PART I

RATIONALE AND RESEARCH DESIGN

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Rationale

The prime function of a banking system in any country is to mobilise the public savings in the form of deposits and channalise them into productive sectors of economy in the form of credit. In doing so, the banks provide safety to the depositors for the monies deposited by them and carry upon themselves the risks inherent in lending the funds to the needy sectors. A major portion of the profits of the banks accrued from the interest margins they earn in this process as a compensation for carrying the risks.

The role of banks in the economic development of a country assumes significance due to the fact that they provide one of the essential inputs, namely finance, for the growth of various segments of the economy. In a developing country like ours, where the scarcity of financial resources is admittedly one of the constraints for accelerating the pace of economic growth, an efficient and responsive banking system is of utmost importance. Further, our country has adopted a system of planning which seeks to attain social justice and equitable distribution of wealth alongwith economic development. Judicial allocation of the scarce financial resources between the various segments of economy is one of

the means by which social justice can be attained and hence the banking system in our country is required to subordinate the 'commercial approach' in its lending policies partially to subserve the national priorities set by the Government (7).

The importance of the banking system in subserving the plans for economic development in India was first recognised in the first five year plan document in which it was emphasised that the banking system should be fitted into the scheme of development to make the process of saving and their utilisation 'socially purposive'. In confirmity with this, steps were taken albeit slowly. Expansion of branches by the then Imperial Bank of India in the fifties and subsequently its conversion into the State Bank of India, and shifts in the loans portfolio of Commercial banks to take care of the financial needs of small scale industries, agriculture, etc., are a few landmarks in the process of integrating banking with the needs of national development during 1960s. Subsequently, the introduction of social control over banks, followed by the nationalisation of 14 largest commercial banks in 1969 and of another 6 banks in 1980, were other developments demonstrating the Government's commitment to reshape the banking system to meet progressively and serve better the needs of development of the economy in conformity with national policy and objectives'(12).

Ever since the nationalisation of major scheduled commercial banks, banking policy has been continuously re-oriented, encompassing the socio-economic objectives laid down in the successive five year plans. These measures have been taken to achieve reduction in inequality of incomes, prevention of concentration of economic power and reduction of inter-regional disparities (10). In the process, the promotional role of commercial banks has gained prominence and there has been a gradual shift from the Real Bills Doctrine of commercial banking to Shiftability Theory and also been conspicuous from elite banking to mass banking. One important measure taken in this context was the branch expansion policy with relatively greater thrust on expansion of branches in rural and semi-urban areas. Further, credit policy was also geared to encourage the flow of credit to priority sectors such as agriculture, small-scale industry, etc., which did not receive adequate attention in the pre-nationalisation period. Targets for advances to priority sectors as a whole and also for the weaker sections thereof have been laid down.Targets have also been set for the credit deposit (CD) ratio in respect of rural and semi-urban branches to ensure that deposits mobilised by the branches in these areas were not siphoned off to urban / metropolitan areas.

This changing scenario of the commercial banking sector in India has adversely affected the profitability of commercial banks especially in view of the high servicing costs, the relatively low earning rates on advances to the priority sectors, and the additional costs involved in opening of new branches in remote rural areas. Also, the potential of lending at commercial rates of interest has been reduced to a relatively small proportion of banks resources by the statutory and other regulatory measures, such as the cash reserve ratio (CRR), the statutory liquidity ratio (SLR) and the lendings to the priority sectors (10). Thus, as a result of these policy measures, while there has been an unprecedented growth in practically all the important banking parameters, it is felt that there have been certain adverse effects also on the quality of certain parameters and the overall operational efficiency of the commercial banking system. At this juncture, it may be appropriate to first of all understand the changes in the scenario of commercial banking in India during the post-nationalisation period, as given in Table - I.1.

Table - I.1

PROGRESS OF COMMERCIAL BANKING IN INDIA

DURING POST- NATIONALISATION PERIOD

Item	June 1969	June 1979	June 1980	June 1981	June 1986
1) Number of offices in India	8262	30202	32419	35707	53287
a) Rural	1833	13337	15105	17656	29703
b) Semi-urban	3342	7889	8122	8471	10585
c) Urban	1584	5037	5178	5454	7209
d) Metropolitan	1503	3939	4014	4126	5790
2) Population per office (in thousands)	64	22	21	19	14
3) Deposits of scheduled commercial banks in India (Rs. crores)	4646	28671	33377	40549	91454
4) Credit of scheduled commercial banks in India (Rs. crores)	3599	19116	22068	26551	57025
5) Scheduled commercial banks advances to priority sector(Rs. crores)	504	5906	7278	9444	22844
6) Share of priority sector advances in total credit of scheduled commercial banks (percent)	15.0	36.6	37.0	38.8	45.0
7) Deposits as percentage of National income (at current prices)	15.5	33.3	35.8	35.9	44.8
8) Per Capita deposits of scheduled commercial banks(Rs.)	88	434	494	587	1194
9) Per capita credit of scheduled commercial banks (Rs)	68	290	327	385	744

Source : Basics statistical Returns on Banking Statistics, Vol.-II, Reserve Bank of India, June 1987

It may be observed that in the post-nationalisation period :

1) The number of bank branches increased from 8262 in 1969 to 53,267 in June, 1986, at a compound growth rate of 11.6 per cent.The average population served per branch declined sharply from 64,000 in 1969 to about 14,000 in 1986, as a result of the opening of the new branches at a faster pace in the hitherto unbanked centres;

2) branches in the rural and the semi-urban areas as percentage of the total bank branches increased from about 63 per cent in 1969 to about 76 per cent in 1986. Rural branches alone accounted for about 57 per cent of the total number of branches in 1986, as against 22 per cent in 1969;

3) the deposits of commercial banks increased from Rs. 4646 crores in 1969 to Rs. 91,454 crores in 1986 showing a compound growth rate of 17.7 per cent only, during the same period; and

4) the share of priority sector advances in total bank credit increased from 15 per cent to about 45 per cent in 1986.

While the quantitative expression of growth in certain important banking parameters highlight the structure-functional transformation of commercial banking, according to the authors of the National Banking Plan(1), Indian banking after the nationalisation of 14

major commercial banks has emerged to be a vital and growing segment of the economy, requiring immediate attention on certain weak areas, such as

1. housekeeping, non-performing assets and recovery;
2. adherence to established credit-appraisal norms and follow-up and monitoring of advances, and
3. managerial control systems.

While the authors of the National Banking Plan have identified the strengths and weaknesses of the commercial banking system during the post-nationalisation period, and the quantitative expression in the growth of certain banking parameters as given in Table-I.1 appear impressive, they all have failed to highlight certain qualititively critical factors which are crucial not only for the survival and growth of commercial banks but also in their achieving the real goal of contributing their share in the socio-economic transformation of the society at large. In terms of their intermediation function, commercial banks have not only to meet the targets of expansion but have to do so efficiently. Lending efficiency emerges in this context as the most critical factor in the evaluation of their performance. While various researchers such as Singh(9), Varde and Singh (11), Sharma(8), Faye(3), and various other scholars have examined the problems of bank lending in the Indian context, they have confined their scope either to the philosophy of lending or thought or to economic and profitability analysis or to the lending procedures. Of late some of these Indian Researchers

have tried to examine the financial management aspect, or costs and margins aspects of bank lending also.

However, these researches and the availble literature on bank lending in the context of Indian socio-economic environment leave a large gap of knowledge and scope for further researches in the area. To meet this need, an attempt is being made in this exercise to take an integrated and more comprehensive view in understanding and evaluating the bank lending system in India especially during the post-nationalisation period, and in the context of the officially assigned roles and goals.

Main Objectives

The main objectives identified to be achieved through this exercise are to :

1. ascertain the relational behaviour between bank lending and overall banking development in the country as a whole and across the regions ;
2. evaluate the distributional / allocational lending efficiency of banks on regional and sectoral basis;
3. evaluate the efficiency of different groups of banks in the performance of lending function ;
4. ascertain the quality of bank loans and advances in terms of recovery of loans and recycling of funds, and determine the factors affecting the quality of bank lending and its effect on the health of banks;
5. ascertain the servicing costs of

resources / deposits and lending;

6. ascertain the profitability in bank lending - over all and in terms of per loan account;
7. evaluate the impact of socially oriented bank lending programmes;
8. suggest appropriate models for achieving higher level of efficiency in bank lending.

Hypotheses

This exercise is both exploratory as well as analytical. Hypothesisation is not considered essential in cetain areas, especially in the analysis of lending costs and margins, and the analysis of distribution of bank credit across the regions and sectors. However, the following hypotheses have been formulated for testing :

1. The growth in commercial bank lending has lagged behind the growth in the number of branches, volume of deposits, and working funds/business of banks :
2. The regional imbalances in bank lending are higher compared to the imbalanc in the overall commercial banking development ;
3. The variances in lending performance across the different bank groups is significant and have increased over the time, during post-

nationalisation period:

4. The lending efficiency of banks is uniformly poor across all the sectors and has deteriorated during the post-nationalisation period in terms of recovery of advances;
5. The profit margins in bank lending have declined over time, during the post nationlisation period;
6. Lending costs have been adversely affected by 'overheads', and
7. Socially oriented lending programmes have failed to achieve their objectives.

Scope and coverage

The study is confined to the analysis of commercial bank lending in India only and as such the performance of the branches/subsidiaries of Indian banks abroad are outside the preview of this exercise.

The temporal coverage is confined to the period 1969 to 1986 for the analysis of growth in advances and for regional and sectorial distributional analysis. In certain cases, due to data constraints a few analysis have been done for the period 1972 to 1985. For the purpose of a detailed analysis of the distributional efficiency as well as for evaluating the relative efficiency of different bank groups, i.e., for inter-stratum analysis and for analysis of advances over rural, semi-urban, urban and metropolitan centres, temporal coverage is confined from 1981 to 1986. The qualitative

analysis covers a still shorter span of time and the analysis is cross-sectional in costs and margins analysis and both cross-sectional and time series in the valuation of certain identified socially oriented schemes of bank lending.

The spatial coverage is all India for the growth and distributional/allocational analysis while for evaluation of credit schemes, the exercise is confined to a few selected locations only.

The institutional coverage is confined to all the scheduled commercial banks except in cases of evaluation of schemes, analysis of computation of costs and margins, and certain other aspects of qualitative analysis, where only public sector banks have been covered.

Data

Data for analysis have been drawn from various issues of Financial Analysis of Banks, published by Indian Banks' Associations, basic statistical returns, and statistical tables relating to banks in India, published by the Reserve Bank of India. Necessary data for relational analysis have been drawn from the basic statistics relating to Indian Economy, published by the Centre for Monitoring Indian Economy. The detailed data for the analysis of the cost of funds, cost of lending and margins have been collected from selected large nationalised banks. Data for evaluation of certain identified schemes have been partly collected through field survey and have partly been drawn from various

evaluation studies conducted by some of the banks.

ANALYTICAL TECHNIQUES FOR

Growth and Distributional Analysis

It is proposed to go for factor analysis taking all the identified indicators together as well as for each group of indicators separately. In factor analysis the factor scores are proposed to be computed by,

Considering a set of variables $X_1, X_2 \ldots\ldots\ldots X_k$, and the corresponding standardised variables, i.e, deviations of the Xs from the mean values divided by standard deviations, called $Z_1, Z_2 \ldots\ldots\ldots\ldots Z_k$. We may then replace these standardised variables by principal factors, which are linear combination of the Zs.

$$F_1 = a_{11} Z_1 + a_{12} Z_2 + \ldots + a_{1k} Z_k$$
$$F_2 = a_{21} Z_2 + a_{22} Z_2 + \ldots + a_{2k} Z_k$$
$$F_k = a_{k1} Z_k + a_{k2} Z_2 + \ldots + a_{kk} Z_k$$

or in matrix notation, we may write as (F) = (A) (Z).

The problem is to estimate the co-efficients a_{ij}'s, called factor loading ; Let R be the correlation matrix between Z_i s.

$$(R) = \begin{vmatrix} 1 & r_{12} & r_{1k} \\ r_{21} & 1 \ldots\ldots & r_{2k} \\ r_{k1} & r_{k2} & 1 \end{vmatrix}$$

The system of linear equations which yields the first

and largest component is (R) (A) = (λ A)

or (R - λ) (A) = 0

The system of linear homogeneous equations can have nontrivial solutions only if the determenant equation becomes zero,

i.e if (R - -/I) = 0

Let - λ ,to be the larges root. Corresponding to this largest root (called as eigen value or latent root of characteristic root) the associated vector representing the factor loadings may be derived.Similarly, for the next largest root, the corresponding factor loading vector can be worked out. Generally it will suffice to work out two latent roots which will explain a major part of the variance of the explanatory variables. The percentage contribution of each principal factor in total variance of the standardised X is given by /k where k is the number of variables. The standardised variables matrix multiplied by factor loading matrix will give the factor scores' (10).

For measuring the overall concentration and dispersion of various characteristics, the Herfindahl Index is used which can be written as,

$$HI = \frac{E*X^2_j}{(E*X_j)^2} \qquad (j - 1,\ldots,m)$$

The value of H I lies between 1 and 1/m which may be derived and given by,

$$1*E*(X_j - X)^2$$

$$O^2 = \frac{}{m} > 0$$

$$= \frac{1*E*(X_j^2 - X)^2}{m} > 0$$

$$= 1*E*X_j^2 - \frac{E*X_j}{m} \times \frac{E*X_j}{m} > 0$$

$$\text{i.e. } \frac{1*E*X^2_j}{m} \quad \frac{(E*X_j)^2}{m^2}$$

$$\text{OR } \frac{E*X^2_j}{(E*X_j)^2} > \frac{1}{m}$$

Further, $(E*X_j)^2 = E*X^2_j + E\ E\ X_i\ X_j\ X_i,\ X_j \neq 0$

i.e $(E*X_j)^2 > E\ X^2_j$

$$\text{OR } \frac{E*X^2_j}{(E*X_j)^2} < 1$$

$$\text{Thus, } \frac{1}{m} < H < 1$$

The value of unity depicts complete concentration and 1/m complete dispersion. A decline in the coefficient of variation of each of the indicators among the states in the two years 1969 and 1986 will give an idea of the deduction in the imbalances in respect of each indicator over the years.

Analysis of Costs and Margins

A Number of scholars have examined the problem of costs and margins in commercial banking during the last two to three decades, mainly in USA, UK, Germany and Australia. Of late, some scholars have devoted their attention to this aspect of Bank Lending.While most of the scholars abroad and also a few Indian Economists who have considered the cost aspects of banking, have done so to examine the economies of Scale in Banking. Varde and Singh (11), and Sharma (8) have dealt with the problem from the view point of bank management. The methodology for computation of cost of funds suggested by Varde and Singh has gained a wide acceptance in the context of Indian banking. Sharma (8) has used a modified methodology of computing the 'cost of lending ' and 'margins' in bank lending. In this study, it is proposed to apply the Varde and Singh (11) methodology for computing the cost of funds for lending and use the adapted verdion of Asset Utilisation Model of Sharma (8) to compute the weighted yield from various types of advances. The 'margin' in bank lending then would be ascertained by deducting the adjusted cost of funds from the weighted yield on lending under different forms and schemes. Thus we propose to deal with the problem of computing costs and margins in bank lending in the following manner:

Sample

In view of the branch banking system in India, with each bank having a large number of branches located all over the country from metropolition to remote rural centres, the primary data has been drawn from a sample of branches and

administrative/controlling offices of selected large Indian banks in the public sector. The sample branches have been identified through cluster analysis techniques and data for each year has been collected in a phased manner drawing information from 1/12th of the cluster-wise sample branches every month. All the costs in this exercise have been computed by adopting FAC (Full Absorption Costing) approach with analytical estimation technique. The cost of each fund-based activity has been presented as a percentage of balance/turnover in the commercial activity.

Computation Model

The cost of funds will be computed by,

$$C = \sum_{i=1}^{2} C \qquad \ldots\ldots\ldots (1)$$

Where, C_1 is the 'interest cost', and C_2 is the 'servicing cost'.The interest cost will be arrived at by,

$$C = \sum_{i=1}^{5} \frac{I_i}{AF_i} * W_i \quad ..(2)$$

Where,

'I' is the actual amount of interest paid during the period;

'AF' is the average amount of funds held during the period; and

'W' is the weight of each subscripted funds in the total funds.

Subscript

i = 1, denotes current account of deposits, except call and overdue deposits;

i = 2, denotes savings account deposits, including debit balances, if any,

i = 3, denotes all types of term deposits consisting of all types of deposits not classified as current or savings,

i = 4, denotes other borrowings, and

i = 5, denotes owned funds.

To compute the servicing cost of each type of funds (Sc) five cost components have been identified, viz.,

(1) Supervisory cost at the branch level

(2) Other staff cost at the branch level

(3) Overhead cost at the branch level

(4) Staff cost at the controlling offices, and

(5) Overheads at the controlling offices.

The following equation will be used :

$$Sc = \sum_{t=1}^{5} Sc \qquad \ldots\ldots(3)$$

Where,

Sc = servicing cost of each type of funds;

'S' = cost components, and

Subscript-t represents the individual cost heads from (1) to (5) defined above.

After computing the cost of each type of funds separately, the weighted servicing cost of funds (CD) will be computed by,

$$CD_2 = \sum_{i=1}^{5} \frac{Sc_i}{AD_i} * W_i \quad \ldots.(4)$$

Where,

Sc_i = servicing cost for i th type of funds

W_i = weight i th type of fund in the total funds; and

Subscript :

i = 1 is for current deposits,

i = 2 is for savings deposits and

i = 3 is for fixed deposits

i = 4 is for other borrowings, and

i = 5 is for owned funds.

The cost of lending (CL) will be computed by,

$$CL = C_F + C_A \quad \text{.....(5)}$$

Where,

C_F is the cost of funds, and

C_A is the servicing cost of average total advances(weighted) calculated by,

$$C_A = \sum_{j=1}^{5} \frac{C_j}{AA_j} * W_j \quad \text{.....(6)}$$

Where,

C_j is the servicing cost of J th type of advances;

AA_j is the average balance of the J th type of advances,

and

W_j is the weight of J th type of advances in the total advances.

Subscript

j = 1 denotes small scale industry advances (SSI),

j = 2 denotes agricultural advances,

j = 3 denotes other priority sector advances

j = 4 denotes commercial and industrial advances

j = 5 denotes all other advances, not covered under J=1 to J=4.

The servicing cost of each type of advances has been computed by,

$$C_j = \sum_{t=1}^{5} St \qquad .....(7)$$

Where,

'S' represents the cost components, and

't' indicates the individual cost heads as defined in equation (3)

To ascertain the profit margin (PM) on lending, earnings on funds deployed in different assets will be calculated. For the purpose, funded assets have been classified into :

(1) cash balances,

(2) variable cash reserves required to be kept with the Reserve Bank of India, classified into Basis CRR and additional CRR,

(3) Investment in banking assets, and

(4) advances (j=1 to j=5)

Assets (1) to (3) are called liquid assets and their ratio in total banking assets is governed by statutory and regulatory controls. Advances, j = 1 to j = 3, are called Priority Sector Advances and j=4 to j=5 are Non-Priority Sector Advances. The basic computational model for determining of earning power of liquid assets as a whole (EL) is given as,

$$EL = EC + ER + EI$$

$$= \left(\frac{ic}{Wc} * 100 + \left(\frac{i1}{WR1} WX + \frac{i2}{2} W \right) + \left(\sum_{j=1}^{n} ij * W \right) \right) \quad \ldots(8)$$

Where,

'ic' is interest earned on cash balances, 'i1' is interest earned on basic CRR, 'i2' is interest earned on additional CRR, and 'ij' is the interest earned on j th type of investment.

Wc is the cash balance, WR_1 is funds under basic CRR, WR_2 is funds under additional CRR, w_J is the amount of funds invested in j th type of securities.

W_1 is percentage of basic CRR to aggregate CRR, W_2 is percentage of additional CRR to the aggregate CRR, W is the percentage of j th type of investment in the total investment.

The earnings on advances have been computed by,

$$EAD = \sum_{j=1}^{5} \frac{ij}{Aj} * W_j \qquad \ldots\ldots(9)$$

Where,

EAD is the weighted average earning (interest) on aggregate advances;

ij is the amount of interest earned on jth type of advance,

Aj is the average amount of jth type of advance, and

Wj is the weight of jth type of advance in total advances.

The profit on liquid assets (PL_A) will be computed by,

$$PL_A = EL - CD \quad .....(10)$$

Where,

EL is the average weighted yield on liquid assets, and

CD is the average weighted cost of aggregate deposits.

The profit on priority sector advances (j=1 to j=3) will be worked out by,

$$P_{pa} = WY_P - CL \quad .....(11)$$

Where;

P_{pa} is the profit on priority sector advances,

WY_{p} is weighted yield on priority sector advances, and

CL is the cost of lending.

It is also proposed to analyse the servicing costs in lending for 5 or more nationalised banks for the years 1984 and 1986, mainly to test the cost related hypothesis,the servicing costs will be computed for ;

(1) per 100 monetary units average balance/turnover;

(2) per voucher, and

(3) per loans and advances account.

The analysis will be carried out on a cross-sectional basis and on a comparative basis amongst different years.

Further, to measure the overall lending efficiency of banks, it is proposed to modify the CME model of Faye (3), which is given as

$$CME = F (Pe, Ac, Re, Te, De),$$

Where,

CME = Credit Management Efficiency

Pe = Profit Efficiency

Ae = Advances efficiency (regulation implementation)

Re = Recovery efficiency

Te = Time efficiency, and

De = Distributional efficiency

Faye (3) has not been able to fully demonstrate the credit

model will be developed for measuring the lending efficency of banks.

Evaluation of Identified Socially Oriented Lending Schemes

The success of massive development programmes, which are being implemented at the grass-roots level throughout the country depends much on (i) how effectively these are administered by the implementing agencies at various levels, and (ii) the extent to which the modus operandi of the Schemes is understood and accepted by the target group.

Accordingly, in this exercise, the identified schemes will be evaluated with the following specific objectives:

(i) to assess the effectiveness of implementation,

(ii) to study the impact of activities financed and the recovery position of loans, and

(iii) to examine the policy implications of the study findings.

The impact of financing will be estimated by comparing the post-loan position of the sample beneficiaries with their pre-loan position.

MAIN FINDINGS

1) Advances have not grown in proportion to growth in deposits and resources available with the banking system have been diverted under policy constrains for

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