheduled commercial banks for the period 1995-96 to 1998-99.

Panel regression is a useful technique to analyse the impact of major shifts in policies which cause wholesale movements of

response functions rather than shifts along the response curve. In this type of analysis, data employed are typically longitudinal – observations of a cross section of variables over a short span of time. Conventional time series analysis is not applicable in this context, due to the small number of time points and aggregative nature of the data. Panel data analysis, moreover, shed the aggregation bias and allows analyses of firm level behavioural variations. Panel regressions also provides a tool to differentiate between the impact of economies of scale from that of technological change. While cross section data provides information on scale economies, time series data capture underlying temporal factors. Panel data analysis combines to the two and allows a resolution of the apparent impasse.

In this paper, commercial banks in India are divided into three categories - public sector banks, private sector banks and foreign banks. Two indicators of bank performance are chosen *i.e.,* the return on assets (ROA) – net profits as a ratio of total assets - and the spread (SPD) – net interest income as a ratio of total assets - which reflect the profitability of banks and their efficiency in financial intermediation. Among the regressors, credit as a proportion to total assets (CRE) represents the activity variable, capturing the banks' responses to the underlying demand for credit. The proportion of investments to total assets (INV) reflects portfolio shifts induced by changes in the policy environment and banks' asset management strategies in a period of transition. Together with CRE, INV represents the allocative efficiency of banks. The ratio of non-performing assets to total assets is a 'soundness' variable representing the quality of banks' assets especially under pressures for greater transparency. The capital adequacy ratio (CAR) captures the prudential strengthening of the capital structure of banks under financial sector reforms. Intermediation costs (COST) measured as the operating expenses of banks excluding interest expenses, provisioning and contingency reserves, represents operating efficiency.

Given that the data set exhausts the population of scheduled banks, there is a priori support for the hypothesis that bank-wise

Table 8 : Bank Group wise Financial Performance : 1995-96 to 1999-2000

(per cent)

	Return on Assets	Spread	Intermediation Cost/ Total Assets	Net NPA/ Net Advances	Capital Adequacy Ratio@
Public Sector Banks					
1995-96	-0.07	3.08	2.99	8.90	8.81
1996-97	0.57	3.16	2.88	9.18	10.53
1997-98	0.77	2.91	2.66	8.15	10.86
1998-99	0.42	2.81	2.65	8.13	10.94
1999-2000	0.57	2.70	2.52	7.42	11.49
Private Sector Banks					
1995-96	1.21	3.08	2.46	—	10.93
1996-97	1.13	2.92	2.36	5.37	12.19
1997-98	1.04	2.46	2.14	5.26	11.39
1998-99	0.68	2.09	2.07	7.41	11.58
1999-2000	0.90	2.13	1.85	5.56	12.16
Foreign Banks					
1995-96	0.16	3.13	2.94	—	10.10
1996-97	0.67	3.22	2.85	1.92	12.19
1997-98	0.82	2.95	2.63	2.25	12.81
1998-99	0.49	2.78	2.65	2.94	13.38
1999-2000	0.66	2.72	2.49	2.37	18.51

Source : Reserve Bank of India, Report on Trend and Progress of Banking in India, various years.

@ : Median values.

variance in performance emanates from divergences in initial conditions (scale of operations, etc) i.e., there are bank-specific constants. This tilts the choice of model in favour of 'within' or 'fixed effects' estimators. The random effects estimates are more robust in terms of more degrees of freedom, but they can only be used if there is no correlation between the regressors and errors. To hedge against any possible bias arising from the use of random effect estimates, we test for presence of correlation between regressors and errors by conducting the Hausman test under the null hypothesis of no correlation between regressors and errors The significance of the chi square statistic of the Hausman test justifies the choice of fixed or variable effects model. The results of the panel regressions are reported below (Tables 9-14).

Table 9 : Determinants of Banking Profitability: Panel Estimates for Public Sector Banks; 1995-96 to 1998-99

Dependent Variable : Return on Assets (ROA),
Method : GLS (Cross section Weights), Fixed Effect Estimates
Total Panel (Balanced Observations) : 108

Variable	Coefficient	Std. Error	t-statistics	Probability
NPA	-0.11	0.032	-3.57	.000**
CAR	0.09	0.030	3.06	.002**
COST	-0.21	0.249	-0.85	.393
INV	0.04	0.022	1.71	.087*
CRE	0.03	0.021	1.38	.167

Panel data : Diagnostics

R-squared	.54
Adjusted R-squared	.36
S.E. of regression	1.03
Hausman Test (Choice of Model : Fixed versus Random Effects)	Chi-Square = 23.23, P-Value = 0.66

** : Significant at 5 per cent.
* : Significant at 10 per cent.

Table 10 : Determinants of Banking Profitability: Panel Estimates for Public Sector Banks; 1995-96 to 1998-99

Dependent Variable : Spread (SPD)
Method : GLS (Cross section Weights), Fixed Effect Estimates
Total Panel (Balanced Observations) : 108

Variable	Coefficient	Std. Error	t-statistics	Probability
NPA	-0.84	.025	-3.33	.001**
CAR	.006	.014	.048	.962
COST	0.347	.141	2.46	.016**
INV	.025	.010	2.53	.013**
CRE	.034	.011	-0.32	.746

Panel data : Diagnostics

R-squared	.87
Adjusted R-squared	.82
S.E. of regression	.32
Hausman Test (Choice of Model : Fixed versus Random Effects)	Chi-Sq =23.64, P-Value = 0.003

Table 11 : Determinants of Banking Profitability: Panel Estimates for Private Sector Banks; 1995-96 to 1998-99

Dependent Variable : Return on Assets (ROA),
Method : GLS (Cross section Weights), Random Effect Estimates
Total Panel (Balanced Observations) : 112

Variable	Coefficient	Std. Error	t-statistics	Probability
NPA	-.052	.019	-2.72	.008**
CAR	0.0341	.015	2.21	.030**
COST	-0.0359	.034	-1.05	.297
INV	-.0182	.01	-1.75	.084*
CRE	-0.014	.009	-1.58	.118

Panel data : Diagnostics

R-squared	.76
Adjusted R-squared	.67
S.E. of regression	.48
Hausman Test (Choice of Model : Fixed versus Random Effects)	Chi Sq=10.792, P-Val = .055

** : Significant at 5 per cent.
* : Significant at 10 per cent.

Table 12 : Determinants of Banking Profitability: Panel Estimates for Private Sector Banks; 1995-96 to 1998-99

Dependent Variable : Spread (SPD)
Method : GLS (Cross section Weights), Fixed Effect Estimates
Total Panel (Balanced Observations) : 132

Variable	Coefficient	Std. Error	t-statistics	Probability
NPA	-.096	.02	-3.93	.000**
CAR	.059	.02	3.38	.001**
COST	.12	.04	2.82	.006**
INV	-.002	.015	-1.01	.919
CRE	.016	.012	1.33	.185

Panel data : Diagnostics	
R-squared	.65
Adjusted R-squared	.61
S.E. of regression	.64
Hausman Test (Choice of Model : Fixed versus Random Effects)	Chi Sq=16.57, P=.0054

Table 13 : Determinants of Banking Profitability: Panel Estimates for Foreign Banks; 1995-96 to 1998-99

Dependent Variable : Spread (SPD)
Method : GLS (Cross section Weights), Fixed Effect Estimates
Total Panel (Balanced Observations) : 120

Variable	Coefficient	Std. Error	t-statistics	Probability
NPA	-.105	.026	-4.00	.000**
CAR	.055	.023	2.35	.021**
COST	-0.16	.041	-3.87	.000**
INV	-0.16	.019	-.858	.393
CRE	negligible	.0115	-.008	.994

Panel data : Diagnostics	
R-squared	0.65
Adjusted R-squared	0.53
S.E. of regression	1.25
Hausman Test (Choice of Model : Fixed versus Random Effects)	Chi Sq = 18.04, P-Val = .003

** : Significant at 5 per cent.
* : Significant at 10 per cent.

Table 14 : Determinants of Banking Profitability: Panel Estimates for Foreign Banks; 1995-96 to 1998-99

Dependent Variable : Spread (SPD)
Method : GLS (Cross section Weights), Random Effect Estimates
Total Panel (Balanced Observations) : 100

Variable	Coefficient	Std. Error	t-statistics	Probability
NPA	-.042	.026	-1.61	0.10*
CAR	.050	.016	3.10	.002**
COST	-.029	.044	-0.65	.51
INV	-.027	.021	-1.29	.20
CRE	.011	.012	0.96	.34

Panel data : Diagnostics

R-squared	0.41
Adjusted R-squared	0.17
S.E. of regression	1.7
Hausman Test (Choice of Model : Fixed versus Random Effects)	Chi SQ= 3.98, P-Val = 0.5521

** : Significant at 5 per cent.
* : Significant at 10 per cent.

The results are reasonably robust in terms of the standard statistical diagnostics and their explanatory variables have the expected signs. In particular, NPA has a strong negative influence on the performance of public sector banks, which vindicates the authorities' two–pronged approach of tightening prudential norms beyond the international standards on the one hand and the emphasis on restructuring and recovery of assets, on the other. For public sector banks, ROA is also negatively related to COST, as expected. However, the variable COST seems to have little influence on the interest income of the banks. The capital requirements for meeting the capital adequacy norms are found to have a strong positive influence on the net profits, but they have constricted banks' abilities to expand credit in favour of relatively high return assets. Thus they do not impact on bank spreads in a significant manner. The activity variable CRE could not, however, produce a strong impact on bank profitability. Seen in conjunction

with the strong positive effect of INV, it reflects the voluntary portfolio shifts of public sector banks towards Government securities, drawn by relatively high yields, zero risk weights as well as risk aversion behaviour of banks fearing decline in the quality of assets due to the downturn in economic activity since 1996. Thus, the first response of banks to greater portfolio freedom has been a flight to quality along with cautious lending (Bery, op. cit). For private sector banks, the impact of NPAs and capital adequacy is significant with the expected signs exerting conflicting pulls. The cost of intermediation (costs) impacts upon private banks' profits in terms of return on assets, the impact on spreads is insignificant as would be expected. The effect of other factors is not significant. Foreign banks exhibit responses similar to those of private sector banks, although the results deteriorate in the regressions on spreads. The choice of investment decisions emerges as a drag on profitability indicators. The volume of credit produces insignificant impact on profitability.

Thus, the results suggests that policies for financial sector reforms have had a relatively stronger impact on the performance of banks in India as compared with the impact of underlying cost and macroeconomic considerations. Public sector banks reveal a fuller response in terms of rising sensitivities to fundamental factors and a distinct risk aversion.

Section V

Concluding Observations

Policies for establishing financial stability have dominated the agenda of reforms in the 1990s. There is a distinct country specific flavour to the approach to the responsibility for financial stability. Although considerable ground remains to be covered in the quest for a vibrant, and well-diversified and competitive financial sector with multiple intermediaries operating in various segments of the financial markets, the initial adaptation responses of financial intermediaries, particularly banks, has been encouraging. The complementarity between macroeconomic and financial policies has provided a sound infrastructure for a

overhaul of the financial system in the pursuit of international standards. It has minimised adverse selection and multiple equilibria in the banking system.

The stylised facts and the empirical results indicate that those banks which have secured the greatest reduction in non-performing assets have reaped the maximum gains in terms of profitability, or at least in terms of unshackling financial performance from policy intervention. Capital adequacy has almost uniformly produced an improvement in performance. For the public sector banks, evidence of a flight to quality indicates that application of capital ratios may not have provoked 'risky' portfolio selection, as found in some other countries. For the Indian banking system in general the adjustment to macro and micro prudential regulation has been relatively rapid although the speed of adjustment has varied across the industry.

Given the experience with financial crises and disorderly workouts in the face of market seizures, efforts are intensifying all over the world to put in place an appropriate international architecture which will operate as a circuit breaker for systems of multiple equilibria, prevent the occurrence of crises or at least mitigate the costs of their incidence. India's involvement in the quest for the appropriate international architecture has emphasised three endogenous elements – strengthening the financial system, instituting an appropriate exchange rate regime, establishing safety nets and enforcing international standards of transparency and disclosure. The exogenous elements in the quest are a greater participation of all countries in the international processes and fora, burden sharing between public and private sectors and enhancement of resources of multilateral institutions to enable a more swift and adequate response to financial instability.

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Stock Returns and Volatility in India : An Empirical Puzzle ?

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The behaviour of equity premiums in India shows that long term investors do get compensated for the systematic risk they bear by holding equities. In the short to medium run, however, both the direct and the indirect test suggested by French, Schewart and Stambaugh (1987) fail to establish the expected risk-return relationship for Indian equities. Dominance of short horizon players in the market and the associated avoidable volatility in the equity market obscures the implications of monetary policy for the equity cost of capital in India.

Introduction

In the financial economics literature, it is generally assumed that risk-averse investors expect higher returns for investing in relatively riskier assets and therefore, the risk premium represents the compensation to the investor for assuming risk. The non-zero risk premiums are not only directly unobservable but also vary substantially over time. Apart from the 'animal spirits' driving investor exuberance, short-term volatility in risk premiums could result from shifts in inflation expectations, monetary policy shocks, changes in market perceptions relating to the underlying 'fundamentals', all of which cause frequent corrections in expectations about future cash flows.

The relationship between premiums or excess returns, representing the excess of expected returns over risk free returns and risk, measured by the volatility of market prices of assets is an intensely debated theme in the literature. In particular, the focus of empirical investigation has been on the dynamics of the risk-return relationship in equity markets. The residual nature of returns to

* The authors are Assistant Adviser and Research Officer, respectively , in the Department of Economic Analysis and Policy. The authors are grateful to an anonymous referee for bringing to their notice the frontier areas of research on this topic and for offering certain useful suggestions to strengthen the empirical relevance of the paper. The usual disclaimer applies.

equity makes it the costliest form of capital. The equity cost of capital covers both the time value of money and a compensation for risk – a combination of 'term premium' and 'risk premium' – which are difficult to disentangle. Nevertheless, assuming the characteristics of a 'rational' market, a positive relationship is expected to emerge between excess returns on equities and volatility in equity returns.

This paper undertakes an empirical verification of the rational markets hypothesis of a positive relationship between excess return and volatility in the context of equity markets in India. In view of the growing debate surrounding the adequacy of the standard Capital Asset Pricing Model (CAPM) in providing empirically testable formulations of the hypothesis and the handicaps faced by alternative cross-sectional approaches, the paper adopts the time-series methodology first employed by French, *et al* (1987) in the context of US equity markets. In essence, volatility of returns is decomposed into an 'expected' component and an 'unexpected' component on the premise that even if the expected relationship between excess returns and realised volatility fails to be established, validation of a positive relationship between excess returns and expected or *ex ante* volatility and a negative relationship between excess returns and unanticipated volatility by means of the indirect test proposed by French, *et al* would provide corroboration to the rational market hypothesis. Section I encapsulates the debate on the observed behaviour of equity premiums and on the alternatives to empirical verification. Section II presents the stylized facts characterising returns in the Indian stock market. Section III sets out the methodology adopted in this paper, *a la* French, *et al*. Empirical findings are examined in Section IV and Section V concludes the paper by summarizing the major findings.

Section-I

The Debate Encapsulated

In the second half of the nineties, equity premiums appear to be going through a secular decline in most of the developed

financial markets. During 1800-1850, the equity premium in the USA was close to zero due to high real rates on bonds. The premium remained mostly stable at around 4 per cent during the period 1850-1950. Since then, the equity premium declined from a peak of 10 per cent in the early 1950s to about 2-3 per cent in the 1990s (Blanchard, 1993). The phenomenon has been attributed to the gradual increase in the real returns on bonds. On a fundamental level, the 'vanishing equity premium' is viewed as the result of the prolonged experience of generalised low and stable inflation which has brought about a downward shift in the risk perception of investors (Modigliani and Cohn, 1979; Blanchard, *op.cit*.). The decline in equity premiums is also attributed to change in the degree of risk aversion *i.e*., possible decline in the degree of risk aversion over time, global financial integration - allowing the diversification of ideo-syncratic risks on a global level, demographic changes - tilting the composition of the population in favour of younger/older and therefore risk loving/ averse age groups, and financial liberalization – lowering illiquidity risk and reducing transaction costs.

At an empirical level, testing for the risk-return relationship in financial markets has typically involved the application of the capital asset pricing model (CAPM), either in its standard form or variants. In the CAPM framework investors have to be compensated only for bearing systematic risks, since unsystematic risks can be managed through diversification. Since the mid-1980s and particularly in the 1990s, an intense debate has dominated the empirical literature on the adequacy of the CAPM in testing for the risk return relationship. Drawing from the seminal critique by Roll (1977), the debate has centred around whether "beta is dead" or whether "beta is alive and well" (Jagannathan, *et.al*., 1993). This has motivated a search for alternative tests to explain the behaviour of the risk return relationship in the genre of cross sectional approaches. Factors such as price-earning ratios (Basu, 1977), firm size (Banz, 1981), book-to-market (Fama and French, 1992) and country ratings (Erb, et.al., 1996; Qin and Pattanaik, 2000) have been used as alternatives to CAPM *beta*.

Empirical failure of cross section approaches, despite powerful theoretical validity, has provoked attempts to empirically investigate the risk-return relationship in equity markets through time series type approaches among which French, *et.al*. can be regarded as seminal. French *et.al.* conducted empirical test using the Standard and Poor (S&P) composite index over the period 1928 to 1984. Volatility was decomposed into anticipated or *ex ante* component and unexpected volatility. Anticipated volatility was estimated using Auto Regressive Integrated Moving Average (ARIMA) and Generalised Auto Regressive Conditional Heteroscedasticity (GARCH) techniques. Instead of the direct test of the relationship between excess returns and contemporaneous estimates of *ex-post* volatility, French e*t.al.* proposed an indirect test through a positive relationship between excess returns and *ex ante* volatility and a negative relationship between excess returns and unanticipated volatility to validate the rational market hypothesis.

Emerging market returns in general are more predictable than developed market returns, the higher degree of predictability stemming from lack of market efficiency (Bekaert *et.al.,* 1998). Emerging markets are usually characterised by high degree of volatility persistence, showing the presence of conditional heteroscedasticity and considerable momentum, indicating path dependence with autocorrelations. Non-normal distribution of the returns is another typical feature of emerging market returns, with fat distribution tails indicating the presence of volatility clustering (Jacobson, 1997). The predictability of returns, which is taken as an invalidation of the random walk process, is no longer viewed as rejection of market efficiency. Recent econometric advances and empirical evidence suggests that financial asset returns are indeed predictable. "Thirty years ago this would have been tantamount to an outright rejection of market efficiency. However, modern financial economics teaches us that other, perfectly rational factors may account for such predictability" (Campbell, *et.al*. 1997). In fact, it is argued that as compared with returns, the volatility of stock returns could be predicted with greater certainty (Pagan and Schwert, 1990). It may be useful, therefore, to estimate predictable volatility and study how predictable volatility influences investor behaviour, as highlighted in French, *et.al.*

Section – III

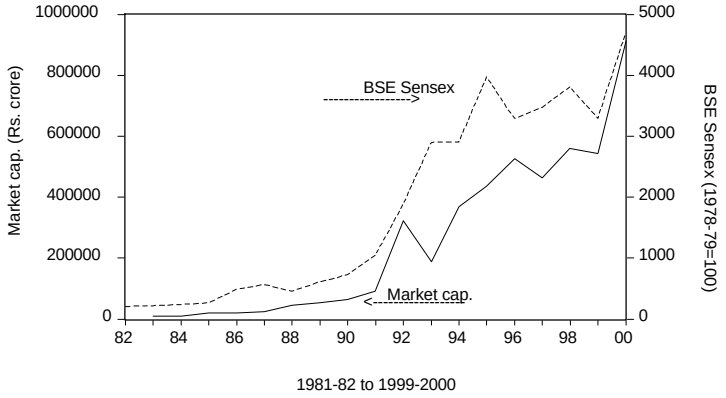
Stock Retuns in India : The Stylised Facts

Indian capital market has acquired considerable depth over the past years and benefited from significant transformations brought about by the introduction of new institutions, infrastructure, technology and innovative instruments. (See Misra, 1997 for a comprehensive review.) The growing importance of capital market as an alternative to banks for intermediating the country's saving is exhibited from the fact that total annual mobilisation of resources through the primary market as a percentage of annual incremental aggregate deposits of scheduled commercial banks has increased from a low of 3.4 per cent in the seventies to about 70 per cent in 1999-2000. In the secondary market, market capitalisation as a percentage of GDP also rose from less than 7 per cent in the seventies to about 47 per cent in 1999-2000. Growth in market capitalisation is a combined effect of growth in new additions to equity and the increase in stock prices. (Graph-1 plots the behaviour of market capitalisation *vis-à-vis* stock price movements during the eighties and the nineties.) In terms of fundamental analysis, stock prices as reflected in a market index is expected to converge to a path justified by a nominal growth rate of equity return that is equal to the expected rate of real GDP (or IIP) growth plus the rate of inflation. Return on individual stocks may be more or less than the long run nominal growth rate of GDP/IIP, but for the market as a whole the convergence is expected to hold in the long run. Graph-2, which plots the Index of Industrial Production against the BSE sensex deflated by WPI shows that the real value of stock prices in India deviated considerably from the actual IIP. Since stock prices should reflect expected future real activity, a contemporaneous relationship as shown in Graph-2 may not be valid.

As per the standard valuation of stock prices in terms of expected discounted future earnings, however, using the P/E ratio one could assess to some extent the possible deviations from the fundamental values of stocks. In India, the P/E ratio has exhibited large fluctuations over time, quite unrelated to fundamentals. As

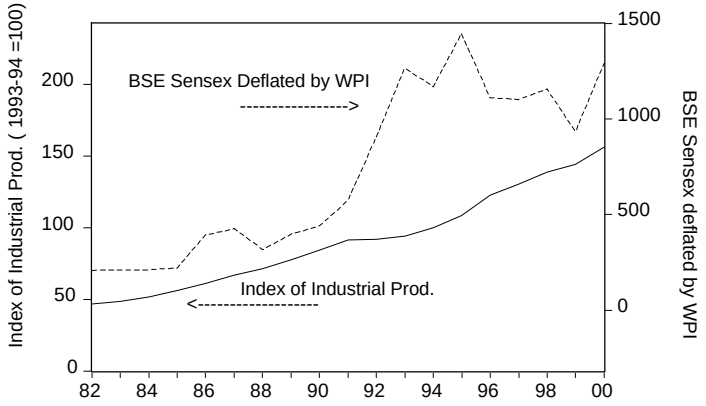
estimated by Gupta, Jain and Gupta (1998), the P/E jumped from about 15 in January 1991 to almost 40 by April 1992, fell by almost half in the next one year and touched 43 in April 1994 before falling to 10.5 in December 1996. (Graph-3) Studying the behaviour of P/E from early eighties, they classified the market valuation of stocks into four categories: dangerously high (for more than 21), high (18 to 20), reasonable (13 to 17) and too low (12 or below). If one uses the P/E on IFC global Index (which is available for the whole of 1990s), during 1991-94 the market was dangerously overvalued and since then it has been either high or reasonable. The inverse of the P/E ratio is also known as the earnings yield – indicating corporate profitability in relation to the market value of corporate equity. For an end March 2000 P/E of 19.76, one obtains an earnings yield of about 5 per cent. If one assumes the market to remain either high or reasonable, then the associated earnings yield would range in between 7.7 per cent to 5 per cent. Such estimates are, however, point estimates and could vary significantly over time since P/E ratio itself is a function of the risk free rate, the risk premium, and expectations of growth, each of which could be time varying.[1] It may be noted that compared with the US market (i.e. S&P 500) which has yielded an averge earnings yield of close to 7 per cent during 1950-99[2], earnings yield on Indian stocks in the 1990s do not seem to be attractive. For such comparisons, however, the holding period is important. For a five year holding period with terminal years in 1992, 1993, 1994 and 1995 returns on BSE Sensex were high in the range of 30 to 40 per cent because the P/E showed the sharpest rise during this period. (Gupta, 2000)[3]. For a ten year holding period, the average rate of return remained above 10 per cent throughout the nineties.

Graph-1

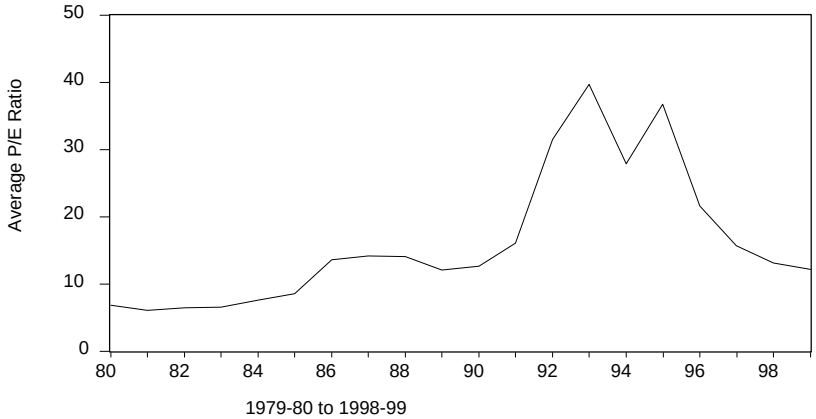


1981-82 to 1999-2000

Graph-2



Graph-3

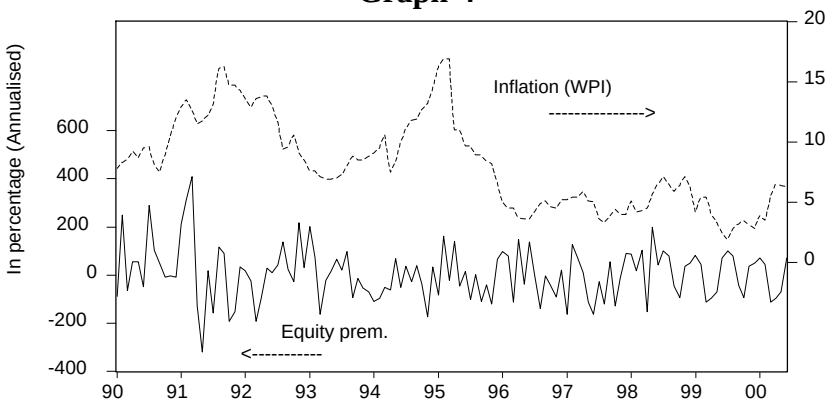


1979-80 to 1998-99

Source : Gupta (2000)

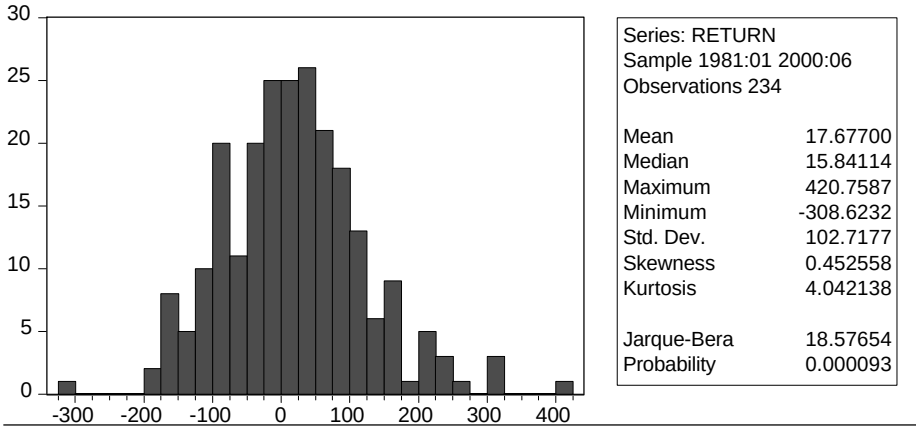
Shah (1999) presented a comprehensive assessment of the impact of reform measures introduced in the Indian capital market in the nineties and concluded that developments like sharp reduction in transaction costs, enhanced liquidity, reduced leverage and evidence of superior information processing by the market agents contributed to greater efficiency in the market. Against these developments, the empirical validity of the indirect test suggested by French *et.al.* could also help in assessing the potency of monetary policy in reducing the equity cost of capital in India. In Graph-4, however, the behaviours of equity premium and inflation do not seem to exhibit any particular relationship between the two. The return on equity could be decomposed in to risk free rate (r_f), risk premium (r_p), bubble premium (b_p) and unanticipated shocks to stock returns (ε_t). Inflation and financial instability represent systematic risks and monetary authority could limit the exposure of the economic system to systematic risk by ensuring financial stability and a low inflation environment. When monetary policy proves effective in containing the equity market bubbles and in avoiding hard landings, the return on equity demanded by the investors could also be influenced. In a market when prices do not yield returns consistent with the systematic risks, evaluating the implications of monetary policy for the equity cost of capital could be difficult.

Graph-4

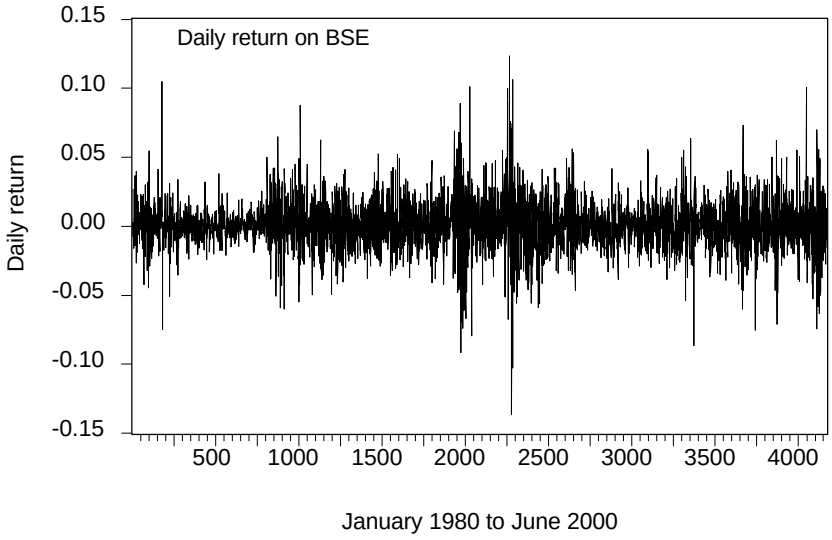


As could be seen from Graph-5, the distribution of monthly (annualised) returns[4] on BSE sensex (January 1981 to June 2000) is symmetric. But the Skewness, Kurtosis and Jarque-Bera test statistics reject the null of normality, indicating the presence of fatter tails. The first order autocorrelation coefficient (estimated as the slope of the regression of monthly return on one period lagged return) at 13.13107 (with standard error = 0.049648) indicates the returns to be autocorrelated, and therefore time dependent. Graph-6 also shows the presence of volatility clustering. The distribution characteristics of BSE stock returns are, therefore, typical of most emerging market economies. Irrespective of these characteristics, every rational market should show a positive relationship between equity premiums and the volatility of returns. When the direct test of this relationship fails, one could use the indirect test suggested by French *et.al*. to validate the relationship.

Graph - 5



Graph – 6



Section-IV

The Methodology

The conventional approach to study the relationship between "expected return" and "*ex-ante* volatility" is through the simple regression equation:

Risk premia (*i.e.* market return – risk free rate) = $\alpha + \beta$ (*ex-ante* variance or standard deviation of the market portfolio). In actual empirical analyses, realised volatility rather than *ex-ante* volatility is considered and, as a result, the underlying market behaviour is not explained properly. Realised volatility represents a combination of ex-*ante* or expected volatility and un-*expected* volatility. While risk premiums may exhibit a positive relationship with *ex-ante* volatility, their relationship with the unanticipated volatility could be negative.[5] Since the relative importance of *ex-ante* volatility and unexpected volatility could vary over time, one may get an obscured relationship between risk premium and observed *ex-post* volatility.

French *et.al*. applied ARIMA and GARCH techniques for estimating *ex-ante* volatility from *ex-post* volatility. Following French *et. al.* monthly standard deviations are computed from daily stock returns on the composite BSE. The standard deviation of monthly returns is tested for stationarity and after identifying the appropriate orders of AR and MA process embodied in the stationarised series, ARIMA based conditional forecasts of the standard deviations are generated to see whether the predicted SDs track the actual SDs closely. The forecasts are then assumed to represent the "predictable volatility", and "unpredictable volatility" is derived as the difference between realised volatility and the predicted volatility. Prior to running regressions of excess holding period returns (as proxy of risk premiums) on ARIMA generated forecasts of volatility, two further adjustments as suggested by French *et.al*. are made: (a) each observation of the relevant variables is weighted by the predicted standard deviation (*i.e.* the use of weighted least squares to correct for possible presence of heteroscedasticity), and (b) White's consistent correction for heteroscedasticity to the regression at (a) is employed.

Following French *et. al. ex ante* measures of volatility using ARCH and GARCH are estimated and the relationship between equity premium and volatility for the composite BSE sensex is empirically tested. When variance of the error term varies directly with one or more independent variables in the regression equation, use of weighted least squares technique could transform errors into a homoscedastic process and thereby Ordinary Least Squares (OLS) could still provide efficient parameter estimates. An alternative is to use White's correction for heteroscedasticity. When the error term is not a function of one or more independent variables in the regression equation but instead varies over time in a manner that large errors are followed by large errors and small errors are followed by small errors (i.e. current errors depend on how large or small were the past errors), it becomes useful to apply ARCH and GARCH techniques. The variance of the error term is explained through the volatility observed in the past and instead of OLS, maximum likelihood estimation procedure is used.

Section-V

Empirical Test Using Monthly Return on BSE Sensex

For generating ARIMA based forecasts of return volatility, monthly standard deviations of return series is tested for stationarity and both the plot of the correlogram and ADF test statistics (reported in Table 1) validate the series to be stationary. The ACFs and PACFs presented in Statement-1 for the full sample and two sub-samples do not seem to change significantly. The stability of the ACFs and PACFs across sub-samples suggests that the parameters of the ARIMA equation can be assumed to be known and stable, and accordingly, as suggested by French *et.al.* the fitted values could be used as the predictable volatility. The moving average specification of the model that statistically approximates the data is as follows[6]:

SDReturn = 0.02 + 0.58 MA(1) + 0.41 MA(2) + 0.27 MA(3)
(16.88) (9.41) (6.10) (4.25) $\bar{R}^2$ = 0.41

As could be seen from the plot of the residuals (Graph-8), there is evidence of volatility persistence and, therefore, the error term is conditionally heteroscedastic. ARCH (1)[7] test for conditional heteroscedasticity (with chi-square = 21.99 and F= 24.08) also support the need for representing the errors through ARCH/GARCH specification. Following Lee (1991)[8], the errors are captured through a GARCH (1,1) in mean specification, yielding the following results :

SDReturn = 0.01 + 0.50 MA(1) + 0.37 MA(2)
(5.67) (5.83) (4.83)

+ 0.29 MA(3) + 0.83 GARCH (SD)
(4.55) (1.90) $\bar{R}^2$ = 0.42

Error variance = 0.006 + 0.183 ARCH(1) + 0.623 GARCH(1)
(2.57) (3.84) (5.87)

The sum of the ARCH and GARCH coefficients is less than one, signifying the volatility process to be stationary. Graph-9 plots the fitted values (proxy for *ex-ante* volatility) against the original volatility series (representing *ex-post* volatility). The difference between the *ex-post* volatility and *ex-ante* volatility for every month is assumed to represent the unanticipated volatility for that month. Graph-10 plots both expected and unanticipated volatility against the equity premiums. In order to explain whether equity premiums[9] exhibit any relationship with the estimated measures of volatility, the following regression equations were run:

Full sample (January 1981 to June 2000)[10]

1) Equity premium = 20.49 – 802.58* (*ex-post* SDs)
(1.41) (-1.01)

2) Weighted Least Square (with predictable SDs used as weights)

Equity premium = 120.57 – 5404.88* (predictable SDs)
(5.95) (-6.67)

-650.53* (unpredictable SDs)
(-0.74)

Sub-sample (January 1995 to June 2000)

2) Weighted Least Square (with predictable SDs used as weights)

Equity premium = -68.92 + 2429.09* (predictable SDs)
(-1.11) (-0.83)

– 4196.77* (unpredictable SDs)
(-2.22)

(All the relevant variables in the above equations are stationary as per the ADF and PP test statistics reported in Table-1. Figures in the parentheses are the respective t values.)

For the full sample, the relationship between equity premium and original volatility turns out to be negative. Furthermore, the t-statistic corresponding to the estimated coefficient signifies that the coefficient is not different from zero. When the alternative test suggested by French *et.al*. is considered through regression equation (2), the coefficients of both predictable and unpredictable volatility appear to be negative with the coefficient for predictable volatility alone turning out to be statistically significant. This is appearently puzzling, because if the predictable volatility is expected to increase, then the investors should actually demand a higher return. The negative relationship could be interpreted, in a sense, as a case of market dominance by investors who mostly speculate on factors unrelated to fundamentals and keep changing their positions with the objective of increasing returns in the short-run. As a result, when the market goes bearish, selling pressure mounts, the BSE sensex declines and monthly returns turn negative, thus showing a negative relationship with volatility. On the other hand, when the market turns bullish, buying pressures lead to rally in BSE sensex and monthly returns become positive, showing a positive relationship with volatility. Over any period of time, therefore, the net impact of volatility on return could depend on both (a) the number of bull/bear phases during that period, and (b) the degree and speed of market response during alternating phases of markets. If the market reacts in the majority of outcomes to bearish conditions than to bull runs and if the bearish phase remains more prolonged than bull phases, then one could get a negative relationship between return and volatility. Such a result, however, hints at the absence of adequate number of genuine long term investors in the market who generally avoid the bandwagon of alternating phases in the stock markets but ensure a long-run return on equity that compensates them appropriately for the time value of money as well as the greater level of risk associated with equity.

In the last equation that relates to the more recent period (i.e. January 1995 to June 2000), the indirect test suggested by French *et.al*. seems to work for the Indian equity market. Predictable volatility shows a positive relationship but in terms of statistical

significance, it does not seem to be very different from zero. Unpredictable volatility, on the other hand, not only shows the expected negative relationship but also turns out to be statistically significant. High negative and statistically significant coefficient for "unpredictable volatility" indirectly explains the positive relationship between expected risk premia and *ex ante* volatility. Since investors want to be compensated for higher risks through higher return, increased "unpredictable volatility" at time (t) would make the investors demand higher risk premia at time (t+1), causing the stock prices to fall so as to offer higher returns. The unobserved positive relationship between equity premium and "predictable volatility" could, therefore, be implicit in the negative relationship between unpredictable volatility and equity premiums.

An alternative to the indirect test could be an ARCH in Mean (ARCH-M) or GARCH in Mean (GARCH-M) specification to directly estimate the relationship between return and risk in an intertemporal capital asset pricing model framework. In this approach, the mean of a sequence (say return or equity premium) is generally seen to depend on its own conditional variance. Following Engle, Lilien and Robins (1987), the equity premium (EP) can be written in a functional form as:

$$EP = \mu_t + \varepsilon_t$$

where μ_t is the risk premium necessary to induce an investor to hold equities as opposed to other risk free instruments, and ε_t is the unanticipated shock (or deviation from μ_t) to the equity premium. In the long run, the expected excess return on equity should approximate μ_t; i.e. E (EP) = μ_t. It is possible that the risk premium μ_t could be an increasing function of the conditional variance of ε_t, so that the expected compensation μ_t increases with the increase in the conditional variance of ε_t. μ_t could then be written as:

$$\mu_t = \alpha + \beta\, h_t, \text{ for } \beta > 0$$

where h_t is the ARCH (q) process : $h_t = \gamma_0 + \sum_{j=1}^{q} \gamma_j \varepsilon_{t-j}^2$

The conditional mean return (or mean equity premium) thus depends on the conditional variance h_t. When this relationship holds, it becomes equivalent of the indirect test of French *et.al.* The negative relationship of French *et.al.* between unexpected volatility and risk premium as an indirect test of the risk return relationship also explains what an ARCH-M or GARCH-M process can do. In the former case, an increase in unexpected volatility would increase the next - period expected volatility and the expected return accordingly. In the latter case, the mean return (or equity premium) would increase as the conditional variance of the unexpected shock to equity premium (*i.e.* the errors) increases.

For the ARCH-M test, daily equity premium series for the period January 1981 to June 2000 are used. The series turns out to be stationary as per ADF and PP tests (Table-1). The estimated mean specification of the equity premium series appears to be:

$$EP = \underset{(2.02)}{0.000562} + \varepsilon_t,$$ with 0.000562 representing the simple average of EP over the period. ARCH-LM tests for the errors ε_t of the above equation show evidence of strong heteroscedasticity (with chi-square = -59.03919 and F = -12.1878). The following ARCH-M specification with a statistically significant ARCH(3) process is estimated to study the return risk relationship :

$$EP = \underset{(-5.56)}{-0.003602} + \underset{(6.73)}{0.257796} * h_t + \varepsilon_t$$

$$h_t = \underset{(34.00)}{0.000152} + \underset{(13.21)}{0.235358}* \varepsilon_{t-1}^2 + \underset{(9.79)}{0.178742}* \varepsilon_{t-2}^2 + \underset{(9.82)}{0.148929} *\varepsilon_{t-3}^2$$

All three ARCH coefficients appear to be statistically significant as also the ARCH-M coefficient in the mean equation. The statistically significant positive relationship between h_t and EP indicate that the indirect relationship between equity premium and predictable volatility may also hold for the Indian data.

Section - V

Conclusions

Equity premiums in India do not seem to exhibit a pattern that could be explained by return volatilities. The absence of the basic relationship between risk and return that characterises many rational equity markets, throws up a puzzle. Unlike the puzzle highlighted by Blanchard - the vanishing equity premiums alongside increasing returns on bonds - the puzzle in the Indian equity market represents a violation of a basic characteristic of equity markets. The inflation environment in India does not seem to be a factor in influencing the risk premiums on equities, significantly limiting thereby the efficacy of monetary policy in lowering the equity cost of capital through a low and stable inflation environment. The empirically observed negative relationship with *ex-ante* volatility and statistically insignificant relationship with the unpredictable component of return volatility also indicate that even the indirect tests of the return-risk relationship do not hold in India. The negative return-risk relationship could be explained to some extent by the nature of investors operating in the markets as well as their asymmetrical response to bearish and bullish phases of the market. As could be seen from Graph-5, the equity market in India could have given an annualised return of 17.7 per cent to a long-term investor over January 1981 to June 2000, implying a return in excess of risk free alternatives as a compensation for risk. But the empirical relationship suggests that investors who tend to optimise return in the short-run dominate the equity market. As a result, they not only add avoidable volatility to the stock market and increase the amplitudes of the BSE sensex but also give rise to alternating short phases of bull runs and bear hugs.

The indirect test suggested by French *et.al.* holds for the Indian equity market for the period Jnauary 1995 to June 2000, signalling possible firming up of the basic risk-return relationship in the Indian equity market. The ARCH in Mean specification of daily equity premium also indicates the validity of the indirect test. The negative relationship with the unpredictable component of the

return volatility, however, requires some rational economic analysis. One argument could be the effect of leverage; *i.e.* when stock prices decline, the debt to equity ratio (leverage) increases automatically and as the capital structure deteriorates (*i.e.* more debt and less equity), expected equity return increases which, in turn, imparts further volatility. The estimated positive relationship between expected return and predictable volatility, therefore, overestimates the CAPM relationship which is corrected to the true relationship by the negative relationship one finds between return and unpredictable volatility. In the Indian case, the estimated relationship between equity premiums and predictable volatility turns out to be negative and, therefore, even the leverage explanation may not be valid. Leverage, in any case, can not be the sole factor to explain the entire negative relationship. As in the cross sectional analysis of CAPM where one often questions the empirical validity of the CAPM in terms of the inability of *beta* to explain the risk premiums, in time series framework also one could argue that standard deviation or variance may not be adequate to capture the element of risk and one may have to identify a more appropriate measure of return volatility. In cross section analysis, Fama and French considered factors like size, P to E, price to book *etc.* to explain return behaviour and argued that these factors could better explain risk premia compared to *beta*. In the time series framework one may also have to identify some alternative measures of return volatility as opposed to conventionally used indicators like variance. Another common point made by the CAPM protagonists is that the market index used for CAPM testing may not be the right representative of market portfolio. Any index which is not the true indicator of market portfolio would contain both systematic and unsystematic risks, whereas the CAPM market portfolio should explain only systematic risks. In the time series test of CAPM conducted in this paper the BSE sensex may not be the true indicator of a market portfolio and hence, such indirect tests of CAPM may not yield the desired results.

Notes

1. According to the Gorden formula, price of an asset $P_t = D_t (1+g)/(i +\rho - g)$, where D_t, g, i and ρ stand for dividend paid, growth rate of dividend, risk free interest rate and the equity risk premium. With dividend being generally a δ percentage of the earnings (i.e. $D = \delta E$) - the above formula can be written as
   $P_t/E_t = \delta (1+g)/(i +\rho - g)$. With information on P/E, g, i and δ, one could derive the equity premium ρ.

2. See World Economic Outlook, IMF, May 2000 for the details.

3. If the P/E ratio remains the same at the initial year and the terminal year for any investment, returns need not be zero since EPS growth could be positive. EPS could grow at a higher rate when lrge proportion of profits are ploughed back and invested productivitely. Technical progress, organizational improvements, scale and scope economies, takeovers/mergers that generate positive synergies, all of these could contribute to EPS growth. EPS and P often exhibit positive correlation since highr current earnings imply higher expected earnings in future.

4. Monthly returns are the sum of daily returns during the month. Daily return is calculated as $(\log P_t) - (\log P_{t-1})$. This is so because, $P_t = P_{t-1} * e^r$. In other words, $P_t / P_{t-1} = e^r$. Taking log on both sides, we get $(\log P_t) - (\log P_{t-1}) = r$. Total return should comprise of capital appreciation and dividend payment. For empirical testing, we need to use daily returns and, therefore, dividend payments are not considered. As pointed out by Gupta and Choudhury (2000), however, the share of dividend component in total return on BSE Sensex portfolio has declined from as low as 5.1 per cent during 1980-85 to just 1.6 per cent during 1992-97. As a result of the insignificant importance of dividend, our estimated average annual return at 17.7 per cent is close to their estimte at 18.8 per cent.

5. According to French *et.al*., given a positive relationship between equity premium and *ex-ante* volatility, when the observed *ex-post* volatility increases, investors expectations about *ex-ante* volatility is revised upwards, giving rise to a higher risk premium. As a result, the discount rate increases, NPV declines (assuming unchanged cash flows) and current stock prices fall. Equity premium may, therefore, show a negative relationship with the unanticipted volatility. According to French *et.al*., this negative relationship could be an indirect proof of a positive relationship between equity premium and *ex-ante* volatility.

6. Figures in the parentheses are respective t values.

7. ARCH(1) is Lagrange multiplier test for conditional heteroscedsticity with chi-squre distribution.

8. According to LEE(1991), LM test of the null of white noise against an ACRH(1) process is equivalent to an LM test of white noise against GARCH (1,1).

9. For generating the equity premium series, we deduct return on three year deposits (instead of short-term risk free rates) from the returns on equity. The reasons being : (a) the importance of bank deposits in the Indian financial system *vis-à-vis* other instruments of financial saving, and (b) the possibility of removing a great part of the term premium from the equity premium so that we can focus on explaining the risk premium on equity.

10. In these equations R^2 are generally low (as in French *et.al.*); the emphasis, therefore, is on the sign of the coefficient and the statistical significnce of the coefficients rather than the degree to which volatility could explain equity premium.

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Statement-1 : Correlogram of Monthly Volatility (SD of daily return)

Sample : 1981:01 to 2000:06

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
*****	*****	1	0.652	0.652	100.73	0.000
****	*	2	0.471	0.080	153.57	0.000
***		3	0.346	0.020	182.20	0.000
**		4	0.230	-0.038	194.91	0.000
*		5	0.187	0.052	203.34	0.000
**	*	6	0.221	0.138	215.16	0.000

Sample : 1981:01 to 1991:12

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
*****	*****	1	0.621	0.621	52.018	0.000
****	**	2	0.519	0.217	88.644	0.000
***		3	0.379	-0.014	108.32	0.000
**		4	0.314	0.036	121.95	0.000
**		5	0.268	0.045	131.95	0.000
**	*	6	0.278	0.102	142.80	0.000

Sample : 1991:12 to 2000:06

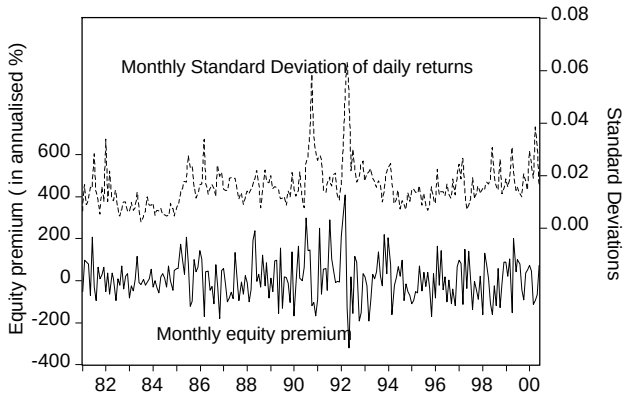
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
*****	*****	1	0.656	0.656	45.676	0.000
***	*	2	0.388	-0.076	61.780	0.000
**	*	3	0.283	0.105	70.466	0.000
*	*	4	0.117	-0.172	71.960	0.000
*	*	5	0.072	0.112	72.538	0.000
*	*	6	0.120	0.082	74.145	0.000

Table-1 : Tests of Stationarity

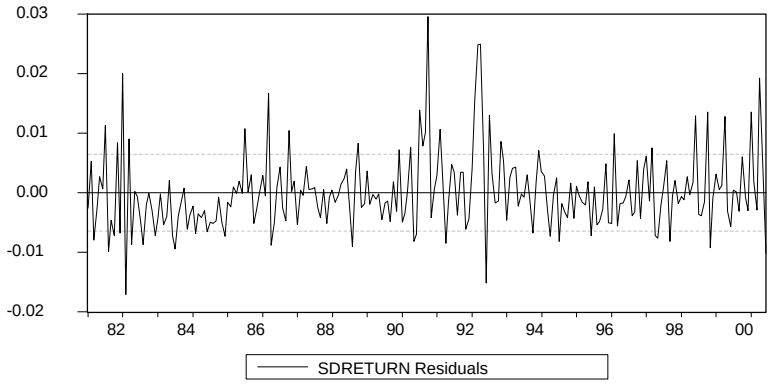
	ADF	PP
Monthly Equity Premiums	-5.386322	-13.95768
SD of Daily Return	-3.513992	-7.034327
SD of Predictable Return	-3.778759	-5.648865
SD of Unpredictable Return	-4.050140	-13.33402
Daily Equity Premiums	-12.18780	-59.03919

With constant in every ADF/PP equations and relate to AIC based lags.

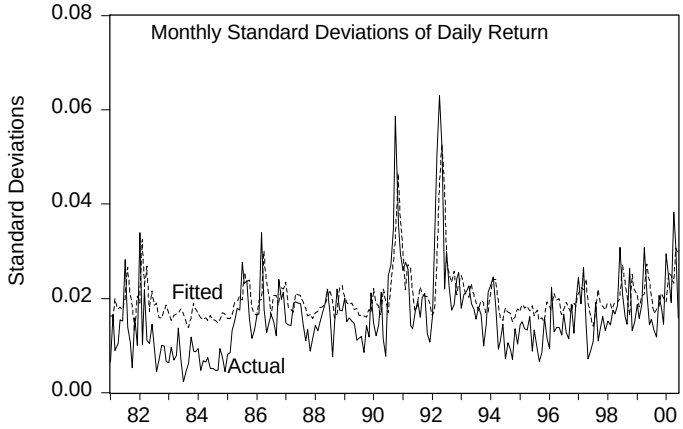
Graph-7



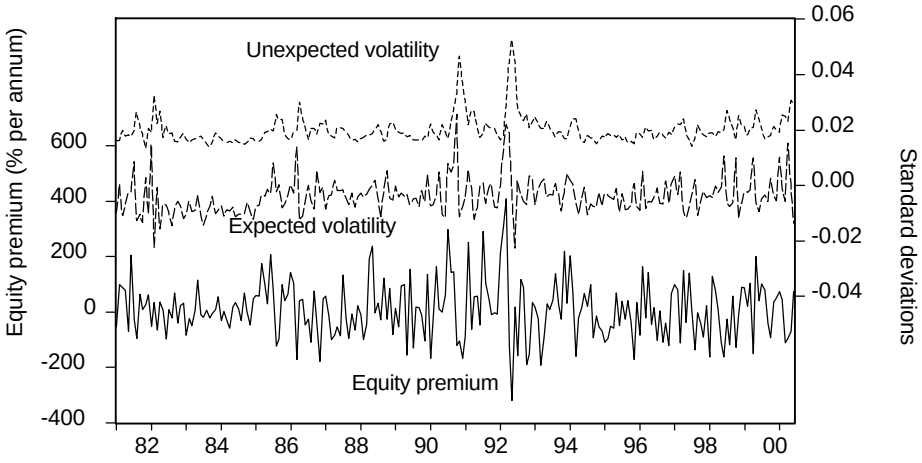
Graph-8



Graph-9



Graph-10


Unexpected volatility
Expected volatility
Equity premium
Equity premium (% per annum)
Standard deviations
600
400
200
0
-200
-400
0.06
0.04
0.02
0.00
-0.02
-0.04
82
84
86
88
90
92
94
96
98
00

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Short Term Interest Rate and Real Economic Activity

Sarat Chandra Dhal*

This paper examines the impact of short term interest rate on real activity in India using monthly data over the period 1961-2000. Using rolling regression technique, monetary impulses transmitted through interest rate effects are compared with policy changes effected through liquidity effects. The empirical evidence points out that interest rate has emerged as a significant factor for explaining the variation in real activity in the 1990s. The empirical results have important implications for monetary policy, particularly with respect to the interest rate channel of monetary transmission.

Background

Interest rates have assumed a key role as an instrument of macroeconomic policy. Since the 1970s, driven by McKinnon and Shaw's hypotheses, policy authorities have rolled back repression regimes and have undertaken concerted reform measures in their endeavor to strengthen competition and improve the functioning of financial markets. Deregulation of interest rate is the most common element of financial reforms occurring around the world. Shifts in operating procedures of monetary control have accompanied these changes in the policy environment, paving the way for a shift from direct instruments to indirect instruments of monetary control. Short term interest rates have become the key instrument through which central banks transmit policy impulses to the financial market. The famous Taylor's interest rate rule linking output gap and inflation gap has been employed by various central banks as the basis for setting up a reaction function.

In India, almost all major interest rates have been set free with banks and financial institutions being empowered to determine their own lending rates and deposit rates, except the saving deposit rate which is set by the Reserve Bank of India. In the 1990s, various financial prices have displayed reasonable comovement, reflecting

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the improvement in operating efficiency of the financial market spectrum. The growing flexibility in interest rate behaviour has sparkled off a debate in India on the real effects of interest rates. Concerns have been raised regarding the potential variability imparted to real activity due to interest rate changes occurring in the financial market.

The paper undertakes an exploration of the interest rate effect on real activity in the 1990s as compared with the 1980s. The rest of the paper consists of three parts. Section I contains review of the literature on this subject with a view to seeking an appropriate framework for empirical investigation. Section II analyses the empirical results. Section III summarises the findings of the study and offers some concluding observation.

Section I

The Literature in a Capsule

The last two decades have witnessed a surge of empirical studies on money and finance providing evidence of sharp real effects caused by changes in short term interest rates. In particular, studies on the interest rate channel of monetary transmission and the yield curve have demonstrated that effect of short term interest rate movements on real activity can be more pronounced than the effect of changes in financial quantities such as money or credit aggregates.

Stock and Watson (1989), Friedman and Kuttner (1992a, 1992b, 1993), Bernanke and Blinder (1992) and Emery (1996) presented evidence that interest rate and interest spreads outperform the monetary aggregates as predictors of real economic activity. These studies have found that the spread between commercial paper rate and treasury bills is highly significant in explaining output fluctuation. The federal funds rate, in particular, was found to contain significant information for predicting real activity in the US economy. Bernanke (1990) and Stock and Watson (1993) pointed out that predictive power of paper-bill spread weakened during the second half of the 1980s and the early 1990s.

Subsequent empirical approaches to the subject have moved away from pure *atheoretical* to *structural* vector autoregression models. Strongin (1992), Gordon and Leeper (1994) and Bernanke and Mihov (1995) focused on various refined measures of monetary aggregates using explicit models of the reserve market and central bank operating procedures. The merit of the structural VAR studies was that they focus on identifying monetary policy shocks. However, the usefulness of these studies have been questioned in several quarters. Rudebusch (1996), for instance, argued that the empirical results of these econometric studies are fragile and at odds with other evidence on the nature of central bank's reaction function and policy surprises, particularly the Fed in the United States. Thoma and Gray (1998) challenged empirical findings of these studies by pointing out that the empirical evidence on interest rate effect is biased to few sample observations. Using rolling regres-sion technique, they found that financial variables do not predict real activity on a sustained basis.

Theoretically, these empirical studies have derived justification for their findings from neoclassical postulate on the finance literature i.e., a competitive financial market has an edge over regulated financial market in terms of operating efficiency as well as allocation efficiency. In a free financial market, resources are mobilised most efficiently and allocated to productive sectors which bear lower risk and fetch high returns. From policy point of view, changes in short term interest rates alter marginal cost of borrowing for the business sector. In a competitive market, policy induced changes in short term interest rate may percolate down to the entire spectrum of interest rates and therefore, affect the yield curve. Such changes in the yield curve affect business expectation and investment decision which in turn affect real activity[1].

Although, these empirical findings have been offered to justify the progressive weakening of liquidity effect on real activity, the declining liquidity effect has adduced to inappropriate measure of money and credit aggregates (Thoma and Gray,1998). Moreover, it has been argued that waning of liquidity effect suggests money neutrality. Another view point is that the breakdown of money-

output relationship stems from the type of stationarity assumption imposed on the data (Hafer and Kutan,1997). Assuming difference stationarity in the data produces results which are in agreement with the studies pointing out the breakdown of money-output relationship. If trend stationarity is imposed on the data generating process, the money and output remain statistically related. Moreover, the change in stationarity assumption greatly affects the quantitative importance of interest rates in explaining output.

Methodology

Most empirical studies report the full sample causality tests which may be affected by the episodes of excessive market activity in the sample periods or isolated spikes in the interest rate variable during crises. Evolution of interest rate effect can be justified only if it exists on a sustained and continuity basis over time. In view of this statistical bias, Swanson (1998) and Thoma and Gray (1995, 1998) argued that the rolling regression technique constitutes an appropriate framework for empirical investigation of comparative performance of alternate monetary transmission process. This paper applies rolling regression technique in a single equation as well as multiple equation setting of VAR systems consisting of four major variables, money, output, prices and interest rate. In the single equation framework, the study uses the linear feedback methodology owing to Geweke (1982,1984) for quantifying the importance of interest rate conditional upon price and money variables. Such an exercise provides meaningful information input to the policy making process (McGarvey, 1985, Cushing and McGarvey, 1990).

The framework of the empirical model can be outlined in the following way. For the single equation model, the rolling regression of the output equation takes the form of

$$\Delta Y_{t,T} = c + \alpha_j \sum \Delta Y_{t-j,T} + \beta_j \sum \Delta P_{t-j,T} + \varphi_j \sum \Delta M_{t-j,T} + \omega_j \sum \Delta R_{t-j,T}$$

where Δ denotes first difference operator, j the common lag length, Y, P, M are natural logarithm of output (index of

industrial production), price, broad money and R interest rate, respectively. The equation is rolled over T times by adding one year data to the sample beginning from a starting sample period *i.e.*, 1961 to 1985. For each variable, Granger's causality statistic (F statistic) can be derived for testing whether the lags of explanatory variables are significant in the output equation. In order to estimate the linear feedback from explanatory variables, money and interest rate to output, the Geweke's methodology involves the following set of regression equations.

$$\Delta Y_t = c + \alpha_j \sum_{j=1}^{k} \Delta Y_{t-j} + \varepsilon_{1t} \quad (1)$$

$$\Delta Y_t = c + \alpha_j \sum_{j=1}^{k} \Delta Y_{t-j} + \omega_j \sum_{j=1}^{k} \Delta R_{t-j} + \varepsilon_{2t} \quad (2)$$

$$\Delta Y_t = c + \alpha_j \sum_{j=1}^{k} \Delta Y_{t-j} + \beta_j \sum_{j=1}^{k} \Delta P_{t-j} + \varepsilon_{3t} \quad (3)$$

$$\Delta Y_t = c + \alpha_j \sum_{j=1}^{k} \Delta Y_{t-j} + \beta_j \sum_{j=1}^{k} \Delta P_{t-j} + \omega_j \sum_{j=1}^{k} \Delta R_{t-j} + \varepsilon_{4t} \quad (4)$$

$$\Delta Y_t = c + \alpha_j \sum_{j=1}^{k} \Delta Y_{t-j} + \beta_j \sum_{j=1}^{k} \Delta P_{t-j} + \varphi_j \sum_{j=1}^{k} \Delta M_{t-j} + \varepsilon_{5t} \quad (5)$$

$$\Delta Y_t = c + \alpha_j \sum_{j=1}^{k} \Delta Y_{t-j} + \beta_j \sum_{j=1}^{k} \Delta P_{t-j} + \varphi_j \sum_{j=1}^{k} \Delta M_{t-j} + \omega_j \sum_{k}^{k} \Delta R_{t-j} + \varepsilon_{6t} \quad (6)$$

where j-the lag length ranges from 1 to K^2. Equation 1 entails that output is explained by its past lags capturing autoregressive secural trend component of output and the unexplained component ε_{1t}. In the equation 2 and 3, interest rate and price variables are introduced separately, and in equation 4 and 5, financial variables

money and interest rate, are employed alternatively along with prices as the conditioning variable. Equation 6 includes both money and interest rate at the same time. The errors of these equations are used to estimate linear feedback and conditional feedback from financial variables to output in the following way.

$F_{R\text{-}y} = Ln[var(\varepsilon_{2t})/var(\varepsilon_{1t})]$
$F_{R\text{-}y|P} = Ln[var(\varepsilon_{4t})/var(\varepsilon_{3t})]$
$F_{R\text{-}y|P,M} = Ln[var(\varepsilon_{6t})/var(\varepsilon_{5t})]$

where Ln denote natural logarithm and $var(\varepsilon_t)$ indicate variance of error terms, $F_{R\text{-}y}$ indicates unconditional bivariate linear feedback from interest rate to output. The $F_{R\text{-}y|P}$ indicate the conditional linear feedback from interest rate to output, conditional upon price. The measure $F_{R\text{-}y|PM}$ indicates the conditional feedback from interest rate to output, conditional upon the presence of price and money at the same time. In a similar manner, feedback from money and output can be derived. Also, the contemporaneous feedback from interest rate and money to output can be estimated by introducing current lags of these variables in the output equation. For instance, the bivariate unconditional contemporaneous linear feedback (F_{Ry}) from interest rate to output can be derived as

$F_{Ry} = Ln[var(\varepsilon_{7t})/var(\varepsilon_{2t})]$

where the error term ε_{7t} is derived from the equation

$\Delta Y_t = c + \alpha_j \sum \Delta Y_{t-j} + \omega_j \sum \Delta R_{t-j} + \varepsilon_{7t}, \qquad \text{for } j = 0, ..,K.$

In the same manner, the feedback from output to interest rate can be derived and the overall feedback ($F_{R\Theta y}$) between interest rate and output will be arrived as the sum of three effects:

$F_{R\Theta y} = F_{R\text{-}y} + F_{y\text{-}R} + F_{Ry}$

These feedback estimates can be estimated by rolling over the sample size to include additional information for a year from the chosen base year. As a result, linear feedback can be compared on

annual basis. A simple transformation of each feedback measure, 1 - exp(-F), gives the reduction in the one step ahead univariate linear prediction error variance of Y. For example, 1 - exp(-F_{R-Y}) is the proportion of the variance in Y given past Y, explained by R.

Section II

Empirical Results

First, it is necessary to explain the choice of the relevant short term interest rate. The interbank call money rate is chosen as the indicator of short term rates. There are several reasons for choosing this variable. First, it is the only interest rate variable determined by market forces before the 1990s and data are available on historical basis. Secondly, the underlying risk factor is comparable with reference to a benchmark gilt rate. Thirdly, recent studies on financial integration suggest that treasury bills rate and call money rate are highly correlated, changes in monetary policy has immediate effect on these segments of the financial market. Fourth, in the money market, banks constitute major players in the market. Change in the call money rate will adequately reflect underlying changes in the marginal cost of borrowing from the banking sector, the leading source of short term finance to business. The sample covers the period from 1961, April to 2000, March. The purpose of using a long sample size was to contain the upward bias in estimates owing to few spikes in interest rates.

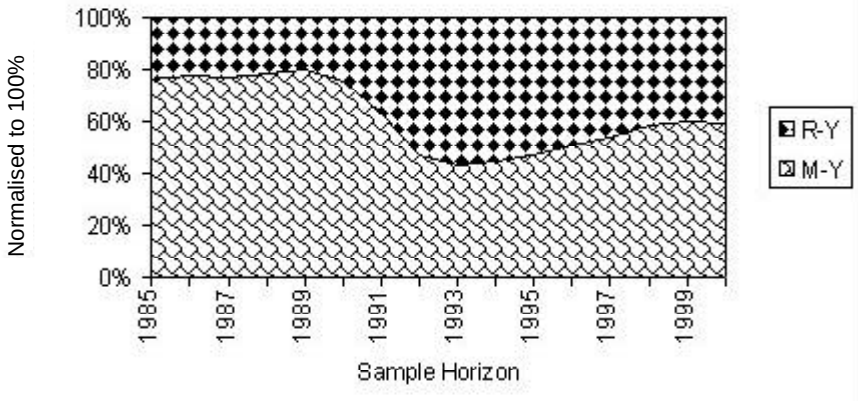
Granger's Causality Test

Table 1 reports the computed 'F' statistic for the null hypothesis that interest rate and money do not Granger cause output. The computed F statistic turns insignificant for the late 1980s, ruling out causal link between interest rate and output. The causal link become significant as the computed F statistic turns out much stronger for most part of the 1990s, particularly the first half than in the late 1980s, the period preceding financial reforms. Thus, the null hypothesis of no causality running from interest rate to output can be rejected for the 1990s[3]. The last three years *i.e.,* 1998-2000, have seen the weakening of interest rate effect. But in the

case of money, the causality statistic remains significant for all the years, implying that liquidity variable continues to be a statistically significant factor for explaining variation in real output.

As reported earlier, the F statistic only indicates the direction of causality impact but not the magnitude of causal influence of explanatory variables on the dependent variable. For this purpose, the estimate of Geweke's linear feedback sheds important insights[4]. Table 2 reports the linear feedback from interest rate and money to output. From this table, the feedback estimates provide a picture similar to the one given by causality statistic. During the late 1980s, linear feedback from interest rate to output was barely 2 per cent, whereas the money effect was about 8 per cent, 4 times larger than interest rate effect. The interest rate effect overtook the money effect during 1992-96 and declined towards the late 1990s. On the other hand, the liquidity effect has shrunk consistently. In relative terms, the interest effect is as important as the money effect during the 1992-96, and coming down to a competitive level as compared with the size of the money effect during the late 1990s. Thus, from the late 1980s to the late 1990s, there has been a remarkable change in the comparative effect of money and interest rate on real activity. The comparative performance of these two effects are shown in Chart I.

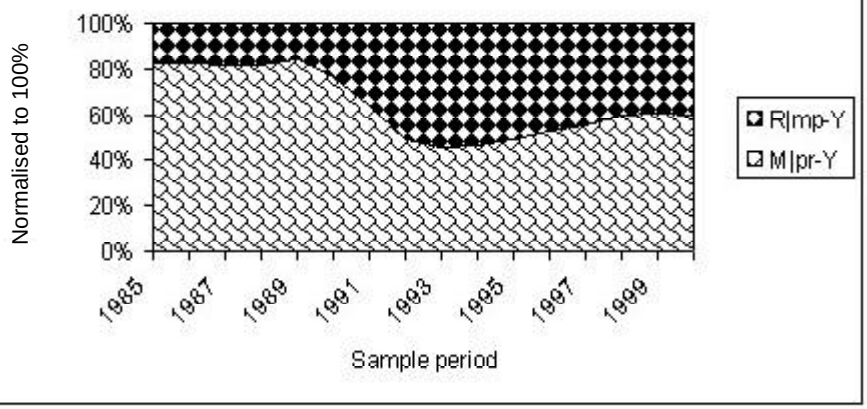
Chart 1 (a) : Relative Impact of Money(M) and Interest Rate(R) on Output Unconditional Linear Feedback



There is another interesting observation from the empirical linear feedback estimate. The joint impact of money and interest rate on output works out at 10-11 per cent for the late 1980s. The joint feedback went up to about 15-16 per cent during the first half of the 1990s and it receded to about 10 per cent during the late 1990s which is more or less the same with the estimates for the late 1980s. The broad pattern of empirical evidence needs to be carefully interpreted.

One possibility is that there exists a threshold limit (a natural response) to which real sector responds to financial innovations. During the process of financial reforms, it is possible for the real sector to react to financial innovations above its natural response path but the same trend may not continue for all the time. On the other hand, the real sector was going through a set of structural problems owing mainly to sluggish domestic demand condition besides the Asian Crisis at the international front during the 1998-99. There was some perception that the real interest rate was upwardly sticky as the inflation rate was at its lower end and the real sector was expecting some policy induced changes in nominal interest rate structure. In view of this, the response of real activity to nominal interest rate changes may have somewhat declined.

Chart 1 (b) : Relative Impact of Money and Interest Rate on Output Conditional Linear Feedback



Results from Vector Autoregression Model

The single equation may obscure the relationship among economic variables when they could be simultaneous interactions. Another problem with the single equation is that out of sample prediction error can not be comparable on annual basis. On the other hand, forecast error variance decomposition in vector autoregression (VAR) model can be comparable for different forecast horizons. In this regard, it is relevant to compare the broad pattern of results with the results of the multivariate VAR model in which all the variables are treated as endogenous in nature. The VAR model consisting of four variables money, output, prices and short term interest rate were run in a rolling regression setting by changing the sample horizon by 12 months with the base period 1961-85. All the variables were first differenced in order to bypass the non-stationarity problem and the system included seasonal dummies and a constant term as deterministic components. In order to examine how important these variables are for explaining output variation, the forecast error variance decomposition of industrial production was examined. Since orthogonalised forecast error decomposition is likely to be affected by ordering of variables, generalised forecast error variance method is used which is free from ordering effect. Table 3 provides the summary of output variation being explained by the variables in the system for different horizons and sample periods.

The results provide interesting insights. Beginning with the sample period 1961-85, short run monetary effects accounted for about 7 per cent of the variation in output over a 12 month horizon. Over a 24 month horizon, its effect hardly improves by 1 per cent. Over long horizon of about 120 months or 10 years, this effect does not increase, implying that short term variation in money can not produce persistent effects on real output. With respect to the interest rate effect, it accounted for about 2-3 per cent of output variation during the same period and forecast horizon.

As the sample size increased, the money and interest effect did

not record any remarkable change on a comparative basis until 1989. But their comparative performance went through a remarkable change during the first half of the 1990s. The effect of variation in money on output decreased beginning with the year 1990 whereas the interest rate effect increased. The interest rate effect overtook the money effect from 1991, with its effect on output going up to about 10 per cent as compared with the money effect of 6-7 per cent. The dominance of interest rate over money continued till 1998. Thereafter, the interest rate effect and money effect differ by 1 per centage point for the years 1999 and 2000. The results are similar to the estimate of linear feedback reported in the earlier section. The empirical results are consistent with the process of financial liberalisation in India.

Section III

Summary of Findings

(i) The interest rate has emerged as a statistically significant factor in explaining variation in real activity in the 1990s as compared with its negligible impact in the 1980s, it has become stronger in the 1990s, the phase of reforms period. The liquidity effect continues to be a significant factor but in terms of magnitude it has diminished.

(ii) The empirical evidence supports the continuity in interest rate effect through out the 1990s. In a situation of incomplete integration and less than perfect competitions, economic agents consider interest rate among other variables in allocational decisions and for measuring the risk and return characteristics of financial products. In this regard, quantity of money and its flows will definitely continue its impact on agents' economic choices.

(iii) The gradual decline in liquidity effect has no implications for credibility of monetary policy. In a maturing economy, economic agents attach less importance to nominal aggregates as compared to real factors in investment decisions. The

changes in nominal aggregate will have only temporary effects. Interest rate effects underscore the linkage between financial sector and real activity and therefore, enhance policy credibility in a competitive market. The continuity in the statistical significance of interest rate effect on real activity in the 1990s has important implications for monetary policy, particularly with respect to interest rate channel of monetary transmission.

Notes

1. For a review of this subject, see 'Yield Curve and Real Activity' a Box item in R.B.I. Annual Report, 1998.

2. Various lag selection criteria did not yield in uniform lag structure. However, empirical experiment with various lags (upto 12 months) did not have any effect on the nature of empirical findings. We chose six lags as results were more meaningful as compared with higher order lags. Moreover, the choice of six lags appears plausible from the viewpoint of the frequency of monetary and credit policy.

3. The computed F statistic changed marginally but remained significant when few sample outliers (i.e., changes in interest rate being more than 9 per cent) were trimmed from call money rate.

4. The contemporaneous feedback between interest rate and money and output was negligible within a range of 0.5 to 1per cent. The reverse feedback from output to money was stable where as the feedback to interest rate followed the same direction of the feedback from interest to output (as shown in the Table 2, last two columns). Therefore, there was no change discernible in the broad pattern of overall feedback from money and interest rate to output and only, linear feedback is analysed.

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Table 1 : Granger's Causality Test : Computed F statistic

Sample	Bivariate		Conditional Upon Price or Money			Conditional Upon Both Price and Money	
Years	R-Y	M-Y	R|p-Y	R|m-Y	M|p-Y	R|pm_Y	M|pr-Y
1985	1.09*	3.73	1.00*	0.95	4.36	0.83*	4.09
1986	1.07*	4.02	1.04*	0.90*	4.69	0.84*	4.41
1987	1.16*	4.19	1.14*	1.00*	4.88	0.97*	4.63
1988	1.16*	4.49	1.16*	1.02*	5.16	1.02*	4.93
1989	1.13*	4.94	1.11*	0.95*	5.62	0.93*	5.34
1990	1.55*	5.12	1.57*	1.61*	5.72	1.65*	5.73
1991	2.88	5.03	2.81	3.14	5.42	3.07	5.64
1992	6.05	5.25	5.91	6.10	5.59	5.93	5.61
1993	6.53	4.78	6.33	6.73	5.13	6.48	5.30
1994	6.29	4.93	6.05	6.50	5.24	6.23	5.42
1995	5.95	5.18	5.73	6.11	5.48	5.88	5.63
1996	5.03	5.17	4.91	5.15	5.47	4.99	5.55
1997	4.29	4.98	4.17	4.42	5.26	4.25	5.34
1998	3.13	4.42	3.11	3.30	4.73	3.26	4.86
1999	2.95	4.51	2.98	3.09	4.81	3.09	4.90
2000	3.11	4.59	3.12	3.26	4.88	3.25	4.98

* these are not significant at 5 per cent level of significance.

Table 2 : Estimate of Geweke's Linear Feedback From Interest Rate and Money to Output

Proportion of Error Variance in Y Explained: 1 - exp(-F)										
	Bivariate		Conditional (P)				Joint Feedback		Reverse Feedback	
Year	M-Y	R-Y	R|p-Y	R|m-Y	M|pr-Y	R|mp-Y	MR-Y	MR|p-Y	Y|rp-M	Y|mp-R
1985	0.078	0.024	0.023	0.022	0.089	0.019	0.098	0.110	0.028	0.008
1986	0.080	0.023	0.023	0.020	0.091	0.019	0.098	0.111	0.028	0.007
1987	0.080	0.024	0.024	0.021	0.091	0.021	0.100	0.113	0.029	0.006
1988	0.082	0.023	0.023	0.020	0.093	0.021	0.101	0.114	0.027	0.007
1989	0.087	0.021	0.021	0.018	0.096	0.018	0.103	0.116	0.026	0.007
1990	0.087	0.028	0.029	0.030	0.099	0.031	0.114	0.125	0.026	0.008
1991	0.082	0.049	0.049	0.054	0.095	0.054	0.132	0.139	0.029	0.013
1992	0.083	0.094	0.094	0.097	0.091	0.096	0.172	0.177	0.027	0.043
1993	0.074	0.098	0.097	0.102	0.084	0.100	0.169	0.172	0.024	0.061
1994	0.074	0.092	0.090	0.096	0.083	0.094	0.163	0.166	0.023	0.051
1995	0.075	0.085	0.083	0.088	0.083	0.087	0.157	0.160	0.023	0.044
1996	0.073	0.071	0.070	0.073	0.080	0.072	0.141	0.144	0.022	0.043
1997	0.068	0.059	0.059	0.062	0.075	0.061	0.126	0.129	0.024	0.030
1998	0.059	0.043	0.043	0.046	0.067	0.046	0.102	0.107	0.020	0.025
1999	0.059	0.039	0.040	0.042	0.065	0.042	0.098	0.103	0.021	0.022
2000	0.058	0.040	0.041	0.043	0.065	0.043	0.099	0.1031	0.021	0.022

Table 3 : Generalised Forecast Error Variance Decomposition of Output

Sample (End) March	Forecast Horizon	DLY	DLP	DLM3	DR
1985	1	0.973	0.004	0.015	0.011
	6	0.893	0.013	0.072	0.024
	12	0.885	0.014	0.076	0.026
	24	0.885	0.014	0.076	0.026
	120	0.885	0.014	0.076	0.026
1986	1	0.975	0.005	0.014	0.009
	6	0.891	0.014	0.074	0.022
	12	0.884	0.015	0.080	0.023
	24	0.883	0.015	0.080	0.023
	120	0.883	0.015	0.080	0.023
1987	1	0.976	0.006	0.012	0.007
	6	0.888	0.013	0.077	0.020
	12	0.882	0.015	0.081	0.021
	24	0.882	0.015	0.081	0.021
	120	0.882	0.015	0.081	0.021
1988	1	0.974	0.007	0.015	0.007
	6	0.886	0.014	0.079	0.021
	12	0.881	0.015	0.082	0.022
	24	0.881	0.015	0.083	0.022
	120	0.881	0.015	0.083	0.022
1989	1	0.974	0.006	0.018	0.006
	6	0.879	0.013	0.092	0.017
	12	0.872	0.015	0.096	0.019
	24	0.871	0.015	0.096	0.019
	120	0.871	0.015	0.096	0.019
1990	1	0.968	0.005	0.015	0.032
	6	0.861	0.012	0.079	0.062
	12	0.855	0.014	0.083	0.062
	24	0.855	0.014	0.083	0.062
	120	0.855	0.014	0.083	0.062

(Contd.)

Table 3 : Generalised Forecast Error Variance Decomposition of Output (Contd.)

Sample (End) March	Forecast Horizon	DLY	DLP	DLM3	DR
1991	1	0.969	0.003	0.015	0.019
	6	0.837	0.008	0.070	0.088
	12	0.825	0.011	0.074	0.092
	24	0.824	0.011	0.075	0.093
	120	0.824	0.011	0.075	0.093
1992	1	0.946	0.001	0.015	0.037
	6	0.826	0.006	0.070	0.095
	12	0.816	0.009	0.074	0.098
	24	0.815	0.009	0.074	0.099
	120	0.815	0.009	0.074	0.099
1993	1	0.951	0.001	0.012	0.033
	6	0.827	0.005	0.061	0.101
	12	0.820	0.009	0.066	0.101
	24	0.819	0.009	0.066	0.102
	120	0.819	0.009	0.066	0.102
1994	1	0.956	0.001	0.010	0.029
	6	0.836	0.006	0.058	0.095
	12	0.828	0.010	0.063	0.095
	24	0.827	0.010	0.063	0.095
	120	0.827	0.010	0.063	0.095
1995	1	0.962	0.001	0.009	0.025
	6	0.841	0.007	0.060	0.089
	12	0.833	0.010	0.065	0.089
	24	0.832	0.010	0.065	0.090
	120	0.832	0.010	0.065	0.090

(Contd.)

Table 3 : Generalised Forecast Error Variance Decomposition of Output (Concld.)

Sample (End) March	Forecast Horizon	DLY	DLP	DLM3	DR
1996	1	0.968	0.000	0.007	0.021
	6	0.850	0.007	0.057	0.081
	12	0.840	0.010	0.064	0.082
	24	0.840	0.010	0.064	0.083
	120	0.840	0.010	0.064	0.083
1997	1	0.970	0.001	0.007	0.020
	6	0.876	0.004	0.053	0.063
	12	0.866	0.007	0.060	0.064
	24	0.865	0.007	0.060	0.064
	120	0.865	0.007	0.060	0.064
1998	1	0.980	0.001	0.005	0.013
	6	0.891	0.005	0.044	0.058
	12	0.882	0.007	0.051	0.059
	24	0.882	0.007	0.051	0.059
	120	0.882	0.007	0.051	0.059
1999	1	0.980	0.001	0.005	0.012
	6	0.906	0.005	0.045	0.043
	12	0.897	0.007	0.052	0.043
	24	0.896	0.007	0.052	0.043
	120	0.896	0.007	0.052	0.043
2000	1	0.980	0.001	0.005	0.013
	6	0.906	0.005	0.044	0.043
	12	0.897	0.007	0.052	0.044
	24	0.897	0.007	0.052	0.044
	120	0.897	0.007	0.052	0.044

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Review Articles

Measurement of Household Financial Saving in India: A History of the Methodological Evolution

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The paper traces the history of compilation of financial saving of the household sector in India. Against the backdrop of the evolution of various methodologies adopted by the institutions producing primary estimates of household financial saving and the progressive movement towards synthesis, the paper discusses the existing methodological impediments and the future directions in the compilation of financial saving in India.

Introduction

Economic development and the extent of sophistication in compilation of macro aggregates share a mutually reinforcing relationship, encompassing in their interaction a number of aspects like institutional arrangement of compilation, stage of development of the economy and its coverage in the statistics. Traditionally while compilation of national accounts aggregates comes under the purview of the Central Statistical Authority of a country, the central bank takes the primary responsibility of compiling monetary and balance of payments statistics. In most countries, saving is primarily compiled by the Central Statistical Office on the basis of the returns of the Income Tax Authority or some suitable survey-based methods. This is not the case for India where a miniscule fraction of the population pays income taxes and the saving numbers generated from sample surveys yield quite unreliable statistics.

In India within the standard three-sector classification, *viz.*, households, public and private corporates, the saving of the household sector is further decomposed into a two-fold asset based classification, *viz.*, physical and financial assets. There exists

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considerable dichotomy in the method of compilation of saving of these sectors. Saving of the public and private corporate sectors are compiled through an income-expenditure method. On the other hand, physical saving of the household sector is compiled through the production method (*i.e.*, accounting for production of 'plant and machinery', 'construction' and 'change in inventory' by the household sector) as a residual after deducting public and private corporate investments from economy-wide capital formation while financial saving of the household sector is computed through an asset-based approach.

A distinguishing feature of the household sector is that it not only contributes entirely to its capital formation through its physical saving but also generates a financial surplus with the rest of the two sectors, which is its financial saving. On the other hand, in the case of each of the other two sectors, saving is supplemented by the net capital receipts from other sectors and the financial liabilities it incurs to others to finance capital formation. India follows a unique institutional arrangement relating to the compilation of saving between the Central Statistical Organisation (CSO) and the Reserve Bank of India (RBI); the estimations of household financial saving (except in life funds, provident and pension funds) and saving of the corporate sector are undertaken by the RBI, and the CSO compiles savings of the public sector and household sector in physical assets and in life funds, provident and pension funds.

This arrangement of distributing the compilation between two different agencies is, however, of recent origin. In the post-Independence period, the Indian economy was characterised by a multiplicity of saving estimates generated by number of institutions like the CSO, the RBI and the National Council of Applied Economic Research (NCAER). Such multiple estimates about the same number often created confusion among the users. In fact, insofar as the compilation of saving in the Indian economy is concerned, from the standpoint of availability of estimates, one may sub-divide the post-Independence period in three phases, *viz.*, (a) 1950-51 to 1961-62 : when the CSO, the RBI, and the

NCAER all published their independent saving estimates; (b) 1962-63 to 1987-88 : when after the NCAER stopped their publication of saving numbers, only the CSO and the RBI continued to publish their independent saving estimates; and (c) 1988-89 till date: when, following the recommendations of the Working Group on Savings (Chairman: Professor K.N. Raj, 1982; hereafter referred to as Raj Committee), the CSO and the RBI reconciled most of their differences and started publishing saving numbers on the basis of a uniform methodology and data base.

Against this periodisation, this paper is confined to a study of the methodology and its evolution in respect of household saving in financial assets. The rest of the paper is organised as follows. Section 2 deals with the conceptual and methodological issues in estimating financial saving. The evolution of estimation of household financial saving in India during the three phases is taken up in sections 3, 4 and 5. Section 6 is devoted to critiques of the Raj Committee Report and proposed recommendations of the Expert Group on Saving and Capital Formation (Chairman: Raja J. Chelliah hereafter referred to as Chelliah Committee). Instead of presenting concluding observations, section 7 addresses some future directions in the compilation of financial saving in India.

Section 2

Measurement of Financial Saving: Conceptual and Methodological Issues

In a social accounting system there can be two approaches to measure saving of an economy. As per the first approach, saving may be calculated as the excess of current disposable income over current expenditures. Alternatively, saving can be measured from the balance sheet of the sector as the net result of changes (excluding revaluation) in all types of assets and liabilities. The two calculations are necessarily identical. Essentially, the same concept gets reflected in the three sequential flow accounts framed by the United Nations' System of National Accounts 1993 (UNSNA, 1993), as presented below:

First approach: Distribution and Use of Income Accounts:

$$\mathbf{S = I - E} \quad (1)$$

Second approach:

(a) Capital Accounts: $\mathbf{S = [C + (CP\text{-}CR)] + F}$ (2)

(b) Financial Accounts : $\mathbf{F = [FA - FL]}$ (3)

where, S = Saving; I = Current Disposable Income; E = Current Expenditure; C = Increase in sector's Physical Assets; CP = Capital Transfers Paid; CR = Capital Transfers Received; F = Financial Surplus (or Financial Saving); FA = Increase in sector's Financial Assets; and FL = Increase in sector's Financial Liabilities.

As the household sector in the Indian economy contributes entirely to its own capital formation in terms of its physical saving (*i.e.,* CP = CR = 0), then equation (2) can be re-written in the case of the household sector as,

$$\mathbf{S = C + F} \quad (2)'$$

Thus, household saving can be measured as an aggregation of its physical saving and financial saving.

Although the procedure, *prima facie*, appears very straight-forward, complexities arise, especially for developing economies like India. As the household sector here is a heterogeneous unorganised sector which does not maintain accounts, information relating to the household sector has to be compiled indirectly. A word of caution about the ambit of the generic entity called 'household sector' needs to be given here. Household is a residual sector. In the Indian situation whatever is not included under private corporate sector or public sector comes under households. The household sector comprises, apart from individuals, all non-government, non-corporate enterprises like sole proprietorships and partnerships owned and/or controlled by individuals and non-profit institutions which furnish educational, health, cultural, recreational and other social and community services to households (CSO, 1989).

Calculation of Financial Saving

Financial saving of the household sector can also be measured by two approaches. Adopting the *first approach*, it can be calculated by deducting the sector's physical saving from its total saving. Here, while the total household saving can be derived by the income approach, household physical saving, which is nothing but its capital formation, can be estimated as a residual by deducting from the economy-wide capital formation, the capital formation for public and private corporate sectors. As per the *second approach*, household sector's financial saving can be compiled directly as the increase in financial assets *net* of financial liabilities, excluding any revaluations. In the Indian context, financial saving of the household sector is estimated by the *second approach,* as it is a direct measurement and also is useful in analysing the volume and composition of the sector's financial portfolio. Thus, the basic framework for instrument-wise estimation of household financial saving is as follows:

Let $\mathbf{W} = \{W_i\}$ be the vector of the financial assets (i = 1, .., n), and $\mathbf{L} = \{L_j\}$ be the vector of financial liabilities (j = 1, .., m) in the economy, all in terms of national currency. In such a frame, the compilation of financial saving of the household sector involves the following three steps.

Step 1: Calculation of households' share in **W** and **L**, say $\mathbf{W}^h$ and $\mathbf{L}^h$.

Step 2: Finding out the flows in $\mathbf{W}^h$ and $\mathbf{L}^h$, say $\Delta\mathbf{W}^h$ and $\Delta\mathbf{L}^h$.

Step 3: Financial Saving (**F**) is then given by, $\mathbf{F} = (\Delta\mathbf{W}^h - \Delta\mathbf{L}^h)$, i.e.,

$$\mathbf{F} = \left[\sum_{j=1}^{n} (W^h_{i,t} - W^h_{i,t-1}) - \sum_{j=1}^{m} (L^h_{j,t} - L^h_{j,t-1}) \right]$$

On balance, the household sector has a financial surplus *vis-à-vis* the other sectors of the economy, which is measured by the

financial saving computed by netting out annual increases in financial liabilities (flow) from the annual rise of financial assets (flow).

Thus, there are two important issues in the calculation of financial saving of the household sector, *viz.*, (a) choice of constituent items in **W** and **L**, and (b) finding out households' share in **W** and **L**.

As an economy develops and the financial sector deepens and widens, there is an increase of options for households to hold their financial assets. This widening of the menu may take the form of new financial instruments emerging for the households or new financial institutions sourcing their funds from households or existing institutions changing their fund mobilising pattern. For instance, in the early stages, the menu may be limited to very liquid instruments and very illiquid instruments. Later on, this widens to cover whole range of financial instruments offering differing degrees of liquidity and rates of return from which households can choose. The major financial assets of the household sector include currency, deposits, shares and debentures, life insurance funds, provident and pension funds, and claims on government. The household sector incurs liabilities from the banks, financial institutions, corporates, co-operatives and government. Therefore, the task of the compiler is to keep track of the innovations in the financial system and appropriate framing of financial asset and liability vectors of the household sector.

The first best solution for ascertaining the household sector's share in the chosen financial and asset liability vectors is from the detailed flow of funds (FOF) accounts compiled for the economy across its various sectors and financial instruments. As the household sector does not maintain its accounts, information is compiled on an indirect basis from data compiled with respect to other sectors. This indirect procedure of compilation varies from instrument to instrument. Some data like investment in life insurance funds and provident and pension funds are obtained as counterpart information from the accounts of other institutions; for

other instruments like bank deposits both counterpart information and survey data are resorted to. In the cases of the other instruments like shares and debentures, the household sector's subscription is estimated as a residual after deducting from the aggregate issues, the investments made by the non-household sectors. However, the compilation and consolidation of FOF accounts of the economy are contingent upon receipt of information from the different sectors of the economy. Hence, the flows of funds accounts invariably suffer a time lag. Therefore, in such cases, the second-best solution becomes estimation of the household financial saving by whatever current data are available along with use of some benchmark ratios.

As a check the household financial saving can also be derived by the *first approach*. For instance, in the flow of funds accounts of the United States, the estimates of household financial saving are compiled by the balance sheet approach and the discrepancy with its alternative estimate derived from the income approach is shown. In the case of India, while the balance sheet approach is used in the estimation of household financial saving, no check is made by estimating with the alternate approach.

Section 3

The Early Stage (1950-51 to 1961-62)

Since the estimate of domestic saving was a key input in projections of various macro aggregates, there were a number of alternative estimates of saving in the initial years of planning. Apart from estimates by individuals, there were a number of official bodies like the Planning Commission, the Reserve Bank of India (RBI), the Central Statistical Organisation (CSO) and the National Council of Applied Economic Research (NCAER) which generated saving estimates for the Indian economy.

Planning Commission's Estimates

The genesis of estimation of financial saving in independent India dates back to the rudimentary estimates made by the

Planning Commission in the *First Five-Year Plan Document*. In its effort towards a national budgeting exercise in 1952, the financial saving was estimated for the private sector for 1950-51 in currency and bank deposits, provident funds, small savings, insurance, and deposits & share capital of co-operative banks. Although the Planning Commission regarded financial saving estimates to be relatively more reliable than physical saving of the private sector, there were notably a number of shortcomings. First, financial saving was estimated for the private sector as a whole and not for the household sector alone. Secondly, the coverage was too limited to gather data for the entire range of financial assets. Thirdly, the Planning Commission admitted to the possibility of double counting, which was adjusted from the aggregate saving estimates to match with the overall investment estimates. Finally, the estimates of household financial saving in insurance and co-operatives related to the year 1949-50 while those for the rest of the instruments related to the year 1950-51.

Private Attempts

In one of the initial private attempts (Avadhani, *et.al.,* 1960), household financial saving was estimated for the period 1949-50 to 1954-55 across three categories of financial assets, *viz.*, liquid assets (currency, deposits and gold), contractual saving (insurance and provident fund contributions) and other financial assets (government securities and other savings transferred to government, and industrial shares and securities). There were some improvements: a separate estimate was arrived for financial saving for the *household* sector, the coverage was widened, the estimates of household financial saving were generated in a time series and the methodology of estimation was refined. Gold was also included as one of the instruments of financial saving. The private hoards of gold were considered to be part of country's *potential* reserves and therefore considered as foreign investment. However, some shortcomings still remained. First, the cash holdings of non-banking corporations were assumed to remain constant and currency with households was estimated to equal the changes of currency in circulation, after adjusting for currency with banks and treasuries.

Secondly, in respect of provident funds (PF), figures for only government employees were taken and no attempt was made to estimate the PF contributions in the private sector. Thirdly, in the calculation of household sector's investment in shares and debentures, the data of bonus issues sanctioned were taken in the absence of information on actual issues. Besides this fundamental estimation exercise on saving, there were some review studies by individual scholars (See Bhatt, 1959 and Raj, 1962).

Three Major Institutional Attempts

Estimates of National Council of Applied Economic Research (NCAER)

NCAER began estimation of household saving by following both institutional (NCAER, 1961, 1965 and 1966) and survey approaches (NCAER, 1962). The institutional approach provided a time series for the period 1948-49 to 1961-62, and the results were verified from the surveys. On the other hand, surveys were aimed at capturing the behavioural and motivational aspects of rural and urban areas.

A number of refinements were made as compared with the earlier attempts. A detailed coverage was made to capture information on both the assets and liabilities of the households across the various financial instruments, *viz.*, currency, deposits, shares and debentures, claims on government, life funds and provident & pension funds and gold and silver. Standard sources and procedures were organised for compilation purposes. The residual system of estimation was adopted for computing holdings of currency, corporate securities and claims on government. As the estimates of non-household sectors' holdings under the various instruments became more refined the saving estimates for the households in these instruments, arrived residually, became more accurate. Besides obtaining data from other sources, notably the RBI (especially for the banking sector, local authorities and for the government) the Council developed its own data base of domestic non-government companies on the basis of sample information

available with them. The calculation of commercial bank deposits and commercial bank advances pertaining to the households was refined by blowing up the data pertaining to households in the RBI's survey on ownership of deposits with scheduled commercial banks and in the RBI's survey on outstanding credit of scheduled commercial banks, respectively, on the basis of coverage of aggregate deposits and aggregate credit in these surveys. The coverage of provident funds was improved to include estimates for industrial workers and employees of the government, educational and financial institutions, and employees under Coal Mines' provident fund scheme. Coverage was also made for all the pension funds. Availability of the RBI's surveys on government securities since 1957 improved the household saving estimates in this instrument. The data on household investment in the local authorities were also included.

Some areas of weakness still remained. In the residual derivation of household investment in corporate securities no deductions could be made for the subscription of these securities by the Central and State Government departments. On the other side of the households' financial account, the estimates of liabilities of the household sector to the non-government companies were *ad hoc*.

Estimates of Reserve Bank of India (RBI)

The RBI was the first official agency to systematically estimate the domestic saving of the Indian economy, covering the period 1950-51 to 1957-58 (RBI, 1960). The financial assets were bifurcated into two categories, *viz.,* (i) liquid assets (currency, net bank deposits and gold), and (ii) other financial assets (shares, securities and insurance policies). The refinements made in the subsequently released saving estimates RBI (1961, 1965) have been presented in Annexure I.

While the 1960 and the 1961 series had several limitations, the estimates in the 1965 series became more complete as a result of some refinements in methodology. The estimates of currency and

shares and debentures held by households were derived residually after deductions of the holdings of the non-household sectors from the aggregate holdings in these instruments. Therefore, the accuracy was contingent on the correctness of the estimates of aggregate estimates as well as those for the non-household sectors. The estimates of holdings of households in the above mentioned instruments improved as the RBI's data base of sample companies of private corporate business became complete with data pertaining to small public limited companies becoming available from the 1961 series. Furthermore, the increased coverage of the estimates of currency with public to include variations in small coins in the 1961 series made the figures of currency held by the households more accurate. In the case of shares and debentures, in the 1960 series, the data on total consents by the private corporate business were taken as a proxy for the actual issues. However, from the 1961 series onwards, the estimates of aggregate issues were based on the actual issues.

The procedure of estimation of household saving in commercial bank deposits was refined over the years. For instance, while in the 1960 series, the coverage of household saving in commercial bank deposits was incomplete in the sense that the RBI's survey data of commercial bank deposits across the designated household categories were taken to represent for the whole household sector, in the 1961 series and 1965 series, the coverage became more comprehensive as the proportion of household holdings in the total surveyed deposits were applied to the census of aggregate commercial bank deposits available with the RBI (as on end-December in the 1961 series and as on the last Friday of March in the 1965 series) to estimate household commercial bank deposits. In the case of estimating advances by commercial banks to household sector, in the 1960 and 1961 series, the advances to 'personal and professional services' and those to 'non-corporate sector' were added and, thus, there was some double counting to the extent that the advances under the former category included advances under the latter category. Thus, the estimate of net deposits (arrived after deduction of advances from commercial banks) was an underestimate. However, as the coverage of the

survey became more precise and survey data became more recent, in the 1965 series, the estimates of commercial bank advances to the household sector became more sound. Gold and silver were included as part of the household sector's financial portfolio in the first two series but excluded in the 1965 series in which precious metals were treated as consumer durables.

Estimates of household investments in government securities improved in the 1965 series as, unlike the procedure of using initial cash subscriptions in the first two series, the results of the ownership survey of government securities were used. Moreover, household investments in other government securities started being included. As far as liabilities of households to the government are concerned state government loans received only from some State governments could be covered for the period up to 1955-56, for the subsequent years, all the states could be considered.

The estimates of household sector's saving in provident funds improved in the 1961 series as the data bases of wages and salaries became available separately for all the categories of public limited companies; for private limited companies, households' saving in provident funds were estimated afresh. The data on provident fund contributions of employers also became available separately not only for the sample of all categories of public limited and private limited companies but also for government companies. In the 1965 series, the coverage improved to include provident funds of employees of statutory corporations and branches of foreign concerns.

Finally, expansion of coverage in the 1965 series to include data on postal insurance and life annuity funds considerably improved the estimates of household financial saving in the form of insurance.

The RBI started publishing annual estimates of financial saving of the household sector regularly in its *Report on Currency and Finance* from the year 1964-65 onwards. The estimates were disaggregated by type of financial instruments. Since the commencement of publication of Flow of Funds accounts in March

1967, the RBI has been publishing at intervals the compilation procedure of the Flow of Funds accounts and refinements being made in them. These captured, *inter alia*, the refinements made in the compilation of financial accounts of the household sector.

Estimates of Central Statistical Organisation (CSO)

The CSO followed the *investment approach* in its maiden attempt to estimate saving (CSO, 1962). Gross domestic saving was estimated by deducting net foreign capital inflow from the estimates of gross domestic capital formation. Household saving was derived as a residual by deducting saving of the government and private corporate sectors from the gross domestic saving. Subsequently the CSO prepared the first 'official' set of estimates of saving for the period 1960-61 to 1965-66 and also published the methodology of estimation of saving which was consistent with the methodology of capital formation and national income (CSO, 1969). The financial flow approach adopted towards instrument-wise compilation of financial saving of the household sector was more or less similar to that followed by the RBI. However, unlike the RBI, the CSO included households' deposits of the non-banking sector in its coverage of deposits. The main data source for non-banking companies for the period after 1962 was the RBI's surveys on Growth of Deposits with Non-banking companies. The RBI's survey on non-banking deposits was not available for the period prior to 1962. The average ratio of households' non-banking deposits (as available from the non-banking survey) to 'other borrowings' of public limited companies (obtained from the RBI sample studies on these companies) for the period 1962 to 1965 was worked out. This average ratio was applied to the data on 'other borrowings' for the years prior to 1962 to derive the estimates for household deposits in the non-banking companies.

Comparison of the Institutional Estimates

The profile of the instrument-wise estimates of household financial saving of the three organisations, *viz.*, CSO, RBI and

NCAER shows sizeable divergences between the estimates of the three organisations as well as no uniformity in direction in them (Table 1). The differences were particularly prominent in net deposits, net claims on government and in shares and debentures. These divergences basically reflected differences in coverage, sources of data and methodologies of compilation in some of the instruments of the respective organisations. While the NCAER included precious metals as part of household financial financial saving, the RBI (since the 1965 series) and the CSO considered holding of these assets as durable consumption and did not include them in the financial saving portfolio. In the case of deposits, the CSO also included the deposits with non-banking companies, while the RBI and the NCAER restricted their coverage only to commercial and co-operative banks. Furthermore, the RBI covered households' investment in debentures of Land Mortgage Banks under 'net claims on government', whereas the CSO included this item under 'shares and debentures'. Although, the households' share of currency holdings was estimated residually, the estimates varied reflecting the differences in the calculations of the non-household sectors. In the estimation of household saving in shares and debentures, while the derivation was on a residual basis after deductions of non-household subscriptions from the total, the estimates still differed due to varied sources. While the CSO and the NCAER directly culled out aggregate data from the records of the Company Law Board, the RBI obtained this data from Controller of Capital Issues (CCI). Similarly, in estimation of household saving in government securities while the CSO used balance sheets for the data on investments by Life Insurance Corporation and co-operatives for deducting their subscriptions from the total, the RBI relied on its surveys for such data.

Table 1 : Household Financial Saving (1950-51 to 1961-62) : Different Estimates

(Rs. crore)

Item / Financial Year (19')	50-51	51-52	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Financial Saving: CSO	**62**	**14**	**72**	**142**	**282**	**429**	**333**	**291**	**362**	**433**	**456**	**489**
Currency	81	-116	-17	26	67	203	48	50	111	133	145	94
Net Deposits	-26	-45	43	21	38	24	-19	76	42	68	11	103
Shares & Debentures	52	49	23	27	11	41	71	36	34	61	67	112
Net Claims on Govt	-84	93	-22	-2	91	76	141	19	71	39	57	-12
Life funds	20	13	18	25	28	31	30	29	32	46	50	65
PF & Pension funds	19	20	27	45	47	54	62	81	72	86	126	127
Financial Saving: RBI	**17**	**-20**	**45**	**84**	**307**	**389**	**352**	**355**	**378**	**430**	**369**	**521**
Currency	80	-115	-22	25	85	190	52	55	121	132	147	99
Net Deposits	-38	-45	28	-8	32	0	37	123	63	82	-124	182
Shares & Debentures	33	23	13	24	38	51	54	50	26	55	125	70
Net Claims on Govt	-96	87	-15	-21	41	65	121	37	68	37	54	-5
Life funds	19	12	18	22	24	33	27	18	32	45	58	61
PF & Pension funds	19	18	23	42	87	50	61	72	68	79	109	114
Financial Saving : NCAER	**167**	**-9**	**118**	**162**	**223**	**380**	**279**	**331**	**431**	**423**	**654**	**457**
Currency	71	-115	-19	26	68	194	47	37	115	138	126	89
Net Deposits	-13	-45	21	-2	11	9	-13	38	75	34	107	-7
Shares & Debentures	31	46	30	22	29	30	75	76	51	56	123	113
Net Claims on Govt	14	25	24	35	33	53	57	44	59	32	94	47
Life funds	15	12	18	23	25	28	26	33	40	49	57	69
PF & Pension funds	29	33	26	45	46	53	64	71	56	79	112	111
Gold & Silver	20	35	18	13	11	13	23	32	35	35	35	35

Sources : (1) CSO, 1989, (2) *Report on Currency and Finance, 1970-71* , RBI, (3) RBI, 1978 and (4) NCAER, 1965.

Note : In the cases of the CSO and the NCAER, the estimates of household financial saving (net) are directly available (CSO, 1989 and NCAER, 1965). For the RBI, while estimates of financial saving (net) are directly available for the period 1950-51 to 1955-56 the same had to be derived from the *gross* series of household sector's financial account for the subsequent period, which are available in the above mentioned reports of the RBI.

Section 4

The Second Phase (1962-63 to 1987-88)

In 1966 the NCAER discontinued its institutional approach to estimation of saving and focused on undertaking surveys to obtain estimates of saving and investment of the household sector. Since 1975 the Planning Commission started publishing estimates that have been consistent with those released by the CSO. The RBI and the CSO persevered with systematic time series of household sector's financial saving (Table 2). This system of two sets of estimates for financial saving continued till the adoption of the recommendations of the Raj Committee. There were a few changes in the methodology of compilation of financial saving. Furthermore, the average rate of divergence in the RBI's estimate of financial saving from the CSO's etimate narrowed considerably during 1962-80 from the average rate during 1950-62. The RBI started including non-banking deposits in the portfolio of the household financial saving since the 1960s. On the other hand, although methodology of compilation of household financial saving converged the two organisations could not *retrospectively* revise their data for the earlier period to narrow the differences.

In 1980, the CSO released a more comprehensive methodology of saving in which, *inter alia*, the instrument-wise compilation of household sector's financial saving was elaborated (CSO, 1980). Financial saving of the household sector was estimated in *net terms* across the various instruments by netting out the financial liabilities at the instrument level. Although "currency with households" continued to be derived residually, there were some refinements. First, in the cases of co-operative societies since 1973-74 and general insurance companies since their nationalisation *separate* estimates of their currency holdings were available. Secondly, the currency holdings with private corporate business were estimated by using the RBI's studies of finances of sample companies, which provided detailed information on private limited companies segregated under 'medium and large companies' and 'small companies'. Thirdly, deductions were also made for currency held with railways using data from the records of the Railway Board. The estimation of household sector's commercial bank deposits improved with the application of the RBI's

Table 2 : Household Financial Saving (1962-63 to 1979-80) : Different Estimates

(Rs. crore)

Item / Financial Year (19')	62-63	63-64	64-65	65-66	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Financial Saving: CSO	**499**	**743**	**714**	**1072**	**864**	**865**	**795**	**919**	**1371**	**1555**	**2128**	**3612**	**2374**	**3918**	**4852**	**5853**	**6658**	**6081**
Currency	175	211	135	285	118	145	263	334	345	381	616	812	17	321	1130	705	1482	1338
Net Deposits	70	118	253	309	337	268	72	85	265	574	773	1260	1017	1131	1902	2780	2742	1650
Shares & Debentures	45	119	64	175	114	78	84	65	94	61	26	44	137	115	87	325	175	214
Net Claims on Govt	-20	42	-32	-9	-48	-59	-84	-139	-12	-243	-196	434	-95	742	95	180	31	465
Life funds	82	78	88	96	104	122	139	160	189	216	262	326	322	385	480	559	648	739
PF & Pension funds	147	175	206	216	239	311	321	414	490	566	647	736	976	1224	1158	1304	1580	1675
Financial Saving: RBI	**512**	**751**	**662**	**838**	**770**	**843**	**788**	**835**	**1487**	**1622**	**2368**	**2801**	**2602**	**3816**	**5195**	**5444**	**6942**	**6797**
Currency	174	217	135	287	126	161	271	336	355	404	637	769	18	342	1140	703	1525	1398
Net Deposits	64	134	197	247	296	241	-4	5	407	644	882	1041	1318	1181	1917	2445	2840	2438
Shares & Debentures	25	113	26	24	23	42	41	47	81	32	46	8	60	59	15	235	322	267
Net Claims on Govt	31	51	37	8	-5	8	50	-68	42	-130	18	69	154	812	514	230	61	149
Life funds	89	81	85	74	120	122	157	157	180	198	262	311	265	342	437	515	601	670
PF & Pension funds	129	155	182	198	210	269	273	358	422	474	523	603	787	1080	1172	1316	1593	1875

Sources : (1) CSO, 1989, (2) RBI, 1978, (3) *Report of the Working Group on Savings* (Raj Committee), RBI, 1982; (4) *Report on Currency and Finance*, RBI, various issues.

survey on ownership of deposits with scheduled commercial banks through Basic Statistical Returns (BSR) which provided more accurate picture of the household sector's share in total as compared to the use of earlier surveys not based on BSR. Household sector's investment in shares and debentures of non-government joint stock companies was derived as a residual after deducting from the estimate of total paid-up capital (exclusive of bonus) and the debentures, the subscriptions by non-household sectors (*viz.*, central and state governments, local authorities, statutory corporation, LIC and general insurance companies, banks and foreigners) as well as intra-sectoral investment in the form of industrial securities and shares of subsidiary companies. Household saving in life insurance funds comprised saving through Life Insurance Corporation (LIC), postal life insurance and state government life insurance. Household saving in LIC was computed as excess of 'income' (excluding capital gains and old claims) over 'outgo' and the government's share in profits. The saving was netted out with loans and advances to households against mortgage of property. Saving in the postal life insurance and State government life insurance was estimated as excess of receipts over payments. The sources were the annual reports of P&T and the state government budgets. The employees' saving in provident fund included two more categories, *viz.*, funds collected under public provident fund scheme and dock labour provident fund scheme on top of those already covered in the earlier methodology of 1969. Since 1971-72 Employees Family Pension Scheme, 1971 were also included. The procedure of compilation for rest of the categories under this instrument remained the same.

Comparison between the estimates of the CSO and the RBI

There were efforts between the RBI and CSO to harmonise the concepts, methodology and sources adopted for compilation of savings. However, the differences in their estimates persisted (Table 3). The RBI estimated the households' non-banking deposits with non-financial companies from its sample studies of joint-stock company studies and those with financial companies from its survey of non-banking companies. On the other hand, the CSO, relied on one source, *i.e.*, the survey of non-banking companies for

estimating these deposits in both financial as well as non-financial companies. Secondly, for the households' holdings in the life funds of LIC, the RBI used the balance sheet data of LIC, while the CSO relied upon the biennial valuation accounts of LIC with adjustments for capital gains. Thirdly, the RBI estimated of household sector's investment in government securities on the basis of its surveys of ownership of government debt. On the other hand, the CSO computed this by the residual approach. On the liability side, in case of borrowings of the households from the Central and State governments, the CSO included a larger number of budgetary items as compared with the RBI's compilation. Finally, in the case of the households' investment in shares and debentures of joint stock companies, the RBI continued to rely upon the quarterly returns of the Controller of Capital Issues (CCI). The CSO obtained data from the Department of Company Affairs (DCA) and CCI for the estimation of aggregate issues of shares and debentures for the corporate sector.

Table 3: Household Financial Saving (1980-81 to 1987-88) : Different Estimates

(Rs. crore)

Item/Financial Year (19')	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Financial Saving: CSO	**8610**	**9614**	**12739**	**13294**	**17879**	**18538**	**23336**	**26820**
Currency	1625	955	2026	2776	2854	2220	3090	4815
Net Deposits	2985	3022	4623	3684	5646	5295	7805	7684
Shares & Debentures	443	513	867	720	1320	1980	2711	2009
Net Claims on Govt	576	1656	1211	1777	2920	3223	2670	3350
Life funds	859	982	1149	1283	1453	1676	2005	2453
PF & Pension funds	2122	2486	2863	3054	3686	4144	5055	6509
Financial Saving: RBI	**8610**	**9588**	**12566**	**13552**	**17816**	**18579**	**23339**	**26819**
Currency	1625	965	2026	2776	2938	2220	3090	4815
Net Deposits	3126	3090	4911	4258	5744	5850	8189	8119
Shares & Debentures	443	624	768	777	1329	1980	2711	2009
Net Claims on Govt	561	1636	1110	1773	2910	3208	2657	3333
Life funds	733	793	886	916	1136	1133	1637	2034
PF & Pension funds	2122	2480	2865	3052	3759	4188	5055	6509

Sources: (1) *National Accounts Statistics*, CSO, Various Issues, and
(2) *Report on Currency and Finance*, RBI, Various Issues.

Section 5

The Third Stage: Unifying Methodology (1988-89 till date)

Rates of saving and investment increased significantly in the late 1970s. However, commensurate acceleration in the overall growth rate of the economy did not occur in this "high saving phase". In this milieu, the Working Group on Savings (Chairman: Professor: K.N. Raj) (RBI, 1982) was appointed to, *inter alia*, critically evaluate the estimates of saving and investment for the Indian economy and recommend improvements in the methods of estimation. The Raj Committee was of the view that the estimates generated in India in 1960s and 1970s were internationally comparable. It suggested further strengthening of efforts by both RBI and CSO to bring about uniformity in concepts, methodology and data sources for saving estimation. As far as the estimates for households' deposits with non-banking companies are concerned, the Committee recommended the supply of the estimates by the RBI to the CSO. For the household sector's investment in government securities, the Committee suggested that the RBI's methodology of using the survey results was more appropriate than the CSO's residual approach as the latter was prone to inaccuracy resulting from differences of valuation, accounting period, etc. across the various institutions. For removing the substantial differences in households' investment in shares and debentures, the Raj Committee recommended that the CSO's expert committee could construct an annual series for paid-up capital. The Committee suggested that the RBI's survey of ownership of corporate securities needs to be revived for deriving the household sector's share in the investments in shares and debentures. The Committee recommended that the RBI and the CSO sort out the remaining differences pertaining to the saving in the form of life fund of LIC and borrowings of households from the government through mutual deliberations. On the presentation aspect the Committee suggested that the RBI's presentation of financial account of the sector showing the financial assets and liabilities separately was preferable to the CSO's convention of presenting only net increases in financial assets as in the form provided a

better understanding of the scale of financial intermediation and the growth of saving associated with it. The need for undertaking company finance studies through regular quinquennial censuses covering companies of all sizes more regularly and for finding appropriate blowing-up factors was recommended. As this would, *inter alia*, refine the estimates for private corporate sector it would *ipso facto* remove the biases in household saving for particularly for the instruments in which residual approach is adopted (like currency, shares and debentures, etc.). Expeditious surveys pertaining to ownership of bank deposits and those relating to growth of deposits of non-banking companies were also advised. Furthermore, it was recommended that the bank deposit survey needed to provide more detailed and meaningful break-up of unclassified category of individuals. The non-bank deposit survey was also sought to improve its coverage. The deposits of fully Government-owned public sector companies and security deposits of the households with various improvement trusts, housing boards and electricity boards had to be captured in the financial saving. Furthermore, it was recommended that the inherent inflation in household financial saving, as provident funds of non-government educational institutions are considered without including the loans and advances of these institutions to their employees, needs to be removed. The estimation of these loans and advances to households were recommended to be done on the basis of the deposit and loan pattern of government institutions. As the provident funds of the employees of some private institutions are also kept in the post offices as small savings, it was cautioned that any duplication on this account had to be removed. Duplication also had to be avoided by not including bonus shares in the compilation of investment in shares and debentures. As far as the data base pertaining to local authorities were concerned, the Committee indicated that the State Statistical Bureaus had to compile statistics of local authorities on a complete enumeration basis, and so the liabilities of the household sector to local authorities could also be accounted for. The lag pertaining to information of loans received by households from the primary credit and non-credit co-operative societies also needed to be reduced. The RBI surveys of ownership of shares and debentures

of the private corporate sector and ownership of Government debt needed to be revived.

The CSO and the RBI agreed to adopt a uniform methodology and data base as well as to a division of labour in the estimation of savings. Regarding financial saving of the household sector, the CSO undertook the preparation of the estimates for life funds, provident and pension funds and supplying the same to RBI, while the RBI agreed to compile estimates for rest of the financial instruments and to provide the same to the CSO. This division of labour between RBI and the CSO has been insuring that each agency is compiling that set on which it has comparative advantage, as had been notified by the Raj Committee. Now some differences, which persist, essentially reflect just the time differences in the release of the estimates by the two organisations when they update their respective portions of the data base.

The annual publication of the CSO introduced both the asset-wise and liability-wise details of the whole financial account of the household sector. The financial assets for each category of assets were presented in gross terms and financial liabilities to the various sectors were also shown before finally deducting the latter from the former to estimate the financial saving. Refinements in the methodology were also effected. As per the suggestion of the Advisory Committee in National Accounts in 1987, based on sectoral holding pattern, 93 per cent of the currency with public was apportioned to the household sector. It was, however, suggested that this ratio of currency for the household sector would be subject to revision with availability recent survey data of the RBI. The RBI started releasing the survey of ownership of deposits for estimation of commercial bank deposits every year. The coverage of the financial account of the households increased to include estimates of security deposits of the households in the State Electricity Boards (SEBs) on the assets side and the loans and advances by the SEBs to their employees on the liabilities side. In the case of households' investment in shares and debentures, due care was taken to exclude blown-up estimate of bonus shares from the aggregate of global paid-up capital (PUC)

of the joint-stock companies and blown up data of debentures. The household sector's investment in this instrument was being derived residually by deducting from the aggregate of shares and debentures, the subscriptions contributed by the individual sectors, as available from the flow of funds accounts. The surveys relating to ownership of government debt and pertaining to shares and debentures were revived. In the case of provident funds from employees of non-government educational institutions, since 1981-82, no separate estimates were shown as PF under this category is included under Employees' PF scheme, 1952.

Besides the impetus provided by Raj Committee's recommendations, further refinements have been effected in the estimation process. The estimates of household investments in Unit Trust of India (UTI) are now being derived on the basis of both its Annual Report and special status-cum-scheme wise break-up of sales and repurchases of units, providing the current holding ratio of the households. Furthermore, the coverage has also been improved to include households' investment in all the other mutual funds. Secondly, in order to correct the unavoidable time lag in the availability of surveys on company finances the current data on new issues of non-government public limited companies are used in conjunction with data of DCA and ownership survey of securities of private corporate business to derive household sector's investment in shares and debentures. Thirdly, similarly, in case of data pertaining to the co-operative sector advance data from summary publications are utilised.

Section 6

Further Developments

The methodology for estimating saving in India has attracted considerable attention during the last two decades, both as episode specific and as critiques of Raj Committee Report. Rakshit (1982, 1983) pointed out an important source of overestimation in household financial saving. Since unlike the saving of the public or the private corporate sector, financial saving is compiled as the

change in stock numbers of financial assets (net of financial liabilities) between two end-points, any year-end bulge is going to affect the relevant estimates. Rakshit (1982) termed this as 'bunching effect' due to the bunching of foodgrains, cotton, raw jute, oil seeds, sugar cane or tobacco leaves by traders and/or manufacturers in the organised sector, and to the bunching of payment in February/March by a large number of government and semi-government organisation (Rakshit 1983). While the outstanding number of the financial asset/liabilities could be subject to the influence of bunching, its extent in the flow number would definitely be relatively small. Nevertheless, the ideal way to get rid of the 'bunching effect' totally could be to work out the saving in currency and deposits on the basis of outstanding numbers on yearly average basis.

Against the backdrop of economic reforms and recommendations of System of National Accounts, United Nations, 1993 (*1993 UNSNA*), an Expert Group on Saving and Capital Formation (Chairman: Prof. Raja J. Chelliah) (Government of India, 1996) submitted its report in December 1996. It recommended a number of measures to streamline data on household financial savings. They include reduction in the time lag associated with the availability of flow of funds data and improvements in coverage to include the household sector's deposits in institutions like Housing Boards, Mahanagar Telephone Nigam Limited, *etc.*, consumer credit from the non-banking financial companies, credit extended by the non-financial joint stock companies to their employees and all new financial instruments like deep discount bonds, zero coupon bonds *etc.*, including derivatives like warrants, which are traded apart from their underlying securities to which they are linked. It also recommended spreading of accrued interest of the full tenure on deep discount and zero coupon bonds on a yearly basis and inclusion of the same in household financial saving on an annual basis. As a procedural refinement, the Committee advised that currency apportionment to the household sector should be basically on the basis of detailed flow of funds accounts.

In February 1999, the CSO upgraded its methodology and released its new series of national accounts statistics and advanced the base year from 1980-81 to 1993-94. In the area of household sector financial saving the coverage has been improved to include Pension Fund of Dock Labour Boards and Port Trusts.

Section 7

Future Directions

The compilation of household sector's financial saving has come a long way in India. However, considerable refinements need to be made in the existing estimates. The core strategy would be to progressively reduce the time lag in the compilation of flow of funds accounts of the Indian economy so as to make it contemporaneous with estimation of household financial saving and with national income aggregates. Furthermore, the data base of the non-household sectors needs to be refined to tone up the estimates with respect to the household sector on the lines suggested by the Raj Committee and Chelliah Committee.

With the onset of financial liberalisation, there is a need for the compilers to be prepared to increase the coverage of financial asset and financial liability vectors of the household sector to include new financial instruments. For instance, investments in zero coupon bonds and other deep discount bonds as well as the imputed interest accrued on these during their terms have to be incorporated. Similarly, the participation of the household sector, if any, in the auctions of the treasury bills also need to be accounted for. Financial derivatives have added a new dimension to the estimation of household financial saving as the figures under warrants have to be constantly adjusted in the shares of private corporate business depending on the options exercised by the holders.

Progress is also due towards disaggregation of financial saving of the heterogeneous household sector across its different constituent sub-sectors on the lines suggested by the Raj Committee as this would facilitate the analysis of the behaviour of the households proper *vis-a-vis* the other components.

There is a need to examine the feasibility of presenting the estimates of household financial saving in real terms by the most acceptable method, *albeit* as a memorandum item. Saving, being value aggregate, is always presented in *current prices* and is not deflated by compilers. Unless, one uses the investment deflator, there arises a case *ex-post* inequality between real saving and real investment. However, in case of household financial saving, instead of investment deflator the household consumption expenditure deflator may be more appropriate (Shetty, 1990). In the absence of the data on household consumption expenditure in the Indian national accounts, private final consumption expenditure could be used to deflate the series and this can appear as a memorandum item.

Finally, there is also a need to integrate the entire sequence of accounts in the national accounting system (United Nations, 1993), as then it would be possible to derive the estimate of household financial saving by the income approach and check the estimate as arrived by the conventional balance sheet approach.

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Annexure I
Evolution in the RBI's Compilation Procedure in the Pre-Seventies

Financial Assets (net)	***First Series,* March 1960 (1950/51 to 1957/58)**	***Second Series,* August 1961 (1950/51 to 1958/59)**	***Third Series,* March 1965 (1950/51 to 1962/63)**
(1)	(2)	(3)	(4)
1. Currency	Calculated as a residual (currency with public *minus* currency held by non-financial corporates, local authorities, government companies, financial, insurance and co-operative institutions). Data of non-financial companies pertained to medium and large public limited companies and private limited companies.	Currency estimates for households underwent refinements, as variations in small coins also were included and data of currency with non-financial companies were revised due to availability of data on small public limited companies.	No change in procedure was effected.
2. Bank Deposits net of Advances	Households' deposits with commercial and co-operative banks & co-operative credit societies were compiled directly from the RBI surveys on deposits with commercial banks and its publications on co-operative movement, respectively. But the RBI survey used for computing commercial bank advances to households led to unavoidable double-counting imparting downward bias to estimate of households' net deposits.	While earlier the survey data on household deposits were taken directly now the survey ratios were applied to actual year end totals. The procedure for advances was also similar, *i.e.,* by applying survey ratios to the year end totals.	The survey ratios of households' deposits were now applied to the outstanding deposits as at last Friday of March instead of as at end-December. Bank advances to households were compiled on the basis of more updated surveys. Deposits of individuals with co-operative non-credit societies now began to be included.
3. Gold and Silver	Value of annual gold production *plus* smuggled gold	As government acquired gold production from 1958, this was not included in household saving. Silver production was included.	Excluded gold and silver from household saving as they were treated as consumer durables.

(Contd.)

Annexure I (Concld.)
Evolution in the RBI's Compilation Procedure in the Pre-Seventies

Financial Assets (net)	***First Series*, March 1960 (1950/51 to 1957/58)**	***Second Series*, August 1961 (1950/51 to 1958/59)**	***Third Series*, March 1965 (1950/51 to 1962/63)**
(1)	(2)	(3)	(4)
4. Insurance	Increase in life funds from insurance *minus* loans and advances to policy holders	No change in procedure was effected.	Data on postal insurance and life annuity funds were also included.
5. Provident Funds	Included PF of RBI, Central and State governments scheduled and A2 class non-scheduled banks and insurance companies.	With data on small public limited companies and data on employers' contributions for all categories of limited companies available, estimates were refined.	PF of employees of branches of foreign concerns, government companies and statutory corporations were included.
6. Net Claims on Government	Households' Initial subscriptions to Central and State government loans *plus* small savings *plus* investment in local authorities' securities net of advances by government to households	No change in procedure was effected.	Households' investment in approved securities of state electricity boards, transport corporations, financial corporations, *etc.*, were calculated as a residual.
7. Shares and Securities	Residually derived after deducting from the total issues, subscriptions by government and corporate sector. Till 1957 as data on actual issues were not available, data on consents were taken.	As consents were valid for two years, the changes in paid-up capital till 1957 were adjusted to equal to half the change in paid-up capital (PUC) of the current year and half the change of PUC of the preceding year. Households' investment in shares of co-operatives started being included.	Refinements were made by using average of annual ratios of capital (issues) actually raised during 1957-61 period to consents in the corresponding years. Further, refinements were made regarding estimates of subscriptions by non-residents, government and banks.

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Financial Stability and Public Policy: An Overview

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The paper reviews the sources of market failure in financial institutions and markets and what can be done to alleviate them. It examines game-theoretic explanations for financial instability, in particular the role of asymmetric information in generating destabilising behaviour. In the area of remedies, the paper analyses the potential contribution of official safety nets and what can be done to minimize the associated moral hazard. In this context, it discusses the role of regulation and transparency.

Introduction

A considerable amount of discussion has been generated in recent times on the issue of financial stability. It is well recognized that safeguarding financial stability is of central importance to overall macro-economic stability. It provides the basis for rational decision-making about the allocation of real resources through time, and in the absence of imperfections in the real sector, improves the climate for savings and investment. The absence of stability creates damaging uncertainties that can lead to resource misallocation and reduce the willingness of agents to enter into inter-temporal contracts. Recent interest in financial stability has been driven by two major considerations. First, advancements in finance have provided a coherent macroeconomic foundation for studying manifestations of financial instability. From the policy perspective, the growth and integration of world financial markets and the systemic repercussions that idiosyncratic failures might engender, have increased the importance of policy actions to safeguard financial stability. The present review joins the on-going debate on reinforcing financial stability on a global scale drawing from accumulated evidence on disruptions to financial stability, the responses and the new imperatives for re-defining the

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boundaries between State and markets. It is organised as follows. The first part reviews the various reasons that have been advanced as to why institutions should be particularly prone to instability. The second part examines the issue of instability in financial markets. The third section examines instability in market infrastructure. The subsequent section considers the possible responses. The final section contains the concluding remarks.

Section I

Sources of Instability

As a starting point, a distinction needs to be made between monetary stability and financial stability. Monetary stability can broadly be defined as the stability of the general price level; financial stability, on the other hand, refers to the smooth functioning of institutions, markets and infrastructure. The principal focus of the present article is financial stability. One can distinguish between two main sorts of financial instabilities: instabilities in institutions and instabilities in markets. Institutional instability exists when 'failure of one or a few institutions spreads and causes more widespread economic damage'. Market instability, on the other hand, is defined 'in terms of the wider impact that volatility in asset prices and flows can have on the economy' (Crockett, 1997). These apart, another potential source of instability, which has gained prominence in recent times, has been instability associated with disruptions to market infrastructure.

For a considerable period of time, the two standard explanations propounded to explain episodes of financial distress were characterized as cyclical and monetarist. The cyclical school focused on the various forces making for cyclical excess. The occurrence of periodic episodes of financial turmoil was attributed to external shocks or various forms of aberrant behaviour (Kindleberger, 1978). The process is usually initiated when some favorable event leads to a bidding up of asset prices. Such a phenomenon is more likely to occur if a substantial period has elapsed since the last crash and the underlying pecuniary motive

gathers momentum. In such a situation, a rise in price leads to further buying in anticipation of a continuation in the current price trend (bandwagon effect). Eventually, when prices reach overvalued levels or some external event occurs that shatters the confidence in the system, prices collapse, inducing a downward spiral, so that financial intermediaries, whose portfolios are financed by borrowing, are badly affected.

The monetarist view, on the other hand, contends that financial instability is not likely to become serious in the absence of an associated accommodation in the money supply. In this view, it is monetary policy mistakes that either initiate financial instability or engenders disruptions. Schwartz (1986), in particular, has labeled as 'pseudo-financial' crises those disturbances that are not accompanied by significant changes in the quantity of money.

Neither of these explanations is however, wholly satisfactory. The Minsky-Kindleberger hypothesis of cyclical excesses leaves an uncomfortable burden to be borne by irrational behaviour, unsupported by any underlying rigorous microeconomic foundation. The monetarist view, although more self-contained theoretically, is rather limited in its approach since it does not explicitly internalize the possibility of disturbances arising from non-monetary factors.

Recent insights from game theory and the economics of decision-making under uncertainty have offered more satisfactory explanations as to why agents act in ways that produce instability in financial institutions. These insights have also provided strong microeconomic underpinnings to the earlier works.

A. Fragility in Financial Institutions

Recent advances in the theory of asymmetric information have provided significant insights into the vulnerability of financial intermediaries to a sudden loss of confidence. Asymmetric information gives rise to the problems of adverse selection, moral hazard and ex-post verification (Van Damme, 1993). In the market for loans, the asymmetric information process ensures that borrowers are relatively well-informed about the risk-return

characteristics of the projects vis-à-vis the lenders. Adverse selection therefore serves to ensure that a disproportionate number of 'bad' (risky) projects are presented for financing, leading to the phenomenon of credit rationing by lenders. When such problems become acute, there might not be any price at which buyers and sellers are willing to trade, given the uncertainty about the quality of the goods being traded. Such a situation necessitates an institutional mechanism to overcome this informational asymmetry. In the financial sector, such a mechanism is a financial intermediary. Such intermediaries can exploit economies of scale and scope in monitoring borrowers on behalf of investors and thereby reduce the cost of finance. In this context, the insight provided by Diamond (1984) was that such intermediaries (banks) could overcome the infinite regress problem by holding a portfolio of loans. Portfolio diversification eliminates the risk of investing in a single project and enables banks to offer depositors standard debt contracts, which offer a fixed return. Judged thus, depositors can arbiter banks merely in terms of whether they offer the going rate of return.

The vulnerability of banks results from the interaction of liabilities that are relatively more liquid than assets. Asymmetrically informed depositors may become nervous about the solvency of their banks and about the possibility that those other depositors may withdraw their deposits from the bank, thereby impairing the liquidity of the first group of depositors. Such fears and anticipations can lead to depositor runs, which could cause premature closure of even solvent banks and could be contagious among banks. In essence, depositors face a 'Prisoners Dilemma' problem, with each deposit withdrawal imposing negative externalities on other depositors. Mention may be made in this context of the fact that, prior to the 1930s, the US banking system suffered periodic banking panics and crisis, involving depositor runs, culminating in the banks runs of the early 1930s that led to the closure of over 9,000 banks between 1930 and 1933 (White, 1999).

If the dynamics of financial runs have become better under-

stood as a result of advances in economic theory, it needs to be examined as to what are the factors responsible for initiating episodes of financial instability. Recent contributions to the literature have revealed the systematic influence of other phenomena, related to debt deflation, disaster myopia, herd behaviour, adverse incentive structure, principal-agent problem and negative externalities. Fears of loss of liquidity sustain and intensify runs, but what causes the erosion of confidence in the first place? Typically, banks get into trouble because of deteriorating asset quality. They lend to activities that generate significant profits during boom times, but turn out to be vulnerable when underlying economic conditions become unfavourable.

The debt deflation theory (Fisher, 1933) contends that a shock to a highly indebted economy, implying significant default on interest and repayment obligations, can generate distress sale of assets, declining asset prices, consequent falls in general wages and prices, rising real debt burdens, calling-back of loans, contagious bank failures and a collapse of overall economic activity. In effect, excessive debt and deflation reinforce each other and drive the economy into a downward spiral.

Disaster myopia (Guttentag and Herring, 1984) occurs when lenders' assessment of the potential distribution of economic outcomes (subjective probabilities) differs from reality (objective probabilities). Disaster myopia can occur for a variety of reasons. For example, disastrous outcomes might occur so frequently that it is might prove impossible to assign with a reasonable degree of certainty any meaningful probability to the future occurrence of the event. Alternately, changes in policy regimes could push economic conditions well beyond the boundaries that were factored into account when the decisions were first made. In such circumstances, financial intermediaries may not find it worthwhile to devote scarce management time to analysing such eventualities. In their view, such disasters are expected to engender countervailing action by the authorities designed to stave of its consequences.

A third aspect of lending action that gives rise to difficulties is

what is referred to as herd behaviour (Banerjee, 1992). Herd behaviour can be a manifestation of irrationality, but it can also reflect rational maximization under uncertainty. The fact that others are lending may be considered as invaluable information concerning the creditworthiness of a potential borrower. And importantly, managerial performance is generally judged relative to some market benchmark. The disincentives for being wrong in company are generally much less than for being wrong in isolation.

A fourth type of problem arises from the fact that management compensation structures can generate perverse incentives, which in turn, is an aspect of the principal-agent problem. Such problems arise because those involved in financial decision-making are compensated in ways not fully congruent with the success of their investment decisions. So, if an economic agent receives a handsome bonus if an investment is successful, but suffers no more than temporary loss of employment, if his decision adversely affects the employer, it might be rational for such an agent to favour high risk-return strategies vis-à-vis strategies with reasonable risk-return profiles.

The final aspect of asset quality problems arises from negative externalities. Negative externalities arise when some of the costs of an agent's decisions accrue to outsiders. Such externalities are often a pertinent feature, particularly of the banking industry, because of the relatively small cushion of own funds relative to total balance sheet size. The smaller the net worth of the bank, the less is the probability that its owners have to lose from adverse outcomes and the more inclined they are to pursue high-risk strategies or 'gamble for resurrection' (Dewartipont and Tirole, 1994).

Another reason why the financial industry is often thought to be particularly prone to systemic instability is because of the possible vulnerability to failure contagion across institutions. Contagion effects are often a significant feature of the financial sector for two main reasons. Firstly, there is a network of interlocking claims and liabilities through the inter-bank market and

the payments and settlements system. These have become more pronounced and increasingly dominant in recent years, with the growing integration of national and international capital markets. Secondly, informational asymmetries make it more difficult for creditors to correctly judge the strength of financial institutions on the basis of publicly available information. As a result, creditors may be inclined to presume difficulties at one institution as indicative of potential vulnerability at other institutions with similar business structures. More importantly however, bank failure contagion is liable to (i) occur faster; (ii) spread more broadly, (iii) result in a larger number of failures, and (iv) result in significant losses to creditors.

Last, but not the least, the costs that fall on the public budget provides the most persuasive evidence of the need to take public policy action to strengthen financial systems. The most prominent example of this pertains to the US S&L debacle of the 1980s, the resolution costs of which are estimated anywhere between 2 and 4 percent of GDP. These numbers, however, pale in comparison to the costs incurred in a number of other countries. In France, the losses incurred by a single bank, Credit Lyonnais, are placed at around US$ 30 billion, or over 2 percent of GNP. Honohan (1997) estimates the fiscal costs of resolving crisis in developing countries alone as being as much as US$ 250 billion. Recent studies have placed the resolution costs of such crises anywhere between 5 to 55 per cent of GDP (Table 1). The resolution costs of these crises often falls on the banking system, and if the system is state-owned, on the Government. In such situations, the use of public money to support distressed institutions often endanger efforts to rein in budget deficits (Sundararajan and Balino, 1991). And even if budget deficits are viewed as (domestic) transfers rather than as real economic costs, they can compel the authorities towards less benign ways of deficit financing (e.g., an inflation tax); the rescue process itself can weaken the incentives for creditors to monitor the behaviour of banks in the future.

Table 1 : Costs of Resolving Banking Sector Crises in Selected Economies

Country (Period of crisis) (per cent of GDP)	Estimate of cost/losses
Latin America Economies	
Argentina (1980-82)	13-55
Mexico (1994-95)	12-15
African Economies	
Cote d' Ivorie (1988-91)	25
Senegal (1988-91)	17
Asian Economies	
Sri Lanka (1989-93)	9
Malaysia (1985-88)	5
Transition Economies	
Bulgaria (1990s)	14
Hungary (1995)	10
Industrial Economies	
Spain (1977-85)	17
Japan (1990s)	10
United States (1984-91)	5-7

Source: Goldstein (1996) and World Economic Outlook (1998).

B. Fragility in Markets

The two markets in which instability has been most disconcerting and therefore subject to serious economic analysis have been the foreign exchange and the equity markets. These apart, instability in other markets, such as in the real estate market has been an important factor for the transmission of distress in the financial system, as evidenced from the recent experiences in South-East Asia (BIS Annual Report, 1997 and 1998).

Foreign exchange market instability can be divided into two main types. The first type, usually described as a currency crisis, takes place in a managed exchange regime when market participants lose confidence in the sustainability of the currency's current exchange rate and seek to reduce their exposure

denominated in that currency. The common explanation offered for such a crisis is that the authorities of the country concerned have sought to peg their exchange rate at a level that is incompatible with the underlying macro policies. While the exchange rate may be maintained for a certain period through the use of reserves or otherwise, eventually the weight of market opinion implores that a change in the exchange rate is unavoidable. This position has however, not gone unchallenged. Several authors (Eichengreen, Rose and Wyplosz, 1993) have suggested that the exchange rate market may be subject to multiple equilibria. In such a setup of pegged exchange rates, so long as the exchange rate peg is considered 'credible', the evolution of domestic factor costs is consistent with external equilibrium. However, once a change in the exchange rate occurs, a new set of expectations governing price formation evolves and the exchange rate ceases to be in equilibrium. The second type of exchange market instability occurs in a floating exchange rate situation, when the amplitude of fluctuations in the market exchange rate exceeds that which can be explained on the basis of underlying fundamentals. This is usually termed as volatility.

Instability in equity markets cannot be easily explained by rational speculative behaviour. Three standard explanations have been advanced as to why stock markets should be particularly prone to instability: (i) speculative excesses, (ii) instability in macroeconomic policies, and (iii) internal market dynamics. Any episode of market instability might contain elements of all the three explanations in varying degrees.

Speculative excesses come closest to the Minsky-Kindleberger explanation. As memories of the most recent crash fade out of public memory and economic recovery causes equity prices to rise, naïve investors jump on the bandwagon, intensifying an upward movement. There might be particular sectors that are favoured, because of their perceived growth potential. Whatever the contributory causes, a process develops that leads to a bidding-up of asset prices. Eventually, reality sets in and prices crash.

Another potential source of stock market volatility lies in macroeconomic instability. Since equity prices represent the present discounted value of a future stream of earnings, they change whenever an event occurs that changes either the expected future income stream or the rate at which it is discounted by the market. When a major change in economic prospects occur, the prospective future shifts in income streams have an effect on the current prices.

Stock market declines have the potential to affect real economic activity through several channels. Firstly, the fall in private sector wealth will have a direct effect on willingness to spend out of current income, akin to the ratchet effect. Estimates produced at the time of US stock market crash of 1987 suggested that the negative effects on industrial country output from wealth effects would be less than one-half of one percent of GDP (World Economic Outlook, 1988). A second channel through which stock market declines affect real economic activity is via their effect on financial interme-diaries. If declining equity prices reduce the net worth of financial institutions and their customers, they may exacerbate asymmetric information problems and lead to a reduction in the level of financial intermediation (Mishkin, 1994). This, in turn, would make it harder to mobilise funds for productive investment and lead to a cumulative contraction in the level of output.

Apart from the exchange market and the stock market, the markets for fixed income securities (bonds) and real estate are also important, although they have attracted less attention in the literature. The most prominent instance of bond market instability occurred in 1994, when long-term bond yields rose sharply in most major markets, raising fears that certain financial institutions might find themselves in difficulty (Crockett, 1997).

A second potential source of macroeconomic instability lies in instability in the prices of real assets. The effect is more pronounced when the asset concerned is a large component of the private sector's real wealth, when changes in its price affect the

profitability of different production technologies and when such price movements create generalized inflationary or deflationary pressures. The crisis in South-East Asia has been a testimony to the consequences of speculative excesses and its impact on real estate markets.

A third significant source of instability lies in fluctuations in commodity prices. The most striking example of this is to be found in two rounds of oil price increases in the early and late '1970s, and the subsequent decline in real energy prices in the 1980s and 1990s, barring episodes in 1990 and 1999-2000.

C. Fragility in Market Infrastructure

The growth in volume of both domestic and international transactions has meant the transfer of an enormous volume of funds across the globe through the payments and settlements system. Consequently, the payments network has become one of the most likely channels of transmission of a generalized shock throughout the financial system. Most developed countries have switched over to a Real Time Gross Settlement (RTGS) system in the face of such vulnerabilities and several others have initiated a process of movement towards RTGS.

At the same time, the phenomenal growth in off-balance sheet (OBS) activities of banks, through the use of derivative instruments, has meant that credit exposures in settlement systems have increased at a pace much faster than real economic activity. The fear of a major bank failure because of OTC derivative activities appears to stem from two sources. First, the sheer size of banks' OTC derivative activities suggests that they may be exposed to substantial market and credit risks. Such concerns have been heightened in recent times, consequent upon the near-bankruptcy of Metallgesellschaft and Barings. Secondly, many fear that regulation, as well as managerial sophistication, has lagged developments in the derivatives area, and, as a consequence, banks may be taking risks much more above the limits of prudence. These exposures, which often amount to a multiple of a bank's capital, have

become the single biggest threat to the maintenance of stability in the financial system (Corrigan, 1996).

Section III

Achieving Financial Stability

It is therefore important to devise policies that can safeguard stability in the financial system, by improving the stability of financial institutions, containing excessive volatility and mitigating disruptions in market infrastructure.

A. Improving the Functioning of Financial Institutions

It has long been recognized that the specific characteristics of the banking industry makes it imperative that there should exist a lender-of-the-last resort (LLR) to provide the assurance of stability under all circumstances. Since banks are in the business of enhancing the creditworthiness and the liquidity of private financial obligations, they are vulnerable if, for whatever reason, their depositors seek early repayment of their claims at the same time. This is the argument adduced for the LLR function of the central bank, as a sort of catastrophic insurance coverage that should be used only in situations of extreme distress.

Another type of safety net is implicit or explicit deposit insurance. If depositors' are insured by an entity of unquestioned creditworthiness, then the incentive for sudden withdrawals in the case of any eventuality would stand curtailed. In India, a system of deposit insurance was established in the early 1960s and the insurance cover presently stands at Rs.1 lakh per depositor. Although the coverage of deposit insurance varies across countries, one might surmise that even in countries that do not have such mechanisms, in case of an eventuality, the authorities would take the necessary steps to ensure that the losses suffered by depositors are minimised.

Several variants of this approach, among others, a co-insurance fund (such as putting a certain percentage of each depositors

account at risk) and a system of risk-based deposit insurance have been advanced in the literature. Although such schemes have the advantage of increasing the monitoring incentive of depositors, they nonetheless suffer from implementation problems.

The general problem of safety net mechanisms is that they exacerbate the problem of moral hazard. Not only is it inherently difficult for the lender to control the behaviour of an economic agent, incentives might be created that reduce the desire of lenders to even attempt such control. If banks believe that they will be rescued in cases of illiquidity, they will have fewer incentives to prudently manage their portfolios; consequently, their interest in the institution in which they place their funds will be that much lower.

Several ways of dealing with the problem have been discussed in the literature. These include, among others, prudential regulation, narrow banking, increased disclosure and transparency and reducing settlement risk.

A time-tested approach to dealing with moral hazard is through regulation. The basic justification for bank regulation is that, in its absence, banks might, accidentally or otherwise, indulge in excessive risk-taking, so that even market discipline might prove insufficient to prevent this. Several complementary reasons have been cited as to why banks might be subject to regulation. These include (i) to protect the bank's customers from loss (consumer protection argument), (ii) to reduce the incidence of contagion (the systemic risk argument), (iii) to avoid losses to the deposit insurance fund or the LLR (the fiscal argument), and finally, (iv) to improve the allocation of resources in the financial system (the efficiency argument).

Two different approaches to bank regulation can be distinguished. The first focuses on controlling the activities that the regulated institutions can engage in, the second one focus on ensuring that they are adequately capitalized against the risks they run (Goodhart, 1995).

Risk-based capital requirements have not been without their critics. Objections have been raised, not so much to the principle of relating capital-holding to risk, but to the way risks are measured and the somewhat arbitrary process for setting minimum capital levels. Secondly, the focus in the original Capital Accord on credit risk, to the exclusion of other kinds of risks, was a subject of criticism. Thirdly, the rule of 'one-size-fits-all' aspect of the capital adequacy ratio was also the subject of intense debate and recent crises have only drilled home the point that baseline capital adequacy norms are not enough of a hedge against failures. In response to such criticism, the Basle Committee on Banking Supervision has proposed a Consultative Paper on the new capital adequacy framework, based on the three pillars of minimum capital requirements, supervisory review process and effective use of market discipline (BIS, 1999).

Given the growing disenchantment with capital adequacy standards, newer approaches to risk measurement are being discussed. These methods include, among others, Value-at-Risk models and pre-commitment approach. Under the Pre-commitment Approach, a bank itself decides how much capital it will hold within a given period to cover risks arising from its trading block. Sanctions will apply if the accumulated losses exceed the amount. The Value-at-Risk approach has emerged as a major tool for measuring market risk and is being used internally by banks for risk management and as a regulatory tool for ensuring the soundness of the financial system. However, the basic problem with such models lie in (i) obtaining adequate/high-frequency data and, (ii) devising a satisfactory way of handling the variability of credit exposures.

Another approach to maintenance of stability that has found support has been narrow banking. It has found considerable support in the writings of several writers (Litan, 1987). Institutions ('narrow' banks) would be authorized to accept deposits that can be withdrawn on demand. These banks would be required to restrict their investments to certain categories of safe assets. However, for several reasons, the proposal has not found much

favour in policy circles. First, narrow banking might expose banks to increased market risks, as their entire asset portfolio comprises of marketable securities. Secondly, the implicit assumption behind narrow banking is that Government Securities have zero default risk attached to them. Such a proposition might not necessarily hold good, with instances of reputation of debt not having been uncommon in the history of financial markets. Thirdly, the proposal to convert a commercial bank into a narrow bank can be detrimental to the reputation of the bank management and the faith of its depositors.

An approach to improving the functioning of financial entities which has gained currency has been reliance on enhanced transparency and higher disclosure standards. Greater transparency, coupled with strict disclosure standards, would enable depositors to discriminate between risky and less risky banks, and strengthen managerial incentives by making banks management more accountable when losses occur. It has also been suggested that increased market discipline through improved transparency is likely to lead to a stable banking system. In the absence of disclosures, depositors and other creditors assume that banks will choose riskier positions and that the debt (deposits) will be priced accordingly. The solution then is for a bank to take riskier options. In contrast, with full disclosure, i.e., with its risk known, the bank can take less risky options. As a result, by enhancing market discipline, more effective disclosures is likely to engender a more stable banking system (Cordella and Yeyeti, 1997).

In India, the transparency aspect has been emphasized by expanding the coverage, timeliness and analytical content of the information provided in various publications by the supervisory authorities. The authorities have also mandated disclosure of some of the essential strength indicators and performance-related parameters as part of the 'Notes on Accounts' in the annually published accounts of banks.

Goldstein (1997) has documented the best and worst performing indicators of banking and currency crises in developed,

developing and emerging market economies (Table 2). The better leading indicators seem to anticipate correctly somewhere between 80 and 100 per cent of the banking and currency crises over the period 1970-1995. The leading indicators that show the best forecasting accuracy also tend on average to send the earliest and most persistent signals of banking and currency crises.

Table 2: Currency and Banking Crises : Best *vs* Worst Performing Indicators

	Currency Crises Indicators	*Banking Crises Indicators*
BEST	Real Exchange Rate	Real Exchange Rate
	Banking Crisis	Equity Prices
	Exports	M2 Multiplier
	Equity Prices	Real Output
	M2/International Reserves Real Output	Real rate of interest on deposits Exports
WORST	Terms-of-trade	International Reserves
	Domestic/foreign real interest rate differential	Terms-of-trade
	Imports	Excess real M1 balances
	Lending interest rate/	Lending interest rate/
	Deposit interest rate	Deposit interest rate
	Bank Deposits	Imports

Source: Goldstein (1997).

Banking crises are however, found to be harder to forecast than currency crises. Recent work in this area, including Frankel and Rose (1996) and Honohan (1997) have emphasized the importance of monitoring foreign borrowings, particularly short-term liabilities denominated in foreign currency, to measure the degree of exposure to currency and inflation risks. The recent literature also focuses on the level of non-performing loans (NPLs). Empirical evidence suggests that the CAMELS-type assessment is statistically significant only if NPLs and capital adequacy are simultaneously considered (Gonzalez-Hermosillo *et al.,* 1997)[1].

Other indicators to capture financial vulnerability include a measure of segmentation (proxied by inter-bank interest rate differential), the deposits to M2 ratio and aggregate stock indices. In surveying literature on these indicators, Gonzalez-Hermosillo (1999), using both micro and macro factors in explaining banking fragility concludes that the introduction of macro variables significantly improves the explanatory power of models based on micro-prudential indicators only.

In a recent study on financial sector surveillance, the IMF has identified a set of macro-prudential indicators (IMF, 2000). These are categorised under two broad categories (a) aggregated micro-prudential indicators and (b) indicators of macroeconomic developments. However, the number of indicators included under these two heads is extremely large, numbering more than fifty, and it compromises on the principle of parsimony. It is therefore suggested that there is the need to develop a smaller and manageable set of indicators, primarily for purposes of periodic monitoring and data dissemination[2,3].

B. Improving the Functioning of Financial Markets

Excessive volatility in asset prices can have adverse macro-economic consequences. Therefore, policy makers need to ensure that undesirable price volatility is not generated either by their own macroeconomic policies or by the microstructure of financial markets.

It is possible to distinguish two sorts of price instabilities. One is the result of unnecessary variability in the underlying determinants of asset prices. Such variability might be the outcome of certain policy inconsistencies elsewhere in the system. Price instability in such cases often acts a signaling device, necessitating the need for remedial policy actions to bring them in line with other sets of domestic policies. A second sort of instability arises from imperfections in the price discovery mechanism (such as asset bubbles or over-shooting).

Although markets have become more powerful in ensuring that financial prices ultimately reflect fundamental economic determinants, they do not always do so in a smooth way. Lags in perceptions may mean that disequilibrium can exist for a while, perhaps because market opinion is divided about whether or not the situation is indeed sustainable, before corrective forces assert themselves. The risk lies in that the needed price adjustment will be more sudden and disruptive than it would have been had corrective action been taken earlier.

Greater integration of global capital markets has had the consequence of giving rise to currency crises. There are three broad approaches that have been discussed in the literature that can be pursued when crises occur. Firstly, to organise a financial rescue; secondly, to allow events to chart their own course, accepting the possibility of an excessive depreciation and/or default on external debt and thirdly, to arrange a rescheduling and renegotiation of existing claims. Each of these approaches have their respective merits and drawbacks.

A financial rescue can limit the adverse effects on real living standards and help to limit the contagion effects elsewhere. If the financial support is based on appropriate conditions, it can also contribute to the adoption of corrective macroeconomic policies. On the flip side, the expectation that the international community will provide emergency assistance in the event of extreme debt-servicing difficulties risks worsening moral hazard. The second possibility of allowing market forces to trace their own route avoids the problem of moral hazard and in the end probably makes economic agents-borrowing Governments and external lenders-more cautious. The downside is that a *laissez faire* approach would involve larger costs in those crises that did nevertheless occur. The deadweight loss in terms of output is likely to be higher than in circumstances where international assistance was available in support of a well-designed adjustment programme.

The demerits of both the financial rescue as well as the *laissez faire* approach have led to a search for alternative ways of dealing

with sovereign liquidity crises. An approach that has been advocated in the literature has been the re-schedulement/re-negotiation of loans. Such an approach has obvious attractions, but has its pitfalls too. For one, legal frameworks differ so much across countries that it would be well nigh impossible to agree on a common approach at the sovereign level. For another, the ultimate sanction as in domestic bankruptcy proceedings, the take-over and liquidation of the debtor entity is not available at the sovereign level.

Supervisors of financial institutions seek to ensure that firms hold sufficient capital and liquidity to meet unforeseen market conditions. An important way to ensure stability of markets is by addressing some of the underlying factors that make for excessive price volatility. Non-financial firms in countries with high and variable inflation tend to be vulnerable to economic shocks, because their debt tends to be of short duration and denominated in foreign currency. Highly variable inflation reduces the credibility of policy makers, making it difficult to promote recovery from crisis. At the macro-economic level, this means avoiding abrupt changes in policy that cause economic agents to re-assess the value of debt and equity instruments. Such abrupt changes might be deemed as necessary when a unsustainable situation has been allowed to persist for long and an initial corrective move on the part of the authorities is perceived as heralding a turning point.

C. Improving the Financial Market Infrastructure

The growth of financial transactions generally means that financial intermediaries find themselves with increasingly large, though very short-term credit exposures in the payments system. At the same time, given the complexity and unpredictability of inter-bank payments flows, it becomes extremely difficult for financial institutions to form a view of the indirect exposures that they face through the settlement position of their counter-parties vis-à-vis others.

An aspect of market infrastructure which has received scant attention in the literature is the legal framework. In developing and

transition economies, there is often a basic need for workable laws on contract, collateral and bankruptcy proceedings, as well as the need to streamline court proceedings for rapid and effective remedy. But the issue also extends to developed legal and judicial systems, because the continual state of innovation and evolution of new financial products can outrun existing legislation and raise finer points of law.

An important strand of market infrastructure which is gained prominence in policy discussions is the issue of corporate governance. Corporate governance in its wide connotation covers a variety of aspects, such as protection of shareholders' rights, enhancing shareholders value, Board issues including its composition and role, disclosure requirements, integrity of accounting practices and internal control systems (Reddy, 1999).

Section IV

Concluding Remarks

There is overwhelming evidence that financial stability provides a conducive environment for efficient resource allocation and rapid economic growth. The integration of international capital markets and the globalisation of major financial institutions has made the objective of maintaining financial stability increasingly important, but overtly complex.

In an increasingly deregulated world, wherein most emerging market economies have been encompassing deregulation in varying degrees, one aspect of stability which has largely bypassed the attention of observers has been the issue of timing and sequencing of reforms. The sequencing of reforms that takes into account the institutional imperatives has a better chance to succeed and avoid disruptions to the financial system. Experience is indicative of the fact that even with all the sequencing and timing problems resolved, financial sector reforms needs to be preceded by the real sector reforms, good corporate governance, a firm control of the fiscal deficit as well as consistent macro-economic policies.

Recent theoretical work has greatly increased understanding of the forces making for instability in the financial system. One no longer needs to rely on psychological explanations as to why bank runs occur or why financial prices move by more than what is justified on the basis of underlying economic fundamentals. The understanding of the microeconomics of financial market behaviour is an important part of the policymakers' tool-kit in the search for a system that is stable enough to facilitate inter-temporal resource allocation decisions, yet flexible enough to allow prices and institutional structures to adapt through time, and to provide a proper range of incentives for good decisions and penalties for bad decisions.

Notes

1. Non-performing loans may be of particular relevance, as they give an indication of risks to capital adequacy from future write-offs (Davis *et al*., 1999).

2. Davis *et al*. (1999) has outlined the types of financial data required for macro-prudential surveillance. As Davis *et* al. observes, the essential point is to seek to detect emerging patterns of financial stability in advance and guage their gravity when they occur by observing the *overall pattern* of economic and financial developments in a *judgemental manner, informed by the events of the past that have entailed systemic risks, and with a broad conceptual framework derived from theory to identify appropriate danger signals* (italics in original).

3. Patra and Roy (1999) have attempted to delineate the optimum thresholds of financial stability in India for the period 1970/71-1997/98. The variables used in their setup include (a) Real GDP growth, (b) inflation rate, (c) international reserves, (d) money multiplier and (e) export growth (in dollars).

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Mergers and Acquisitions: An Indian Experience

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This paper undertakes a scan of the first Mergers and Acquisitions (M&As) wave which is currently underway in India. This roughly coincides with the latest wave of international M&As. Takeovers are the dominant mode of M&As in India, similar to the international trend.

Mergers and Acquisitions (M&As) have emerged as a natural process of business restructuring throughout the world. The process of M&As spans geographical boundaries: cross-border M&As, mostly by transnational corporations (TNCs), have assumed a significant proportion. For the Indian industry, market driven M&As are essentially a phenomenon of the late 1990s. The early M&As in India were arranged either by the government agencies[1] or by the financial institutions within the framework of a regulated regime. However, since 1991, Indian industries have been increasingly exposed to both domestic and international competition and competitiveness has become an imperative for survival. Hence, in recent times, companies have started restructuring their operations around their core business activities through M&As.

The primary objective of this paper is to analyse the recent trends in M&As in India. As the current wave of M&As in India is the first of its kind, international experiences are relied upon to understand the issues relating to M&As in a historical perspective. Section II provides an overview of the emergence of M&As with special emphasis on cross-border M&As. Section III examines the recent trends in M&As in India. Section IV assesses the preparedness of the regulating authorities in India to frame suitable guidelines for M&As. Section V provides summary and concluding observations.

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There is an acute data deficiency with respect to M&As in India. Only the Securities & Exchange Board of India (SEBI) currently maintains a limited database on M&As relating the companies registered on Indian stock exchanges. This, however, provides a partial picture of M&As in India. The database maintained by a few private agencies is neither elaborate nor fully reliable as they are not available for public use on a regular basis. The Centre for Monitoring Indian Economy (CMIE) is the only agency which has been publishing data on M&As in India on a regular basis since January 1997. However, data compiled by the CMIE have obvious limitations as they are based purely on announcement of M&As rather than actual execution of the deals. Due to non-availability of more reliable data, CMIE data on M&As are used in this paper.

Section II

Mergers & Acquisitions : Motivations, Trends and Impact

There are several motivations, which govern the process of M&As (Annexure I). The economic motivations behind M&As are: 1) to gain efficiency through synergies, 2) to minimise risk through diversification, 3) to achieve short term financial gains from imperfect capital and foreign exchange markets. Sometimes, non-economic factors like prestige, market power or market dominance etc., do influence access to proprietary assets through M&As. Besides these underlying motivations, there are several other enabling factors responsible for the upsurge in M&As during the last two decades. These are new technologies, capital mobility, policy liberalisation, particularly with respect to FDI, deregulation and privatisation and changes in the capital market. The production system is now globally integrated mostly due to information and communication technologies. The advent of internet and electronic commerce has further accelerated the process of M&As in a cost effective manner. Liberalisation of trade, capital account convertibility, formation of regional trade groupings could also be attributed as major enabling factors for rapid growth of cross-border M&As.

There have been at least four distinct merger waves in the corporate history of the USA. The exact timing of these episodes

were: (1) 1897-1902, (2) 1926-29, (3) 1965-69 and (4) 1988-90 (Boff & Herman, 1989). During the first wave, eight industries, namely, primary metals, food products, petroleum products, chemicals, transport equipment, fabricated metal products, machinery and bituminous coal experienced the greatest merger activity (Nelson, 1959). The bulk of the M&As were horizontal among these industries. The second wave is characterised mostly by vertical M&As. The industries, which witnessed the largest merger activity were: primary metals, petroleum products, food products, chemicals and transport equipments - leading to integration of manufacturing, suppliers and distributors. While the first merger wave is treated as "merger for monopoly", the second merger wave is termed as "merger for oligopoly". When both horizontal and vertical mergers were regulated through anti-trust laws,[2] there was a surge of conglomerate M&As in the third wave. The fourth wave of M&As offers a mixed picture with hostile takeovers and leveraged buyouts (LBOs) dominating the composition of M&As. One of the notable features in the fourth wave of M&As is that they assumed an international dimension. The current wave of M&As since the mid-1990s may be treated as the fifth wave. According to the World Investment Report 2000 (UN 2000), M&As completed worldwide have grown over the past two decades (1980-1999) at an annual average rate of 42 per cent and reached $ 2.3 trillion in 1999. In relation to GDP, total M&As in the world were hardly 0.3 per cent in 1980, which rose to 2 per cent in 1990 and further to 8 per cent in 1999. During this period, cross-border M&As hovered around 25 per cent in terms of both value and the number of total M&A transactions.

Cross-border M&As

Cross-border M&As have assumed significance since the late 1980s mainly because of gradual liberalisation and globalisation.[3] Although the bulk of the cross-border M&As continue to be concentrated among the developed countries, they have emerged as an important mode of FDI flows to the developing countries.[4]

The total value of cross-border M&As increased from US$ 74.5 billion in 1987 to US $ 720.1 billion in 1999 (Table 1).

Around 60 per cent of the cross-border M&As were in the manufacturing sector in the late 1980s, followed by about 32 per cent in the tertiary sector and less than 10 per cent in the primary sector. The trend of cross-border M&As seems to have reversed between manufacturing and tertiary sector, the latter accounting for a little over 60 per cent in 1999, while the manufacturing sector's share has fallen below 40 per cent and the share of primary sector has become negligible. The main reason behind the rising trend of M&As in the tertiary sector is the greater degree of liberalisation of the services sector, particularly the financial services. In the services sector, the industries with highest levels of cross-border M&As in 1999 were telecommunications, energy and financial and business services like banking, finance and insurance etc. In the manufacturing sector, the leaders were automobiles, pharmaceuticals, chemicals, food, beverages and tobacco etc. In the primary sector, mining and petroleum, extraction of mineral oils and natural gas are the notable industries with the highest M&As.

Table 1 : Cross-Border Mergers & Acquisitions by Sector

(US $ Million)

Year	Primary	Manufacturing	Tertiary	All Industries	% share of total		
					Primary	Manufacturing	Tertiary
1	2	3	4	5	6	7	8
1987	10795	42393	21321	74509	14.5	56.9	28.6
1988	3911	73727	37986	115623	3.4	63.8	32.9
1989	1941	89596	48851	140389	1.4	63.8	34.8
1990	5170	75495	69911	150576	3.4	50.1	46.4
1991	1164	36176	43297	80713	1.4	44.8	53.6
1992	3637	43222	32384	79280	4.6	54.5	40.8
1993	4201	43204	35649	83064	5.1	52.0	42.9
1994	5517	69321	52270	127110	4.3	54.5	41.1
1995	8499	84462	93632	186593	4.6	45.3	50.2
1996	7935	88522	130232	227023	3.5	39.0	57.4
1997	8725	121379	174744	304848	2.9	39.8	57.3
1998	10599	263206	257843	531648	2.0	49.5	48.5
1999	9417	275148	435443	720109	1.3	38.2	60.5

Note: Sectors may not add up to all industries.
Source: World Investment Report 2000, United Nations.

Region-wise, around 90 per cent of the cross-border M&As are carried out in the developed countries (Table 2). Cross-border M&As in terms of purchases by developed countries were marginally higher than their sales, indicating a small part of capital flowing into developing countries through cross-border M&As. On the contrary, cross-border M&As in terms of sales were slightly higher than the purchases in the developing countries. Although the share of developing countries in the total cross border M&As is low, it has been rising in the 1990s.

Table 2 : Cross-Border Mergers & Acquisitions by Region

(US $ Million)

Year	Developed Countries				Developing Countries				World Total
	Pur-chase	% of the total	Sale	% of the total	Pur-chase	% of the total	Sale	% of the total	
1	2	3	4	5	6	7	8	9	10
1987	71874	96.5	72804	97.7	2614	3.5	1704	2.3	74509
1988	113413	98.1	112749	97.5	2180	1.9	2875	2.5	115623
1989	135786	96.7	135305	96.4	3990	2.8	5057	3.6	140389
1990	143216	95.1	134239	89.2	7035	4.7	16052	10.7	150576
1991	77635	96.2	74057	91.8	3057	3.8	5838	7.2	80713
1992	74431	93.9	68560	86.5	4827	6.1	8119	10.2	79280
1993	72498	87.3	69127	83.2	10439	12.6	12782	15.4	83064
1994	116597	91.7	110819	87.2	10164	8.0	14928	11.7	127110
1995	173732	93.1	164589	88.2	12779	6.8	15966	8.6	186593
1996	198257	87.3	188722	83.1	28127	12.4	34700	15.3	227023
1997	272042	89.2	234748	77.0	32544	10.7	64573	21.2	304848
1998	511430	96.2	445128	83.7	19204	3.6	80755	15.2	531648
1999	677296	94.1	644590	89.5	41245	5.7	64550	9.0	720109

Note : Regions may not add up to World Total.
Source : World Investment Report 2000, United Nations.

Among the developed countries, western European firms are most actively engaged in cross-border M&As in 1999 with a total of $354 billion in sales and $519 billion in purchases (Table 3). Bulk of these transactions were among the European Union driven by the introduction of the single currency and measures promoting greater regional integration. The United Kingdom has emerged as

the single largest acquirer country, acquiring mostly firms in the US. The US continued to be the single largest target country with M&A sales of $233 billion to the foreign investors in 1999.

Of late, developing countries have emerged as important locations for incoming cross-border M&As in terms of value, although their share in the world cross-border M&As remained less than 10 per cent (Table 4). The value of cross-border sales has gone up from $1.7 billion in 1987 to $64.5 billion in 1999. Cross-border purchases among developing countries have also increased from $2.6 billion to $41.2 billion during the same period. Among the developing countries, Latin America and the Caribbean accounted for almost 60 per cent of total transactions, followed by Asia (slightly less than 40 per cent). Major sellers among the developing countries were Argentina, Brazil, Republic of Korea, Chile, Poland etc. In the developing countries, the principal acquirers have been TNCs based in developed countries. Of late, European firms have replaced US firms and have become the largest acquirers accounting for more than two-fifth of all cross-border M&As in the developing countries. In 1999, the highest M&As among the top five countries belonging to both the regions are given below (Table 5). India does not figure among the top five developing countries either by sales or by purchases.

Table 3 : Total Cross-Border Mergers & Acquisitions by Developed Countries

(US $ Million)

Year		European Union	% of 10	Other Western Europe	% of 10	North America	% of 10	Other Developed Countries	% of 10	Total Developed Countries
1	2	3	4	5	6	7	8	9	10	11
1987	P	32617	45.4	452	0.6	32138	44.7	6668	9.3	71874
	S	12761	17.5	448	0.6	57918	79.6	1677	2.3	72804
1988	P	40141	35.4	9549	8.4	38577	34.0	25146	22.2	113413
	S	31012	27.5	3262	2.9	72641	64.4	5834	5.2	112749
1989	P	71365	52.6	2900	2.1	47862	35.2	13659	10.1	135786
	S	47358	35.0	1591	1.2	79233	58.6	7123	5.3	135305
1990	P	86525	60.4	6043	4.2	30766	21.5	19883	13.9	143216
	S	62133	46.3	5237	3.9	60427	45.0	6442	4.8	134239
1991	P	39676	51.1	2797	3.6	20702	26.7	14461	18.6	77635
	S	36676	49.5	1844	2.5	31884	43.1	3654	4.9	74057
1992	P	44391	59.6	5362	7.2	17190	23.1	7488	10.1	74431
	S	44761	65.3	1070	1.6	18393	26.8	4337	6.3	68560

(Contd.)

Table 3 : Total Cross-Border Mergers & Acquisitions by Developed Countries (Concld.)

(US $ Million)

Year		European Union	% of 10	Other Western Europe	% of 10	North America	% of 10	Other Developed Countries	% of 10	Total Developed Countries
1	2	3	4	5	6	7	8	9	10	11
1993	P	40531	55.9	2478	3.4	25534	35.2	3955	5.5	72498
	S	38537	55.7	2061	3.0	22291	32.2	6237	9.0	69127
1994	P	63857	54.8	12086	10.4	33610	28.8	7044	6.0	116597
	S	55280	49.9	1982	1.8	49093	44.3	4464	4.0	110819
1995	P	81417	46.9	11122	6.4	69833	40.2	11360	6.5	173732
	S	75143	45.7	3971	2.4	64804	39.4	20672	12.6	164589
1996	P	96674	48.8	13954	7.0	69501	35.1	18128	9.1	198257
	S	81895	43.4	6617	3.5	78907	41.8	21303	11.3	188722
1997	P	142108	52.2	11928	4.4	99709	36.7	18297	6.7	272042
	S	114591	48.8	6958	3.0	90217	38.4	22983	9.8	234748
1998	P	284373	55.6	40285	7.9	173039	33.8	13733	2.7	511430
	S	187853	42.2	6258	1.4	225980	50.8	24761	5.6	445128
1999	P	497709	73.5	21781	3.2	131131	19.4	26675	3.9	677296
	S	344537	53.5	9668	1.5	257862	40.0	32523	5.0	644590

Note : Regions may not add up to total. P : Purchases, S: Sales.
Source : Worlds Investment Report 2000, United Nations.

Table 4 : Total Cross-Border Mergers & Acquisitions by Developing Countries

(US $ Million)

Year		Africa	% of 13	Latin America & Caribbean	% of 13	Developing Central and Eastern Europe	% of 13	Asia	% of 13	India	% of 13	Total Developing Countries
1	2	3	4	5	6	7	8	9	10	11	12	13
1987	P	100	3.8	142	5.4	8	—	2372	90.7	—	—	2614
	S	143	8.4	1305	76.6	—	—	256	15.0	—	—	1704
1988	P	—	—	100	4.6	—	—	2080	95.4	22	1.0	2180
	S	—	—	1305	45.4	—	—	1569	54.6	—	—	2875
1989	P	—	—	992	24.9	6	—	2998	75.1	11	0.3	3990
	S	1039	20.5	1929	38.1	27	—	2089	41.3	—	—	5057
1990	P	—	—	1597	22.7	—	—	5438	77.3	—	—	7035
	S	485	3.0	11494	71.6	289	—	4073	25.4	5	0.0	16052
1991	P	229	7.5	387	12.7	14	—	2441	79.8	1	0.0	3057
	S	37	0.6	3529	60.4	880	—	2182	37.4	—	—	5838
1992	P	—	—	1895	39.3	22	—	2624	54.4	3	0.1	4827
	S	177	2.2	4196	51.7	2734	33.7	3614	44.5	35	0.4	8119
1993	P	—	—	2507	24.0	120	1.1	7843	75.1	219	2.1	10439
	S	301	2.4	5110	40.0	1178	9.2	7347	57.5	96	0.8	12782

(Contd.)

Table 4 : Total Cross-Border Mergers & Acquisitions by Developing Countries (Concld.)

(**US $ Million**)

Year		Africa	% of 13	Latin America & Caribbean	% of 13	Developing Central and Eastern Europe	% of 13	Asia	% of 13	India	% of 13	Total Developing Countries
1	2	3	4	5	6	7	8	9	10	11	12	13
1994	P	16	0.2	3653	35.9	329	3.2	6486	63.8	109	1.1	10164
	S	154	1.0	9950	66.7	1419	9.5	4701	31.5	385	2.6	14928
1995	P	41	0.3	3951	30.9	59	0.5	8755	68.5	29	0.2	12779
	S	200	1.3	8636	54.1	6050	37.9	6950	43.5	276	1.7	15966
1996	P	618	2.2	8354	29.7	504	1.8	19136	68.0	80	0.3	28127
	S	700	2.0	20508		3679	10.6	13368	38.5	206	0.6	34700
1997	P	34	0.1	10720	32.9	275	0.8	21690	66.6	1287	4.0	32554
	S	1682	2.6	41103	63.7	5764	8.9	21293	33.0	1520	2.4	64573
1998	P	160	0.8	12640	65.8	1008	5.2	6399	33.3	11	0.1	19204
	S	675	0.8	63923	79.2	5120	6.3	16097	19.9	361	0.4	80755
1999	P	406	1.0	24939	60.5	1553	3.8	15875	38.5	21	0.1	41245
	S	591	0.9	37166	57.6	10561	16.4	25262	39.1	776	1.2	64550

P: Purchases
S: Sales
Source: World Investment Report 2000, United Nations.

Table 5 : Cross-border M&As : Top Five Countries During 1999

Developed Countries		Developing Countries	
Name of Country	**Amount ($ million)**	**Name of Country**	**Amount ($ million)**
1	2	3	4
A. By Sales		**A. By Sales**	
1. United States	233032	1. Argentina	19183
2. U.K.	125403	2. Brazil	9396
3. Sweden	59618	3. Rep.of Korea	9057
4. Germany	41938	4. Chile	4032
5. Netherland	38497	5. Poland	3561
B. By Purchases		**B. By Purchases**	
1. U.K.	209543	1. Bermuda	18815
2. United States	112426	2. Iran	4382
3. Germany	84421	3. Singapore	4048
4. France	82951	4. Brazil	1901
5. Netherlands	48429	5. Mexico	1839

Source : World Investment Report 2000, United Nations.

Impact of M&As on Corporate Performance

Most of the empirical studies on M&As focus on domestic M&As and have used data from the US and the UK, where M&As have been prevalent since the beginning of the last century. The conclusions drawn from these studies may not be true in case of developing countries and economies in transition. Moreover, the experience of the 1990s has not been fully explored in the literature except a few recent surveys (AT Kearney, 1999; KPMG, 1999). Besides, it may not be possible to factor in what would have happened to a firm, had merger or acquisition not taken place.

The post-merger performance of the firms could be measured in several ways. One way to measure the performance is to monitor the share prices after the merger or acquisition deal is struck, that is "event studies" which assumes that stock markets are efficient. Empirical studies of this type indicate that a target firm's shareholders benefit and the bidding firm's shareholders

generally lose (Franks & Harris, 1989). All the major episodes of M&A waves occurred in periods of economic expansion, high liquidity, rising stock prices and an influx of new participants into financial markets. Therefore, it is not surprising that each merger movement was terminated by a stock market crash or a recession or both (Boff & Herman,1989). In view of this, share prices may not be true indicators of the company's performance, particularly when capital markets are underdeveloped and/or inefficient.

Another set of studies evaluate the impact of M&As in terms of various measures of profitability before and after M&As. This type of industrial organisation studies normally consider longer time horizons than the event studies. Most of the firms do not show significant improvement in long term profitability after acquisition (Scherer, 1988). There are some studies which have concluded that conglomerate M&As provide more favourable results than horizontal and vertical M&As (Reid, 1968; Mueller, 1980). Moreover, some evidence indicates that cross-border M&As may outperform domestic ones, although several recent surveys have found a high failure rate among cross-border deals (Morosini *et al*. 1998). Broadly speaking large number of M&As failed both in terms of share prices and profitability than those who did not enter into M&As. However, the picture is more positive with regard to the target companies.

Modern firms are not necessarily profit maximisers. Studies relating to profitability after M&As may not, therefore, be sufficient to evaluate the corporate performance. Oligopolist firms may like to increase their market share through higher output, employment, capital stock and material purchases etc. It is, therefore, useful to examine the relative efficiency of the firms after M&As. This could be accomplished by measuring improvement in the *total factor productivity* compared to the industry average at any point of time or productivity trends before and after ownership change over a period of time. Major findings in productivity studies support the hypothesis that changes in ownership are associated with significant improvements in total factor productivity (Lichtenberg and Siegal, 1992). In fact, important

indicators of firm activities like output, employment, capital stock and material purchases tend to decline at an accelerating rate prior to ownership change and gradually increase for several years following the change. The relative efficiency of leveraged buyout plants (LBOs) is significantly higher after the buyouts than it was at any time before the buyout. The efficiency increase is particularly large in the case of management buyouts (MBOs) (Lichtenberg, 1992).

Section III

Recent Trends in M&As in India

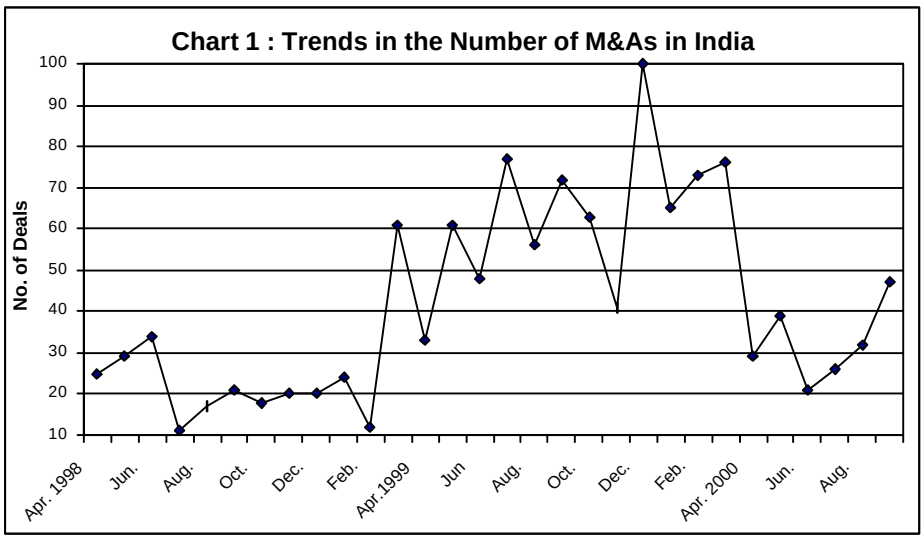
Indian industries are undergoing structural changes in the post-liberalisation period. Competitive pressures are high not only due to deregulation but also due to globalisation. As a part of the restructuring programme, the first merger wave in India is underway in the second half of the 1990s. The data presented in Table 6 reveal that, in recent years, there was a substantial growth in the M&A activities in India. The total number of M&A deals in 1999-2000 was estimated at 765, which is 162 per cent higher than the total number of estimated deals in the previous year (292). What is noticeable during 1999-2000 is the rise in the number of approvals in each month of the year (average of around 64), as compared to the months in the previous year (average number 24). During the current fiscal year up to September, the total number of deals was relatively lower at 194, a decline of 44.1 per cent as compared to the total number of deals during the corresponding period in the previous year (Chart 1).

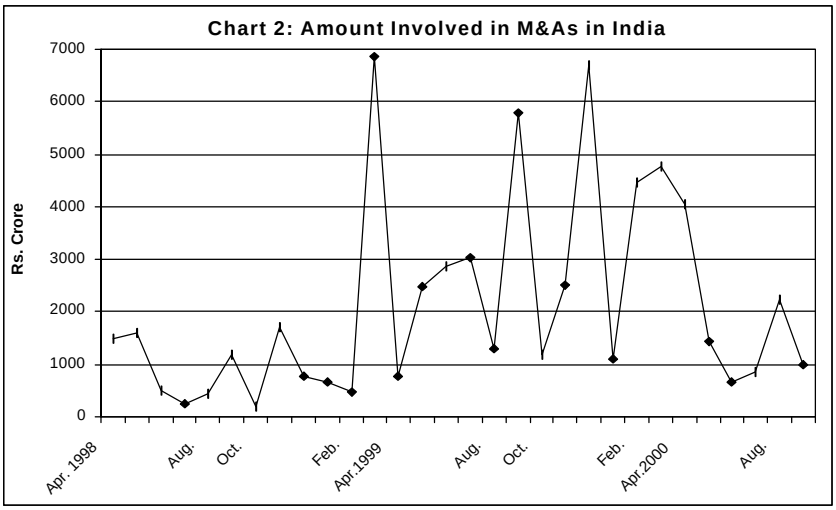
Along with the rise in the number of M&A deals, the amount involved in such deals has risen over time. During 1999-2000, M&As were worth Rs.36,963 crore, which was 130 per cent higher than the amount of M&A deals in the previous year (Rs. 16,070 crore). During the current year up to September, the deals were made worth Rs. 10,261 crore, which is 36.9 per cent lower than the amount of deals made during the corresponding period of the previous year (Table 6 and Chart 2).

Table 6 : Mergers and Acquisitions in India

	No. of Deals			Amount (Rs. crore)		
	1998-99	1999-2000	2000-01	1998-99	1999-2000	2000-01
1.	2.	3.	4.	5.	6.	7.
April	25	33	29	1477	775	4051
May	29	61	39	1585	2477	1423
June	34	48	21	485	2873	675
July	11	77	26	238	3040	868
August	17	56	32	445	1307	2246
September	21	72	47	1187	5784	998
October	18	63	NA	199	1182	NA
November	20	41	NA	1699	2498	NA
December	20	100	NA	780	6694	NA
January	24	65	NA	651	1107	NA
February	12	73	NA	474	4469	NA
March	61	76	NA	6851	4757	NA
Total	**292**	**765**	**194 @**	**16070**	**36963**	**10261@**

@ : April-September. NA : Not Available.
Source: Centre for Monitoring Indian Economy.





Trends in Mergers

The total number of mergers in 1999-2000 was 193, which is 141.3 per cent higher than the total number of mergers in 1998-99. From the limited available data, it appears that mergers account for around one-fourth of total M&A deals in India. It implies that takeovers or acquisitions are the dominant feature of M&A activity in India (Table 7), similar to the trend in most of the developed countries.

Table 7 : Share of Mergers in Total M&As in India

	1998-99			1999-2000		
Months	**Total No. of M&As**	**Number of Mergers**	**% Share of Mergers**	**Total No. of M&As**	**Number of Mergers**	**% Share of Mergers**
1	**2**	**3**	**4**	**5**	**6**	**7**
April	25	18	72.0	33	15	45.5
May	29	5	17.2	61	17	27.9
June	34	6	17.6	48	12	25.0
July	11	3	27.3	77	12	15.6
August	17	2	11.8	56	20	35.7
September	21	4	19.0	72	15	20.8
October	18	2	11.1	63	14	22.2
November	20	12	60.0	41	16	39.0
December	20	4	20.0	100	24	24.0
January	24	13	54.2	65	11	16.9
February	12	2	16.7	73	16	21.9
March	61	9	14.8	76	21	27.6
Total	**292**	**80**	**27.4**	**765**	**193**	**25.2**

Note: Data are provisional.
Source: Centre for Monitoring Indian Economy.

Trends in Open Offers

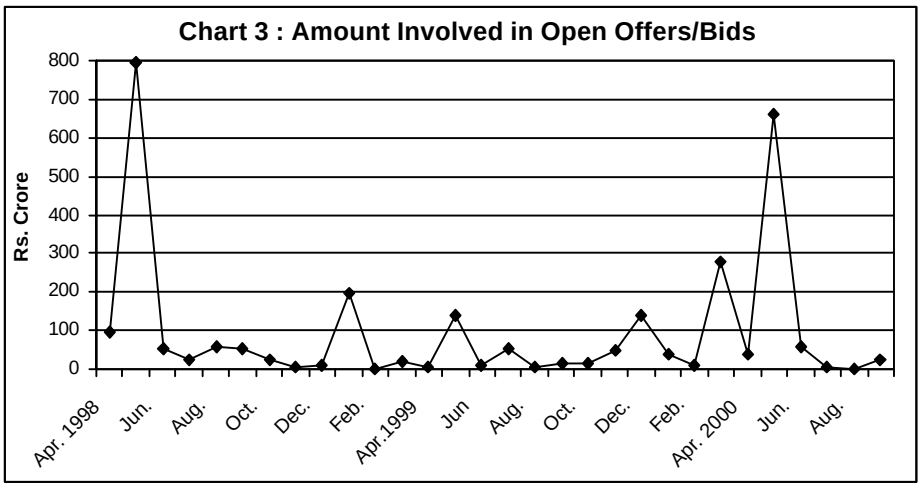
Along with the rise in M&As, there was also an increase in the number of open offers, *albeit* at a lower pace. The number of open offers rose by 27.5 per cent to 88 in 1999-2000 from 69 in 1998-99. However, the amount involved in the open offers rose by around 44.0 per cent during the above period. During the current financial year up to September, the number of open offers rose by 34 per cent and the amount by 252.2 per cent (Table 8 and Chart 3). During 1998-99, the number of open offers were mostly in industries like software, cement, chemical industries and pharmaceuticals.

Table 8 : Open Offers/Bids

Month	No. of Open Offers/Bids			Amount (Rs. crore)		
	1998-99	1999-00	2000-01	1998-99	1999-00	2000-01
1	2	3	4	5	6	7
April	8	9	6	97.0	4.8	38.2
May	8	7	9	793.9	136.7	660.8
June	8	2	2	54.8	11.1	56.7
July	2	4	2	22.2	50.4	2.4
August	5	4	5	56.4	4.4	1.4
September	7	3	6	50.9	14.6	22.3
October	5	6	NA		14.6	NA
	3	5		7.0	48.1	
December	4		NA	10.4		NA
January		6	NA		38.7	NA
	1	13		0.3	8.4	
March	7		NA	17.2		NA
Total		**88**	**30**	**1326.7**	**745.8**	**@**

@ : April-September. NA : Not available.

Source: Centre for Monitoring Indian Economy.



Sale of Assets

Sale/transfer of assets are not included in the M&A announcements reported in Table 6. However, companies often have to shrink and downsize their operations for various reasons.[5] This may be due to poor performance of some divisions of the company or because the affected divisions no longer fit into the firm's future plan of action. Restructuring may also be necessary to undo a previous merger or acquisition that proved unsuccessful. During 1999-2000, the number of sale/transfer of assets was higher at 212, as compared to 72 in 1998-99. The lower level of sale of assets in 1998-99 can be partly explained in terms of lower FDI flows during that year. During the current financial year up to September, the number of sale of assets was lower at 50 as against 146 in the corresponding period in the previous year (Table 9).

Table 9 : Number of Sale/Transfer of Assets

Item	1997-98	1998-99	1999-2000	1999-00 April-September	2000-01 April-September
Total No. of Sales/ Transfer of Assets	316	72	212	146	50
% Change	NA	**-77.2**	**194.4**	**—**	**-65.7**

NA : Not available.

Source: CMIE, *Economic Intelligence Service, Monthly Review of the Indian Economy*, various issues.

Industry-wise M&As

Industry-wise, the largest number of mergers have occurred in

number of mergers/takeovers, were chemicals, textiles, electrical and electronic industry, hotels, and pharmaceuticals. Of late, M&As

are taking place in India. During the three year period 1997 to 1999, nearly 40 per cent of FDI inflows in India have taken the

sectors like banking and financial services, advertising and other business services and travel agencies (Kumar, 2000).

the entry of TNCs. Instead of setting up fresh greenfield capacities, they preferred to either acquire existing companies or

developments, *viz.*,
M&A activities, and ii) economic liberalisation measures and introduction of Takeover Code in India. The cross-border M&As

years, the condition was somewhat subdued (Table 4).

There is a virtual absence of empirical work on the impact of

limitation that prohibits any meaningful empirical research in this area. Secondly, M&As being a recent phenomenon, adequate data

However, it is a potential area of research on the issues raised in the previous section.

Section IV

Regulatory Framework for M&As and the Role of Competition Policy

Regulatory Framework for M&As

As M&As have implications for market dominance, concentration of economic power, and unfair practices, suitable regulatory mechanism for the orderly conduct of M&A activities is crucial. In India, mergers and amalgamations are governed by the provisions of Companies Act, 1956, while acquisition of companies comes under the provisions of Takeover Code of SEBI. In case of mergers and amalgamations, there are well laid down procedures for valuation of shares and protection of the rights of investors (SEBI, 1997).

In India, the institutional arrangement which has a bearing on the evolution of regulatory framework for M&As are: (i) various provisions of MRTP Act, 1969, (ii) Clause 40 of the Listing Agreement, (iii) amendments to Clause 40 in 1990, iv) creation of SEBI in 1992 and adoption of takeover code in 1994, v) Bhagwati Committee on Takeovers and adoption of a new code in 1997 and vi) amendments to the code in 1998. At present, the Takeover Code of the SEBI is the major regulatory mechanism relating to acquisition of companies.

Clause 40 of the Listing Agreement

Historically, the genesis of takeover regulation could be traced to the Monopolies and Restrictive Tade Practices (MRTP) Act, 1969. According to the MRTP Act, the Union Government can prevent an acquisition if it leads to concentration of economic power to the common detriment. Before SEBI came into existence, there were some attempts by the stock exchanges to regulate takeovers. A significant effort in this direction was incorporating Clause 40 in the listing agreement. Clause 40 provides for making a public offer to the shareholders of a company by any person who sought to acquire 25 per cent or more of the voting rights of

the company. However, the acquirer easily circumvented this Clause by garnering shares with voting rights just below the threshold limit of 25 per cent.

Hence, in 1990, the Government amended Clause 40 to

1992 and thereby SEBI has been empowered to regulate substantial acquisition of shares and takeovers. In November 1994, SEBI issued guidelines for substantial acquisition of shares and takeovers, which are widely referred to as Takeover Code 1994. Thus, for the first time, substantial acquisition of shares and takeovers became a regulated activity. These regulations introduced several new provisions allowing hostile take-overs, competitive bids, revision of open offer, withdrawal of open offer under certain circumstances, and restraining a second offer on the same company within six months by the same acquirer.

Bhagwati Committee on Review of Takeover Code

As there were many loopholes in the Takeover Code 1994, a committee, chaired by Justice P.N. Bhagwati, was appointed in November 1995 to review it. The prominent among the recommendations of the Bhagwati Committee were: mandatory public offer consequent to change in management control, additional disclosure in public announcements, definition of the term promoter, creeping acquisitions for consolidation of holdings, and inclusion of price in the preferential allotment for the purpose of calculating the minimum price for public offer. The Bhagwati Committee report also laid down circumstances in which the regulations did not apply, including transfer of shares among group companies, promoters and foreign collaborators, and acquisitions of shares by financial institutions in the ordinary course of business. The SEBI accepted Bhagwati Committee's recommendations, *albeit* with some minor modifications and they formed the basis of a revised takeover code adopted by SEBI in 1997, known as "SEBI (Substantial Acquisition of Shares and Takeovers) Regulations, 1997".

The new code provides for the acquirer to make a public offer for a minimum of 20 per cent of the capital as soon as 10 per cent ownership and management control have been acquired. The creeping acquisitions through stock market purchases over 2 per cent over a year also attracted the provision of public offer. In order to ensure compliance of the public offers, the acquirers are

required to deposit 50 per cent of the value of offer in an escrow account. Further, the acquirer has to disclose the sources of funds.

Reconstituted Bhagwati Committee

The Bhagwati Committee was reconstituted in 1998 to examine the provisions of "SEBI (Substantial Acquisition of Shares and Takeovers) Regulations, 1997" relating to consolidation of holdings, threshold limit and acquisitions during the offer period. The Takeover Code 1997 was amended in October 1998 on the basis of the recommendations of the re-constituted Bhagwati Committee. The major recommendations of the Committee, *inter alia*, include, revision of the threshold limit for applicability of the Code from 10 per cent acquisition to 15 per cent. The threshold limit of 2 per cent per annum for creeping acquisition was raised to 5 per cent in a year. The 5 per cent creeping acquisition limit has been made applicable even to those holding above 51 per cent, but below 75 per cent stock of a company.[6]

M&As and the Competition Policy

The competition policy is defined as those Government measures that directly affect the behaviour of enterprises and the structure of industry so as to promote efficiency and maximize welfare. Such a policy has two elements. First, it involves putting in place a set of policies that enhance competition in local and national markets. These would include a liberalised trade policy, reberalised foreign investment and ownership requirements and economic deregulation. Second, there should be legislation to prevent anti-competition business practices and unnecessary Government intervention.

The Need for Competition Policy

One of the major concerns about M&As is the concentration of market power. In the absence of an anti-trust regulation in India, there is a need for formulating competition policy so that M&As do not lead to concentration of market power. The need

for competition policy becomes particularly critical in a liberal FDI and industrial investment policy regime. An effective competition policy would promote the creation of a business environment, which improves efficiency, leads to efficient resource allocation and prevents the abuse of market power. In addition, competition law prevents artificial entry barriers and facilitates market access and complements other competition promoting activities. There is also a development dimension to the competition policy. In developing countries with liberalised trade and investment regimes, competition policy can provide a level playing field for domestic enterprises *vis-a-vis* subsidiaries of TNCs (Kumar, 2000). Thus, there is a need for a competition policy to deal with possible anti-trust implications of overseas mergers and dealing with M&As of Indian enterprises.

In India, the MRTP Act, 1969 and the Consumer Protection Act, 1986 (CPA) deal with the anti-competitive practices. However, the MRTP Act is limited in its scope and hence it fails to fulfil the need of a competition law in an age of growing liberalisation and globalisation. In this context, a High-Level Committee on Competition Policy and Law was set up in October 1999 under the chairmanship of Shri S.V.S Raghavan to examine the existing MRTP Act, 1969 for shifting the focus of the law from curbing monopolies to promoting competition and to suggest a modern competition law in line with international developments to suit Indian conditions. The Committee submitted its report in May 2000.

Raghavan Committee on Competition Policy

The Committee has examined several issues relating to competition policy & competition law which are analysed below:

Agreements among firms have the potential of restricting competition. Most laws make a distinction between “Horizontal” and “Vertical” agreements between firms. The Committee felt that the Competition Law should cover both these types of M&As, if it is established that they prejudice competition. However, the

agreements that contribute to the improvement of production and distribution and promote technical and economic progress, while allowing consumers a fair share of the benefits, should be dealt with leniently. On the contrary, certain anti-competitive practices, such as, blatant price, quantity bid and territory sharing agreements and cartels should be presumed to be illegal.

Abuse of dominance should be the key to Competition Policy/ Law. Abuse of dominance includes practices like restriction of quantities, markets and technical development. Predatory pricing, which is defined as a situation where a firm with market power prices the product below costs so as to drive the competitors out of the market, is generally prejudicial to consumer interests in the long run. This is because of the possibility that after elimination of competitors, the offending firm may start functioning as a monopolist. It is, therefore, desirable that predatory pricing be treated as an abuse, only if it is indulged in by a dominant undertaking.

Mergers should be discouraged, if they reduce or harm competition. The Committee did not favour monitoring of all mergers by the adjudicating authority, because very few Indian companies are of international size and there is a need for mergers as part of the growing economic process before Indian companies can compete with global giants. The Committee has, therefore, recommended pre-notification for a threshold limit for the value of assets of the merged entity at Rs. 500 crore or more and of the group to which the merged entity belongs at Rs. 2000 crore or more, both linked to the Wholesale Price Index. The potential efficiency losses from the merger need to be weighed against potential gains in adjudicating a merger. If within a specified period of 90 days, the adjudicating authority does not, through a reasoned order, prohibit the merger, it should be deemed to have been approved. The major recommendations of the Raghavan Committee are given in Annexure III.

Section V

Summary & Conclusions

The underlying motivations behind Mergers & Acquisitions are many. Therefore, it would be difficult to evaluate the success or failure of a merger or acquisition in terms of any single yard stick. Using alternative methods, the empirical literature has narrated the story of failure of M&As. Nevertheless, distinct merger waves across the world are real corporate events, which need to be reckoned with. Of late, cross-border M&As have emerged as an important mode of entry, as far as the foreign direct investment is concerned. Most of the countries by now, have adopted suitable regulatory system, particularly competition policy, to reduce the negative effects of M&As.

In the corporate history of India, the first merger wave is underway. This has assumed strong momentum in the post-liberalisation period, particularly in the second half of the 90s. India's share, however, remains very low so far as cross-border M&As are concerned. Although the liberalisation programme has progressed considerably, the degree of openness is perceived to be low by the overseas investors. The progress with respect to capital account convertibility has been gradual. Infrastructure bottlenecks are still a major problem. The second generation reforms, particularly the real sector reforms, are underway. A competition policy is being formulated which would take care of the issue of market dominance. Although quick and radical reforms have downside risks, opportunities should not be lost so that there could be an early restructuring of the Indian industries. This would not only increase productivity in the industrial sector but also address balance of payments problems in a number of ways. Besides the USA, India should encourage FDI flows from the Western European countries, particularly from the European Union, as they have been extremely active in cross-border M&As during the recent years. The outlook with respect to the current wave of international M&As is difficult to predict. As the recent upsurge in M&As in India roughly coincides with the current wave of

international M&As since the mid-1990s, India may experience, a temporary let off in M&As in consonance with the international pattern. However, the M&A activities are likely to continue in India with periodic upsurge depending on the economic conditions and activities in the capital market. The regulatory framework in India needs to be modulated carefully to prevent the likely adverse affects associated with M&As.

Notes

1. Board for Industrial and Financial Reconstruction (BIFR) was the nodal agency to arrange early M&As in India.

2. The anti-trust environment of the 1920s was stricter than that which prevailed before the first merger wave. In fact, as the Sherman Act, 1890 was not effective, the Clayton Act was passed in 1914.

3. In the literature, often distinction is made between cross-border M&As and greenfield investment. For details about the debate, please see Annexure II.

4. Data on cross-border M&As are systematically collected by the United Nations only from 1987 onwards.

5. With the process of M&As in India, acquisition of brands has also started as part of the restructuring process.

6. The takeover code is being reviewed in the light of the recent controversy relating to the takeover attempt of Bombay Dyeing by Bajoria group.

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Annexure I

Motivations for Mergers and Acquisitions

Firms can grow either through M&As or through organic growth. There are several reasons as to why firms prefer to grow *via* M&As. The motivations behind M&As are : a) speed, b) removal of inefficient firms, c) short-term financial gains, d) efficiency gains through synergies, e) search for new market, increased market power and market dominance, f) diversification, and above all, g) access to proprietary assets for personal gains.

M&As often provide the fastest means of reaching the desired goal of expanding the firm activities, both domestically and internationally. For a late-comer to a market, M&As can provide an opportunity to catch up rapidly with the existing firms. For example, takeover is far more preferable to developing a new marketing network or a local distribution system.

Traditionally, M&As are preferred to remove the inefficient firms. As a matter of fact, no firm is equally inefficient in all lines of business. Therefore, it is often better to concentrate on core competencies rather than expand the empire through conglomerate M&As. Shedding of inefficient units not only improves the overall performance of the parent firm but also increases the shareholders' value of the ailing unit in the hands of a new management.

One of the major driving forces behind the recent M&As is the short term financial gains. Stock markets often do not reflect the true value of a firm. The acquirer may anticipate the earnings of a firm to be higher in future. Inefficient management of the firm, imperfections in the capital market and exchange rate misalignment often provide short term capital gains to the prudent acquirer. Moreover, some M&As are undertaken purely for tax planning.

The most significant justification for M&As cited in the literature is probably the anticipated efficiency gains through synergies. The synergy may be static that can reduce cost of

production or enhance revenue at a given point of time; or it may be dynamic which can improve the overall performance through scale and scope economies over a period of time. Static synergies may arise due to pooling of management resources, sharing of marketing and distribution networks, greater bargaining power in purchases, avoidance of duplication of expenditures like R & D etc. The static gains are generally high in case of automative and defence industries. Dynamic gains spring from matching of complementary resources and skills that enhance the firm's innovative capabilities with a positive effect on sales, market shares and profits over a long period of time. Industries that are innovation-driven, such as information technology and pharmaceuticals are more suitable for achieving dynamic synergies under M&As.

Search for a new market is considered as one of the important motivations for M&As. When the domestic markets are saturated, firms prefer overseas markets for expansion. Through M&As, firms can quickly access overseas markets, increase market power and market dominance through immediate access to local network of markets, clients and indigenous skills. The recent expansion of crossborder M&As has, in fact, facilitated many TNCs to acquire oligopolistic positions across the world.

Diversification is often attributed as a driving force behind M&As. The economic reason behind conglomerate M&As is the desire to reduce risk through product and geographical diversification. Risk-averse firms not only acquire domestic firms to reduce cost of production, but also spill over to foreign markets partly to circumvent tariff and non-tariff barriers and thereby reduce the level of uncertainty associated with a single market. Of late, product diversification has become less important vis-a-vis geographical diversification which has led to sharp rise in cross-border M&As.

Sometimes, managers pursue their self-interests for personal gains. Access to proprietary assets provides an opportunity to increase their size of operation, particularly where corporate governance is weak. The "empire building" motive of the modern managers offers prestige, power and job security even when the M&As are not technically efficient to increase the shareholders' value.

Annexure II

Cross-Border M&As *versus* Greenfield Investment

A firm can enter a host country either through cross-border M&As or through greenfield investment. Both modes of entry are included in the foreign direct investment flows. It is often debated that M&As as a mode of entry are less beneficial for economic development of the host country than greenfield investment. Arguments in favour of this hypothesis are as follows: Cross-border M&As do not add to productive capacity at the time of entry, but simply transfer ownership and control from domestic to foreign firms. This transfer is often accompanied by layoffs and/or closing of certain activities. Moreover, foreign owners need to be serviced in foreign exchange. If the acquirers are global oligopolists, M&As may lead to market dominance. Cross-border M&As, in fact, tend to reduce competition in the domestic market. The commercial objectives of TNCs and the development objectives of host country may not necessarily coincide. Sometimes, M&As in industries like media, defence, entertainment may threat national culture and even erode national sovereignty. In addition, TNCs are thought to benefit disproportionately while host country firms are being affected adversely.

The negative impact of cross-border M&As need to be evaluated dispassionately so as to derive sensible conclusion in the context of recent wave of liberalisation in general and globalisation in particular. Most of the shortcomings of cross-border M&As may be valid at the time of entry or soon after entry. Over a longer term, when both direct and indirect effects are taken into account, most of the differences between two modes of FDI flows disappear. In fact, cross-border M&As are often followed by sequential investments by the foreign acquirers. If sequential investments take place, cross-border M&As can generate employment over time. Although transfer of technology is not immediate at the time of entry, cross-border M&As are no less inferior to greenfield investment as regards transfer of new and better technology over a period of time. Under exceptional circumstances,

cross-border M&As may play a crucial role, a role that greenfield FDI may not be able to play. FDI through M&As can bring in capital faster than greenfield investment, particularly when capital is needed urgently to tackle a crisis situation.

Cross-border M&As and greenfield investments are often perceived as alternative modes of entry of the foreign capital from the perspectives of both host country and TNCs. But they are rarely perfect substitutes for each other. From the host country's perspective, substitutability depends on the level of development, FDI policy and the institutional framework (UN 2000). In the developed countries with a large pool of strong private enterprises and well-functioning markets, both modes may be alternative options; but this may not always be the case in developing countries or the economies in transition. In general, higher the level of development of the host country, the larger the supply of firms that may be targeted for cross-border M&As. The liberalisation of FDI policy has gone too far. In many cases, liberalisation policy does not discriminate between the two modes of FDI. However, in a number of developing countries, certain restrictions are imposed on foreign takeovers. Even in some developed countries, authorisation is needed for the acquisition of companies in certain strategic sectors.

Institutional framework, like good corporate governance and competition policy, plays crucial role in balancing between cross-border M&As and greenfield investment. As these institutional arrangements are generally weak in the developing countries, the possibility of cross-border M&As causing unexpected harm is not ruled out. Nevertheless, FDI through M&As supplements domestic savings similar to greenfield investment. When domestic firms are otherwise not viable and, therefore due for closure, cross-border M&As act as a "life saver" of the firms in the host country. When globalisation is inevitable, it is wise to seize the opportunities through necessary regulatory changes.

Annexure III

Major Recommendations of the Raghavan Committee

III.1 Recommendations Relating to Pre-requisites for Competition Policy and Law

* The Industries (Development and Regulation) Act, 1951 may no longer be necessary except for location (avoidance of urban-centric location), for environmental protection and for monuments and national heritage protection considerations.

* There should be a progressive reduction and ultimate elimination of reservation of products for the small scale industrial and handloom sectors. However, cheaper credit in the form of bank credit rate linked to the inflation rate should be extended to these sectors to make them competitive. The threshold limit for the small scale industrial and small scale services sectors needs to be increased.

* All trade policies should be open, non-discriminatory and rule-bound. All physical and fiscal controls on the movement of goods throughout the country should be abolished.

* The Government should divest its shares and assets in State monopolies and public enterprises and privatize them in all sectors except those subserving defense needs and sovereign functions.

* The Industrial Disputes Act, 1947 and the connected statutes need to be amended to provide for an easy exit to the non-viable, ill-managed and inefficient units.

* The Board for Industrial and Financial Reconstruction (BIFR) needs to be eliminated and the Sick Industrial Companies Act (SICA) be repealed.

* The Urban Land Ceiling Act (ULCA) should be repealed.

III.2 Recommendations on State Monopolies and Regulatory Authorities

* The State Monopolies, government procurement and foreign companies should be subject to the Competition Law.

* All decisions of the Regulatory Authorities can be examined under the touchstone of Competition Law by the proposed Competition Commission of India (CCI).

* Bodies administering the various professions should use their autonomy and privileges for regulating the standard and quality of the profession and not to limit competition.

* If quality and safety standards for goods and services are designed to prevent market access, such practices would constitute abuse of dominance/exclusionary practices.

III.3 Recommendations on The Indian Competition Act and Competition Commission

The Committee recommended that a new law called "The Indian Competition Act" may be enacted. The MRTP Act, 1969 may be repealed and the MRTP Commission wound up. The provisions relating to unfair trade practices need not figure in the Indian Competition Act as they are presently covered by the Consumer Protection Act, 1986.

A competition law authority called the “Competition Commission of India” (CCI) may be established to implement the Indian Competition Act. It would hear competition cases and also play the role of competition advocacy. The CCI would have the power to formulate its own rules and regulations to govern the procedure and conduct of its business. It will have the powers to impose fines and punishment, to award compensation and review its own orders. All the pending monopolistic trade practices (MTP) and restrictive trade practices (RTP) cases in MRTP Commission may be taken up for adjudication by the proposed Competition

Commission of India (CCI) from the stages they are in. The Committee's recommendations are relevant in the context of providing a legal framework for promoting competition in our economy which is opening up in the context of industrial restructuring and the on-going globalisation process.

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Special Note

Design Issues in Micro Credit

Suddhasattwa Ghosh*

Micro credit interventions are being increasingly recognized in India, as in other countries, as an effective tool for achieving the distributional objectives of monetary policy which contribute to socio-economic welfare. This study takes a close look at a major micro credit provider in India and seeks to analyse the problems and prospects of designing and implementing a viable micro credit dispensation route in India.

Introduction

In the recent period, considerable emphasis has been placed on strengthening credit delivery mechanisms with special focus on the promotion of micro credit enterprises in the dispensation of rural credit. In India, as in other countries, micro credit groups are being recognized by policy authorities as an effective tool for achieving the distributional objectives of monetary policy. Indeed, the increasing focus on micro finance institutions in recent times has come as a response to the perceived inadequacies of existing agencies for providing productive credit to those with little or no previous access to formal credit facilities. In this context, the Reserve Bank of India (RBI) set up a Micro Credit Special Cell in April 1999 which submitted its report in January 2000. Earlier, the National Bank for Agriculture & Rural Development (NABARD) appointed a Task Force on Supportive Policy and Regulatory Framework for Micro Credit in November 1998 whose report has also been presented. These two reports have guided the shaping of policy initiatives on micro credit in successive half-yearly reviews of monetary and credit policy since April 2000.

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Further, the Union Budget for 2000-01 has underscored the promotion of micro enterprises set up by vulnerable sections of society especially in rural areas. During 1999-2000, loan disbursements by banks to such groups have more than doubled and it is envisaged that an additional 1 lakh Self-Help Groups (SHGs) would be covered by schemes managed by NABARD and Small Industries Development Bank of India (SIDBI) by 2000. Against this background, this paper undertakes a study of a major micro credit provider in India, i.e. the Ahmedabad-based Mahila Self-Employed Women's Association (SEWA) Sahakari Bank, popularly known as the SEWA Bank, with a view to understanding the key issues in provision of micro credit in India.

The paper is organized into four sections. Section I sets out the methodology adopted for pursuing this study. In Section II, the stylized facts about SEWA Bank are detailed out. The analysis of findings is given in Section III and Section IV contains broad conclusions.

Section I

Methodology

In view of the relative neglect of the subject of micro credit in the literature available especially in India, this paper has relied largely on the interview method for eliciting quantitative and qualitative information. As predesigned questionnaires are structured and relatively fixed, these usually do not leave much scope for interaction between the researcher and the respondents. The methodology used in this study, therefore, is quasi-experimental as it involves free interface with the management of the micro credit institution, on the one hand, and randomly selected member-borrowers, on the other. During the field visit(s) to Mehendikuan, Dariapur, Alampura and Jamalpur areas in Ahmedabad, 35 SEWA Bank members were interviewed. This afforded a first-hand opportunity to understand the savings and borrowing behaviour of the members. These members were scattered throughout the city and were picked up randomly. The majority of interviewees were in the age group of 40-50 years. They included bidi rollers, block

printers, paper pickers, vegetable vendors and ready-made garment stitchers.

Section II

The Stylized Facts

The SEWA Bank, an offshoot of the Ahmedabad-based Self-Employed Women's Association (SEWA), commenced operations in 1974 as a novel experiment in financing the women's labour movement. Its genesis can be traced back to the dearth of working capital and operating surplus for poor self-employed women workers and the problems they confronted in their day-to-day business activities. On the one hand, SEWA Bank's thrust has been on acquainting women workers with the banking habit; on the other, it has also sought to activate its supply of services with a view to integrating the unserved groups into the system and providing credit facilities to them for income-generating activity. With its exclusive woman clientele, mostly illiterate and poor, the SEWA Bank has come to be regarded as an important and effective tool for poverty alleviation, individual and household security and as a harbinger of social change.

The SEWA Bank is registered as an urban co-operative bank and regulated by the Banking Regulation Act, 1949 and Gujarat Co-operative Societies Act. It also comes under the Indian Trusts Act 1882. It operates in five districts of Gujarat : Ahmedabad, Kheda, Banaskantha, Gandhinagar and Mehsana with nine collection centres in Ahmedabad. The bank is owned by the self-employed women as shareholders and policies are made by their own elected Board of women workers.

About 80 to 87 per cent of the total working capital of the bank has come from members' savings. The composition of these savings has, however, changed over time under the impact of financial planning and conversion of savings into investments. In the absence of any physical collateral, savings performance enables the bank to assess the creditworthiness of a borrower in lieu of

collateral. A financial profile of the SEWA Bank is given in Table 1.

Table 1 : Performance Indicators

	1996-97	**1997-98**	**1998-99**	**1999-2000* (Provisional)**
Net Profit	Rs.17.87 lacs	Rs.17.58 lacs	Rs.22.59 lacs	Rs. 18 lacs
Working Funds	Rs. 17 crores	Rs. 21 crores	Rs. 26 crores	Rs. 31 cr.
% of Net Profit to Working Funds	1.1%	0.83%	0.86%	0.58%
Loans & Advances	Rs.6.51 cr.	Rs.8.65 cr.	Rs.9 cr.	Rs.9.38 cr.
NPA	Rs.1.82 cr.	Rs.1.75cr.	Rs.2.22 cr.	N/A
% of NPA**	28.01%	20.2%	24.64%	N/A

* : Relates to April - December, 1999.
** : % of NPA has since come down to 19% as on 30/09/2000.

The scale and outreach of the SEWA Bank' operations stand out even more when compared to the extent of SHG-bank linkage achieved in the state of Gujarat. While the average volume of advances for SEWA Bank has been hovering around Rs. 9 crore annually for the last few years, it has been rising steadily during this period. On the other hand, as per data received from Ahmedabad office of NABARD, credit extended to SHGs by all banks in Gujarat taken together in 1999-2000 amounts to a little less than Rs. 1 crore only.

Micro credit is thus one kind of support within a whole spectrum of services provided by SEWA like savings and credit, health care, childcare, insurance, legal aid, capacity building and communication services. Taking a holistic approach, SEWA has helped women take a number of initiatives in organising these services for them. Some of the supportive services like savings and credit, health and childcare have formed their own co-operatives.

Section III

Analysis of Findings

Types of Financial Services Demanded

On the basis of the responses of the interviewees, the categories of financial services demanded are presented in Table 2, following an ordinal ranking scheme which is based on subjective orderings by interviewees.

Table 2 : Types of Demand for Financial Services on SEWA Bank

(i) Acquisition of House, Development & Repair
(ii) Working Capital for Business
(iii) Debt Repayment
(iv) Education & Marriage of Children
(v) Maternity
(vi) Getting Back Mortgaged/Pledged Assets
(vii) Accident
(viii) Death/Widowhood
(ix) Festivals
(x) Losses in Riots, Flood, Cyclone & Fire
(xi) Pilgrimage

Other Products Demanded

(i) Savings & Loans
(ii) Insurance Services[1]
(iii) Housing Finance[2]
(iv) New Products :
  (a) Financial Counselling
  (b) Daily/Weekly Loans
  (c) Rural Banking
  (d) Zatpat (Quick) Loans

Customer Expectations

Responses presented in Chart 1 clearly indicate a high interest-sensitivity of the majority of the member interviewees. 28 out of 35 interviewees want interest charged on loans to come down. This dispels the conventional wisdom that interest charged on credit ceases to be an issue in micro credit provision once informal sector-like timeliness of credit is ensured. Further, the clamour for better customer service should put micro credit providers on the 'deliver or else' kind of an alert.

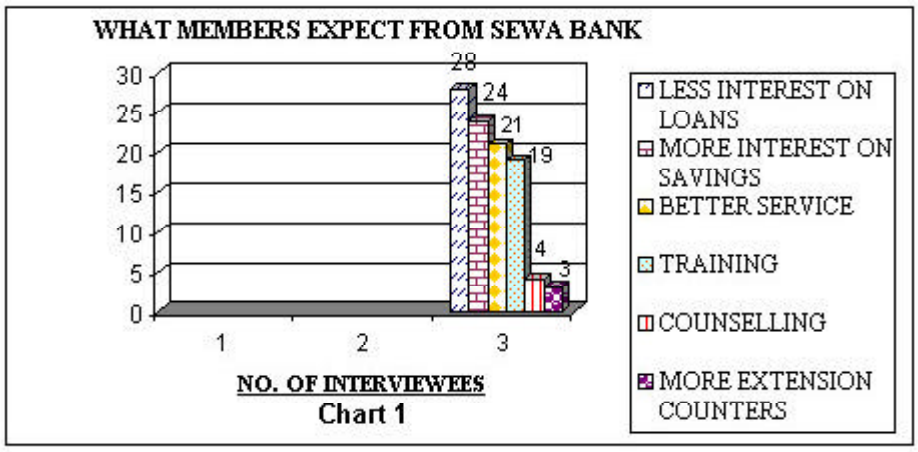


Chart 1

Federations as Conduits

In the light of RBI's recently framed guidelines granting banks freedom to choose conduits for micro credit delivery, it is interesting to note the SEWA Bank's increasing use of federations for financing in rural areas. Promoting district level federations was a part of the SEWA Bank's overall approach of creating grass-root level economic organisations owned by poor women. It has also been a part of their decentralization process with the objective of increasing outreach and focusing on district-level savings and credit activities. These federations are registered as Society and Trusts under Societies Registration Act and Trust Act. They promote savings and credit groups in the district, build savings capacity, monitor activities of such groups and provide

finance to these savings and credit groups. The main thrust of all these federations is to bring self-employed women to the mainstream. The main advantage to the bank due to its link with these intermediaries is the externalisation of a part of the work items of the credit cycle, viz. assessment of credit needs, appraisal, disbursal, supervision in transaction cost. The interaction among these federations at different levels, the membership base and the status of credit groups are shown in the Appendix.

Socio-economic Impact of SEWA Bank

Besides helping to improve levels of income and savings, the SEWA Bank has also been able to bring about enhancement in a number of social indicators such as housing, literacy and nutrition/ primary health care. The positive impact of access to resources clearly demonstrates an overriding concern of the women loan recipients for household well-being and makes a strong case for making micro credit women-centric. 85.7 per cent of the member-interviewees (30 out of 35) have better housing and 57.15 per cent of them (20 out of 35) have been able to set up enterprises, due to the SEWA Bank assistance (Chart 2).

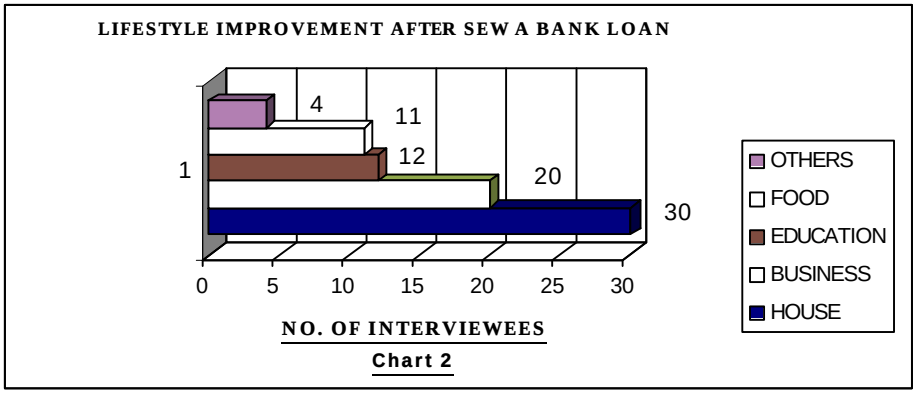
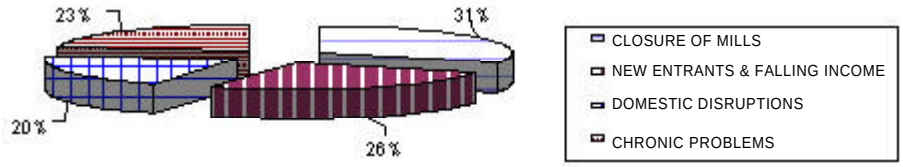


Chart 2

Many SEWA Bank members are home-based workers and therefore require housing finance for improvement in their living conditions and also for a better business set-up. While their initial loan requirements revolve mostly around housing and other infrastructure-related needs, the ratio of business loans to total credit extended has increased in case of repeat loans. Most members interviewed developed banking habits only on joining the SEWA Bank. While not many members had formal loan experiences before linkage to SEWA Bank, their earlier loan resources had been limited to moneylenders, relatives and others with a very high interest rate outgo of around 45 per cent. The effectiveness of the savings-loan linkage in micro credit is manifest in the members' urge to save primarily to secure their future and improve their lot by getting loans.

Overdues

Reasons for Not Repaying Loans
(Chart 3)



New entrants and falling income	26 per cent
Domestic disruptions	20 per cent
Chronic problems	23 per cent

As regards the increasing incidence of non-payment of loans and the consequent rise in overdues, the interface with the member-borrowers, as shown in Chart 3 and Table 3, revealed that (a) closure of textile mills in and around Ahmedabad, (b) entry of these displaced workers into activities like paper picking and bidi rolling thereby cutting into the earnings of existing paper pickers and bidi rollers, (c) major domestic disruptions like severe illness and death of a breadwinner and (d) chronic problems like poor health and alcoholism are the main economic stress events that place strains on household incomes and resources and thereby affect their repaying capacity adversely. The strong correlation between lack of incremental income and declining repaying capacity also came to the fore during this interface. This growth in overdues has hampered the recycling of scarce resources of the bank and affected its profitability over the years as well.

Identifying overdues as the major area of concern, the SEWA Bank has initiated the following corrective measures :

(i) A special team of 20 field workers called hand-holding teams has been created. They are allotted areas and loanees. Each pair, consisting of one literate and one illiterate woman, is responsible for 400 loanees. These illiterate women are from the same area and are elected leaders in their respective areas. The field workers are regularly visiting these loanees to learn about their lives, business and facilitate/counsel them on making their financial decisions.

(ii) Specially designed software has been provided to field workers in which area-wise, recommender-wise, occupation-wise information on overdue accounts are maintained and relative printouts are given to them. Computerisation has now also made available the services of a substantial part of the workforce, hitherto deployed in operational work-areas, for collection purposes.

(iii) Leaders from all areas and directors are called for weekly meetings and updated on the latest figures and next week's plans.

(iv) A Committee of senior-level organizers and some directors has been established for 02 months to closely monitor the recovery campaign.

(v) Daily targets are set and monitored regularly.

(vi) Pressure is being put increasingly on personal guarantors.

(vii) Legal action is being taken in difficult cases.

(viii) Integrated insurance scheme is being put in place that, among other things, would cover loss of assets in flood, cyclone, fire & riots.

(ix) As a long-term strategy, the bank is planning to introduce a daily collection system in market place, chawls, slums and other labourer-dominated areas.

Section IV

Concluding Observations

The analysis of the operations of the SEWA Bank affords us a microscopic view of the challenges confronting micro credit providers in India. Meeting these challenges for realization of a sustainable micro credit purveying system would require suitable and proactive micro credit policy responses. The recent guidelines on micro credit mark a positive beginning. Fine-tuning the policy responses henceforth to build on the beginning made is the task that lies ahead. Dialogue-based studies on micro credit providers in India acquire critical importance in this fast-emerging and relatively uncharted area of credit delivery. In fact, without the insights of the poor people, who have a long-overlooked capacity to contribute to the analysis of poverty, we may apprehend only part of the reality of poverty and its causes. The survival strategies of

the poor as brought out in such intensive interaction with them should fashion and sharpen the response initiatives.

In recent years there has been a marked growth in the number and outreach of micro credit providers in India. Most of these institutions have high average loan repayment rates – a powerful statistic to reinforce their sustainability. However, such interventions are sustainable only when rural households are resilient in the face of exogenous shocks. Livelihood diversification strategies of low-income urban/rural households and micro credit interventions that can best support such strategies should be the focus of providers like the SEWA Bank. In the absence of the usual collateral, only a regular savings habit identifies a creditworthy client. Hence even when a loan is being repaid, ongoing savings should be encouraged.

Equally important for ensuring the success of micro credit institutions is the role of the field worker within such institutions. This is especially true of institutions like the SEWA Bank that disburse loans on an individual case-by-case basis. Close interaction and familiarity between the field worker and her/his clients ensures that she/he is fully aware of the financial situation of the clients which, in turn, makes possible appropriate decisions on loan sanction, due follow-up on the amount disbursed and high repayment rates.

The organizational ethos, culture and attitude of institutions like the SEWA Bank would play an important role in micro credit intervention. Since the bank's problems were co-terminus with its evolution into a formal financial institution, it is imperative that any intended focus shift in its management involves transition from: (i) 'bureaucracy orientation' to 'informal institution orientation'; and (ii) 'procedure driven' to 'problem-solving driven' for this purpose. Decision-making should be decentralized and the span of control should be fairly limited. Modern information dissemination technology should be used extensively both for effective customer interface and identification of early warning signals for problem loan accounts.

The future strategy of micro credit institutions would need to build on the undernoted elements :

Firstly, there is an inescapable need for designing new and innovative loan and savings products especially in the light of the flexibility imparted by the recent micro credit guidelines. Indeed, these institutions should think of diversifying their loan portfolio and devising distinct product(s) addressing a particular niche taking into consideration the preferred attribute/possible use of credit.

Secondly, technical assistance and credit support to members is imperative for diversifying their income-generating activities.

Thirdly, these micro credit institutions must expand into rural areas. The rural financial sector is still not an integrated one and weaning the borrowers away from the informal sources of credit would require a major expansion drive for these institutions in rural areas.

Fourthly, financial counseling for making all income-generating pursuits sustainable and strict control over overheads should be combined with rigorous follow-up and an all-out concern for higher recovery.

In the medium-term, the strategy for these institutions may focus on the following :

(i) Micro Finance Institutions (MFIs) may be linked with insurance services. Such integrated insurance services should be provided to the clients/loanees of MFIs.

(ii) Separate Cell(s) should be created in MFIs for providing financial counseling to the poor clients. These poor people have not learnt to plan their lives and they should be taught and encouraged to think about their future. They should learn to reduce their unproductive expenses and save for their future.

(iii) Special training programmes should be designed and conducted for overdue monitoring.

Notes

1. Annual premium: Rs. 75/-. Coverage: (i) Sickness : Rs. 1,200/-; (ii)Accident : Rs. 3,500/; (iii) Natural Death: Rs. 3,000/-; (iv) Widowhood: Rs. 3,000/-; and (v) Losses in riots, flood, cyclone & fire: Rs. 5,000/-. The insurance scheme is linked to a fixed deposit saving of Rs. 750/- and premium is paid out of interest earned on this deposit. There is an added advantage of maternity benefit of Rs. 300/- for depositors. The coverage under the insurance scheme till March 1999 was 32,000 members.

2. As on 31/08/98, the bank has disbursed a total of Rs. 1.52 crores as housing loan to 12,015 women.

Appendix

Federations as conduits

1. Interactions at different levels

(a) State-level Federation (Executive Committee)
This includes elected representatives from District-level Associations.

⇓ ⇓

(b) District-level Associations
This includes elected representatives from Savings & Credit Groups of districts.

⇓ ⇓

(c) Savings & Credit Groups {Village level}

⇓ ⇓

(d) Individual Members

2. Membership Base

The Ahmedabad Savings & Credit Association: 6,868 members.
The Kheda Savings & Credit Association: 9,230 members.
The Gandhinagar Savings & Credit Association: 1,182 members.

3. The status of credit groups

Credit Groups	:	891
Membership	:	26,915
Saving Groups	:	1009
Membership	:	26,508
Savings (in Rs. Lakhs)	:	47.67

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Book Reviews

***Eight Lectures on India's Economic Reforms*, by T.N. Srinivasan, Oxford University Press, New Delhi : 2000**

India's structural reforms have been driven as much by the response to the balance of payments crisis of 1990-91 as by an animated and broad based debate that transcended national boundaries. The reforms represented a fundamental revision in the prevalent view regarding India's development strategy. At these cross roads, the political leadership of the day turned to leading economists at home and abroad, to assess this turning point of history, to engage in and generate discussion and thus shed light on the road ahead. Prof. T.N. Srinivasan was one of them. Readers will remember the refreshing flavour of his paper written jointly with Jagdish Bhagwati entitled "India's Economic Reform" in 1993 which became the white paper of the "reform" process. Since then Prof. Srinivasan's involvement with the evolution of the Indian economy has been continuous and intensive. His latest book entitled "Eight Lectures on India's Economic Reform" is a simple and lucid revisitation of the reform process undertaken in major sectors of the economy, *viz.*, agriculture, industry, foreign trade, infrastructure, education and health, financial sector and poverty eradication.

The political vicissitudes of the 1990s have clearly lent a sombre tone to the optimism of the 1993 paper. All through the lectures stress the role of enlightened political leadership in ensuring the success of reforms, in mobilising people by convincing them that reforms are in their own interest. A general flagging of hope runs like a common thread through all the eight lectures. Indeed, in this regard, Prof. Srinivasan is unguardedly critical of latest developments – nuclear testing, infrastructural constraints, fiscal deficits. In fact, within an overall sense of gloom, he hopes that the States will take over the reform process from the Centre so that "the realistic possibility of rapid growth

and poverty alleviation is not sacrificed at the alter of jingoistic and myopic politics" – as dangerously close as one could get to making a political statement.

In the context of the industrial sector, Prof. Srinivasan's view is that the focus for the future should be on industrial sickness, privatisation and the small scale sector. Drastic reform of labour and bankruptcy laws, infusion of competition, unbundling monopoles in vertically integrated public sector enterprises (PSEs), abolition of reservation and establishment of Mahalonobis – type Labour Reserve Service are proposals offered by Prof. Srinivasan for the future. While these areas are generally being accorded priority, one is left wondering why Prof. Srinivasan stays away from areas of reform which involve something more than the vacating of policy interventions and impediments to market forces; in the recent period, the industrial sector has been undergoing structural shifts which are, to an extent, exogenous: organisational change (mergers and acquisitions), the impact of globalisation and import competition, capacity utilisation and business cycles, consumerism and the capital gap. These are problems which reflect more complex forces at work. Obviously, there are no simple answers.

On agriculture, Prof. Srinivasan's view is that it is the one sector which has largely been kept out of the process of economic liberalisation and reforms. Taking note of the decline in productivity in agriculture, he laments the lack of coordination in agricultural policies which has, in fact, raised the level of disprotection in the sector. Integrating Indian agriculture with world markets, integrating agricultural markets within the economy, major revamping of irrigation projects, phasing out of input subsidies form part of the vision offered for the future of Indian agriculture, with a specific four – pronged medium-term agenda based on modernisation of technology, taxation of agriculture, crop insurance and agricultural credit reform. In the context of modernisation of agriculture and preparing it for the new millennium, it would also involve establishing a self regulating system in agriculture in preparation for greater commercialisation, overcoming the limits to

growth set by availability of land and irrigated area through technological transformation, promotion of human development and higher capital formation. At the same time, policies for the agriculture sector must contend with the growing exposure of the sector to international trade and to multilateral rules for commerce in agricultural produce.

Poverty alleviation, to Prof. Srinivasan, is the biggest failure of India's development strategy, with more than a third of the population still below the poverty line. Underlying this is the failure to achieve rapid growth, more in terms of quality and character of growth rather than its rate. The essay on poverty alleviation is critical of transfer programmes such as the public distribution system, self employment programmes and special area programmes, on the grounds of overlaps, mal-allocation and cost in-effectiveness rather than the form and content of the programmes *per se*. Cost effectiveness, in particular, needs to be stressed as it is the basis of designing directed programmes; bureaucratisation is the major cost escalator. It is this factor that has adversely affected the case for redistributive policies versus rapid growth. In the final analysis, therefore, Prof. Srinivasan casts his vote in favour of rapid growth as the panacea for poverty alleviation.

On fiscal issues, Prof. Srinivasan's suggestions draw essentially from received and accumulated wisdom. His preference is for reducing debt rather than fiscal deficits and disinvestments is one of the better options for fiscal rectitude. There is a welcome shift in focus from the centre to the States, and a run up against the hard budget constraint facing the States. Tax reforms are suggested along the conventional lines: VAT. An interesting suggestion is the assignment of the task of redistribution across States to the Centre. The scope for reducing fiscal deficits through rationalisation of subsidies and expenditure programmes alone remains considerable.

Policy priority assigned to health and education in India, according to Prof Srinivasan, is merely rhetoric. In reality, he sees a massive failure brought on by the stifling of market incentives,

the preponderance of State control. In his view, the reforms initiated in 1991 have excluded the social sector. In sifting through the evidence of this failure, several suggestions are offered, drawing from analytical and empirical work on the subject and the Chinese experience which has now become a standard comparator for India in the context of the 'right' way to undertake reforms. In contrast, however, there is cautious optimism as regards the halting progress made in carrying forward reforms in the infrastructure sector. Prof Srinivisan is all for removal of remaining quantitative restrictions, easing barriers to entry and exit, toning down of revenue considerations as the sole motive in the regulatory policies for infrastructural industries, and legislative changes. In this area, Prof Srinivasan opines, there is a long way to go. Financing infrastructure somehow escapes notice. Moreover, infrastructure issues do involve overlaps with strategic interests and solutions often have to be political.

The lecture on financial sector appears late in the volume, presumably reflecting the author's priorities as regards the sectoral sequencing of reforms, and perhaps suggesting a veiled re-ordering of reforms in India. Here, the reader will encounter familiar ground being traversed: the ancestry of financial repression and the McKinnon Shaw hypothesis, the evolving role of the financial sector in economic development, all viewed through Indian eyes. The documentation of financial sector reforms is enumerative rather than issue-based, and an aversion for moving ahead on capital account convertibility is reflected in the prescription of pre-conditions. In some of these, the actual outturn has overtaken the narration of events. Nevertheless, the point that is emphasised is vital: there is a complementarity between reforms in the financial and real sectors, and financial sector strategies need to anticipate the requirements of the global market place.

The lecture on international trade and investment narrates the measures of reform undertaken against the background of an inward past. Here, the wishlist for the future is familiar, heard time and again at international fora – remove QRs, lower tariffs, and make policy changes which allow India to absorb a greater

share in private capital flows than before. Living with external openness has not been easy in the 1990s. Visitations of capital flows and reversals have brought forward the imperatives for external debt and international reserve management. Adequacy has taken second place to liquidity and solvency management in the approach to the external sector.

The lectures make for fascinating reading, notwithstanding the descriptive tone and the acknowledged pessimism that courses through them. For the informed reader, they provide an unencumbered, expatriate assessment of an 'insider' of the maturing of India's structural reforms over the decade of the 1990s. Undertaking the overhauling of an economy is never easy. The reformer encounters formidable roadblocks all along the way, most of which are in the mindset. Reforms, as Prof Srinivasan holds, are all about people, convincing them and carrying them along. In this sense, the Eight Lectures make a noteworthy contribution.

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"Exchange Rates and the Firm" ***by Richard Friberg, 1999, by Macmillan Press Ltd.,*** **Great Britain, and by St. Martin's Press, Inc., United States of America, Priced at 45 pounds, PPX + 174**

The impact of fluctuations in exchange rates on asset values and profits of firms has been engaging a great deal of interest in recent years in the economic and financial literature. Micro-economic underpinnings for this interest have been provided by multinational firms suffering declines in market shares and profits on account of changes in exchange rates. For the book entitled "Exchange Rates and the Firm" by Richard Friberg, the intellectual impetus stems from recent changes in the international environment such as the formation of Economic and Monetary Union (EMU) in Europe and the currency crises in East Asia which have brought about a fundamental revision in various strands of economic enquiry, including the theory of the firm. Exchange rate risk is part of wider macroeconomic risks, especially those relating to domestic interest rates, inflation rates and political developments. In fact, as the book points out, the recent exchange rate crises were not independent events. They showed that exchange rates, are an important channel for the transmission of policy and other shocks affecting the firms.

A recurring theme in the book is 'Economic Exposure'. Whether and to what extent a firm is adversely affected by a given change in exchange rate, depends not only on the change in question, but also on how the competing firms and consumers react to the resulting change in product prices. Individual firms ward off the adverse effects of exchange rate fluctuations on their asset values and net profits by taking recourse to instruments of hedging - forwards, futures, swaps, and options. Developments relating to the proliferation of these instruments and the evolution of markets for them have dominated the current literature on finance and markets. However, the treatment of this subject in the book, especially in Chapter 5 is disappointing, leaving much to be desired in terms of clarity, precision and detail, especially with

respect to the *modus operandi* of the instruments in question. In defence of the book, however, it needs to be recognised that, "if you use up resources in the process of hedging you will furthermore lower cash flows over time. Limiting variability will then be associated with lower returns." (pp. 23). There are also the practical problems involved in constantly updating the different instruments of hedging as well as in holding differing numbers of the various hedging instruments in the face of temporal shifts in underlying fundamentals and degrees of exchange rate risks. Indeed, there is an inherent imperfection in the very devices of hedging in so far as forward exchange rates and forecasts thereof are largely based on spot rates, so that using forward contracts to hedge has the effect of locking oneself into the spot rate. Even in the best of circumstances, the various instruments of hedging offer only partial protection against negative effects of exchange rate variation; they merely help to buy time during which real operations, particularly the selling prices of internationally traded goods, can be adjusted suitably.

The empirical findings by several studies cited extensively in the book are mixed and do not establish conclusively that there is any significant influence emanating from exchange rate movements on sales or profits of firms in various countries. One study, concerning 156 Canadian firms, reports even perverse effects. In their cross-country study, Griffin and Stulz (1999) virtually dismiss the 'economic relevance' of exchange-rate movements, and instead find 'industry-wide shocks' to be more important in explaining financial fortunes of firms. However, these negative empirical results do not appear to deter the author from proceeding with very elaborate discussion of the principle theme of his book. 'Diversification' (which involves setting up production facilities and marketing networks in several countries) and 'flexibility' (which involves ability to shift rapidly production and/or sales from one country to another in the face of exchange rate variations) constitute the two basic elements of strategies adopted by firms to deal with exchange rate exposure. Two specific cases could be of special interest to the reader: the collapse of Mexican peso in 1994 and the South Korean currency crisis in 1998. Exchange rate

fluctuations entail transnational extensions of production facilities. The author mentions several cases of firms in countries like Germany, Japan, U.K. and Canada setting up their production facilities in the US during periods of a strong dollar. Are we then to deduce that exchange rate fluctuations serve as a blessing in disguise by promoting international mobility of capital and enterprise? Such a deduction seems at least permissible (if not inescapable) in the light of what emerges from the author's discussion of the strategies of 'diversification' and 'flexibility' on the part of firms so as to insulate themselves from exchange rate repercussions.

It is also important to underscore the widespread prevalence and exercise of 'market power' on the part of sellers of internationally traded goods. A firm with market power generally tends to pass very little of exchange rate increase onto the consumers, since the firm would already be charging the maximum price before the exchange rate increase. The author refers to specific strategies on the part of business to acquire and maintain 'price-setting power' in the interesting case of the German Auto giant, Volkswagen, which had originally achieved market prominence by concentrating on low priced cars and was eventually forced to target higher priced segment by competing on quality and style rather than on price.

The book has interesting discussions regarding the formation of Economic and Monetary Union (EMU) in Europe, "the largest institutional change to take place on the monetary scene for a very long time." (p.111). The discussion covers a wide spectrum of issues within EMU, pertaining to institutional arrangements, price level, exchange rate, financial market, pattern of industrial and commercial competition, structure and management of banking, and above all, stance and conduct of monetary policy within EMU, besides implications of all these for non-EMU countries.

The book expects EMU to change significantly exchange rate exposure of all EMU firms, as well as of all those non-EMU firms which are exposed to EMU areas through trade and/or

payments. The author apparently overlooks the crucial fact that the same factors (such as the dissimilar behaviour of exports, imports and of other sources of supply of and demand for foreign exchange), which gave rise to mutually offsetting movements in the exchange rates of the national currencies, would now ensure relatively greater stability of Euro. The different national parameters would now be subsumed under the overall macroeconomic parameters of the EMU area. This has implications for the possible nature and impact of the common monetary policy within EMU. The concept of 'optimum currency areas', first enunciated by Robert Mundell in 1961, assumes significance. The EMU is poorly equipped in this respect, as labour mobility is very low even within individual countries, while fiscal transfers at the EMU wide level are very small. Underscoring the difficulties and limitations that may present themselves in the way of ECB's (European Central Bank) implementation of a common monetary policy for the entire EMU area, the author lays great stress on the importance of the personalities who constitute the Central Bank board. Quoting Friedman and Schwartz (1963) the book makes the point that during the Great Depression in USA, lack of agreement among the twelve regional Governors of the Federal Reserve System led to policy blunders, thereby prolonging the Depression (pp. 148-9).

While most of the author's analyses and observations with regard to monetary policy in the context of the EMU deserve full approbation, a thoughtful student of international economics may not be inclined to go along with the author entirely. The proximate and immediate determinants of the exchange rate of any national currency are the behaviour of exports/imports, and the two-way flows of capital (both, direct and portfolio) and other financial payments/receipts, and such other sources of supply of and demand for foreign exchange. These, in turn, are very closely linked to technology, taste, the relative rate of economic growth at home and abroad, existence of tourism endowments, and the like. To club all these economic variables under monetary policy as under the EU, would obviously, to say the least, amount to a travesty of the very concept and connotation of monetary policy.

The book is valuable for its copious references, but in several other areas such as the monetary influences on the exchange rate, the prognosis regarding the EMU and the relevance of exchange rate exposure to the behaviour of firms nationally and trans-nationally, i.e. its very theme, it leaves the reader with a sense of *deja vu*, a feeling of much to be desired in this complex but highly topical area of financial markets and the firm.

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