CHAPTER II
THEORETICAL BACKGROUND & LITERATURE REVIEW

Economists have recognized the importance of financial intermediaries in the process of economic development since credit long. Schumpeter called, 'a vehicle of economic growth'. Many others have considered the role played by financial intermediaries in general and commercial banks in particular in promoting and mobilizing savings in an economy as a necessary condition for economic development. In the developing countries, the planners and policy makers have invariably recognized the importance of the financial system in increasing production and productivity.

The financial system is a set of institutional arrangements through which financial resources (or commands over real resources) in the economy are mobilized from surplus units and transferred to deficit spenders. The institutional arrangements include all conditions and mechanisms governing the production, distribution, exchange and holding of financial assets or instruments of all kinds and the organization as well as the manner of operation of financial markets and institutions of all descriptions. In concrete terms, financial assets, financial markets and financial institutions are the three main constituents of any financial system.21

It is a historical fact that banks have usually been the first type of financial institutions to develop as a medium of savings.2
The credit of elaborating the role of financial intermediation and suggesting the wide spectrum of financial assets which are available in an economy as it moves along the path of economic progress goes to Gurley & Shaw. They propounded the thesis that the financial assets of non-banking financial intermediaries gained in importance as the process of economic development of an economy accelerates. The ratio of bank money (cheque deposit) to total financial assets first increased, but, has levelled and decreased, with a lag of one or several generations. Harold observed that "as economic development progressed the share of the banking system in the assets of the financial institutions has declined." This was true of Britain as well as all developed countries. The share of the newer types of financial institutions, viz. primary savings banks, building societies, mortgage banks, life insurance companies, government and private retirement funds, investment companies and finance companies has increased in relation to both the assets of all financial institutions as well as to total financial assets. In late Sixties Goldsmith concluded that the assets of the banking system (central and commercial banks) are now considerably below those of all other financial institutions taken together in the economically most advanced countries while the opposite relationship is still common in less developed
countries. This relationship continued to hold true even at present.

Several reasons are put forth for the loss of grounds by commercial banks to the N.B.F.Is.

Firstly, once a certain stage of economic development is reached, the income elasticity of demand for non-bank financial assets/services is higher than those of commercial banks.

Secondly, inflation raised the operating costs of banks more than those of N.B.F.Is.

Thirdly, the banks have been most discriminated against in the monetary and tax policies.

Fourthly, some legal factors also throttled the growth of banks e.g. the ceiling on interest rates, price control on transaction charges, restriction on the entry of new banks and opening of bank branches solely for profit maximisation.

Lastly, the electronic funds transfer mechanism enable the N.B.F.Is to render money transmission service without having to incur the full burden of labour-intensive operational costs that is borne by the commercial banks which are to a great extent bound by their history.
Thus, what was once the great advantage of the commercial banks - their domination of the money creation and transmission system, has proved to be a mixed blessing. In spite of all this, it needs to be noted that commercial banks are the only financial intermediaries which create credit and thus have influence on the money supply in an economy. The experience of the developed countries has clear lessons for the developing countries. Once the N & F Is reach the size at which they offer easy accessibility to the public, they are bound to offer stiff competition to the commercial banks. Unless the latter, widen their spectrum of services and assets through financial innovations and improve operational efficiency through professional management and adoption of modern techniques, their market share of financial assets is bound to dwindle rapidly.

**Role of Intermediaries**

Financial Intermediaries (F Is) are institutions or firms that mediate or stand between ultimate lenders and ultimate borrowers or between those with budget surplus and those who wish to run budget deficits. The examples are banks, insurance companies, unit trusts (or mutual funds), investment companies, provident funds, etc. The central function of all financial intermediaries is to collect surpluses (savings) of other economic units and to lend them to deficit spenders.
FIs are dealers in securities, what they buy are primary securities what they sell are secondary securities.

The secondary securities in the form of saving deposits has enabled the banks to mobilise savings of households which can be used to lend even to a distant farmer who could not otherwise borrow directly from an urban household on the strength of his own promise to pay.

The main advantages to savers from the FIs are - Low risk, Greater Liquidity, Convenience of dealings and rendering of other services.

Borrowers also have a preference for FIs as they have big pools of funds, so that big individual demands for funds can be satisfied easily, much greater certainty of the availability of funds at all times, the rate of interest is lower, regulated FIs do not fleece small borrowers in the manner money lenders do.

The true economic basis of financial intermediation lines in the - 1 - law of large numbers, and

2 - economics of scale in portfolio management

1 - Law of Large Numbers

All FIs operate on the assumption supported by statistical law of large numbers that not all the creditors will put forward their claims for cash at the same time.
2 - Economics of Scale in Portfolio Management

FIs can reap several economies of scale in portfolio management which improve significantly their net rates of return from their asset holdings by -

1 - Reduction of risk through portfolio diversification.
2 - Professional management.
3 - Indivisibilities and Market imperfections.
4 - Other cost economies.

F Is play a very important role in the functioning of a modern complex economy, in promoting economic development and in the working of the monetary and credit policy. The more numerous, varied, well organised, geographically well-distributed and efficient the F Is, more developed is the financial infrastructure of an economy in general.

The financial system helps production, capital accumulation and growth by -

1 - Encouraging savings,
2 - Mobilising them and
3 - Allocating them among alternative uses and users.

Each of these function is important and the efficiency of a given financial system depends on how well it performs each of these functions.
Financial Intermediation by Banks

The process of financial intermediation by banks is aptly described by Goldfield & Chandler, "a bank gathers funds from people by issuing and selling financial claims against itself. It can acquire assets to the extent and only to the extent, that it is supplied with funds in exchange for financial claims against it". Thus, a bank participates in financial markets, in two principal roles - as a buyer of funds through issues of claims against itself and as a seller of funds or purchaser of claims against others. This process of mobilising savings from the economy and channelising the funds to the investors is known as the process of financial intermediation.

Gopal Karkal observes, "the image of banks has changed from the traditional 'dealer in money' to that of a modern 'leader in development'. Banks consider it their primary task together deposits (i.e. mobilise savings of the people) as a means of providing the resources for lending (i.e. channelising the savings thus collected into the most productive and profitable investments). The deposit role of banks is as important as the credit role, for the essential activity of the banks is converting of the raw materials of deposits into outputs of loans and investment."
The business of the commercial bank is 'receiving, transferring and encashing deposits'. Bank is an institution which deals in money and money substitutes and it also provides a range of financial services.

The most important functions performed by banks are as under:

1 - providing a mechanism for making payment and remittances, and
2 - the role of intermediaries between borrowers and primary lenders. Commercial banks also deal in debts and in the process they create money. The process of money creation by the banks is known as 'monetization of credit.'

Dr. M. Arivastava threw light on a special aspect of deposit mobilisation, "a commercial bank is the only institution which accepts funds from the public in the form of demand deposits i.e. deposits accounts which are subject to withdrawal by the owner on demand and subject to transfer to a third party by means of a cheque."

Bank and Non-bank Financial Intermediaries (N B F Is)

Role of banks and N B F Is in the field of deposit mobilisation is explained in the Report of Study Group on N B F Is, "in terms of drawal on the
pool of community's saving, NBFIs are main competitors with banking system in the field of deposits. The time accounts of household sectors are the main source of funds for NBFIs. The competition with commercial banks has therefore relevance mainly with reference to time accounts.

Despite the insured character of bank deposits the individuals prefer to put their money with NBFIs due to the following advantages -

1 - A better rate of return on deposits,
2 - The specialised type of customer services, &
3 - Easier access.

NBFIs have been able to thrive in areas where the banking system is well spread due to the differential rate of interest on deposits. NBFIs mobilise deposits by paying higher rates, of interest than the banks as they have not to maintain liquidity ratios. On the other hand there is a possibility of charging higher rates of interest by NBFIs from their loan customers because, their major clientele are small men, who have very few other sources of finance. Further at present certain tax benefits are given to the depositors of commercial banks whereas such benefits are not available to the depositors of NBFIs.
Some of the deposits at the margin, may represent a shift from the organised banking sector. Some part of it would constitute an aspect of resource mobilisation by organised institutions. The problem of flight of deposits can be solved by bringing in the degree of surveillance of both deposits and lending operations of N B F Is. N B F Is should supplement the activities of banks. Their function with respect to deposit mobilisation, is somewhat akin to the role of the local non-scheduled banks or urban banks. 10

D.M. Mithani has distinguished banks and N B F Is as under -

**Banks**

Their liabilities are accepted as a means of payment in settlement of debts. Form a homogenous group. Provide short-term loan in the money market. Generates multiple expansion of credit. Credit creation is determined by the availability of excess reserves. They can raise funds costlessly as no interest is payable on demand deposits. People deposit money for safety, convenience and liquidity considerations. Less time involved in the process of credit. The financial claims on the N B F Is are increasing at the cost of bank's demand deposits.

**N B F Is**

Their liabilities are not accepted as a means of payment in the settlement of debt. They form a heterogenous group. They spread all over the entire range of financial
markets, supplying short, medium and long term credit. Mobilise savings for investment. Operation and saving mobilising process is governed by structure of interest rate. Pay higher and higher interest to attract more funds. Economic motive of earning extra income. Lending operations involve longer time period and are based on income turnover. Operations can cause destabilisation impact when there are changes in the structure of portfolios held by them.1

Savings and Bank Deposits

Bank deposits constitute a vital component of national savings. Hence, for explaining the behaviour of bank deposits, it is pertinent to draw on the theories explaining the behaviour of savings.

Savings could be defined either as a flow concept or a stock concept. As a flow, saving is defined as income not consumed. Since income and consumption both are defined as flows, savings also becomes a flow which is a homogeneous difference between two flows. As a stock concept, saving can defined as a rate of change in wealth.

Individual households invariably save a part of their income, for meeting future needs. An individual household first of all meets its consumption needs from the income in any given period. The excess of income over consumption is his savings. When the savings of individual income earning identities is totalled we get the savings of the economy during the period. Symbolically, $S = Y - C$, where $S$ denotes savings, and $Y$ and $C$ stand for income and consumption respectively.

The concept of aggregate savings became an important monetary variable, in economic theory since Keynes declared, "savings is a function of income i.e. $S = f(Y)$. That is
to say, as income increases, savings also increases and vice-versa, savings depends on the propensity to save, which is derived from the propensity to consume.

Symbolically it means \( S/Y = 1 - C/Y \), where propensity to save \( S/Y \) is equal to one minus the propensity to consume \( C/Y \). According to Keynes, the consumption function (or the propensity to consume) is a stable function of income in the short period. It follows from this, that the savings function (or the propensity to save) would also be a stable function of income. It should be noted that though the propensity to save is a stable function of income, savings (individual or aggregate) is an increasing function. Thus, the marginal propensity to save \( \frac{\Delta S}{\Delta Y} \) is an increasing function. Thus, \( \frac{\Delta S}{\Delta Y} \) is always greater than zero, but less than unity.

Symbolically, \( 1 > \frac{\Delta S}{\Delta Y} > 0 \).

Several economists tested this “Absolute Income Hypothesis” of Keynes. From the three segments of savers in an economy, viz. households, firms and government, households contributed a very significant proportion of total savings in all the countries. Hence, the economic theorists concentrated their attention on suggesting various alternative explanations of households saving behaviour. The important landmarks were:

1 - Relative income hypothesis of Dulesen Berry, 1948.
2 - “Permanent Income Hypothesis” of Friedman 1957.
3 - Life Cycle Hypothesis of Modigliani & Brumberg

According to the "Permanent Income Hypothesis" of Milton Friedman permanent income and not current income (Keynes) is the basic determinant of savings and consumption. Permanent income in a year, is not current income but depends upon the expected income to be acquired over a long period of time. The actual or measured (Ym) income is composed of permanent income (Yp) and transitory income (Yt). In the longrun positive and negative changes in the transitory incomes cancel in an economy and there is a fixed relationship between average permanent consumption and permanent income.

This explains the empirical observation that "total savings accounts for a fairly stable share of total income", despite the rising trend of income overtime.¹³

In the recent past the life cycle hypothesis of Franco Modigliani and others was found very useful in explaining the savings behaviour in various economically developed countries.¹⁴ The hypothesis assumes that the primary motive for saving is to provide for retirement, thus, individuals save during their working years and dissave during their retirement. In a stationary economy, the savings of the young will exactly equal the disavings of the old, leading to aggregate household savings of zero. In the process of either population growth or productivity growth however, a positive amount of household savings
Will result because the savings of the young will exceed the dissavings of the old and the higher the rate of population or productivity growth, the higher will be the household savings rate. Modigliani has argued, however, that it is not population growth per se but the ratio of retired households to working households that influences the savings rate. Moreover, since the population that has not yet reached working age, contributes to consumption without contributing to income, its ratio also affects the savings rate.

The life cycle hypothesis also identified some other factors influencing savings in an economy, viz. retirement related factors (ratios of the retirement span to lifespan, the retirement age etc.), social security (public old-age pensions represent an alternative source of financing for the retirement years and hence will tend to reduce private savings), the rate of consumer price inflation and the land prices (rising rate of inflation and land prices will increase savings).

The Role of Savings in a Welfare State

Capital formation is the most significant variable of economic growth. At the macro-level, the banking system is the main component of the machinery which converts savings into capital.
It is through the three stages of capital formation that banking contributes to economic growth - mobilisation of savings, financing and investment in productive activities and assets.

After the second World War the concept of welfare state became popular, increasing considerably, states participation in the economic activities. The state has also taken over the responsibilities earlier shouldered by the family and the community. The United Nations - World Economic Survey of 1960 - indicated that the economy in the centrally planned state was better off than in other countries. Financing the growing gamut of socio-economic activities required larger resources which are not possible to secure from taxation. It requires the rise in the rate of capital formation. The rate of investment and savings has to be raised. "The future welfare of Great Britain depends, opines L.G. Whyte to a great extent, upon a high level of capital investment...". This is only possible in the long run by the generation of an adequate volume of saving. 

The United National
Committee of experts has observed: "it is a common place that economic progress is a function among other things, of the rate of new capital formation. In most of the countries where rapid economic programme is occurring net capital formation at home is atleast 10 percent of the national income and in some, it is substantially higher, assuming that population increased between 1 and 1.1/2 percent per annum."

In less developed countries (LDCs) the states responsibility in economic and social spheres are far more than in advanced countries. Several social services have to be provided by the state to keep pace with the growth of economic activities and the growing expectation of the people. W.R. Arthur Lewis stated that Industrial countries must invest between 10 to 15 percent of their national income to have an economic growth of 3 to 4 percent. He further states, "for India to raise her standard of living by 1 percent annually she would have to raise the rate of investment from its current level of 4 to 5 percent to say 12 percent of national income."

Thus, savings was considered one of the vital factors of development as investment has to be financed by savings.

Realising the importance of savings in the process of economic development the governments of LDCs made concreted effort over the past three decades for developing financial intermediaries of all possible types for
mobilising savings from various segments of the community. The Government of India has emphasised on mobilisation of savings in all the five year plans from the inception of planning. Several legislations have been passed, from the State Bank of India Act 1955, to the Regional Rural Bank Act 1976. Legislative powers were used by LDC Governments to create new institutions and to strengthen and control the existing ones for mobilisation of savings. A singular trend observed in all the countries has been growing channelisation of saving to the state for financing, the ever increasing state activities. Hence, in a welfare state, "promotion and mobilisation of savings are consciously directed towards the achievement of socio-economic objectives." 

The fundamental factors influencing savings are aptly summarised by Arun Ghose, "it must be emphasised that a raising of interest rates is not necessary for tapping higher savings. One must go back to fundamentals. Savings are not a function of the rate of interest, though where savings are likely to be channelised is of course, a function of relative interest rates, of the asset preferences of the community, and the liquidity of different forms of assets."

For study of savings as a macro level parameter, it is usually calculated at current prices. There is no universally accepted concept of savings at constant prices.
For the savers the real value of savings depends on the general price level.

For the right historical perspective, it is interesting to observe that, even during a relatively more advanced stage of development and with higher per capita incomes during 1961-90, the present day developed countries had an average saving rate (12-13 percent) which was significantly lower than that of all LDCs during 1961-70 and was more or less equal to the saving rate of the low income LDCs during 1961-70. Further, their growth rate of GDP (1961-90) was roughly half the growth rate of even the low income LDCs (1961-70).

From the review of trends in output, investment, savings and capital inflow during 1951-80, V.V. Bhatt arrives at broad conjectures with regards to the saving-investment aspect of the development process in the LDCs.

1 - "Maintenance of high investment levels is largely a function of domestic savings performance, capital inflow from abroad serves mainly as a catalyst and as a factor in relaxing the foreign exchange constraints rather than as a major factor in supporting rising levels of investment."

2 - "The domestic savings rate is positively related to the level of income and it's growth rate", and to the size of a country.
3 - For raising savings rate the degree of development of financial structure and the examining of positive real interest structure seem to be important factors. Evidence to support this relationship exists practically in all the countries.

4 - In mixed economies, a major part of domestic saving takes place in private sector and more particularly in the household sector. Public sector savings, generally account for less than one fourth of total savings.

5 - "There has been no systematic rise in public and aggregate saving attributable to rising public revenues." 21

Commenting on the structure of financial savings Dr. V.V. Bhatt, observes, "the structure of financial savings seems to be evolving in favour of deposits and claims on social security institutions in LDCs which have experienced a significant rise in the saving rate of the non-corporate sector during the last 15 years or so. Such has been the historical trend even in the developed countries. It seems desirable for the LDCs to assist this trend and concentrate their efforts on bringing about or facilitating those changes in financial structure and in the laws and regulations which affect it, that will ensure, or at least make more likely that a predominately indirect and institutional and largely contractual and mandatory flow of personal saving contributes as much as possible to economic growth." 22
Literature Review

During the post-bank nationalisation period, bank deposits in India have grown at a compound growth rate of more than 19 percent per annum. Bank deposits constitute one of the important monetary variable of the Indian economy. They accounted for 47.3 percent of the national income in the year 1986-87. Obviously, its growth and composition has aroused considerable interest and concerned several studies were undertaken during the last two decades. Most of them have focus on identification of factors influencing the growth of bank deposits. The models using the data of determinants have been used for forecasting and predicting the future growth of deposits. While all the studies have examined the behaviour pattern of aggregate bank deposits, a few of them have considered the demand and time deposits separately. They have argued that the motives for holding two types of deposits differed, different sets of factors influence their growth.

The available literature on bank deposits is reviewed below. The first part deals with the determinants of bank deposits on the demand side and second one, with those based on supply side.

Demand Approach

Khusro and Sidharthan was a pioneering work on determinants of bank deposits in the early seventies. They identified interest rate as the only variable influencing the demand for bank deposits. Further, the
demand and time deposits were treated separately. The demand for demand deposits was found to be inversely related to the rate of interest on time and savings deposits were the demand for time deposits was directly related to the interest rate on time deposits.

Shakuntala Dessai made an attempt to identify and quantify the variables which are relevant in explaining the behaviours of aggregate deposits as also the time and demand deposits of all scheduled commercial banks with the help of multiple regression analysis.

Using the stability of these relationships and certain assumptions, regarding the likely level of these variables, to arrive at quarterly estimates of aggregate, time and demand deposits for 1980 and 1981. Quarterly data concerning deposits and explanatory variables for the period from March 1972 to December 1979 have been utilised.

The deposits of the banking system in this study are considered to be largely a function of National Income, banking facilities in the form of total number of commercial bank branches, opportunity cost variables, such as yield on deposits themselves and the expected rate of inflation and lagged deposits.

Following variables were used in the model:

1) Branch expansion
2) Value of agricultural production
3) Index of Industrial production at current prices
4) Wholesale price index
5) Aggregate deposits at current prices with a time lag
6) Demand deposits at current prices with a time lag.
7) Time deposits at current prices with a time lag.
8) Time trend.
9) Rate of interest on company deposits.
10) Rate of interest on variable divided industrial securities.

1 - Branch Expansion: The banking facilities specified as total number of branches of all commercial banks (lagged by two quarters) (bt-2) showed highly significant (at 1 percent level) and positive coefficient in all the three models on deposits. In fact, branch expansion variable ranked the highest in terms of its value of elasticity. In other words, extension of banking facilities in the form of branch expansion would help to the maximum extent in mobilising the higher to untapped deposits potential and also in generating new potential via credit deployment function of these branches.

2 - Lagged Deposits: Deposits lagged by one year (ADt-4, DDT-4 and TDT-4) as a variable representing the characteristic of stickiness of deposits exerted a highly significant (at 1 percent level) and positive influence on aggregate demand and time deposits. Lagged deposits variable ranks second, to branch expansion variable in terms of the value of elasticity.

3 - Rate of Inflation: The rate of inflation specified as wholesale price index lagged by quarters (Pt-4) exerted a negative and highly significant (at 1 percent level) influence on deposits as compared to rate of interest, which
substantiates the hypothesis that in presence of high inflationary trends in the economy the substitution between deposits and real assets is more probable than the substitution between deposits and financial assets. Moreover, given the same level of income, the capacity of the individuals to save and invest is adversely affected with a rising price level which explains the negative influence of prices on deposits.

Of the two specifications tried namely, wholesale price index with one year time-lag and without any time-lag the former turned out to be a stronger determinant in terms of significance tests than the later, implying that depositors adjust their investment decisions to price changes with a time-lag.

The price elasticity of demand for deposits expressed as coefficient of wholesale price index variable ($P_{t-4}$) was higher than that of rate of interest. The value of price elasticity were higher though marginally in case of time deposits as compared to demand deposits implying that the inflation effect makes the substitution of deposits for real assets more attractive in case of time deposits than in case of demand deposits.

4) **National Income**

Although the index of industrial production expressed as non-farm income (IVm) and the value of agricultural production specified as farm income ($Y_{t-4}$) as anticipated showed positive influence on deposits in all the models, their values were statistically insignificant in majority of the equations.
5) The non-farm income elasticity of demand for deposits and farm income elasticity of demand for deposits was found to be as low as 0.06 to 0.16 and 0.001 to 0.02 respectively. The effect of income variable on deposits appears to be underestimated in the regression. This may be attributed to underlying assumptions in specifying income as farm and non-farm income and resultant exclusion of income from service sector. Although this appears to be the only alternative available to arrive at quarterly assumptions in constructing this series, it may distort the impact of income variable by under-mining its importance quantitatively in explaining the behaviour of deposits.

6) Trend Variable

Trend variable though positive in sign showed statistically insignificant 't' values in most of the regressions indicating that there is no definite trend in the deposits series. The inclusion of this variable did not improve the value of D.W statistics.

7) The percentage error in terms of the deviation of the estimated levels of deposits from the actual levels of deposits was the lowest in the case of aggregate and time deposits (on average around ±1 percent). However, the error was somewhat higher in the case of demand deposits (on average between ±2 percent).

G.V. Satyamurthy and others made attempts to construct an econometric model for forecasting deposits of scheduled...
commercial banks in India taking into account a variety of factors influencing variations in the level of the bank deposits.

Deposits with scheduled commercial banks in India may be classified into two different categories - demand and time deposits. The annual time series data on the variables for the period 1960-61 to 1977-78 have been made use of in the formulation of the models. For demand deposits, following factors were included in the model:

1. National Income at current prices in the year t.
2. Total number of scheduled commercial bank branches at the end of the year t.
3. The rate of inflation in the year t. (Base Year 1960)

It can be observed that except national income all other variables considered are not statistically significant. While the changes in branch network do exert influence on the demand deposits to a certain extent the influence of rate of inflation and interest rate are comparatively insignificant.

In the case of time deposits, the deposits level at the current year is influenced among other things, by the level of time deposits in the past year. This is due to the fact that a majority of the time deposits in the recent past are likely to be continued in the current year and to the compounding effect of interest earned.

C. Ranganarajan and G.S. Gupta, have studied separately the demand for current accounts, saving accounts and fixed
deposit accounts because in recent years with the change in the formula adopted for partitioning savings deposits, considerable jumps have been seen in the time deposits on demand deposits. Also this kind of classification enabled them to understand the possible shift between one type of bank deposits and another consequent upon changes in the interest rates offered on these deposits.

They have estimated the relationship in nominal terms rather than in real terms. Data for the period 1960-61 to 1978-79 were used for estimating the relationship.

The selected independent variables were as follows:

1. Net National Product at factor cost in current prices (Rs. in crores)
2. Bank Branches
3. Ratio of bank branches opened in that year to the total bank branches.

In relation to current deposits, all the variables have the right kind of sign—income has a positive effect, and 'branches' has a positive co-efficient. However, 'branches' alone has a co-efficient which is statistically significant. The ratio of one year has a negative co-efficient, they have found in their various experiments that when both income and branches are used as independent variables only one becomes significant. If branches are omitted, income has always a strongly significant co-efficient. Since during the last ten years, national income and branches have grown at a fairly rapid rate, it becomes difficult to disentangle the separate effects.
In case of savings deposits all the co-efficient have right signs. Income has a positive co-efficient. Branches again has a positive co-efficient. It can be seen that only the co-efficient for income is statistically significant.

In relation to the fixed deposits income has a positive coefficient. Branches again has a positive coefficient.

The author has also examined the importance of income and branches as determinants of bank deposits from the cross-section analysis.

For the year 1974-75, they related the three types of deposits in various states to income in the various states and the ratio of non-agricultural income to total income and to the number of branches in each state.

In the cross-section analysis, the factors mentioned above 11(6) taken and addition only as follows:

- Ratio of non-agricultural income to the total national income.

For making predictions for the future, one will have to make assumptions on the behaviour of nominal income, the rate of interest and growth in branches. However, it can be observed that while on the average the deviations between the actual and the estimated value is not much, the deviations are quite pronounced towards the end. In view of this, they tried to re-estimate the equations using the more recent observations. One problem faced in estimating equations with smaller number of observations is the reduction in the degree
of freedom particularly when a number of independent variables are to be used.

They have taken the estimated and actual value for the three kind of deposits using the equations estimated with smaller number of observations. It can be seen from the estimated values are closer to the actual values in many years. In relation to current deposits and savings deposits between 1970-71 and 1977-78, the estimated values are closer to actual values according to the new equation in 5 years with respect to fixed deposits the new estimates are closer to actual values in 7 years. On thing that emerges from analysis is that for the purpose of forecasting it is better to use equations based on recent observations even though it has a limitations which was pointed earlier.

In the demand approach, it was found that the equations based on the sample period 1969-70 to 1978-79 perform better than those based on the period 1961-62 to 1978-79 in reproducing the history. Although, there is no guarantee that an equation which explains the history better would predict the future also better than the other equations, this is true. In other words, a high $R^2$ is generally, generally the necessary condition for better prediction, though it is not the sufficient condition. For this reason, in what follows, the equations based on the shorter but the more current period are used for generating deposits forecasts.

In 1982, study of D.M. Nachne, several variables were studied. A three equation model was tested, featuring currency, demand deposits and time deposits as the dependent variables. As the model was fully recursive OLS equations was considered adequate. For the demand deposits equations,
the explanatory variable tried were -

1) Net non-agricultural income at current (market) prices
2) Rate of interest on 3 months deposits
3) Bank branches
4) A dummy variable to examine the impact of bank nationalisation.

On the other hand, the explanatory variables tried out in the time deposits, equations were -

1, 3 and 4 mentioned above plus the difference between the interest rate on one year time deposits and gold inflation rate.

The model was fixed for the years 1960-61 to 1976-77 and expose forecasts were made for the three years 1977-78, 1978-79, 1979-80 and compared with actual data which was already available on the whole the forecasting performance of the model was quite good.

Satyamurthy and others also formulated separate models for demand and time deposits. The multiple linear regression model was fitted for annual time series data for the period 1960-61 to 1977-78. Several explanatory variables were tried from which only national income turn out to be having statistically significant impact on bank deposits. While in the changes in the branch net-work and interest rate on time deposits for 6-12 months did exert influence on demand deposits to a certain extent, the influence on interest rates and inflation was comparatively insignificance. In case of time
deposits the model indicated a strong influence of the level of time deposits in the previous year. This highlighted the sticky character of time deposits and explains why time deposits increase even in years of a decline in national income or of severe drought conditions. The second important factor was the national income. It also had a significant influence on bank deposits. The model also indicated that in the context of the high inflation rate in the economy, the deposit tended to the decline. Also, increase in the maximum interest rate on time deposits and average yield on industrial security tend to increase time deposits.

In more recent study, Vikas Chitre has projected the components of aggregate deposits using new factors like income distribution, legged value of bank deposits, call money rate within the banks and intervention effect in the year 1977-78 of withdrawal of high denomination of currency notes from circulation in that year, apart from income and interest variables.

The latest methodical study available on the topic is that of Thomas Paul and Bhattacharya. The study presents comprehensive literature review, analysis the behaviour of aggregate bank deposits and their determinants. In order to overcome, the problem of multi-collinearity and to make use of available a prior information both time series and cross-section data used for estimating demand function. A new approach to study the determinant bank deposits and in components was followed in which there is no income effect. The effect of income on bank deposits was computed as an income coefficient from the cross-section data containing
income and deposits of different states of India. A regression equation was fitted across the 22 states for the fixed year variables of bank deposits without income effect were computed using the residual of the nominal net national products using pulled cross-section and time series method they observed the real effect of the interest rates variables (which are correlated among themselves along with national product) influencing expectations and rate of inflation and number of bank branches on bank deposits and in components.

The non-linear relations were found to be significant. The coefficient for double log equation was highly significant and thus double log equations explain the relation best. Income either permanent or current was found to be the dominant variables affecting bank deposits. They also concluded that there was a non-linear relationship between branch expansion and growth of bank deposits. Interest rate policy had no positive impact on bank deposits. This was explained by domination of consideration like safety etc. rather than rate of return for holding bank deposits. Inflationary expectation had a significant negative reaction with fixed and total deposits.

Supply Approach

Khusro and Sidharthan's identified the differential interest rate and the reserves as the supply side factors influences bank deposits. Applying statistical technique of two stage least squares (TSLS) they found bank reserves as the most important variable explaining the supply of deposits. Even the effect of the differential between the market rate of interest which the banker receive and the rates they pay
on deposits also had substantial effect on deposit supply.

One of the most comprehensive study was undertaken by C. Rangarajan and G.S. Gupta. Their supply approach was based on the premise that total deposits in the systems can increase only if high-powered money is increased by Central Banking System. Two ratios were used - the current deposits ratio (C/TD) and excess reserves to deposits (ER/TD). The deposit multiplier is dependent upon two parameters which are totally policy determined with a higher proportion of currency to deposit the multiplier would be smaller. Similarly higher the reserves ratio lower would be the multiplier. The impact of these two variables (ratios) on bank deposits was examined through regression analysis using the data for the period 1968-69 to 1975-76. In all the year except one (1973-74) the actual and estimated values of deposit corresponds very closely. However, the limitation of these methods are the difficult in making reasonable assumption on the growth of high powered money and required reserves ratios.

S. Singh and B.B. Pawar has also included the supply approach in their study of determinant of bank deposits. Both have highlighted the importance of reserves in promoting bank deposits. The later has also taken the component of the aggregate monetary resources viz. C_g, C_c, E, L_g and N.*

\[ C_g = \text{Bank Credit to Government Sector} \]
\[ C_c = \text{Banks' credit to Commercial Sector} \]
\[ E = \text{Net foreign exchange assets of banks} \]
\[ L_g = \text{Government's currency liabilities to the public} \]
\[ N = \text{Net non-monetary liabilities of banks} \]
However, the predication value of such an equations was
evertheless criticised. It was argued that, the frame at best,
is an only an according identity while any change in any
of these components would lead to a corresponding changes
in $M_3$, it cannot be said for sure, which was the causal
relationship works. Inspite of these, short comings the
equations can be used for short-term forecastings purpose.

With increasing importance on bank deposits as a
monetary variable, several studies were undertaken to
identify the factors influenced the growth and behaviour
of bank deposits in India and in other countries. Coghlan's
work is mainly concerned with conceptual issues. He
presented two types of models regarding the supply of
deposits based on multiplier approach. Firstly, the simple
ratio model used three ratios, (A) Ratio of bank reserves
to bank deposits, (B) Ratio of public currency to bank
deposits, (C) Ratio of high powered money to bank deposits.
The second one was a structural model which used public demands
for currency bank reserves and other related variables.
He cautioned that the assumption of linear behavioural
equation may be unrealistic. He also pointed out that
application of multiplier model is possible if and only
if the implicit assumption of demand for bank credit are true.

Time Series Approach

A several studies have attempted forecastings of
bank deposits following the time series approach. The
D. Ray's study in the recent past made use of Holt-Winter
and Box-Jenkince methods. The most of the earlier studies
showed that these two methods on an average, performed better than the others. The ten years data from 1970 to 1979 of total bank deposits indicated that though the series is seasonal in character. The seasonality is not so pronounced. However, it is always better to build a seasonal model to explain any variable due to seasonality. Hence, the two methods mentioned earlier were selected. Lastly, it was found that deposit forecasts based on combined forecasts under the two methods performed estimates well compare to the individual forecasts.

Varsha Varda applied Box-Jenkins model for forecasting weekly deposits. This model is generally used for short-term forecasting of variables. It is expected as the most accurate and powerful time series forecasting method. However, it is costly and complex in comparison with other classical time series techniques. This method gave the most accurate one week ahead forecast of deposits.

**Conclusion**

From the above review, it is clear that most of the recent studies to forecast and explain the level of bank deposits in India, demand function and estimated using variables such as national income, rate of inflation, no. of branches, inflationary expectations etc. Majority of them found national income as the dominant factor for determination of bank deposits. Interest rate variables were found to be mostly statistically insignificant in most of the cases. Even when coefficient had correct signs. However, many studies have indicated that deposit holders do shift one type of deposit to other type when relative rate of return changed.
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