Determinants of Bank Deposits of The Household Sector in India

By

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Introduction

INTRODUCTION

Capital formation is a crucial element for economic growth and economic prosperity. Economic development of a country depends upon the growth of capital equipment along with human skill and technology. As such, savings is a must for achieving the objectives of development, namely removing the regional imbalances and to improve the economic conditions of the poor. In an economy like India, which is still in the stage of establishing pre-conditions for development, however, upper income groups often assign considerable prestige value to conspicuous consumption. Hence savings have an important role to play in restricting consumption during the early stages of economic growth.

National saving is the sum total of the savings by different sectors of the economy namely households, corporate enterprises and government enterprises. The household sector is in effect the residual sector as far as the national savings estimates are concerned. Besides the households, this sector also includes unregistered business firms and registered business firms-both proprietory and partnership. Nevertheless the share of the household sector in the total net domestic savings in the 1970s was about 77 per cent. (Vasudevan, 1981). That is out of every rupee saved, 77 paise comes from the household sector. The Indian savings

rate had grown impressively since 1950. Gross savings as a proportion of gross domestic production, increased from less than ten per cent in the early 1950s to about twenty five per cent, towards the close of the 1970s. The significant stepping up of the Indian savings rate was made possible principally by the remarkable saving performance of the household sector.

Savings of the household sector are held in various finabcial assets like currency, bank deposits, Government securities, life insurance funds, shares, bonds, debentures in corporate enterprises, small savings, company deposits, units of the Unit Trust of India and securities of term lending institutions.

The share of commercial bank deposits in the gross financial savings of the household sector was 18 per cent in 1970-71 and it became 40 per cent in 1980-81. In terms of gross household sector saving, this ratio was 8 per cent in 1970-71 and 24 per cent in 1980-81 (Sen, 1977).

Keynes' simple distinction between money and bonds as the only assets between which individuals have to choose has now been abandoned (Stonier and Hague, 1972). Tobin has emphasised that both individuals and institutions are concerned with building up portfolios of assets in which money, short term securities, long term securities and physical assets of various assets, all find their place.

The spectrum of assets which can be held by individuals and institutions can be schematically represented as given below:

Spectrum of Assets

Cash	Short Term Securities	Bonds	Equities	Physical Assets.

From the point of view of savings, the demand as well as the time deposits held with the banks may be considered to fall in the second category of short term securities, though from the point of view of monetary theory, deposits of a non-interest bearing nature, i.e. the demand deposits, are considered as a component of cash. The result is that any one who holds financial assets will have to behave in the way that banks have to behave. He has to balance liquidity against profitability. He has to ensure that he has sufficient assets that are less liquid and more profitable to balance the assets which are less profitable and more liquid. He has to choose the proportion of his assets to be held in cash, in short term securities, in long term securities and in physical assets. Bank deposits have been preferred to other financial assets by the household sector because of certain relative advantages.

A unique feature of the bank deposits is that it provides more liquidity and security. Time deposits constitute nearly 80 per cent of the aggregate bank deposits and they are withdrawable to the extent of 75 per cent at any time by means of a loan. Savings deposits carried complete liquidity with a fairly good return. Further, this is the only savings medium to the corpus of which additions can be easily made without any stipulation of periodicity or of minimum amount.

The bank deposits of the household sector are influenced by various factors. Primarily it depends upon the national income and general price level which in turn determine the real income of the household sector and it's capacity to save. Bank deposits in general and bank deposits by the household sector in particular can be considered as a direct function of national income. A rapid income generation increases the marginal propensity to save and promotes more saving. The influence of the general price trend on bank deposits may be expected to be negative. In inflationary situation, consumers are required to spend larger proportion of their income on purchasing commodities. Therefore, inflation reduces both the overall level of savings and the amount of bank deposits.

The impact of the rate of interest on the portfolio of assets held by individuals and institutions had been a fascinating subject of study in the Post Keynesian period. Following the Keynesian line of reasoning, on the relationship between the rate of interest and the demand for short term securities, an upward movement in the interest rate will increase the demand for short term securities, of which bank deposits are a component. Similarly, a fall in the interest rate will reduce the demand for short term securities including bank deposits. Hence the generalisation implies that bank deposits are positively related to the rate of interest.

In India, the deposit rates of interest are statutorily determined and they have been revised by the Reserve Bank of India, mostly in the upward direction. Other things remaining the same, a rise in the rate of interest may induce the individuals and institutions to hold more of bank deposits in relation to other less liquid and more profitable assets and even within the short term securities, the shift may be expected to be in favour of bank deposits.

The massive branch expansion programme has meant not only an enlargement of the channels for the flow of credit but also the institutional structure for the absorption of the community's savings. Hence the influence of branch expansion on bank deposits, may be expected to be positive.

The larger the bank deposits, larger is the capacity of the banking system to create credit. Therefore, banks as profit making institutions are interested in mobilising more and larger deposits. The expansion of the credit base incidentally makes commercial banks as an effective instrument of national economic development.

The investigator was interested in examining the determinants of deposits, especially with reference to the household sector. As the bulk of savings accrues from the household sector, an examination into its growth, composition and determinants was undertaken.

The current study on the determinants of household deposits examines the influence of national income, per capita income, wholesale price index, consumer price index, interest rates, security price index and number of branches of commercial banks on household deposits. The specific objectives of the study are--

(i) To find out the income deposit ratio for the household sector.

(ii) To find out the growth rate in household deposits between 1971-1980.

(iii) To assess the relative dominance of bank deposits over other financial assets held by the household sector.

(iv) To identify the determinants of bank deposits of the household sector and

(v) To estimate the functional relation between household deposits and the related variables like national income, per capita income, wholesale price index, consumer price index, interest rates, security price index and number of branches of commercial banks.

This study is an attempt to highlight the determinants of household deposits and evaluate their relative influence. In this respect, it differs from the previous studies of Cagan (1958), Chandrasekar (1980) and Vasudevan (1981) which concentrated on general aspects of deposit growth of commercial banks. As such, it is hoped that the current study will add to the available literature on bank deposits of the household sector.

Review of Literature

REVIEW OF LITERATURE

The literature relating to the study on the determinants of bank deposits of the household sector is discussed under the following headings:

A. Concept of saving

B. Composition of household savings

C. Importance of Household deposits

D. Determinants of household deposits and

E. Studies done on the topic

A. Concept of saving

Official reports and researchers have used various definitions of the concept of saving to suit their individual requirements. A survey of such definitions is attempted here.

The All India Rural Household Survey (1956) defined the net saving of an economic unit as the difference between current disposable income and current consumption.

Pandey (1972) defined the saving of an economic unit, in an accounting period, as the difference between changes in assets and liabilities, adjusted for capital transfers, capital gains and losses.

Khare (1973) defined saving as a difference between current disposable income and current consumption expenses. In his view, saving is the difference between changes in physical and financial assets, minus changes in liabilities adjusted for capital transfers and net capital gains. Khare's definition is similar to that of Pandey's, except that he explicitly states the composition of assets as physical and financial assets.

According to All India Rural Household survey on Savings, Income and Investment undertaken by National Council of Applied Economic Research (1965), the only way to measure savings of household, as distinct from business enterprise, is to have estimates of the total receipts and its total expenditure on current consumption account. Hence, household savings was measured as the total financal saving and saving in the form of physical assets.

B. Composition of household savings

Sarma (1979) throws light particularly on the changes in the composition of household saving and the propensity to save in his study on 'Changes in the Structure of personal savings'. Gross saving of a household is measured as the algebraic sum of the following components:

> Investment in physical assets + increase in the value of financial assets - increase in the value of net borrowings - increase in the value of inflow of capital transfers.

Financial assets are insurance, provident fund, bank deposits, shares, bonds and securities, gold, silver etc.

Sanyal (1972) has developed a model of portfolio choice with indivisibility. This model explained the portfolio behaviour of households and stated that a low rate of interest will induce more deposit formation in the household sector. According to him, for effective saving, the accumulated saving function must cut the asset price function.

This study found out that household have increased their savings significantly, in the form of small savings, shares, securities and deposits.

C. Importance of household deposits

According to the data furnished by Vasudevan (1982), bank deposits are an important constituent of the financial assets held by the household sector. About 48 per cent of the total financial assets of this sector are held in the form of bank deposits.

Mody's study (1983) also substantiated the dominance of bank deposits among the financial savings of the household sector. He studied the importance of commercial bank deposits in the community's financial savings and pointed out that bank deposits have predominated over other savings media because of certain special features peculiar to them.

D. Determinants of household savings and household deposits

Reserve Bank of India (1951) estimated the National Savings for the period 1950-51 to 1958-59. These estimates gave the saving function as regression equations of sectoral savings on national income on the one hand and general price level on the other. The estimated saving equation was:

$$S = a + bY$$

where S = Savings

Y = National Income

b = The regression coefficient which measures the value of marginal propensity to save

a = the intercept

The estimated regression results are given in Table I.

TABLE I

SECTORAL SAVINGS EQUATIONS

Specification	Constant a	Coefficient b_1	Coefficient b_2
I. Total savings			
a) TS = F (y)	-128.35	+.1702	..
b) TS = F (y,P)	-991.86	+.1985	- 6.08
II. Household savings			
a) HS = F (y)	-858.29	+.1248	..
b) HS = F (y, P)	-842.48	+.1265	- .3909
III. Public sector			
a) PS = F (y)	-245.72	+.0335	..
b) PS = F (y, P)	-30.662	+.0655	-6.8460
IV. Corporate sector			
a) CS = F (y)	-134.345	+.0120	..
b) CS = F (y, P)	-181.07	+.0066	+1.153

Marginal propensity to save of the entire economy was estimated at .20 in terms of real income and for the household sector it was .13. The marginal propensity to save for the public sector and corporate sectors in respect of real income were quite low indicating that they were governed in their savings decisions more by non income factors.

The All India Rural Household Survey on Saving, Income and Investment (1965) assessed the relative affects of income, wealth and the size of households upon the marginal propensity to save at the rural household level. The study found that there was a negative average saving income ratio in the lowest income class and the ratio was 5.9 per cent.

Sen (1977) has analysed the effect of changing pattern of the distribution of income and consumption upon household savings. He found that in 1970-71, at the wholesale price index of 226.6, the index of savings generation from household sector was 675.4 whereas it decreased to 625.8 at the price index of 378.8 in 1975-76.

According to Chandrasekar (1980), the increase in marginal propensity to save of the household from 14.5 per cent in 1969 to 16 per cent in 1974-76 was due to a rapid income generation supplemented by effective saving drive.

Sanyal (1982) pointed out, that the change in rate of interest has an effect on saving. A higher interest rate will promote savings because it implies a shorter waiting time. It also reveals that a change in price level will affect deposits and at high price level, less would be saved.

Charati and Gupta (1973) showed that real saving was promoted by banking progress and proportion of the increase in the demand for total deposits was due to banking progress.

Trivedi (1980) found that the money rate of interest played an important role in diverting savings from unproductive channels. He also found out that the influence of the general trend on public savings was negative.

Prasad (1980) has analysed the relationship between the demand for bank deposits and the other variables, namely wholesale prices and national income. He found out that the wholesale price index and national income are important variants in determining household deposits. His study showed that the wholesale price index was the most prominent determinant of household deposits followed by the past level of deposits and advances.

E. Specific studies related to the topic

Rao (1980) studied the saving behaviour in India with specific reference to household sector. He wanted (a) to assess the dominance of the household sector in the total saving (b) to explain the influence of income on household saving and (c) to suggest suitable measures to improve the household savings.

The study covered a period of 25 years from 1950 to 1975. The required data were obtained from the surveys and reports of the Central Statistical Organisation, Reserve Bank of India and National Council of Applied Economic Research.

He found that the increase in marginal propensity to save of the household sector from 14.5 per cent in 1960-61 to 17 per cent in 1975-76 was due to a rapid income generation. He fitted sectoral regression equations, pre-supposing a linear saving function. The resulting sectoral regression coefficients were as given in Table II.

TABLE II

SECTORAL REGRESSION COEFFICIENTS

S.No.	Sector	Regression coefficient (Marginal Propensity to save)
1.	Household sector	0.12473
2.	Corporate sector	0.01200
3.	Public sector	0.03349

Rao found that MPS of the household sector was .12 or 12 per cent of the household income. This ratio was less pronounced in the case ~~of the case~~ of corporate and public sectors.

2. The All India Rural Household Survey on Savings, Income and Investment carried out by National Council of Applied Economic Research (1962) had analysed the factors influencing household savings. The objectives of the survey were (a) to assess the relative effects of income, wealth and size of households upon the marginal propensity to save at the rual household level (b) to show variations in savings as brought about by occupational differences; and (c) to suggest suitable measures to increase the household savings.

The survey covered all rural households in relation to:

a. Changes in physical assets;

b. Changes in financial assets including currency;

c. Change in borrowings;

d. Changes in lending;

e. Inflow of capital transfers;

f. Outflow of capital transfers;

g. Depreciation attributed to physical assets; and

h. Estimates of gross and net savings.

The survey revealed that during the reference year the gross savings of rural households was Rs.731 crores including change in currency as estimated from external data and Rs.666 crores excluding change in currency. The standard error of the survey estimate of gross savings, excluding currency was Rs.71 crores which set the 95 per cent confidence limit of Rs.524 crores and Rs.808 crores. The coefficient of variation for gross savings was 10.65 per cent which reflects the high variability in household savings.

The classification of households by occupation revealed very significant differences in relation to the proportion of net savings. The self employed farm households have financed nearly sixty nine per cent of their net change in assets through net savings.

The data revealed that a higher proportion of the net change in assets was financed from net savings as the age of the head increases. It also found that fifty per cent of the net change in assets was financed through net savings for households, with heads who had no formal education and this percentage goes upto eighty per cent at higher level of education.

3. Vasudevan (1981) in his study on <u>estimating rural household sector savings in currency and deposits</u>, had examined the various issues in connection with estimating

the household sector savings in currency and deposits. He has compiled the data on household deposits as a proportion of gross financial assets held by the household sector, over the period 1971-1980. The ratio of deposits to gross financial assets is given in Table III.

TABLE III

FINANCIAL ASSETS OF THE HOUSEHOLD SECTOR - (1971-80)

(Rupees in crores)

Years	Deposits	Gross Financial Assets	Deposits as per cent of Gross Financial Assets
1971-1972	1024	2348	43.64
1972-1973	1214	3004	40.41
1973-1974	1511	3632	41.60
1974-1975	1654	3403	48.63
1975-1976	2871	4894	57.49
1976-1977	3920	6905	56.77
1977-1978	3535	7113	49.70
1978-1979	4304	9286	46.35
1979-1980	4272	9559	44.69
Average	2901	5583	48.32

Bank deposits formed about 48 per cent of the gross financial assets held by the household sector in the period 1971-1980. He had also highlighted the method followed by Reserve Bank of India in estimating thebank deposits held by the household sector. The Reserve Bank of India's procedure consists of deducting the deposits held by other sectors from the aggregate deposits and obtaining the balance which is regarded as the deposits held by the household sector. The difference in the deposits of the household sector for any two years, gives the savings in the form of deposits held in the household sector. The author pleads for the use of better analytical techniques to improve the estimation of savings held in currency and deposit by the household sector.

4. Charati (1983) had studied some aspects of deposit growth of commercial banks. His study aimed at explaining the sluggish growth in bank deposits and in identifying the determinants of bank deposits. The information required for this study was collected from Reserve Bank of India Reports for the period 1971-1982.

Charati found that the predominance of bank deposits can be gauged from the fact that they constituted only 8 per cent of net national product in 1969 and it increased to 30 per cent in 1980. He also found that, time deposits

constitute nearly 80 per cent of the aggregate bank deposits. He concluded that merely offering higher rates of interests on deposits and brokerage for mobilising large deposits will serve only to push up their already high costs without any benefit to the community at large.

5. Karfman (1966) has studied the <u>demand for demand deposits and the demand for currency</u>. He wanted to show that currency and demand deposits are perfect substitutes and the study concentrated on the causes of the changing substitutability between currency and demand deposits.

Karfman considered the demand for saving deposits and demand deposits as a function of the arrey of rates of return on securities, saving shares and time deposits and on total labour income and private non human wealth. The demand functions that he formulated are as follows:

$$S_d/P = f\ (y^{\ell}, i, i_s, i_t, A/P) \qquad (1)$$

$$DT_d/P = f\ (y^{\ell}, i, is, it, A/P) \qquad (2)$$

The partial derivatives of each function with respect to y^{ℓ}, A/P and the own rate of return are positive while the partials with respect to the other rates of return are negative. The authors found out that the two assets are not perfect substitutes for all transactions and currency is more useful for illegal transactions.

6. Sanyal (1982) studied the portfolio choice with indivisibility. The study provided explanation for the portfolio behaviour of households and the study was based upon Tobin's model.

This study found that a household that once manages to save remains a saver at all subsequent dates. It also revealed that a changing rate of interest have effect on savings. If rate of interest is lower, then at the aggregate level, it will induce more deposit formation as a proportion of total savings. The study highlighted that the changes in price level affected deposits and at high price level less was saved. This result of the study is in contrast to that of Charati (1983) who found that a higher deposit rate of interest brought about higher savings.

7. Prasad (1980) analysed the behaviour of bank deposits in India. He had drawn the data from RBI's Monthly Bulletins and Reports on Currency and Finance. He fitted a regression equation to derive the relationship between the demand for bank deposits and the other variables namely advances, wholesale price and national income. The wholesale price index and advances were found to be important variables in determining household deposits. In household deposits, the impact of wholesale price index was the most prominent determinant followed by the past lvel of deposits and advances.

8. Sen (1977) had studied the levels of living and savings during the plans. He wanted to show the changing patterns of the distribution of income, consumption and savings and he mainly dealt with the savings of the household sector.

The study covered the period of 25 years from 1950 to 1975 and utilised the data collected by the National Sample Survey Organisation in its different rounds of survey on savings by the National Council of Applied Economic Research and by Reserve Bank of India including RBI's reports on Currency and Finance. The results of the study relating to savings trends in the household sector are given in Table IV.

TABLE IV

TRENDS IN HOUSEHOLD SECTOR SAVINGS

(Rupees in Crores)

Year	At current prices	At 1952-53 prices	Index of Savings Generation 1952-53=100	Index of wholesale price 1952-53=100
1950-51	411.0	387.6	158.7	111.8
1951-52	278.8	24411	100.0	114.2
1952-53	305.1	305.1	125.0	100.0
1953-54	446.5	427.7	175.2	104.4
1954-55	620.5	625.5	256.2	09992
1955-56	799.1	863.9	353.9	092.5
1956-57	841.2	798.9	327.3	105.3
1957-58	761.0	674.0	276.1	112.9
1958-59	623.1	574.8	235.5	108.4
1959-60	841.6	718.0	294.4	117.1
1960-61	1025.8	821.3	338.5	124.9
1961-62	922.2	737.2	302.0	125.1
1962-63	983.6	769.0	315.0	127.9
1963-64	1224.0	904.7	370.6	135.3
1964-65	1307.0	855.3	350.3	152.7
1965-66	1307.0	855.3	350.3	152.7
1966-67	2612.0	1365.4	559.4	191.3
1967-68	2445.0	1151.0	471.6	221.4
1968-69	2698.0	1283.5	525.8	210.2
1969-70	3256.0	1516.5	621.3	214.7
1970-71	3736.0	1648.7	675.4	226.6
1971-72	3210.0	1361.9	557.9	235.7
1972-73	3857.0	1488.0	609.6	259.2
1973-74	4549.0	1430.5	586.0	318.0
1974-75	4865.0	1242.0	509.0	391.6
1975-76	5786.0	1527.5	625.8	378.8

The study concluded that the real domestic savings in India grew substantially since 1950-51 while per capita inequality of various expenditure classes declined over time.

Methodology

METHODOLOGY

The methodology that the investigator adopted for studying the 'Determinants of bank deposits of the household sector in India' is discussed under the heads of materials and methods.

A. Materials

Indian economy is conventiona ly divided into three sectors, the public sector, the private corporate sector and the household sector. The significant stepping up of the Indian savings rate was made possible principally by the remarkable savings performance of the household sector and hence household sector was taken into account for the study.

Since the subject of the study was on 'Determinants of bank deposits of the household sector in India', in relation to other variables, time series data regarding the related and relevant variable of household deposits like the national income, per capita income, branch expantion, wholesale price index, consumer price index, security prices and interest rates were needed for the study.

The data was collected from the secondary sources. The information relating to total deposits, household deposits,, national income, per capita income, wholesale price index,

consumer price index, interest rates, number of branches and security prices were collected from the various issues of the Reserve Bank of India Bulletins, its Reports on Currency and Finance, and Annual Reports on Trend and Progress of Banking in India. The study covered the period of ten years from 1971 to 1980.

B. Methods

I K. The principal hypothesis tested in the study were:

1. A major determinant of bank deposits of the household sector is national income and since there is a direct relationship between national income and household deposits.

2. Per capita income of the households has got a positive influence over bank deposits held by them.

3. The wholesale price index and consumer price index seem to affect bank deposits of the household sector in a negative way and as such high price index will reduce the volume of bank deposits of the household sector.

4. There is a direct relationship between household deposits and interest rate which the banks provide on deposits.

5. Since number of branches of banks available is a determining factor in mobilising deposits, the volume of bank deposits of the household sector is directly affected by number of branches of banks.

6. As the household sector can have an array of total assets in the form of cash, deposits and securities, higher security price will have only negative stimulus on bank deposits of the household sector.

B. The statistical tools used in the study were:

1. Index Number Analysis:

Index number analysis was used to find the percentage change in national income, per capita income and household deposits for the period 1971 to 1980.

2. Coefficient of Variation:

This was used to analyse the variations in household deposits, national income, per capita income, wholesale price index, consumer price index, security price index, interest rates and branch expension.

3. Confidence Interval Analysis:

The purpose of using this statistical tool was to find out the maximum and minimum deposits mobilised from the household sector between 1971-1980.

4. Ratio analysis:

This was used to work out the following ratios:

a. Deposit - National income ratio;

b. Deposit - Per capita income ratio;

c. Deposit - Branch ratio and

d. Deposit - Population ratio

5. Simple Linear Regression:

Simple linear regression equation was used to estimate the relationship between the volume of household deposits and its determinants like national income, per capita income, wholesale price index, consumer price index, number of branches of banks, rate of interest and security prices.

The regression equation was of the form:

$$y = a + b\,x$$

where, y represents household deposits

x represents the determinant

The regression coefficient was expected to be positive in case of the determinants like national income, per capita income, interest rate and number of branches. On the other hand, it was expected be negative in relation to wholesale price index, consumer price index and security price.

6. Multiple regression analysis:

This was used to estimate the household deposit function by linking it with the per capita income and consumer price index as a whole.

The multiple regression equation was of the form

$$y = a + b_1 x_1 + b_2 x_2$$

where y represents household deposits

x_1 represents per capita income, and

x_2 represents consumer price index

The multiple regression coefficient b_1 was expected to be positive in case of the determinant-per capita income and b_2 was expected to be negative in relation to the variable-consumer price index.

7. Growth rate:

The variable of bank deposit of the household sector as a function of time was analysed to examine whether the bank deposit of the household sector under study was effective or not. The equation used to estimate the growth rate in bank deposit of the household sector was of the form

$$D_t = D_o e^{\lambda t}$$

where D = Bank deposits of the household sector

λ = Growth rate in bank deposit of the household sector and

t = Time period

[illegible] and analysis of data

Besides this, the data collected was also [illegible]ised under suitable heads. The results of the analysis are presented and discussed in the following chapter on results and discussion.

Results And Discussion

RESULTS AND DISCUSSION

In the light of the objectives of the study, the results of the study are discussed under the following heads:

A. Share of bank deposits as a proportion of total household savings;

B. Growth rate of bank deposits of the household sector;

C. Determinants of bank deposits of the household sector and

D. Bank deposit model of the household sector.

A. Share of bank deposits as a proportion of total household savings

The share of commercial bank deposits as a proportion of total household savings was analysed by the investigator to assess the dominance of bank deposits.

Table V gives information about the share of household deposits in proportion to total household savings.

TABLE V

SHARE OF BANK DEPOSITS AS A PROPORTION OF TOTAL HOUSEHOLD SAVINGS

(Rupees in crores)

Year	Total household savings	Household deposits	Household deposits as percent of total household savings
1971	2,753	1,024	37.19
1972	3,285	1,214	36.94
1973	3,857	1,511	39.17
1974	4,549	1,654	36.33
1975	4,865	2,787	57.20
1976	5,786	3,940	67.74
1977	7,115	3,491	49.06
1978	7,290	4,869	66.73
1979	11,921	6,186	51.89
1980	14,397	5,212	36.20
Average	6,681.8	3,187.8	47.94

On an average, 48 per cent of the total household savings were in the form of bank deposits. The declining share of bank deposits in 1974, 1977 and 1980 were due to the availability of other attractive avenues of investment namely equity shares, debentures and the units of the Unit Trust of India.

B. Growth rate of bank deposits of the household sector:

The growth rate of bank deposits gives an indication of the change in bank deposits of the household sector between 1971-1980. On the basis of the available information, the investigator has worked out the growth rate of bank deposits and also projected the estimates of household deposits for 1985 and for 1990 (Appendix I).

Table VI gives the estimated growth rate equation of bank deposits of the household sector.

TABLE VI

ESTIMATED GROWTH RATE OF BANK DEPOSITS OF THE HOUSEHOLD SECTOR

Function	Equation	Standard error	$\bar{R}^2$ value	Projection For 1985	Projection For 1990
D = f(t)	$2927e^{.21t}$	0.75	3.7**	19,374	42,531
				(Rupees in crores	

Footnote: ** Statistically significant at 5 percent level.

The estimated equation showed that the bank deposits held by the household sector had increased at the rate of 21 per cent per annum. The projected bank deposits imply that bank deposits of Rs.6,186 crores of the household sector in 1979 will increase to Rs.19,375 crores in 1985 and to Rs.42,531 crores in 1990.

Based upon the growth rate in bank deposits of the household sector, the investigator had estimated bank deposits of the household sector from 1971-1980 and has compared it with the actual values. Table VII gives the deviation between actual and the estimated values.

TABLE VII

ESTIMATED BANK DEPOSITS OF THE HOUSEHOLD SECTOR

(1971-1980)

Rupees in crores

Year	Actual value	Estimated value	Deviation
1971	1,024	1,263.62	-239.62
1972	1,214	1,589.36	-375.36
1973	1,511	1,923.18	-478.36
1974	1,654	2,372.59	-718.59
1975	2,787	2,927.01	-140.01
1976	3,920	3,610.98	309.02
1977	3,491	4,454.79	-963.79
1978	~~4,865~~ 4,869	5,495.78	-630.78
1979	5,212	6,780.02	-1568.02
1980	6,186	8,364.36	-2178.36

Between 1971-1980, with an exception of one year, the actual value of bank deposits of the household sector are much less compared to the estimated value. This implies that the household sector has to still make use of the banking facilities and come forward to invest in bank deposits.

The deviation between actual and estimated values of bank deposits of the household sector are represented through trend line (Figure I).

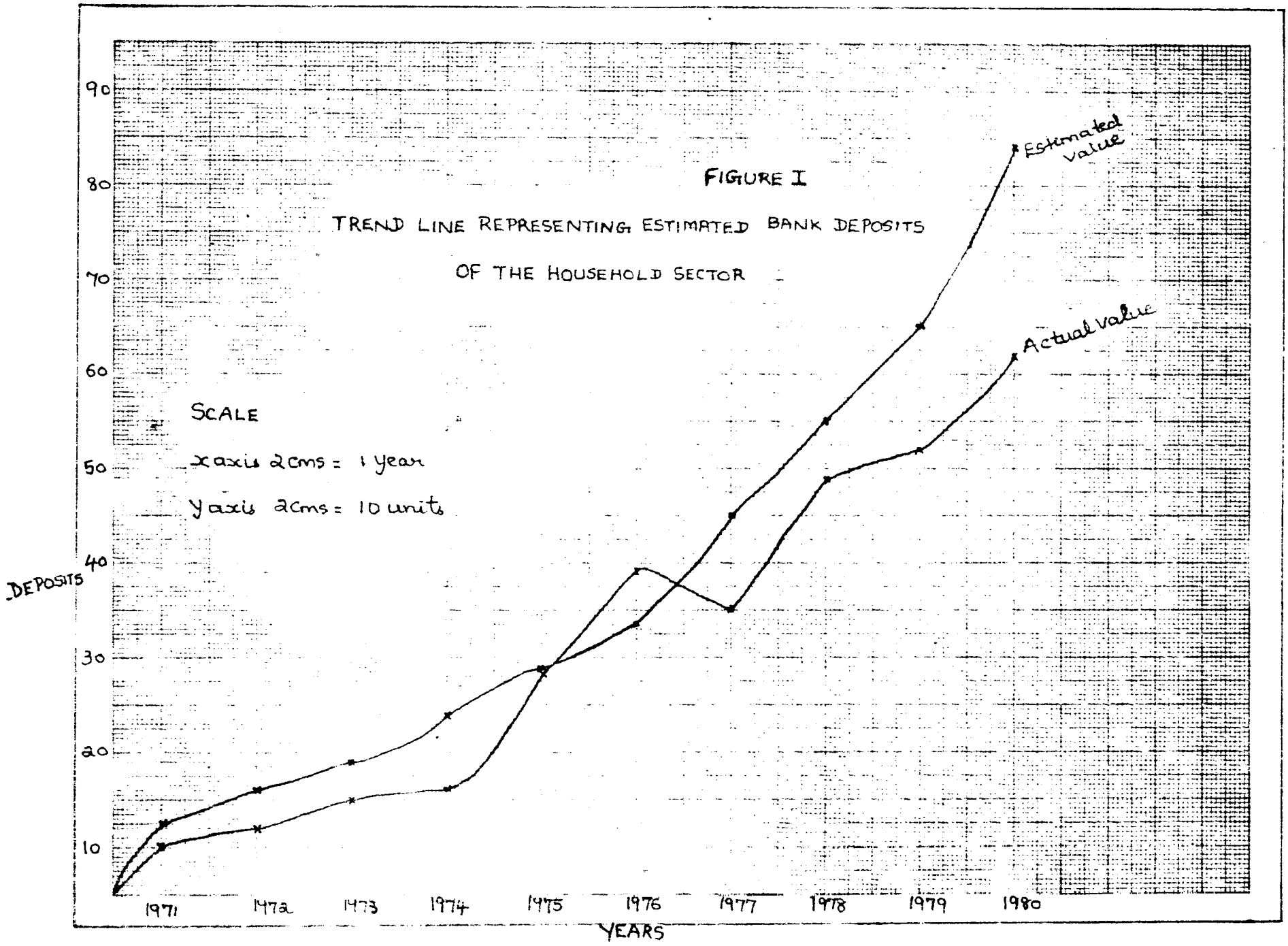
FIGURE I
TREND LINE REPRESENTING ESTIMATED BANK DEPOSITS
OF THE HOUSEHOLD SECTOR
SCALE
x axis 2cms = 1 year
y axis 2cms = 10 units
Estimated Value
Actual value
DEPOSITS
90
80
70
60
50
40
30
20
10
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
YEARS

C. [redacted]:

The data on the variables of bank deposits, national income, per capita income, wholesale price index, consumer price index, security price index, interest rates and branch expansion together with the relevant ratios are given in Table VIII. These data formed the basis for carrying out the statistical analysis which revealed the relationship between these variables and the household deposits simply and jointly.

1. National income and household bank deposits:

The increase in the household savings and particularly bank deposits is considered to be the result of rapid income generation supplemented by an effective savings drive. Out of national income of Rs.5,954.6 crores, household have saved in the form of bank deposits, Rs.3,186.4 crores. The investigator has computed average propensity to deposit $\left(\frac{D}{Y}\right)$ for the household sector. Between 1971-1980, average propensity to deposit was .04 and this implied that 4 per cent of the national income was saved in the form of bank deposits by the household sector.

2. Percapita income and household bank deposits:

Variations in household bank deposits could also arise because of variations in percapita income. Obviously the propensity to save of the household sector is low, in times of low per capita income and high in times of high per capita income. The increase in bank deposits of the household sector by 408.98 per cent between 1971-1980 was majorly due to the increase in per capita income by 111.4 per cent.

3. Wholesale price index and household bank deposits:

Savings tend to vary inversely with changes in wholesale price index and specifically for the household

sector, the increase in wholesale prices by increasing the transaction demand for money, has counted for declining saving ratios. Table VIII gives information about the wholesale price index. A high percentage change in wholesale prices, brought about a lower percentage change in household deposits. In 1974, the wholesale price index increased by 209 per cent as compared to 1971. This abnormal increase in the price level brought about a lower percentage increase in household deposits of 61.52 per cent. On the other hand in 1976, when wholesale price index increased only by 74 per cent as compared to 1971, household deposits gained in momentum and had increased by 284.77 per cent.

4. Consumer price index:

Consumer price index is another predominant factor affecting household deposits. An increase in consumer price index is expected to bring a decrease in household saving and hence consumer price index has got a negative influence over bank deposits of the household sector.

5. Security price index:

Another determinant of household deposits having a negative influence is the current price of securities. When security is one form of earning asset, a person is likely to compare the relative benefits of depositing money in

banks and investing in securities. Higher security prices may induce the households to invest more of their money in securities than in bank deposits.

6. Interest rate:

An attractive feature in bank deposits for the household sector is its income - earning character. The households prefer bank deposits over other forms of investment, as it constitutes an assured source of regular income to them. One of the reasons for the phenomenal growth rate in household deposits after 1974 was the increase in interest rate from 7 to 9 per cent.

7. Branch expansion:

An obvious factor for the upward trend in household deposits since 1969 has been the spread of banking branch network throughout the country. Expansion of banking facilities induce the people to hold more of their assets in the form of bank deposits. Hence branch expansion has meant not only an enlargement of the facilities for the flow of credit but equally important as the institutional structure for the absorption of the community's savings. Between 1971-1980, number of branches of commercial banks had increased by 61 per cent. Hence in the decade under consideration, banking network has expanded to meet the needs

of the rising population. The increase in branches of commercial banks kept pace not only with the rising population, but it also gave them increased banking facilities over the period. While in 1971, there was one commercial bank for every 46,000 population, in 1980 due to rapid branch expansion programme, there was one branch for every 20,000 population.

In order to analyse the extent of variation in the variables of bank deposits of the household sector, national income, per capita income, wholesale price index, consumer price index, security price index, interest rates and number of branches of commercial banks and compare them for their variability, the investigator has worked out the coefficient of variation individually (Appendix II).

Table IX presents the results of the coefficient of variation.

TABLE IX

EXTENT OF VARIATION OBSERVED IN THE SELECTED NATIONAL ECONOMIC AGGREGATES

S.No.	Item	Coefficient of variations (in percent)
1.	Bank deposits of the household sector	55.00
2.	National income	30.00
3.	Per capita income	24.53
4.	Wholesale price index	25.30
5.	Consumer price index	22.30
6.	Security price index	4.90
7.	Number of branches of commercial banks	29.00

The extent of variation observed in bank deposits of the household sector exceeded that of the variation observed in any other related variable implying that the household bank deposits are subjected to greater fluctuation than any of the variables, on which, the quantity of bank deposits depend.

A comparative analysis of the coefficient of variation of bank deposits as against those of other variables, which are likely to influence, showed that each one of these variables, had an additive effect on bank deposits.

With the tool of confidence interval analysis, the investigator had estimated the range within which the variables could have influenced the bank deposits of the household sector (Appendix III).

Table X given the range of variation in the selected national economic aggregates.

TABLE X

RANGE OF VARIATION IN THE SELECTED NATIONAL ECONOMIC AGGREGATES

S.No.	Item	Minimum limit	Maximum limit	Range variation
1.	Bank deposits of the household sector (Rs. in crores)	1,441.98	4,930.82	1,400-4,900
2.	National income (Rs. in crores)	47,815.00	94,155.00	47,800-94200
3.	Per capita income (in rupees)	740.00	1,221.30	700-1200
4.	Wholesale price index	152.20	255.20	150-260
5.	Consumer price index	216.00	340.00	220-340
6.	Security price index	96.82	98.52	97-99
7.	Number of branches	1,578	2,880	1,580-2,880

The application of the tool of confidence interval analysis revealed the minimum and maximum deposits of the household sector as Rs.1042.4 crores and Rs.4930.4 crores. This implied that for 95 per cent of the household sector, the deposits were found to be in the range of Rs.1400-5000 crores. Hence with of the range of per capita income of Rs.700--1200 and with the range of consumer price index of 220-340, household sector, in the aggregate sense, was able to save to the maximum of Rs.5000 crores, between 1971-1980.

The investigator had analysed the extent and nature of influence of variables such as ~~national~~ national income, per capita income, wholesale price index, consumer price index, security price index, interest rates and number of branches of commercial banks on household deposits with the tool of correlation analysis (Appendix IV). The correlation coefficient matrix showing the relationship between household deposits and other variables is given in Table XI.

TABLE XI

CORRELATION MATRIX SHOWING THE RELATIONSHIP BETWEEN HOUSEHOLD BANK DEPOSITS AND RELATED VARIABLES

S.No.	Variable	Household Deposits
1.	National income	.80 (.6400)
2.	Per capita income	.86 (.7396)
3.	Wholesale price index	-.68 (.4624)
4.	Consumer price index	-.89 (.7921)
5.	Security price index	.69 (.4761)
6.	Interest rates	.80 (.6400)
7.	Branch expansion	.97 (.9409)

Table XI reveals that the determinants like national income, per capita income, interest rates and branch expansion have got positive influence over bank deposits of the household sector. A comparative analysis of these determinants indicates that branch expansion is the most powerful factor influencing household deposits since r is equal to + .97. The variables like wholesale price index, security price index and consumer price index have got negative influence over bank deposits of the household sector. Of these variables, consumer price index is the most powerful factor, in reducing household deposits since r was - .89.

D. Bank deposit model of the household sector:

To ascertain whether the nature of the relationship observed between the selected economic aggregates and household bank deposits were genuine or spurious, and to find out the exact degree of dependence of household deposits on these aggregates, regression analysis was applied.

These functional relationships were estimated using the linear regression equations. The parameters of the regression equations are given in Table XII.

TABLE XII

PARAMETRES OF THE REGRESSION EQUATION RELATING DEPOSITS AND OTHER VARIABLES

S.No.	Variable	$\hat{a}$	$\hat{b}$	Standard error	R^2	Z value
1.	National income	.04	2.22	4.90	.99	2.10**
2.	Percapita income	31.80	7.08	1.80	.99	3.87**
3.	Consumer price index	-.06	2.20	1.10	.99	2.20**
4.	Wholesale price index	-.04	-11.94	0.67	.99	2.90**
5.	Security price index	-1.59	-5.13	0.65	.99	6.60**
6.	Interest rates	31.86	6.7	2.75	.99	3.81**
7.	Branch expension	.02	32.63	1.80	.99	18.68**

Footnote: **Statistically significant at 5 per cent level.

The regression results confirmed the nature of the relationships that were observed earlier under the correlation analysis. All the $\hat{b}$ coefficients were found to be statistically significant at 5 per cent level indicating that the observed direction of relationship between any two variables could not have happened as a chance occurence and that there was a definite causual relationship between any one of these variables and the household deposits. The household bank deposits were directly dependent on the income variables, the national as well as the per capita incomes. A positive relationship was also observed between the volume of bank deposits and the deposit rates of interest indicating that an increase in the deposit rates of interest did provide a stimulus to the household sector to increase its investment in bank deposits. In other words, the household sector responded positively to the stimulus of interest rates through raising its level of bank deposits. Another variable which had a direct effect on household deposits was branch expansion. The larger the population covered by the banks, the more were they able to mobilise the deposits.

Estimate of Deposit Function:

An estimate of the household deposit function in relation to per capita income and consumer price index as a whole, had been attempted by the investigator with the help of multiple regression equation (Appendix V). Table XIII gives the regression equation about household deposits.

TABLE XIII

ESTIMATED HOUSEHOLD DEPOSIT FUNCTION

Function	Estimated equation	Z values
D = f (PCI, CPI)	206.52+4.25PCI-1.93CPI	5.66 3.01**

Footnote: **Statistically significant at 5 per cent level

The multiple regression analysis showed that the consumer price index and per capita income influenced the household deposits in the expected direction. The consumer price index coefficient was negative implying that there was an inverse relationship between consumer price index and household deposits. The income coefficient was positive implying a positive relation between per capita income and household deposits. The income coefficient was greater than that of price coefficient indicating that per capita income had more influence over household deposits.

Summary And Conclusion

SUMMARY AND CONCLUSION

The present study attempted to highlight the determinants of bank deposits of the household sector with the specific objectives of

i. Finding out the income deposit ratio for the household sector;

ii. Finding out the growth rate in household deposits between 1971-1990;

iii. Assessing the relative dominance of bank deposits over other financial assets held by the household sector;

iv. Identifying the determinants of bank deposits of the household sector, and

v. Estimating the functional relation between household deposits and the related variables like national income, per capita income, wholesale price index, consumer price index, security price index, interest rates and number of branches of commercial banks.

Necessary data were compiled from the various issues of the Reserve Bank of India Bulletin, RBI Reports on Currency and Finance, and Annual Reports on Trend and Progress of Banking in India.

The findings of the study are:

A. Share of Household Bank deposits

1. Between 1971-80, on an average 48 per cent of the total household savings were in the form of bank deposits.

B. Growth Rate of bank deposits of the household sector

1. The bank deposits held by the household sector had increased at the rate of 21 per cent per annum. In the decade of 1971-80.

2. The projected bank deposits imply that bank deposits of Rs.6,186 crores of the household sector in 1980 will increase to Rs.19,375 crores in 1985 and Rs.42,531 crores in 1990.

C. Determinants of bank deposits of the household sector

1. Out of national income of Rs.59,454.6 crores, households have saved Rs.3,186.4 crores in the form of bank deposits. The average propensity to deposit was .04, i.e. 4 per cent of the national income was saved in the form of bank deposits by the household sector.

2. The propensity to save of the household sector is low in times of low per capita income and high in times of high per capita income.

3. A high percentage change in wholesale prices, brought about a lower percentage change in household deposits. In 1974, the wholesale price index increased by 204 per cent as compared to 1971. This abnormal increase in the price level brought about a lower percentage increase in household deposits (i.e.) 61.52 per cent. On the other hand in 1976, when wholesale price index increased only by 74 per cent as compared to 1971, household deposits had increased by 284.77 per cent.

4. An increase in consumer price index is expected to bring about a decrease in household saving and hence consumer price index has got a negative influence over household deposits.

5. Higher security prices may induce the households to invest more of their money in securities than in bank deposits.

6. One of the means of the phenomenal growth rate in household deposits after 1974 was the increase in interest rate from 7 to 9 per cent.

7. In the decade of 1971-1980, there had been an increase in number of branches of commercial banks by 61 per cent and population per branch ratio has decreased from 46,000 in 1970 to 20,000 in 1980.

8. The extent of variation observed in bank deposits of the household sector exceeded that of the variation observed in any other related variable and it showed that each one of these variables had an additive effect on bank deposits.

9. The application of the tool of confidence interval analysis revealed that minimum and maximum deposits of the household sector were Rs.1042.4 crores and Rs.~~4930~~ 4930.4 crores. Hence with the range of per capita income of Rs.700-1200 and with the range of consumer price index of 220-340, household sector in the aggregate sense, was able to save to the maximum of Rs.5000 crores between 1971-1980.

10. This analysis revealed that the determinants like national income, per capita income, interest rates and branch expansion have got positive influence over bank deposits of the household sector. Branch expansion was the most powerful factor influencing household deposits since r was equal to + .97. The variables like wholesale price index, security price index and consumer price index had a negative influence over bank deposits of the household sector. Of these variables, consumer price index was the most powerful factor in reducing household deposits since r was -.89.

D. Bank deposit model of the household sector

1. All the b coefficients were found to be statistically significant at 5 per cent level indicating that the observed direction of relationship between any two variables could not have happened as a chance occurence and that definite causual relationship obtained between any one of these variables and the household deposits.

The household bank deposits were directly dependent on the income variables, the national as well as the per capita incomes and on the deposit rates of interest. Another variable which had a direct effect on household deposits was accessibility to banks. The larger the population covered by the banks, the more were they able to mobilise the deposits.

2. The estimated deposit function of household sector was

$$D = f(PCI, CPI) = 200.52 + 4.25\ PCI - 1.93\ CPI$$

It implied a positive relationship between per capita income and household deposit and a negative relationship between consumer price index and bank deposits of the household sector.

The study thus, showed the household sector saved about 4 per cent of the national income in the form of bank

deposits. The bank deposits held by this sector had grown at the rate of 21 per cent per annum between 1971 and 1980. The bank deposits held by the household sector were directly dependent on the income variables, the national as well as per capita incomes and on the deposit rates of interest. These deposits had also tended to increase with the increase in the number of bank branches. An inverse relationship was obtained between consumer price index and household bank deposits. From these conclusions, it is evident that if more of household savings were to be mobilised in the form of bank deposits, the rate of economic growth should increase, attractive deposit rate of interest should be offered, inflation should be controlled and the banks should reach larger and larger population.

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Appendices

APPENDIX-I

GROWTH RATE IN HOUSEHOLD DEPOSITS (1971-1980)

YEARS	X t-1976	X^2	D_t HOUSEHOLD DEPOSITS (RS IN CRORES)	Log D_t	Log $D_t - \bar{D}_t$	$(\text{Log } D_t - \bar{D}_t)^2$
1972	- 4	16	1214	3.0842	- 0 3823	0.1461532
1973	- 3	9	1511	3.1792	- 0.2873	0.0825120
1974	- 2	4	1654	3.2185	- 0.2480	0.4979959
1975	- 1	1	2787	3.4451	- 0.0214	0.0004578
1976	0	0	3920	3.5932	0.1267	0.0160528
1977	1	1	3491	3.5429	0.0764	0.0058269
1978	2	4	4865	3.6870	0.2205	0.0486202
1979	3	9	5212	3.7170	0.2505	0.0627502
1980	4	16	6186	3.7914	0.3249	0.1055600
		60		31.1985		0.965939

$\bar{Y}_L = 3.4665$

$D_t = D_0 e^{\lambda t}$

$\text{Log } D_t = \log D_0 + \lambda t \log e$

$Y_t = a + bx$

$b = \frac{\Sigma xy}{\Sigma x^2} = \frac{5.477}{60} = 0.0913$

$a = \bar{y} = 34665$

$C_0 = \text{Antilog } a = \text{Antilog } (3.4665) = 2927$

$\lambda = \frac{b}{0.4343} = \frac{0.0913}{0.4343} = .2102$

$D_t = 2927 e^{.21t} e^{-1.05}$

$= 1024.27 e^{0.21t}$

In 1985

$D_t = 1024.27 e^{.21 \times 14}$

$= 19374.93$

In 1990

$D_t = 1024.27 e^{.21 \times 19}$

$= 42531$

APPENDIX-II

THE COEFFICIENT OF VARIATION OF NATIONAL INCOME

NATIONAL INCOME X (RS. IN CRORES)	$x = (X - \bar{X})$	$x^2 = (x - \bar{x})^2$
39979	- 19475.60	379298995.30
35756	- 23698.60	561623641.90
39573	- 19881.60	395278018.50
49936	- 9518.60	90603745.96
58137	- 1317.60	1736069.76
60293	838.40	702914.56
63362	3907.40	15267774.76
76109	16654.40	277369039.30
81228	21773.40	474080947.50
90173	30718.40	943620098.50
594546	0	3139581246.04

$$\text{Standard Deviation} = \sqrt{\frac{x^2}{n}}$$

$$= \sqrt{\frac{3139581246.04}{10}}$$

$$= \sqrt{313958124.604}$$

$$= 17718.86$$

$$\text{Coefficient of Variation} = \frac{S.D}{\bar{x}} \times 100$$

$$= \frac{17718.86}{59454.6} \times 100 = 30$$

APPENDIX-III

THE CONFIDENCE INTERVAL ANALYSIS OF THE BANK DEPOSITS OF THE HOUSEHOLD SECTOR

HOUSEHOLD DEPOSITS X (RS. IN CRORES)	$x = (X - \bar{X})$	$x^2 = (X - \bar{X})^2$
1024	- 2162.4	4675973.76
1214	- 1972.4	3890361.76
1511	- 1675.4	2806965.16
1654	- 1532.4	2348249.76
2787	- 399.4	159520.36
3920	733.6	538168.96
3491	304.6	92416.00
4865	1678.6	2817697.96
6186	2999.6	8997600.16
5212	2025.6	4103055.36
31864	0	30430009.24

$$\bar{x} = \frac{31864}{10} = 3186.4$$

Standard Deviation $= \sqrt{\frac{x^2}{n}}$

$= \sqrt{\frac{30430009.24}{10}}$

$= 1744.42$

Confidence interval $= \bar{X} \pm 1\sigma$

$= \bar{X} \pm 16$

$= 3186.4 + 1744.42 = 4930.82$

$\bar{X} - 16$

$= 3186.4 - 1744.42 = 1441.98$

APPENDIX-IV

THE CORRELATION ANALYSIS BETWEEN HOUSEHOLD DEPOSITS AND NUMBER OF BRANCHES OF COMMERCIAL BANKS

HOUSEHOLD DEPOSITS y	$y = Y - \bar{Y}$	BRANCH EXPANSION x	$x = X - \bar{X}$	y^2	x^2	xy
1024	-2163	12013	-9319.10	4678569	86845624.80	20157213.3
1214	-1972	13620	-7712.10	3888784	59476648.41	15208261.2
1511	-1676	15362	-5970.10	2808976	35642094.01	10005887.6
1654	-1533	16936	-4396.10	2350086	19325695.21	6739221.3
2787	-399	18730	-2602.10	159201	6770924.41	1038237.9
3920	735	21220	-112.10	538756	12566.41	15133.5
3491	306	24802	3469.90	93025	12040206.01	1061789.4
4865	1679	28016	6683.90	2819041	44674510.21	11222268.1
5212	2026	30202	8869.90	4104676	78675126.01	17970417.4
6186	3000	32420	11087.90	9000000	122941526.40	33263700.0
31864	0	213321	0	30441117	465747768.88	116682126.3

$$r = \frac{\Sigma dx dy - \frac{\Sigma dx \times \Sigma dy}{n}}{\sqrt{\Sigma dx^2 - \frac{(\Sigma dx)^2}{n}} \sqrt{\Sigma dy^2 - \frac{(\Sigma dy)^2}{n}}}$$

$$= \frac{116682126}{\sqrt{465747768.9 - \frac{(0)^2}{10}} \sqrt{3044117 - \frac{(0)^2}{10}}}$$

$$= 0.91$$

APPENDIX-V

SIMPLE LINEAR REGRESSION TO ESTIMATE HOUSEHOLD DEPOSITS

INDEX NUMBER OF HOUSEHOLD DEPOSITS y	CONSUMER PRICE INDEX X	$x=(X-\bar{X})$	x^2	$y=(y-\bar{y})^2$	y^2	xy
100.00	100.0	- 169.66	28784.52	- 211.41	44694.19	35867.82
118.55	190.7	- 78.96	6234.68	- 192.86	37194.98	15228.23
147.56	208.0	- 61.66	3301.96	- 163.85	26846.82	10102.99
161.52	251.3	- 18.36	337.09	- 149.89	22467.01	2751.98
272.17	381.3	48.64	2365.85	- 39.24	1539.78	1908.63
384.77	302.3	23.64	558.85	73.36	5381.69	1734.23
340.92	293.3	32.64	1065.37	29.51	870.84	963.21
475.49	321.0	51.34	2635.80	164.08	26922.25	8423.87
604.10	343.7	74.04	5481.92	292.69	95667.44	21670.77
508.78	368.0	98.34	9670.76	197.57	39033.90	19429.03

$\Sigma y^2 = 290618.04$

$\Sigma x^2 = 60936.80$

$\Sigma xy = 118080.76$

$\bar{y} = 0.04$

$\bar{x} = 0$

$Y = f(x)$

$b = \frac{\Sigma xy}{\Sigma x^2} = \frac{118080.76}{60936.80} = 1.94$

$a = \bar{y} - \hat{b}(x)$

$= 0.04 - 1.94(0) = 0.04$

$\Sigma e_i^2 = (Ey)^2 - \hat{b}(\bar{x})^2$

$= (0.04)^2 - 1.94(0)^2$

$= 0.0016$

$R^2 = 1 - \frac{ei^2}{Yi^2} = 1 - \frac{.0016}{3044117} = 0.999$

$\Sigma ru^2 = \frac{\Sigma y^2 - \hat{b}^2 \Sigma x^2}{n-2} = \frac{290618.04 - (1.94)^2 \cdot 60936.80}{10-2}$

$= -133088.63$

Variance of $\hat{b} = \frac{\Sigma x^2}{\Sigma ru^2} = \frac{60936.80}{-133088.63} = -0.46$

$S.E = \sqrt{46} = 0.67$

$Z = \frac{\hat{b}}{S.E} = \frac{1.94}{0.67} = 2.9$

APPENDIX-II

MULTIPLE LINEAR REGRESSION ANALYSIS LINKING HOUSEHOLD DEPOSITS, PERCAPITA INCOME AND CONSUMER PRICE INDEX

S.No.	Index No. of Household Deposits	Index No of Per Capita Income	Consumer Price Index	$y-\bar{y}$	y^2	$C-\bar{C}$	C^2	$D-\bar{D}$	D^2	[illegible]	CY	DC
1.	100.00	100.0	100.0	-50.31	2531.09	-109.6[illegible]	28784.5[illegible]	-2[illegible].4	4469.19	+10[illegible].03	6535.59	433.38
2.	118.55	106.8	190.7	-43.51	1892.69	-78.96	6234.6[illegible]	-192.86	371[illegible]	-8391.33	3435.55	125.36
3.	147.56	107.37	208.0	-42.94	1843.84	-61.66	3801.9[illegible]	-163.85	26846.[illegible]	+7040.01	2647.69	106.50
4.	161.52	131.90	251.3	-18.51	342.62	-18.36	337.09	-149.89	22467.[illegible]	+2746.33	339.84	127.41
5.	272.17	152.0	318.3	1.69	2.85	-48.64	2365.99	-39.24	1539.78	-66.31	82.20	29.43
6.	384.77	154.30	302.3	4.19	17.55	23.64	558.85	73.36	5381.69	+307.37	99.05	113.71
7.	340.92	159.90	293.3	9.59	91.96	32.64	1065.37	20.51	870.64	+283.00	313.02	28.03
8.	475.49	195.5	321.0	35.19	1238.33	51.34	2635.80	164.08	26922.25	+5773.9[illegible]	1806.65	57.43
9.	604.10	194.2	343.7	43.89	1926.33	74.04	5481.92	292.69	85667.44	-15846.16	3240.62	73.12
10.	808.98	211.4	368.0	61.09	3731.99	99.34	9870.75	197.57	39033.90	+12069.53	6007.59	69.15

8

$\bar{D} = 311.41$

$\bar{C} = 269.66$

$\bar{Y} = 150.31$

$\Sigma dy = 58007.44$

$\Sigma dc = 118080.76$

$\Sigma cy = 29516.76$

$d^2 = 290618.04$

$c^2 = 60936.80$

$y^2 = 13619.23$

$$\hat{b}_1 = \frac{\Sigma dy}{\Sigma y^2} = \frac{58007.44}{13619.23} = 4.25$$

$$\hat{b}_2 = \frac{\Sigma dc}{\Sigma c^2} = \frac{118080.76}{60936.80} = -1.93$$

$$\Sigma ci^2 = \Sigma d^2 - \hat{b}_1 \Sigma dc - \hat{b}_2 \Sigma dy$$

$$= 290618.04 - 4.25(118080.76) - (-1.93)(58007.44)$$

$$= 290618.04 - 501843.23 + 111954.35$$

$$= -99270.84$$

$$\sigma u^2 = \frac{\Sigma ci^2}{n-K} = \frac{99270.84}{7} = 14181.55$$

$$\text{Variance of } \hat{b}_1 = \sigma u^2 \times \frac{\Sigma y^2}{\Sigma c^2 \Sigma y^2 - \Sigma(\Sigma y)^2}$$

$$= 14181.55 \times \frac{13619.23}{(60936.80 \times 13619.23) - (29516.72)^2} = 0.56$$

$$S.E = \sqrt{0.56} = 0.75$$

$$Z\hat{b}_1 = \frac{4.25}{0.75} = 5.66$$

$$\text{Variance of } \hat{b}_2 = r_u^2 \times \frac{\Sigma c^2}{\Sigma y^2 \Sigma c^2 - \Sigma (\Sigma c)^2}$$

$$= 14181.55 \times \frac{60936.80}{4132626.20} = .00003 \times 14181.55$$

$$= 0.42$$

$$S.E = \sqrt{0.42} = 0.64$$

$$Z = \frac{1.93}{0.64} = 3.01$$

$$\hat{a} = \bar{D} - \hat{b}_1 \bar{y} - \hat{b}_2 \bar{c}$$

$$= 311.41 - 4.25 (150.31) + 1.98 (269.66)$$

$$= 311.41 - 638.81 + 533.92$$

$$= 206.52$$

T A B L E VIII

L INCOME, PERCAPITA INCOME, WHOLESALE PRICE INDEX, SONCUMER PRICE INEEX, SECURITY PRICE INDEX,
INTEREST RATE AND NUMBER OF BRANCHES OF COMMERCIAL BANKS (1971 - 80).

rcentage rcentage ange in sehold osit	National income Rupees (in crores	Ratio of National income to Household Deposits (APD)	Percapita income(in Rupees	Wholesale price index	Percentage change in wholesale price index	Consumer price index	Percentage change in consumer price index	Security price index	Interest rate (in per cent)	Number of Branches of commercial Bank	Population per Branch
-	39,979	.02	652.3	100	-	100	-	100.00	6	20,013	45,783
.55	35,756	.03	696.5	199	99	190.7	90.7	98.6	6	13,620	41,263
.56	39,573	.03	700.4	242	142	208.0	108.0	98.6	7	15,362	37,364
.52	49,936	.03	359.9	309	209	251.3	151.3	98.8	8	16,938	34,600
.17	58,137	.04	991.6	177	77	318.3	218.3	97.2	9	18,730	31,874
.77	60,293	.06	1008.1	174	74	302.3	202.3	96.4	9	21,220	28,699
.92	63,362	.05	1043.5	189	89	299.3	193.3	97.0	9	24,802	24,997
.49	76,109	.06	1210.0	186	86	321.0	221.0	97.6	9	28,016	22,687
.10	81,228	.07	1267.0	204	104	343.7	243.7	97.7	9	30,202	21,223
.98	90,173	.05	1379.0	251	151	368.0	268.0	97.6	9	32,420	20,008