STUDY OF TREND, COMPOSITION AND DETERMINANTS OF SAVINGS IN INDIA (1950-51 TO 1991-92)

By

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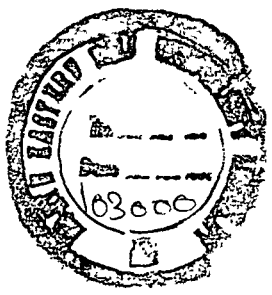

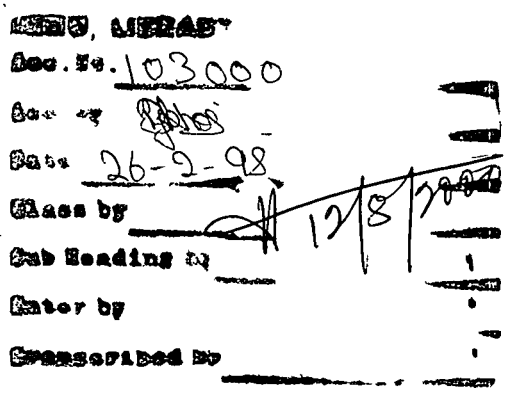

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Sincere Gratitude

to

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ABBREVIATIONS USED

C	=	Consumers Expenditure
I	=	Business Expenditure, Investment
G	=	Total Government Purchases of Goods and Services
S	=	Savings
T	=	Net Tax Payments
R_f	=	Transfer Payments
s	=	Propensity to save
V	=	Capital Output Ratio
Y	=	National Income
p	=	Profit Rate
W	=	Labor Income
K	=	Net Worth
Q	=	Output
G_n	=	Natural Rate of Growth
l	=	Labour Force
t	=	Labour Productivity
e	=	Rate of Growth of Employment
X	=	Export
M	=	Import
R	=	Rate of Inflation
r	=	Correlation Co-efficient
g	=	Growth Rate
NDP	=	Net Domestic Product
GDP	=	Gross Domestic Product
NDS	=	Net Domestic Saving
GDS	=	Gross Domestic Saving
HHS	=	Household Sector Saving
PCS	=	Private Corporate Sector Saving
PS	=	Public Sector Saving
FA	=	Financial Assets
PA	=	Physical Assets
P	=	Price Level
CR	=	Call Rate
CRAT	=	Credit Ratio
PDI	=	Personal Disposable Income
FER	=	Foreign Exchange Reserve

Chapter-1

INTRODUCTION

1.1 Introduction

The term 'saving' means "income not spent." At the end of any period, saving is equal to income in that period minus consumption.

Considering the role of savings in overall economic activity, it is not surprising to find the importance accorded to it in economic analysis. But saving has been treated as a purely passive concept (Kumar, 1992). Initial theoretical foundations of savings are based on theories of consumption which is basically keeping up with the passive role assigned to savings. The study of forms which savings can take and its determinants is of relatively recent origin.

Savings can occur in the public sector when the revenue exceeds final consumption by government plus transfer payments and subsidies and in the corporate sector where profits are not distributed, i.e self-financing, and in the household sector, though typically the public sector is net borrower while the households and corporate sectors are lenders.

The empirical work on saving has proceeded in many directions which includes determinants of savings at the aggregate level (Deaton, 1992) or, the studies pertaining to

determinants of various forms of saving. For the latter case, there have been several attempts, notably by Boskin (1978), Blinder and Denton (1985), Fry (1988), Giovannini (1983, 1985), Gupta (1987) and others to investigate the relationship between savings (total as well as various forms) with the rate of interest. The findings of these researchers can be classified broadly into two categories -- those studies which look for a direct effect of interest rates on the savings, and those, which for a relation between the rate of growth of consumption and the interest rate. In both the cases, association between interest rate(s) and various forms of saving appears to be inconclusive as some studies have reported positive association while other have found no such evidence.

There have been several studies pertaining to the savings behaviour in India also which could be classified into several groups (Choudhury, 1990), covering (i) the methodological issues, (ii) the trends in the savings behaviour as well as trends of savings at the sectoral level, and (iii) the potentials for household savings in India. While all these studies emphasise the role of savings in economic growth, the finding of these studies is often contradictory or, sometimes explanation put forward may be valid for specific time period. As time goes by, one needs to look at these findings in the light of fresh data. The

objective of this study is to carry out an analysis of savings in India in order to remove some of the confusions regarding savings trend in India.

1.2 Objective and Scope of Study

As apparent, from the short review reported above, the issue of the association between interest rate and savings with other variables seems to be far from settled. We intend to investigate this issue with Indian data.

The main objectives of our study in detail are:

1. to study the trends of saving behaviour.
2. to look at the sectoral composition of savings.
3. to identify the determinants of savings specifically that of savings in financial assets.
4. to study the inter-relationship between savings and factors influencing the same.

The study is based on secondary data collected from various issues of National Accounts Statistics, Economic Survey, Report on Currency and Finance, Reserve Bank of India Bulletin, and Economic and Political Weekly, and covers the period 1950-51 to 1991-92. However, study of determinants is limited to savings in Financial Assets during 1980-81 to 1991-92.

1.3 Chapter Plan of the Study

The study has been organised into six chapters:

In Chapter I, we have formulated the problem and reported the objectives and scope of study including the period covered. This is followed by a review of existing literature in the relevant area in Chapter II which forms the basis of our investigation in Chapter IV and V. Specifically, we have studied and reported the existing literatures pertaining to various forms of savings as well as its determinants, the major theoretical aspects related to savings and the scope for further study on the determinants of savings in this chapter.

The methodological aspects of the study has been reported in Chapter III. This chapter reports the data sources and outlines the methods used in our study for the purpose of refinement of data. This is followed by the statistical and econometric techniques used for data analysis.

In Chapter IV, we have analysed the saving behaviour with Indian data for understanding the actual phenomenon of saving growth since 1950-51. Here, we have looked into the time evolution of savings during last four decades as well as the changing structure of savings among its various components. The determinants of savings has been analysed in Chapter V. Here, we have reported the factors which have

affected the growth of savings in Financial Assets by Household Sector Saving which is followed by a specification of the model to study the effects of various variables. Lastly main findings of the study are reported in Chapter VI.

Chapter-2

REVIEW OF EXISTING LITERATURE

2.1 Introduction

As pointed out in the last chapter, the main objective of this study is to look into the long term trend of savings in India and to identify its determinants in recent times. We have also pointed out that though savings plays very important role in production process of the economy but it has, generally, been assigned passive role. There have been several studies covering almost all aspect of savings, its trend not only with the Indian data but all over.

The main objective of this chapter is to provide a broad based review of existing literature on savings. This will provide a background for analysing the trend and composition of savings in India in Chapter-4 and identifying its determinants in Chapter-5 of the study. The rest of the chapter is organised as follows. Section 2.2 outlines major theoretical aspects related to saving. This is followed by studies which attempt to delineate the factors affecting savings in section 2.3. In section 2.4 we review the empirical studies on savings with Indian data. Finally, we provide the scope for future study on the determinants of savings in section 2.5.

2.2 Theory of Savings

The term "saving" means "income not spent". At the end of any period, saving is equal to income in that period minus consumption. In Economics, saving has been treated as a purely passive concept (Kumar, 1992). Saving can occur in the public sector when tax revenues exceed final consumption by government plus transfer payments and subsidies and in the corporate sector where profits are not distributed, i.e., self-financing, and in the household sector.

The theory of savings proceeds mainly in two directions which is consistent with the passive role assigned to it. In this section we present a brief review which provides valuable insight for studies of trends and growth of savings.

2.2.1. Savings in National Income Accounting and Macro Models :

2.2.1.1. Savings in National Income and Product Accounts:

The product and income sides are two different measures of the same continuous flow of currently produced goods and services in the economy. The product side measures expenditures on output. These expenditures then become payments compensating the factors that produced the output. These factor incomes then are disposed of in consumer expenditure, tax payments, saving, and transfer payments to foreigners. We can view gross national product

(GNP) in three different ways - all measuring identically the same flow. The first is GNP measured by expenditure on final product; the second is GNP measured by the type of income generated in production; the third is GNP measured by the way this income is used or disposed of. The first and third of these measurements give us the basic GNP identity that is fundamental to the study of Economics on an aggregate or "macro" level (Branson, 1979) :

$$C + I + G + (X-M) = GNP = C + S + T + Rf \quad \ldots\ldots \quad (2.1)$$

The left hand side of this identity measures GNP by expenditures on final product. Here C is consumers expenditure, I is business expenditure on plant, equipment, inventories and residential construction, all aggregated into gross private domestic investment; G is total (federal, state and local) government purchases of goods and services; (X-M) is net exports.

The right-hand side of equation (2.1) measures GNP by the way income earned in production is disposed of. Here C, again, is consumer expenditure; S is total saving by consumers and by businesses in the form of depreciation allowances and retained earnings; T is net tax payments (total tax receipts less transfer, interest and subsidy payments by all levels of government); Rf is transfer payments to foreigners by private citizens, for example, in

private pension plans or donations to international relief efforts.

If we subtract C from both sides of (1), we obtain saving-investment identity,

$$I + G + (X-M) = S + T + Rf \quad \ldots\ldots \quad (2.2)$$

The sum on the left hand side represents total output not going to consumer expenditure, and the right hand sum gives total income of consumers that is not spent. If we loosely identify non-consumed output as investment of one kind or another and income not going to consumer expenditure as saving, then this equation can be interpreted as an investment = saving identity.

In a closed economy, or one in which net exports and private transfer payments to foreigners are small, the (X-M) and Rf terms can be dropped from the above equation for analytical purpose. It we do this, the move government purchases G over to the right hand side, we obtain

$$I = S + (T-G) \quad \ldots\ldots \quad (2.3)$$

as another version of saving-investment identity. This says that private investment I must be equal to the sum or private saving S plus net governmental saving T-G. The latter is the total federal, state and local government surplus. Output going to business investment plus

residential construction must be equal to the sum of private saving-after tax income not spent - plus the net surplus of government.

Stating in a slightly different way, starting with the basic identity,

$$C + I + G = Y = C + S + T \quad \ldots\ldots \quad (2.4)$$

Subtracting the real consumption component from each side of equation (4) gives us

$$Y - C = I + G \text{ and } Y - C = S + t \quad \ldots\ldots \quad (2.5)$$

$$\text{So that } I + G = S + T \quad \ldots\ldots \quad (2.6)$$

is just another way to express the basic real identity (2.1). Equation (2.6) expresses the saving-investment balance implicit in the basic GNP identity. On the product side, I+G is the amount of real output that does not go to consumer expenditure, while on the income side, S+T is the amount of consumer income that is not spent. These two sums are the same by definition in the accounts. The use of resources in the private sector to produce output not for sale to consumers - I+G - must equal the amount of income that consumers do not send - S+T.

By moving the G term to the right hand side of equation (2.6) we obtain another expression for the saving investment balance,

$$I = S + (T-G) \quad \ldots\ldots \quad (2.7)$$

Here, I is total private investment (gross or net, depending on the definition of Y), S is total private saving and (T-G) is the government surplus, which may be thought of as net government saving. The sum of private saving and the government surplus must, by definition, equal private investment in the national income accounts.

2.2.1.2. Role of Savings in Theory of Economic Growth

In the theory of economic growth savings has been treated as an important factor of growth. This could be traced in the writings of Harrod and Domar, the neo-classical growth models, and many subsequent models of economic growth.

Harrod (1939) assumed savings as a simple proportional function of national income (Sen, 1970)

$$S = sY \quad \ldots\ldots \quad (2.8)$$

where s = the average and marginal propensity to save.

Given the proportional savings function and the accelerator relation, the Harrod's model can be written as,

$$\dot{Y} = sY \quad \ldots\ldots \quad (2.9)$$

$$\Rightarrow \dot{Y}/Y = s/V \quad \ldots\ldots \quad (2.10)$$

Where, V = capital output ratio

$\dot{Y}$ = rate of change of national income

$\dot{Y}/Y$ = rate of growth of national income

Harrod's model says that $\dot{Y}/Y$ must equal the ratio of propensity to save, s, to the capital output ratio, V, its equilibrium between aggregate saving and aggregate investment is to be maintained as time goes on.

Again, Domar (1946) presented the same result as Harrod (1939) by his model of growth.

$$\dot{I}/I = \sigma s \quad \ldots\ldots \quad (2.11)$$

where, I = the flow of investment

$\dot{I}$ = the rate of change of I

σ = the potential social average investment productivity

s = the constant average and marginal propensity to save.

Domar's model demonstrates that, as both s and σ are assumed to be constant, the rate of growth of investment that will maintain actual income equal to the maximum potential level of income is a constant proportional rate of $s\sigma$.

Thus, Harrod-Domar classical model of economic growth considers saving as the fraction of income denoted to save and that economic growth depends upon savings only.

But the neo-classicalists do not consider the classical argument. According to them in the full employment level saving is automatically invested, i.e.

$$S = I \qquad \ldots\ldots \qquad (2.12)$$

One of their three propositions says that saving is a simple proportional function of the rate of national income or national product, Y(t).

$$S = s\ Y(t) \qquad \ldots\ldots \qquad (2.13)$$

The neo-classicalists arrived at the conclusion that the long-run growth rate is not a function of the fraction of income that is saved (i.e. savings) which is in conflict with Harrod-Domar model. According to them, the long run growth is not possible due to the presence of diminishing returns to capital.

2.2.2. Savings Function

Although savings has been considered separately in classical writings but explicit saving functions are relatively recent which can be found in the works of Duesenburry (1949), Kaldor (1955-56, 1961) and Modigliani (1964). The classical saving function makes the saving ratio S a function of the profit rate P.

$$S = S(P); \qquad S > 0 \qquad \ldots\ldots \qquad (2.14)$$

It assumes that the substitution effect of a lower return on saving outweights the income effect which would tend to increase saving to maintain a given future consumption stream.

Nicholas Kaldor's saving function makes the saving ratio a function of profit rate P and capital-output ratio V. This could be written as

$$S = S_w W + S_p P \quad \ldots\ldots \quad (2.15)$$

Here, wage income W plus profit income P add to output Q. Kaldor assumes that the saving ratio out of profit S_p is greater than that of wages S_w and it lies between 1 and 0. That is,

$$1 > S_p > S_w > 0 \quad \ldots\ldots \quad (2.16)$$

Ando-Modigliani suggested consumption function which could be converted to a saving function

$$C = a_0 W + a_1 K; \quad 1 > a_0 > a_1 > 0 \quad \ldots\ldots \quad (2.17)$$

$$\text{Assuming } S + C = Q \quad \ldots\ldots \quad (2.18)$$

$$S = Q - C$$

$$= Q - a_0 W + a_1 K \quad \ldots\ldots \quad (2.19)$$

Here, consumption depend on labor income W and consumer net worth K. in the consumption function.

2.2.3. Inflation, Saving and Growth

The growth rate of labour force (l) plus the growth rate of labour productivity (t) gives the natural rate of growth (Gn). Hence (Branson, 1979; Thirlwall, 1974),

$$Gn = l + t \quad \ldots\ldots \quad (2.20)$$

This is the upper limit to growth in the long run in any economy and depends upon the quantity of investible resources it has at its disposal and on how it deploys those resources. If at an acceptable rate of profit, it takes 3 extra units of capital to produce an additional unit of output and that the ratio of the increment of capital to national output is 9 per cent, the rate of growth permitted by these conditions is given by the division of the two ratios

$$\frac{\delta Y}{Y} = \frac{\delta K}{Y} / \frac{\delta K}{\delta Y} = \frac{9\%}{3} = 3\% \quad \ldots \quad (2.21)$$

where

$\frac{\delta Y}{Y}$ = growth rate of output

$\frac{\delta K}{Y}$ = I/Y = investment ratio

$\frac{\delta K}{\delta Y}$ = I/δY = incremental capital-output ratio.

The natural rate of growth may lie substantially above this rate and it cannot be achieved unless the ratio of investible resources to output rises or capital required per unit of additional output falls. There will also be a gap between the growth of the labour force and the growth of

employment opportunities. Given the capital-output ratio, the capital-labour ratio must rise at the same rate as the productivity of labour, which means that the growth of employment will be uniquely determined by the difference between the rate of growth of capital and the rate of growth of productivity. The formulation of the employment problem gives an alternative expression for the actual growth rate of

$$\frac{\delta Y}{Y} = e + t \qquad \ldots\ldots \qquad (2.22)$$

Where e is the rate of growth of employment

t is the rate of growth of labour productivity.

If the natural rate of growth lies above the attainable rate of growth, there must be profitable investment opportunities for saving in excess of the saving currently being undertaken. Otherwise, it will give rise to excess demand. Planned investment will exceed planned saving causing aggregate demand to exceed aggregate supply. The inflation induced in these circumstances may produce tendencies towards equilibrium through favourable effects of inflation on saving, but the time it takes for the saving ratio to rise to permit growth at the natural rate may be extremely long.

In the developing countries, growth rate set by the propensity to save, i.e., warranted rate of growth, sets a

limit to the actual real growth rate that can be achieved at any point of time. If capital is fully utilized because it is scarce there is little or no scope for reducing capital requirements per unit of output which, given the saving ratio, is the only way in which the actual growth rate could exceed the warranted rate determined by plans to save. Of course, if inflation makes ex post (actual) saving greater than ex ante (planned) saving, the actual growth rate can exceed the warranted rate in a definitional sense, but real saving remains the effective constraint on growth.

If the saving ratio can be raised by inflationary means in an economy where warranted and actual growth rates lie below the natural rate, the attainable growth rate may be raised not only in the short run but also in the long run if the saving ratio is positively related to the growth rate and to the level of per capita income, both of which, will rise in the initial stages of monetary expansion.

Provided that the capital-output ratio is fairly uniform across countries, a positive relation between the saving/investment ratio and the rate of growth of output and per capita income may be expected. This relation is slightly stronger when the growth of income is related to the investment ratio, but a really strong significant relation only emerges when the growth of per capita income is related to the investment ratio.

Monetary expansion can force saving by redistributing income to profit earners and the government; it can be used to alter favourably the structure of capital to yield more output per unit of capital invested, and through an expansion of monetary assets it can encourage the process of voluntary saving. The inter-dependence between growth, saving and per capita income gives rise to the possibility of cumulative expansion initiated by inflationary finance. While growth depends on savings, there are equally good reasons for expecting the saving ratio to be dependent on the growth rate and per capita income. The interdependence between growth, saving and per-capita income together form a virtuous circle. The dependence between these three variables forms the heart of a model of cumulative development and sustained expansion of living standards. The key variable is saving generated by investment.

2.2.4 Saving in Open Economy

There are two ways in which plans to invest exceeding plans to save can result in a greater volume of total saving and investment in an open economy. One is forced saving brought about by inflation; the other is by running an import surplus. The relationship between domestic saving and investment and the foreign balance is seen from the national income identity (Jones, 1975) :

$$Y = C + I + X - M \quad \ldots\ldots \quad (2.23)$$

where Y = income; C = consumption; I = investment; X = exports; M = imports.

Subtracting C and I from both sides of the equation (2.23) gives

$$Y - C - I = X - M \quad \ldots\ldots \quad (2.24)$$

$$\text{or} \quad I - S = M - X \quad \ldots\ldots \quad (2.25)$$

where S = Y - C = domestic saving.

Equation (2.25) says that in accounting terms, an excess of imports over exports is equivalent to an excess of investment over domestic saving.

Devaluation of currency helps in controlling balance of payments. It can improve the balance of payments only if it increases domestic output more than it increases domestic expenditure; i.e. if it increases domestic saving. In equation (2.25), if S is raised, as a result of devaluation, the payments will improve. Saving can only raise if devaluation expands output and/or discourages consumption or if it alters the income distribution to favour saving.

In developing countries, saving is strongly dependent on export earnings. Capital imports to finance balance of payments deficits act as a supplement to domestic saving. This is demonstrated using the growth formula

$$\frac{\delta Y}{Y} \cdot \frac{I}{\delta Y} = \frac{I}{Y} \qquad \ldots\ldots\ldots \qquad (2.26)$$

where,

$\frac{\delta Y}{Y}$ = growth rate

$I/\delta Y$ = the incremental capital output ratio

I/Y = investment ratio.

Since from equation (2.25), $I = S + M - X$, we have

$$\frac{\delta Y}{Y} \cdot \frac{I}{\delta Y} = \frac{S}{Y} + \frac{M - X}{Y} \qquad \ldots\ldots \qquad (2.27)$$

$I/\delta Y$ = the incremental capital output ratio.

Assuming $I/\delta Y$ and S/Y remain unchanged, an import surplus raises the growth rate. If all capital imports are saved and invested the growth rate will rise by the full amount of the import surplus times the productivity of capital. The import surplus may even raise the domestic savings ratio if the marginal propensity to save is greater than the average propensity to save. It is sometimes argued that import surpluses financed by foreign capital inflows increase the capital output ratio and discourage domestic saving. There are several comments on the apparent inverse relation between foreign capital inflows and domestic savings.

2.3. Empirical Works on Savings

The empirical works on savings has proceeded in many directions which includes determinants of savings at the aggregate level (Deaton, 1989) or, the studies pertaining to determinants of various forms of savings. For the later case, there have been several attempts, for example, Boskin (1978), Blinder and Deaton (1985), Fry (1988), Giovannini (1983,85), Gupta (1987) and others. They have tried to investigate the relationship between savings (total as well as various forms) with the rate of interest. The findings of these researchers can be classified broadly into two categories (Deaton, 1989):

a) Those studies look for a direct effect of interest rates on the savings, and those that look for a relation between the rate of growth of consumption and the interest rate. In both the cases, association between interest rate(s) and various forms of saving appears to be inconclusive as some studies have reported positive association while others have found no such evidence. As apparent, the issue of the association between interest rate and savings seems to be far from settled as there appear to be conflicting evidence.

2.4. Studies on Savings in India

Considering the importance attached to saving in economic activity, we have examined various theories and

conjectures about savings in the preceding section. In this section we shall critically review the studies on savings carried out in the Indian economy. These studies may be divided into several groups, covering methodological issues, overall trends in the savings behaviour as well as trends in savings at the sectoral level.

2.4.1. Studies on Methodology

The Central Statistical Organisation (CSO) has been releasing the official estimates of national income and related aggregates including those of saving in its annual publication National Accounts Statistics (NAS). On the other hand, the Reserve Bank of India (RBI) also publishes the estimates of savings in its Report on Currency and Finance. For this purpose the RBI utilises the information/estimates as available in the NAS and its own estimates of household financial saving and saving of private corporate sector. The difference between the above two sets of estimates of domestic saving has been a subject of discussion at a number of forums. The Working Group on Saving set up by the Department of Statistics, under the Chairmanship of Prof. K.N. Raj in 1987, while undertaking a critical review of the estimates of capital formation and saving, also looked into the differences in the two sets of estimates of saving mentioned above. Following the recommendation of the Working Group, the CSO and RBI had a

series of discussions and have agreed on a uniform methodology and data base and areas of responsibilities so as to avoid duplication of work in future. The arrangement came into effect in late 1987. Thus, with the introduction of New series of National Accounts with 1980-81 as base year in February 1988, the only difference between the two sets of figures of domestic saving prepared by RBI and CSO commencing from 1980-81 would be due to the time of preparation of estimates and their release.

Thus, the methodology that derived follows that saving represents the excess of current income over current expenditure and is the balancing item on the income and outlay accounts of producing enterprises and households, government administration and other final consumers. For preparing the estimates of gross domestic saving, the economy has been divided into three broad institutional sectors (i) public sector, (ii) private corporate sector and (iii) household sector.

Public sector covers government administration, departmental enterprises and non-departmental enterprises. The non-departmental enterprises comprise government companies, statutory corporations and port trusts. Private Corporate Sector comprises all non-government, non financial/financial corporate enterprises and cooperative institutions. The households sector comprises, apart from

individuals, all non-government, non-corporate enterprises like sole proprietorship and partnership owned and/or controlled by individuals and non-profit institutions which furnish educational, health, cultural, recreational and other social and community service to households.

In this regard Datta Roy Choudhury and Bagchi (1990) argues that the paper from CSO gives the factual details of the method of estimation with particular reference to the new series but makes no critical evaluation of the methodology.

Vaidyanathan (1990) makes a critical evaluation but primarily of household savings in physical assets and that too with reference to the methodology adopted in the early seventies.

These approaches have been revised substantially since then, particularly in the context of availability of new data both from the NSS (e.g. AIDIS) and otherwise.

In the context of the New Series of Savings, Chakarvarty (1990) particularly questioned the estimation of consumption of fixed capital. According to him, because of the substantial revision of the levels of consumption of fixed capital, even in the base year the difference being large, gross savings have to be written off by as much as nearly 50 per cent in order to arrive at the estimates of

net savings. However, he felt that, though the CSO publications do mention that the life table of the various types of physical assets have been taken into account for measuring depreciation, it is not clear whether this has been done with the care that is needed. Although it is quite plausible that the estimate of depreciation in the old series might have been an underestimate, the basis on which the new estimates have been prepared need to be thoroughly examined, because in sectors like transport, communication, electricity and gas, the results seem to suggest that in those cases the capital stock might have been under maintained which might lead to a bunching of investment requirements for replacement purpose in the coming years for which necessary resources might not be available and even if the resources were forthcoming these investments will be required merely to maintain the current rate of growth.

Ghosh (1990), on the other hand, argues that in spite of all the limitations, the estimates of savings at current prices are perhaps more accurate than any of the other macro-economic aggregates. This conclusion, of course, is directly based on the fact that with increasing monetisation of the economy, the gross/net savings in physical assets which is subject to unknown error because of the absence of cross-checks is now relatively small proportion of total savings. Even if not on other grounds, one would be tempted to support the views expressed by Ghosh

on the mere fact that the savings estimates - the savings in financial assets, to be exact - have a sufficiently extensive and current data base which is not equally true of the estimates of capital formation as they are often based on proportionalities, etc. at different stages which are not equally supported by evidences and data sources.

2.4.2. Studies on Overall Trends

There are a number of studies which have looked into the long term trend of savings in India. The study by Rao (1983) is based on data compiled by CSO on total net savings at current prices and their proportions to the NDP for the period 1951 to 1979-80. He found that while there has been a steady rise in the savings as a percentage of the NDP, from 6.82 per cent in 1950-51 to 19.54 per cent in in 1979-80. But there have been considerable fluctuations in its annual growth. These fluctuations show no correspondence to the annual growth of NDP. Again, he took the figures of savings and the NDP over five-year periods and the average share of savings in the NDP in these periods, he found a steady increase in the growth rate over the six five-year periods. It confirms the existence of a secular trend in the growth of the savings rate during the period under review; but the rate of increase is much higher in the last quinquential period as compared to the earlier ones. This sharp increase in the second half of the seventies, Rao

(1983) points out, is due to the increasing quantum of remittance from Indian nationals abroad, and foodgrain procurement and stocking on a large scale by the government.

Rao (1983) has also analysed the components of net savings by disaggregating it into three sectors. He argues that during the period 1950-51 to 1979-80 savings in HHS sector accounted for about 76.26 per cent. This, he says, may stabilise some where around 75 per cent of the total in the long run. On the basis of all of these analyses, savings, Rao (1983) has drawn the following paradoxical features of aggregate savings behaviour in India:

(i) The declining share of the primary sector (mainly agriculture) in the NDP is because the marginal propensity to save on the part of the agricultural sector is lower than that of the secondary and tertiary sectors or the non-agricultural sector.

(ii) An increase in the inequality of income distribution leads to an increase in the share of high income groups with a larger marginal propensity to save than the other income groups.

(iii) A deliberate attempt on the part of the government to increase savings in the public sector by budgeting for revenue surpluses and profits from public enterprises.

(iv) The creation of incentives for increasing savings by increasing the return in the form of interest and by tax concessions.

(v) An increase in the share of urban areas in the NDP because the propensity to save is higher in urban areas as compared to rural areas. This is linked with factor 1 above.

(vi) The growth of the corporate sector.

(vii) The fluctuating character of the annual NDP may also result in some increase in the rate of saving.

(viii) Whether inflation, which has been a feature of the Indian economy since the mid-sixties, has also helped to raise the rate of saving is a moot point, as it can have both positive and negative effects. On the positive side, towards an increase in saving is the inequality it promotes in income distribution in favour of upper income groups whose propensity to save is higher as also the motivation of the savers in general to keep up their desired or planned rate of savings in real terms. On the negative side is the increase it brings about in the money expenditure on consumption by savers and realisation on their part of the erosion in the real value of savings and fall in the real return received from a given rate of interest.

It would perhaps be correct to conclude that each of these factors contribute to an explanation of the rise in

the savings rate in India in spite of its continuing low per capita income."

Krishnamurty and Sharma (1990) seeks to examine the implications of New National Accounts Series released in February, 1988 for saving behaviour. The paper first examines the correspondence between the old and new series, surveys the literature on determinants of saving based on old series and cross section data, tests the stability of estimated structural relationships for new and old series and finally draws implications of the results.

Output, saving and investment series as reported in National Accounts Statistics (NAS), (February, 1988) is referred to as the new series, which differs from the old series (NAS, January 1987). The differences seem to have arisen from the use of latest information as well as certain methodological changes in estimation. In brief, a major difference is in estimating consumption of fixed capital. Instead of using depreciation provided in the book of accounts, now new estimates are based on the life of each type of asset relying on the information brought out in recent surveys. For public administration while no depreciation is provided in the old series, it is now being imputed on the basis of maintenance expenditure. The corporate sector saving and investment estimates are now based on updated information of paid-up capital.

A method of examining the degree of concordance between the new and old estimates is to use regression analysis. This has been done for saving by institutional sectors, saving rates and composition of saving. The conclusions drawn by Krishnamurty and Sharma (1990) are :

(i) Output, whichever way it is measured, is higher in the new series compared to the old but the coefficient of variability is about the same. However, average increments from year to year between these two series differ significantly as revealed by testing the hypothesis whether the marginal coefficients are significantly different from unity. The intercept terms are not significantly different from zero. Further, the growth rates between the two series, on the average, do not significantly differ from each other.

(ii) A comparison of average gross and net saving reveals a mixed picture. Except for gross corporate saving which shows significant discordance in movements in levels as well as growth rates, total gross saving and its other constituents do not.

(iii) Net saving, however, shows divergence only in terms of intercept being different from zero for public and corporate saving. However, growth rates do not differ significantly.

(iv) Capital consumption estimates, as can be expected, show divergence except for corporate sector.

(v) Gross and net saving rates have a similar pattern except in the case of public saving and the growth of corporate saving rate.

(vi) Composition of gross saving by sectors does not show any differential behavioural patterns except the growth rate of share of corporate saving.

(vii) Composition of net saving shows a mixed picture. This is not unexpected due to differential patterns observed with respect to capital consumption.

(viii) Composition of household financial saving shows similar behaviour except in the case of shares and debentures, and provident and pension funds. A conjecture with regard to shares and debentures is the revision in estimation of paid-up capital and consequent effects on the household estimates which is a residual category. Notwithstanding the above, growth rates do not significantly differ.

Next, Krishnamurty and Sharma outlined the various hypothesis tested in the literature on saving behaviour in India based on their survey (1987), e.g. the principal hypothesis related to income, differential propensities to consume/save between agricultural and non-agricultural sectors and the role of intersectoral terms of trade, interest rate, inflation, taxation and banking infrastructure.

From their study we note that

(i) the empirical evidence tends to support the normal income hypothesis and consequently lags in the response of saving/consumption to income;

(ii) lower propensity to save in agricultural sector compared to non-agricultural sector.

(iii) Narrowing of the propensity differential between the two sectors in the post seventies as a result of a sharper rise in the saving propensity of the agricultural sector following the green revolution;

(iv) Adverse impact of a rise in inter-sectoral terms of trade in favour of agriculture on the aggregate saving rate, given other factors;

(v) Regarding the role of rate of interest in influencing saving behaviour they say "The evidence about the strong supportive role of interest rate in India has not been very clear-cut. In the Indian context the nominal rates of interest in the organised markets have been regulated by public authority and their variation has not been larger over the years. However, what is of relevance in the analysis of saving rates is not nominal rates of interest, but real rate of interest, i.e., interest rate adjusted for actual or expected rate of inflation."

(vi) An unequivocal answer to the question as to whether inflation promotes saving or otherwise, is not

available in India. It has been argued that inflation via income redistribution and real balance effects could have a positive effect on saving. Obversely, it has been contended that inflation could also have a negative effect on saving particularly in a country like India with low consumption levels where consumers are likely to resist cuts in real consumption. Which of the two opposing consequences of inflation could dominate in turn depends on a host of interrelated factors such as extent of inflation, composition of consumption (durables and non-durables) and saving (physical and financial assets), expectations, interest rates, etc.

(vii) Though the External Terms of Trade has figured prominently in inter country analysis, it has not received much attention in the Indian context. However, the study of Krishnaswamy, Krishnamurty and Sharma (1987) does not find any impact of external terms of trade on saving in India.

(viii) There have been some studies on the role of taxation in influencing household, corporate and aggregate saving. The results generally are not robust. However, they point to adverse effects of taxation on household saving and weak positive effect on aggregate saving. Much evidence cannot be placed on the current findings and more empirical work is called for.

(ix) There has been financial development in India and in particular, strengthening of banking infrastructure over the years. This is particularly noticeable in the post-bank-nationalisation period, i.e., 1969 onwards. This has led to larger mobilisation of saving and increase in the saving rate particularly of the household sector in the seventies.

Ghosh (1990) investigated the problem of stagnation in rate of saving and attempted to identify the factors which possibly have led to this tend in the recent past. According to him, the remittances for exportriate Indians working abroad are not part of domestic savings though they may be deemed to be national savings and therefore to that extent measures of domestic saving should be independent of remittances. Again, taking up the question of overall savings, Ghosh argues that since in macro terms I=S, the deflator for investment becomes, in effect, the deflator for savings. According to him in theory, there is no other satisfactory way of deriving a deflator for domestic saving though some argue that the deflator for gross domestic expenditure may be a more meaningful deflator. This, however, would not give the ex-post identity of I=S and hence cannot be accepted.

Regarding the behaviour of saving at the sectoral level Ghosh (1990) says that (i) There has lately been a

steep decline in the rate of public saving, particularly so in the eighties, (ii) Corporate sector saving has stagnated at a low level all along and has declined compared to the sixties and (iii) household sector saving has shown an increase over time and has remained to be the only sector of significance contributing to the overall domestic saving of the Indian economy. Another aspect highlighted by Ghosh (1990) is that there are increasingly new types of government expenditure under the Rural Development Department of the Ministry of Agriculture which are really of the nature of capital expenditure but may not be treated as such in the national income accounts. To the extent funds under the RLEGP/NREP/DPAP and similar programmees lead to payments for direct capital formation in the rural areas, such expenditures from the Revenue Budget should be treated as "saving" by government, spent for capital formation in rural areas. According to Ghosh (1990), the derivation of estimates of saving by households in the form of financial instruments of saving is subject to error because the holding of currency as well as diverse financial instruments by the public and the private corporate sector are only roughly estimated, the balance of the incremental amount of all such savings instruments being treated as household savings.

Shetty (1990a) in his Paper makes a plea for producing real saving series as a memorandum item in

National Accounts. He argues that savings of the private corporate sector, the public sector and of the household sector (in physical assets only) should be deflated by their respective capital formation deflators. Considering the relevance of life-cycle hypothesis and the social security component in financial savings, the deflator relating to household consumption expenditure may be applied to household saving in the form of financial assets. However, this approach of Shetty (1990) will not lead to the ex post identity of I=S and, therefore, will leave an unexplained gap. This gap is not the same as "terms of trade" effect and, therefore, will have to be resolved on its own.

Vaidyanathan (1990) assumes that the deflator for measurement of saving in real terms would be same as for investment to maintain the identity I=S in real terms. He raises a more fundamental issue regarding the real and nominal savings trend. He stresses that the Raj Committee had argued that the real investment (and by implication, savings) has risen considerably more slowly than the nominal rates because the price of capital goods has risen relatively faster than that of consumer goods. If this is so, then according to him, "the real returns to investment in terms of consumer goods must have steadily fallen over the last two decades. How is it that, despite this, the nominal saving rate rose so sharply? Has the shift in

relative prices induced any significant change in choice of technique, capacity utilisation, etc. leading to more efficient use of capital at least in the private sector?"

Roy Choudhury (1990) uses deflated data of household savings and personal disposable income to study the pattern of household savings in India. The deflator to be used for obtaining the series of savings at constant prices need not be the same for the total and for the household sector. She uses data on Household Savings available from Old and New Series of NAS to draw conclusions regarding the household savings behaviour since 1970-71 and changes therein. Then proceeds to analyse the time series of household financial and total savings by the use of alternative savings functions and draw conclusions regarding the household savings behaviour in terms of average and marginal propensities to save and income elasticity of saving both at current and constant prices. This Paper is very much in line with the study of Krishnamurty and Sharma (1987) if one ignores the fact that the former refers solely to household savings while the latter to aggregate and sectoral savings. Roy Choudhury (1990) also tests the Keynesian current income hypothesis, i.e., savings as a function of current income using both current and constant prices savings. The result do not indicate the possibility of rise in prices being an important determinants of the levels of saving though it appears to have a moderate influence.

Roy Choudhury and Bagchi (1990) examines critically the revisions undertaken by CSO of the estimates of savings in the public sector as a part of the New Series on National Accounts and makes an assessment of the quality of the estimates.

Virmani (1990) concludes that increasing public sector saving may, in the long run, help in reversing the process of saving from stagnation and resulting in a rising trend in the rate of saving in the future.

Rao (1990) discussed the rate of saving of the private corporate sector and says that the rate of saving in the private corporate sector has remained almost stagnant and it might have even declined in the recent past as compared to the sixties. Rama Rao (1990) further, discussed the method of estimation and whether the stagnation observed is not due to the particular method adopted for estimating total corporate sector saving by using the blow-up factor (paid up capital proportions) applied to RBI survey data and the nature of the sample.

Shetty (1990b) reviews the trends in domestic saving rates in India during the 1980s and draws some important lessons which have implications for raising the saving rate in the medium term. According to him, the broad feature of saving behaviour in India are roughly, gross domestic saving

as percentage of GDP at current market prices experienced a rising trend until the latter half of the 1970s and touched a peak of 23.2 per cent in 1978-79 instead of foreign inward remittances, large foodgrains procurement, and currency expansion. The rate has consistently remained below or equivalent to the peak reached in the latter half of the 1970's. From his study Shetty has drawn the following conclusions : First, despite substantial fiscal concessions for the corporate sector, the sectors saving rate has stubbornly remained feeble. Second, the 1980's have been a decade favouring rather significantly the urban saving groups and yet the improvement in household saving rate has been moderate. Third, even this moderate level of household saving has been sustained because of substantial subsidisation of household consumption as well as household saving. Fourth, such subsidisation is to an extent responsible for the sizeable dissavings by the public sector. Even the corporate sector confers many benefits on its high income executives and employees such that they tend to subsidise household consumption as well as saving. Fifth, the fiscal privileges on saving instruments seem to have tended to produce sizeable perverse 'wealth' effects which in turn seem to have contributed to the encouragement for conspicuous consumption. Finally, in such a milieu, attempts by the public authorities to improve their saving rate by reducing subsidisation of household incomes or

saving to any significant extent may adversely affect the disposable income of the household sector and in turn the household saving. Therefore, attempts have to be directed at the root of the problem which is to curb conspicuous consumption.

Recently Roy and Sen (1991) studied the saving investment data in the wider context of recent industrial growth and structural change and found some basis to say that household savings may have been moving towards sectors and assets that involve lower capital output ratios and saving-investment behaviour of households may bear a close relationship with changes in the capital and labour markets especially in industry. In conclusion they say that economic growth depends on the size of investible resources and the productivity of these resources. In the 1970s, India's savings rate was high by developing country standards but that did not contribute to higher growth. More recently, economic growth has accelerated without any appreciable change in the savings rate. The explanation for this must lie in returns to investment. It is likely that more funds are now becoming available for sectors and uses that generate higher income per unit of capital.

In India, the households are the main savers, but investments are made by household, government, and the private corporate sector. Household savings takes place in

the form of financial assets like bank deposits and securities, or as physical assets like machinery in agriculture and small industry. In this Paper, we found that in the eighties, the share of corporate securities in financial savings has increased, the share of machinery in physical savings has also increased and the share of non-residential construction in physical savings has fallen. The first tendency suggests that more resources are going to private industrial investment via the capital market. The last two are consistent with a significant growth in informal and unorganised industry in recent times.

2.4.3. Studies on Potential for Saving in the Economy

Lall (1990) in his Paper examines the possibilities of tapping savings potential in the household sector and the question of introducing new instruments to make this possible. On the basis of limited survey for the household sector, the author feels that potentials do exist and it is necessary to determine the strategy to promote market and the saving instruments and work out details of associated infrastructure like the operational cost in terms of the rate of interest on the saving deposit, building up of collection and servicing institutions and so on. But he expressed his reservation about generalisations from a very limited sample and felt that proliferation of savings

instruments would only cause shuffling of the savings rather than an increase in it.

2.5 Scope for Further Study

Even after having gone through the whole course of examining all the issues connected with measurement of savings both at the aggregate and sectoral levels and analysis of the available data, one is unfortunately not in a position to provide an answer to the basic question with which the whole exercise started, viz., is there a convincing explanation to the saving behaviour of the Indian economy over the last 40 years? In particular, an answer to the question as to why the savings rate rose sharply in the late seventies and stagnated, thereafter. Though the basic issue is yet to be resolved, the current examination of the method of estimation particularly at the sectoral level has raised doubts in one's mind about the reliability and accuracy of the savings estimates - particularly the New Series.

Even if the question of quality of data is left aside, no conclusion appears to have emerged regarding the basic attributing factors leading to the pattern of and trend in savings in the Indian economy as it has been since the fifties.

This persuades us to study the trends of savings behaviour in Indian economy and to identify the determinants

of savings in India in general. Since the issue of the association between interest rate and savings is also not settled, we intend to investigate this conflicting association also with Indian data, along with other factors.

Chapter-3

DATA AND METHODOLOGY

3.1. Introduction

The objective of this chapter is to outline the methods used in this study for the purpose of refinement of data which has been used in the study vis-a-vis statistical and econometric techniques used for data analysis.

The chapter has been divided into three sections. Section-I consists of the data sources followed by an elaborate discussion on the adjustment of data in Section-II. Finally, section-III provides the statistical methods used for purposes of analysis.

3.2 Data Sources

The data used in the study is collected mainly from secondary sources. The relevant data has been collected from the following publications. In order to have a consistent time series of many variables, various issues of these publications have been consulted wherever applicable.

1. National Accounts Statistics (NAS), C.S.O., New Delhi (1989 and subsequent issues).
2. Statistical Abstract of India (SAI), C.S.O., New Delhi (various issues).
3. Economic Survey, Ministry of Finance, Economic Division, New Delhi (various issues).
4. Report on Currency and Finance, Vol.II, Statistical Abstract, R.B.I., Bombay (various issues).
5. R.B.I. Bulletin, R.B.I., Bombay (various issues).

6. Economic and Political Weekly, Sameeksha Trust-Publication, Bombay (various issues).

3.3. Data Adjustments

This section deals with various preliminary adjustments of data. Since, it has been collected from more than one sources, it was found that in some cases these are not comparable. Thus, some preliminary adjustments of the data is required before these are used for the analysis.

3.3.1. Data on Domestic Savings

Data on Domestic Savings (Gross and Net), at current prices are taken from National Accounts Statistics 1989, 1990 and 1991.

3.3.2. Data on Net Domestic Product (N.D.P.)

Data on N.D.P. for the period under review has been collected from the Economic Survey (1992-93) and National Accounts Statistics (1989, 1990).

3.3.3 Data on Wholesale Price Index Number (W.P.I.)

Data on W.P.I. has been collected from Economic Survey (1985-86, 1992-93) for the period under review. For the years 1979-80, 1980-81 and 1981-82, we found data at base 1970-71 = 100 which we have converted to base 1981-82 = 100 following the methodology suggested in section 3.3.3.1. below.

3.3.3.1. Conversion of Base of Index Number

In our basic data, the W.P.I. (for all commodities) for the years mentioned above are at base 1970- 71 = 100. Considering the given W.P.I. for 1981-82 = 100 as base, we have derived a new series of W.P.I. for the above mentioned years. Again, considering the W.P.I. for 1980-81 = 100 as base from the computed data, we have derived the new series for the years 1979-80 to 1991-92 (Goon et al., 1970).

3.4. Statistical Methods

To test the initial relations and the direction of movement of trend and computation of growth rates of savings, various statistical methods have been used. These methods are as discussed below :

3.4.1. Computation of Rates of Inflation

Rate of inflation is defined as the ratio of the difference of the price level of two consecutive periods to the price level of the base period (Johnston, 1987).

It could be written as :

$$R_1 = \frac{t_1 - t_o}{t_o} \quad \ldots\ldots\ldots \quad (3.1)$$

Where R_1 = Rate of inflation in the present period

t_1 = W.P.I. of the present period

t_o = W.P.I. of the previous period.

3.4.2. Correlation Co-efficient

The correlation co-efficient which measures the co-movement of two variables, say X and Y, is defined as (Yule and Kendall, 1991).

$$r = \frac{CoV\ (X, Y)}{\sqrt{V(x).V(y)}} \quad \ldots\ldots \quad (3.2)$$

where r = correlation co-efficient

Cov(X, Y) = Covariance of X and Y = $\Sigma(X - \bar{x})\ (Y - \bar{y})$

$V(x)$ = Variance of X = $\Sigma\ (X - \bar{x})^2$

$V(y)$ = Variance of Y = $\Sigma\ (Y - \bar{y})^2$

This is called product moment correlation (Yule and Kendall, 1991). For computation purposes we use the following formula for correlation co-efficient which is nothing but a simpler form of (3.2).

$$r_{xy} = \frac{1/n\ \Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{Sx.Sy}} \quad \ldots\ldots\ldots\ldots \quad (3.3)$$

where Sx and Sy are standard deviation of x and y, respectively.

3.4.3. Computation of Annual and Trend Growth Rates

The growth rate has been defined as the rate of gradual increase of a variable (Schwarz, 1989). Annual growth rate of a particular variable is defined (Johnston, 1987) as :

$$g = \frac{b - a}{a} \quad \ldots\ldots \quad (3.4)$$

where, g = Annual growth rate in the present period

a = value of the variable at the previous period

b = value of the variable at the present period.

The direction followed by the growth rates is called the trend of growth (Johnston, 1987).

Depending upon the causal relationship among a set of variables they may be linear or non-linear (Johnston, 1987).

Considering a linear regression model (Johnston, 1987),

$$\log Y = \alpha + BX + U \quad (3.5)$$

where $\alpha = \alpha_0 + B$

and ignoring the disturbance term, we rewrite the function as (Johnston, 1987).

$$Y = e^{\alpha Bx} \quad (3.6)$$

where e^{α} = intercept

A continuous time formulation of equation (3.6) can be written as, (Johnston, 1987)

$$Y^t = e^{\alpha Bt} \quad (3.7)$$

$$= Y_0 e^{bt} \quad (3.8)$$

where Y_0 = value of Y at t = 0

$$B = \frac{1}{Yt} \frac{dY_t}{dt} = \text{instantaneous rate of growth at time t.}$$

when time is measured in discrete intervals, a constant growth series would be expressed as (Johnston, 1987).

$$Y_t = Y_o (1+g)^t \qquad (3.9)$$

where g = proportionate rate of growth in Y per unit of time. Equation 3.8 and 3.9 could be rewritten as (Johnston, 1987),

$$B = \log (1+g) \qquad (3.10)$$

which can be written as (Johnston, 1987).

$$g = \log^{-1} B-1 \qquad (3.11)$$

This gives the rate of growth per unit of time.

3.4.3.1. Semilog model of transformation

Box and Cox (1964) have suggested a general form of transformation of non-linear relations to linear form, namely (Johnston, 1987).

$$Y(\tau 1) = \begin{cases} \dfrac{Y^{\tau 1} - 1}{\tau_1} & \tau_1 \neq 0 \\ \log Y & \tau_1 = 0 \end{cases} \qquad (3.12)$$

$$\text{and } X^{(\tau 2)} = \begin{cases} \dfrac{X^{\tau 2} - 1}{\tau_2} & \tau_2 \neq 0 \\ \log X & \tau_2 = 0 \end{cases}$$

where Y is transformed to $Y^{(\tau 1)}$ and X to $X^{(\tau 2)}$ (Johnston, 1987).

If $\tau_1 = 0$, $\tau_2 = 1$, the combination of τ values gives (Johnston, 1987).

$$\log Y = \alpha + \beta x + u \quad \ldots\ldots\ldots \quad (3.14)$$

where $\alpha = \alpha_0 + \beta$

This is the semilog model (Johnston, 1987).

3.4.4 Estimation of Behavioural Equation (Linear Regression Model)

For establishing causal relationship among a set of variables, we have to specify a functional relation,

$$Y = f(x_1, \ldots\ldots, x_n) \quad \ldots\ldots\ldots \quad (3.15)$$

where Y is dependent and X is independent variable, and Y is a function of X.

We have assumed here that there is linear relationship between dependent variable Y and a set of independent variables. Or, in case there is a non-linear relation, we can transform the equation as suggested above to linear form.

There are various techniques or methods to estimate the parameters. Among them ordinarily used technique is OLS which may be outlined as follows:

The standard regression model in matrix form is written as (Johnson, 1987)

$$Y = XB + u \qquad \ldots\ldots\ldots\ldots\ldots\ldots \qquad (3.16)$$

where

$$Y = \begin{bmatrix} Y_1 \\ Y_2 \\ . \\ . \\ . \\ Y_n \end{bmatrix}, \quad X = [x_1, x_2, \ldots, x_n], \quad B = \begin{bmatrix} B_1 \\ B_2 \\ . \\ . \\ . \\ B_n \end{bmatrix} \quad u = \begin{bmatrix} u_1 \\ u_2 \\ . \\ . \\ . \\ u_n \end{bmatrix}$$

The assumptions of the model are:

(i) $E(u) = 0$

(ii) $E(u'u) = \delta^2 I_n$

(iii) X is a set of fixed number

(iv) X has rank $k < n$.

Given the assumptions, let b_* denote any arbitary K-element vector. This in turn serves to define a vector of error or residuals,

$$e_* = Y - Xb_* \qquad \ldots\ldots\ldots \qquad (3.17)$$

We choose b_* to minimise the sum of the squared residuals e'_*e_*. Thus from (3.17) we obtain,

$$e'_*e_* = (Y - Xb_*)'(Y - Xb_*)$$

$$\text{Hence} \quad \frac{d(e'_*e_*)}{db_*} = -2X'Y + 2X'Xb_* \qquad \ldots\ldots \qquad (3.18)$$

The necessary condition for a stationary point require that we require that we set equation (3.18) equal to the zero vector. Denoting the resultant OLS solution for b_* simply by β, we obtain,

$$(X'X)\beta = X'Y \quad \ldots\ldots\ldots\ldots \quad (3.19)$$

These are referred to as OLS normal equations.

Since $(X'X)$ is assumed to be non singular, an equivalent expression for equation (3.19) is

$$\beta = (X'X)^{-1}X'Y \quad \ldots\ldots\ldots\ldots\ldots \quad (3.20)$$

which is the OLS estimate of b.

The technique can be used when relationship is linear or in case it is non linear, may be linearised using suitable transformation. We expect the models being used here in this study to fall in either of these categories and application of OLS would provide estimated vector β with all the desirable properties.

3.4.5 Problems Associated with Application (Case of Autocorrelation):

In linear regression model, when the assumption of a serially independent disturbance term is violated and instead a linear relationship between the successive stochastic disturbance terms is found, then it is called the case of autocorrelation (Johnson, 1987). This situation is likely to arise in time series data (Croxton, Cowden and Klein, 1988). One has then to be careful while estimating

coefficient of a time series model as presence of autocorrelation makes estimated parameters inefficient.

Considering the Linear Regression Model (Johnson, 1987)

$$Y_t = X_t b + U_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.21)$$

with classical assumptions,

$$\left.\begin{aligned} &E\ (U_t) = 0 \\ &E\ (U_t . U_{t+s}) = 0, \text{ when } s \neq 0 \\ &\qquad\qquad = G^2 u, \text{ when } s = 0 \end{aligned}\right\} \quad \ldots\ldots \quad (3.22)$$

The presence of autocorrelation is suggested when

$$E = (U_t . U_{t+s}) \neq 0 \quad \ldots\ldots\ldots\ldots \quad (3.23)$$

Thus, in presence of autocorrelation all the off diagonal elements of the matrix $U'U$ are not equal to zero. This is the most simple form of autoregressive scheme.

To understand the nature of autocorrelation, we assume another model $U_t = PU_{t-1} + V_t$ ..... (3.24) with the assumptions,

$$\left.\begin{aligned} &E(V_t) = 0 \\ &E(V_t . V_{t+s}) = Gu^2, \ s = 0 \\ &\qquad\qquad = 0, \quad s \neq 0 \end{aligned}\right\} \quad \ldots\ldots \quad (3.25)$$

Equation (3.24) can be rewritten as (Johnson, 1987)

$$U_t = \sum_{r=0}^{d} P^r V_{t-r} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.26)$$

$$E\ (U_t)^2 = E\ (V_t + PV_{t-1} + P^2 V_{t-2} + \ldots.)^2 \quad .. \quad (3.27)$$

which can be rewritten as (Johnson, 1987)

$$E(U_t)^2 = bv^2 (1 + P^2 + P^4 + \dots) \quad \dots\dots (3.28)$$

This gives (Johnson, 1987),

$$Gu^2 = \frac{1}{1-P^2} \quad \dots\dots\dots\dots\dots (3.29)$$

Similarly, the covariance between the successive disturbance terms (Johnson, 1987)

$$E(U_t.U_{t-1}) = E\{(V_t + PV_{t-1} + P^2V_{t-2} + \dots)(V_{t-1} + PV_{t-2} + P^2V_{t-3} + \dots)\} \dots (3.30)$$

which can be written as (Johnson, 1987),

$$E(U_t.U_{t-1}) = PGu^2 \quad \dots\dots\dots\dots\dots (3.31)$$

Similarly,

$E(U_t.U_{t-2}) = P^2Gu^2$, and in general,

$$E(U_t.U_{t-s}) = P^sGu^2 \quad \dots\dots\dots\dots\dots (3.32)$$

Thus, in presence of autocorrelation, the assumption of serially independence distribution term is violated and a linear relationship between the stochastic disturbance terms are found. Here the model follows a first order autoregressive scheme. However, in more complicated models also, there is the breakdown as shown below.

Equation (3.32) can be rewritten as (Johnson, 1987),

$$\frac{E(U_t.U_{t-s})}{Gu^2} = P^s \quad \dots\dots\dots\dots\dots (3.33)$$

The left hand side of the above equation indicates the Sth order correlation of the u series. Further, correlation coefficients of zero order for any series is simply unity.

Gathering all the informations, we have (Johnson, 1987),

$$E(U'U) = V = Gu^2 \begin{bmatrix} 1 & P & P^2 & \ldots & P^{n-1} \\ P & 1 & P & \ldots & P^{n-2} \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ \ldots & \ldots & \ldots & \ldots & \ldots \\ P^{n-1} & P^{n-2} & P^{n-3} & \ldots & 1 \end{bmatrix} \quad (3.34)$$

Thus, when $E(U'U) = V$,

instead of getting $E(U'U) = Gu^2 In$ we obtain the result as in equation (3.34).

3.4.5.1 Test for correction for Autocorrelation

Suppose that in the model $Y = XB + U$ one suspects that the disturbance term follows autoregression scheme, i.e. (Johnson, 1987),

$$U_t = \phi U_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.35)$$

The null hypothesis of zero autocorrelation would then be set up as

$$H_o : \phi = 0 \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.36)$$

and the alternative hypothesis as

$$H_1 : \phi \neq 0 \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.37)$$

The null hypothesis is about the U's which are unobservable. One, therefore, looks for a test of the null hypothesis using the vector of OLS residuals, $e = Y - Xb$. This raises several difficulties. We know that

$$e = Mu \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.38)$$

where $M = I - X(X'X)^{-1}X'$

is symmetric, idempotent of rank n-k. Thus the variance-covariance matrix of the e's is

$$E(e'e) = \sigma_u^2 M \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.39)$$

Thus even if the null hypothesis is true, so that

$$E(U'U) = \sigma_u^2 I \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.40)$$

the OLS residuals will display some autocorrelation, for the off-diagonal terms in M do not vanish. More importantly M is a function of the sample values of the explanatory variables, so that it is impossible to derive an exact finite sample test on the e's which will be valid for any X matrix that might ever turn up.

3.4.5.2 Durbin-Watson Statistic

The presence of autocorrelation could be tested with the help of Durbin-Watson Statistic (Gupta, 1982).

The Durbin-Watson Statistic could be defined as the ratio of the sum of the squares of the successive differences of the residuals to the sum of the squared residuals.

It could be written as

$$d^n = \frac{\sum_{t=2}^{n} (e_t - e_{t-1})^2}{\sum_{t=1}^{n} e_t^2} \quad \ldots\ldots\ldots\ldots\ldots \quad (3.41)$$

where e_t is the residual in Y_t and $X_t\hat{b} + e_t$.

As is seen in the numerator, t ranges from 2 to n while in the denominator, it ranges from 1 to n.

d_U and d_L represents the upper limit and the lower limit respectively of the b.

Now given the number of observations (N) and the number of parameters to be estimated (K), the decision rules are:

If $d^n < d_L$, then do not reject the hypothesis. This indicates the presence of positive first order autocorrelation.

If $d^n < d_U$, then reject the hypothesis. There is no correlation.

On the other hand, if $d^n < 4 - d_L$, reject the hypothesis, i.e there is no correlation. But if $d^n > 4d_U$, this shows the presence of negative first order autocorrelation.

The test is inconclusive when, $d_L \leq d^n \leq du$ and $4 - du \leq d^n \leq 4 - d_L$.

When $d^n \approx 2$ there is no correlation of any kind.

3.4.6 Other Related Statistic:

In addition to the correlations and all some other statistics are used for testing significance of the

parameter (or, estimated coefficient) and to test the goodness of fit. Those are mentioned below:

t-statistic:

The t-statistic is commonly called students t-distribution or, simply students distribution. It is used when sample size is 30 or less and the population standard variation is unknown.

The t-statistic is defined as (Kendall and Stuart, 1961).

$$t = \frac{\bar{X} - u}{s} \times \sqrt{n} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.42)$$

$$\text{where } s = \frac{\sqrt{\Sigma(X-\bar{X})^2}}{\sqrt{n-1}}$$

The t-table gives, over a range of values of V, the probabilities of exceeding by chance value of t at difference levels of significance. The t-distribution has a different value for each degree of freedom and when degrees of freedom are initially large, the t-distribution is equivalent to normal distribution and the probabilities shown in the normal distribution tables are applicable.

3.4.6.2 The Coefficient of Determination : R^2 :

It is given by the ratio of regression sum of squares to total sum of squares (Kendall and Stuart, 1961),

$$R^2 = \frac{\Sigma(\hat{Y} - \bar{Y})^2}{\Sigma(Y - \bar{Y})^2} = \frac{\hat{B}X'Y}{Y'Y} \quad \ldots\ldots \quad (3.43)$$

It is used to measure the fitness or variability of the estimated line in regression analysis. If a regression line yields R^2 as high as .99, the empirical equation can be inadequate and unreliable for prediction purposes if the variances of the estimates are very large to make the estimates highly insignificant. Moreover, when the number of regressors is increased by more than 2, the contribution to the variance of regression line is significantly increased. R^2 can best be regarded as an indicator of the empirical equation rather than conclusive evidence. Stating in a slightly different way, R^2 measures the percentage of variability in the endogeneous variable explained jointly by the exogeneous variables. So, R^2 is indicator of goodness of fit.

The approximate unbiased version of R^2 is $\bar{R}^2$.

$$\bar{R}^2 = (1-R^2)\frac{n-1}{n-k-1} - 1 \quad \ldots\ldots\ldots\ldots \quad (3.44)$$

$$E(\bar{R}^2) = \rho^2 - \frac{\rho^2(1-\rho^2)(1-2\rho^2)}{n} + O(n^{-1}) \quad (3.45)$$

$\bar{R}^2$ has smaller bias than R^2, although both R^2 and $\bar{R}^2$ are consistent.

CHAPTER-4

ANALYSIS OF OVERALL SAVING TREND

4.1. Introduction

As outlined in Chapter-I, the main purpose of this work is to study savings behaviour in Indian economy since 1950-51. In Chapter-II, we have looked into the nature and importance of savings in economic activity in general. It has been pointed out there that savings assume dominant role in the economy (Kumar, 1992). But it is ironic to note that in the literature savings has been treated at best complementary or passive variable (Kumar, 1992). While its volume has found the importance, savings deserve in economic development and growth of economic (Sen, 1970), its composition has never been an important aspect of investigation. The objective of this chapter is two-fold. One, we have looked into not only time evolution of savings during last four decades but also changing structure of savings among its various components but examined structural changes also.

It has been reported (Rao, 1983, Choudhury et al., 1990, Krishnamurty et al., 1990) that data on savings has been compiled by two independent sources, viz. C.S.O. and R.B.I. Both the series have been reported to differ in absolute amounts (Vaidyanathan, 1990) but their broad trends have been reported to be similar (Krishnamurty et al.,

1990). For purposes of our analysis, we have collected data compiled by CSO and published in National Accounts Statistics (1989) issue for the period 1950-51 to 1987-88 and subsequent issues for latest data on savings.

Another problem with data sources has been that most of the savings data are reported at market or current prices. There have been attempts to generate series on constant prices (Shetty, 1990a). While for broad sectors the IPD may be derived and a series at Constant (1980-81) prices may be generated, further disaggregation and derivation of Implicit Price Deflator (IPD, hereafter) for these as suggested by Shetty (1990) runs into difficulty. Shetty (1990) has suggested to use different IPD for different series of components of savings. Our modest attempt to generate a series at constant (1980-81) prices using/deriving IPD as suggested by Shetty (1990) has failed on two counts. For one, we have not been able to collect data on some series. Secondly, in case where could be IPD derived and series generated it distorts the percentage distribution. Another complication about savings data arises from series on gross and net. In the NAS while broad sectors for both categories are same, it is their division in further disaggregation of various sector into sub-sectors where data is not reported. Therefore, we have used GDS for purposes of analysis. Wherever NDS has been used it has been used for purposes of comparison only.

The rest of this chapter is organised as follows : Section 4.2 of the analysis comprises the study of long term trends of savings followed by the study of composition of HHS in section 4.3. Section 4.4 comprises the analysis of the growth rates of savings along with the macro variables, e.g., GDP, NDP, etc. Lastly, in section 4.5, summary of the chapter is given.

4.2. The Long-Term Trend

In Table 4.1 data on NDP, GDP, NDS, GDS and NDS as percentage of NDP and GDS as percentage of GDP is reported for the period 1950-51 to 1991-92. An examination of columns 4 and 5 suggests that savings as in absolute terms has shown a steady growth throughout the period under review (Fig.4.1). GDS shows a 151 fold increase from Rs.917 crore in 1950-51 to Rs.148039 crore in 1991-92. It was at the lowest ebb in 1952-53 with Rs.806 crore which is equivalent to 6.76 per cent of GDP. But soon it has recouped in the very next year with 10.46 per cent of GDP and thereafter went along steady increasing path till 1978-79 with Rs.24138 crore which is 23.17 per cent of GDP. After 1978-79, during the last decade, i.e., 1980's it has stagnated at around 21 per cent of GDP till 1988-89. Thereafter, during 1989-90 to 1991-92 it has gone up to over 27 per cent of GDP.

NDS also has given the same kind of picture (Fig.4.1). Starting at around 6 per cent in 1950-51, NDS

has steadily gone up to 18.35 per cent in 1978-79. Thereafter it has stagnated at around 14 per cent of NDP. This suggests a very interesting thing that for about thirty years savings as a percentage of GDP has steadily climbed upto about 23 per cent but during last decade, i.e. in 1980's it has stagnated at around 21 per cent on average.

4.2.1. Sectoral Trend

As reported earlier, total saving is divided into three broad categories - Household Sector Savings (HHS), Private Corporate Sector Savings (PCS) and Public Sector Savings (PS), both in case of gross and net. While over-all trends reported in the previous section is that of increasing one, its percentage in national income which has shown stagnation during last 12 years or so, an analysis of sectoral trend is expected to reveal which sector has performing relatively poorly on savings front.

Sectoral distribution of GDS and NDS is reported at current prices in Table 4.2 and 4.3 respectively in columns (2), (3) and (4).

Gross and net HHS savings shows a steady rising trend throughout the period of study (Fig.4.2). Gross HHS has registered a 168 fold increase from Rs.718 crores in 1950-51 to Rs.12123 crore in 1991-92. It has 73.64 per cent share in GDS in 1950-51 which has increased to 84 per cent in

1990-91. During the last decade, i.e., 1980's its share in GDS has shown an increasing trend although it was falling at the first half of the decade. Net-HHS reveals a similar kind of trend. It has shown a smooth growing trend since 1970-71 to 1991-92 in Fig. 4.2. HHS (net) constitute 82.21 per cent of NDS in 1951 which has increased to over 100 per cent in 1967-68, 1968-69 and from 1983-84 until the last period under review. Its share in NDS is around or over 100 per cent when that of FS is found negative. HHS at constant prices reveals the same kind of analysis as in case of current prices, i.e., it also reflects a steadily growing trend throughout the period of study and comprises the highest share in GDS and NDS. Of course, net-HHS at current prices reflects a haphazardly growing trend (Fig.4.2). In comparison with the net HHS, gross HHS has been growing more sharp and steadily.

Trend of gross FCS at current prices is shown in Fig.4.2. Although it has shown a growing trend but is not as faster and steady as Gross-HHS at current prices. In 1950-51 with Rs.89 crores, it went up to Rs.16633 crores in 1991-92 which is about 148 fold in absolute terms. It was lowest with Rs.60 crores in 1952-53 which has constituted only 7.44 per cent of GDS. In the years 1975-76, 1979-80 and 1985-86 it has shown sudden rise but was not that high and dropped down again. From 1983-84 onwards it has followed a steady straight and continuously growing path

till 1989-90 when it has accumulated a highest level of saving, i.e., 12.04 per cent in its part. Net-PCS shows a haphazardly growing trend. It was at the lowest ebb in 1975-76 with only 0.19 per cent of NDS. Its trend of growth was steady straight only during 1987-88 to 1990-91.

A trend of Gross FS at current prices as depicted in Fig.4.2, which shows a haphazardly growing path. It was at its lowest ebb in 1953-54 and thereafter followed a growing trend till 1970-71. Then it has increased up till 1979-80. But after that its growth path is haphazard till it reaches it maximum level in 1991-92. However, it constitutes 18.39 per cent of GDS in 1950-51 which has fallen down to 6.87 per cent in 1991-92 which is about 2.5 fold fall in percentage terms. Net-FS at current prices has shown on an average the same haphazard growth path as mentioned above. It registered negative growth in certain years, e.g., 1953-54, 1958-59, 1959-60, 1966-67 to 1968-69, 1972-73, 1980-81 and 1983-84 to 1991-92. Its share in NDP in 1950-51 is 9.96 per cent which has dropped down to -21.09 per cent in 1991-92.

Sectoral distribution of GDS and NDS as percentage of GDP and NDP are reported in columns 6, 7 and 8 of Table 4.4 and 4.5 respectively (at current prices). Both in terms of GDP and NDP, HHS has shown highest share in it. In 1950-51, HHS's share in GDP is 7.67 per cent whereas PCS and PS share was 0.95 per cent and 1.79 per cent respectively.

In NDP also HHS has registered the highest amount of share among the three sectors. Thus, HHS is the highest amount of savings supplier in terms of national income among the three sectors. Share of HHS in GDP/NDP has shown a growing trend throughout the first thirty years till 1978-79. In 1978-79 its share in GDP and NDP were 17.03 per cent and 16.29 per cent respectively. But after 1978-79, during the last decade, i.e. 1980's its share in GDP and GDS stagnated at around 16 per cent and 13 per cent respectively. Share of PCS in GDP has registered a three-fold increase from 0.95 per cent in 1950-51 2.73 per cent in 1989-90, whereas its share in NDP has shown a two-fold increase during this period. During the last decade, i.e., 1980's its share in GDP remained constant at around 1.5 per cent whereas its share in NDP has shown a fluctuating trend. Share of PS in GDP also has shown a haphazard trend till 1978-79. In 1978-89 its share in GDP is around 4.59 per cent which has shown a falling trend during the last decade under review. Surprisingly, in case of PS's share in NDP, we have seen a haphazard trend which has been negative in the years 1953-54, 1958-59, 1959-60, 1966-67 to 1968-69, 1973, 1981 and 1983-84 to 1991-92.

Going by the aggregate and sectoral trend reported above, one gets the impression that both GDS and NDS have recorded increase in absolute terms as well as in percentage

terms till 1978-79. Thereafter, these have stagnated below the peak level achieved during 1978-79 till 1988-89. It is during last couple of years that GDS has increased considerably and reached all time high of about 27.32 per cent of GDP in 1991-92.

4.3 Sectoral Composition of Household Sector

In the last section, we have seen that overall evolution of savings (total) vis-a-vis sectoral have shown rising trend with HHS performing better chan the other sectors. Noticeable surprise has been Net-PS, which has exhibited negative trend during 1980's. This has clearly changed the composition of the savings which we aim to capture in this section.

4.3.1 Composition of HHS

As mentioned in Chapter II, HHS have been divided into two sub sectors, viz. Financial Assets (FA) and Physical Assets (PA). We have seen above that out of the three broad sectors, it is HHS which has shown rise in proportion of the total. It would, therefore, be worthwhile to look at the trend and growth of its sub-sectors.

Gross HHS and its composition is reported in Table 4.6 along with the percentage distribution of the sub sectors. It is seen that FA has registered around 6 fold increase in its share in HHS from 8.64 per cent in 1950-51

to 48.31 per cent in 1991-92, whereas share of PA in HHS dropped down enormously from 91.36 per cent in 1950-51 to 51.69 per cent in 1991-92. Fig.4.3 depicts the trend of growth of FA and PA. As can be seen from Fig.4.4, FA gives a smoothly increasing trend more or less similar to that of Gross HHS. The trend of PA is found growing quite haphazardly. During the last decade of study, i.e. during 1980's, FA's share has increased from 39.37 per cent in 1980-81 to 48.31 per cent in 1991-92, the share of PA in HHS has shown a continuously falling trend constant (1980-81).

We have reported the share of FA and PA in GDP and HHS on five year averages in column 2, 3, 4, and 5 of Table 4.7. It may be seen from column 4 of this table that the share of FA in HHS has been steadily increasing from 16.60 per cent in the first quinquennial sub period to 47.97 per cent in the eighth whereas HHS in PA has declined from 83.12 per cent sub period to 48.61 per cent during the same period (Column 5). Share of FA in GDP also has registered about eight fold increase from 1.28 per cent in 1950-51 to 9.64 per cent in 1989-90, where in case of PA it has increased by about one and half times.

Rao (1983) has attributed this rise in FA's share to three factors. One is the conversion of hording in non-currency form such as gold and jewellery, to currency and bank deposits because of the growing communication and

monetisation of the economy. Secondly, due to increase in household income coming from economic development and the accompanying distribution and consumption factors referred to earlier. The third reason is the expanding infrastructure of banking and other facilities for financial savings, which must have provided both motivation and access for the increase in the rate of FA. Therefore, it is worthwhile to look into the various components of FA.

The break up of FA is provided in Table 4.8 and analysis by quinquennial periods and their percentage share in HHS are given in Table 4.9. It is seen from Table 4.9 that there has been a drastic change in the composition of FA in the last sub period as compared to the first. While the share of currency has more than doubled from 7.17 per cent to 15.75 per cent and that of net bank deposits increased by about four and half times (5.42 per cent to 25.13 per cent), that of shares and debentures dropped down from 28.32 per cent to 9.90 per cent. The net claim on government also fell down from 13.29 per cent to 8.26 per cent in the seventh sub period, but recouped in the last sub period (14.54 per cent). Life Insurance Funds and Provident Funds also declined from 18.18 per cent to 10.39 per cent and 27.62 per cent to 23.59 per cent respectively.

From the above analysis, it is quite clear that over the period under review, neither the private corporate

sector nor the government have been able to channalise FA into their investments and that the FA is the responsible sub sector which gives rise to HHS which has the highest share in domestic savings.

4.4 Growth Rates of Savings

From the last two sections, viz. 4.2 and 4.3, it is evident that (i) there has been a general rising trend in savings, (ii) at sectoral level, increasing performance of the HHS, and (iii) in the HHS, phenomenal rise of savings in FA. In this section, we present rate of growth to see if these observations are supported by the observed growth rates.

We have reported growth rates on the basis of quinquennial averages, annual, over the entire period and decadal. Methodology for the composition of growth rates have been reported in Chapter III.

4.4.1 Quinquennial Growth Rates

Quinquennial growth rates of NDS as percentage share in NDP has been reported in Table 4.10. Taking the figures of savings and the NDP over five year periods and the average share of savings in the NDP in these periods, we found a steady increase in the growth rate over the first six five year periods followed by a slight fall in the seventh period which has recouped but still below the

previous growth rate, in the last period. The growth rate is much higher in the sixth quinquennial period as compared to the earlier ones. During the last two periods, more or less, it has maintained the same level on an average as compared to the sixth period, i.e. 1975-76 to 1979-80. Rao (1983) has pointed out that this sharp rise in the second half of the seventies is due largely to the increasing quantum of remittances from Indian nationals abroad which resulted in a sharp rise in the amount of FA held in the HSS.

Sectoral growth rates have been reported in Table 4.11 for the quinquennial periods. The quinquennial share has reported an increasing trend of growth from 82.10 per cent in the first sub period to 114.95 per cent in the last period. In fact, it has registered the highest growth rate of 142.75 per cent in the seventh sub period. We can see from Table 4.11 that a very high rate of HHS is accompanied by a very low rate in PS. The public sector accounts for 15.76 per cent of total savings during the period of study and has declined from 9.38 per cent in the first sub period to (-)21.08 per cent in the last. The corporate sector's share in the total is 5.5 per cent over the period as a whole, but it has dropped from 8.95 per cent in the first sub period to 6.13 per cent in the last which is the declining factor in the saving scene. However, as a proportion of NDP, both HHS and PCS have shown a more or less steady increase over the different quinquennial

periods, the former rising from 4.29 per cent to 16.22 per cent and the latter from 0.46 per cent to 0.87 per cent. But the share of PCS has dropped down from 0.49 per cent to (-)2.98 per cent. On the whole, the growth trend of the total savings as a percentage of NDP has also been reflected of its components, though primarily in the PS. The performance of PCS in the saving scenario has been disappointing till 1979-80. Indeed, from 1979-80 till 1991-92, it shows an increasing trend.

4.4.2 Study of Growth Rates

We have computed the growth rate of savings for the entire period 1950-51 to 1991-92 using the method suggested in Chapter III. Wherever Autocorrelation was suspected as indicated by dw statistic we have re-run the regression using Autocorrelation correction and results are reported in Table 4.12. A glance through the Table suggests that equation fits quite well as indicated by high value of $\bar{R}^2$ over 0.95 in almost all the cases. The coefficients are highly significant as indicated by 't'-values. Using the coefficients in column (4), over-all growth rate is computed and reported in column (7) of the same table. The growth rate of GDS and NDS are almost same throughout the period under review, i.e. around 14 per cent. The growth rate of NDS is slightly higher than that of GDS.

Regarding the sectoral growth rate, the HHS shows the highest growth rate among the sectors. It has shown 14.85 per cent gross and 15.72 per cent net growth rate during the entire period. Next to HHS, PCS-gross shows about 13.56 per cent growth rate followed by the public sector saving in gross with 11.25 per cent. PCS-net also has shown 11.91 per cent growth rate.

Growth rate of NDS from PS-net could not be computed since some of the values are negative and, therefore, log value is not possible to find. Anyway, HHS has shown the highest amount of growth rate among all the sectors and thus topped among the sectors in the sectoral distribution of growth rate of savings.

Again, between the two sub sectors of HHS, growth rate of the FA is higher than PA. It has registered about 17 per cent growth rate throughout our period of study. The growth rate obtained by FA is also the highest among all the other sectoral growth rates and the GDS and NDS growth rates per annum.

4.4.3 Decadal Growth Rates

To study the decadal growth rates, we have sub divided our period of study into four groups, as below:

(1) 1950-51 to 1959-60

(2) 1960-61 to 1969-70

(3) 1970-71 to 1979-80

(4) 1980-81 to 1991-92

The first three groups contains ten years each whereas the last group contains twelve years. The results are reported in Table 4.13, 4.14, 4.15 and 4.16 respectively. Here also we could not compute the growth rate for NDS from PS due to the reason mentioned above. During 1950-51 to 1959-60 as reported in Table 4.13, the growth rates of GDS and NDS were more or less the same, i.e around 9.5 per cent, although that of NDS is slightly higher between the two. In sectoral distribution, HHS (both gross and Net) has registered the highest rate of growth among the three sectors. Its growth rates are 9.90 per cent and 12.77 per cent in gross and net respectively, followed by 7.35 per cent in PCS gross and 5.12 per cent in PS-gross and 8.42 per cent in PCS-net. Between HHS, FA and PA, the two sub sectors of HSS, the former has registered the highest rate of growth.i.e. 35.50 per cent, whereas the latter has a growth rate of 6.37 per cent only. Moreover, the growth rate achieved by the FA is highest rate of growth in comparison with all the other total as well as sectoral growth rates.

During 1960-61 to 1969-70 as in Table 4.14, the growth rate of PCS (net) is negative whereas GDS and NDS has registered more or less some growth rate, i.e. around 13 per

cent, although growth rate of NDS is slightly higher then GDS. In case of sectoral distribution, HHS has registered the highest growth rate among all the sectors both in gross and net. The HHS (net) is higher than the HHS (gross) and both of them are higher than GDS as well as NDS. Growth rates of HHS (gross and net) are 16.79 per cent and 20.50 per cent respectively which is followed by PS gross with 6.17 per cent and then by PCS (gross) with 5.10 per cent.

Between HHS, FA and PA, the latter has registered the higher amount of growth rate, i.e. 18.55 per cent. The former's growth rate was very low which is equivalent to 6.91 per cent which tallies with PS (gross) growth rate of 6.17 per cent. It is mainly due to the negative growth in PCS (net) that HSS-FA has registered a low growth rate and savings went to HHS-PA.

The growth rates during 1970-71 to 1979-80 has been reported in Table 4.15. Here, NDS with 19.07 per cent is higher than GDS of 17.92 per cent. In case of sectoral distribution, HHS (gross) with 16.92 per cent has followed PS (gross) with 19.89 per cent at the top. PCS (gross) with 12.59 per cent has followed HHS (gross). HHS (net) has a growth rate of 19 per cent which has not much difference with that of NDS total. In fact, HHS is leading in respect of growth rates.

Regarding the fractions of HHS (gross), FA is leading with 20.04 per cent growth rate whereas PA's growth rate is 15.50 per cent. Thus, it is seen from Table 4.20 that the HHS is leading among all the sectors and between the fractions of HHS, FA is at the highest position during 1970-71 to 1979-80.

Table 4.16 reports the growth rate of savings during 1980-81 to 1991-92. It reflects that during this period, the growth rates of PCS (net) is the highest with 34.93 per cent. GDS has registered a very low growth rate of 4.02 per cent during this period and the PS (gross) is at the lowest with 2.31 per cent. Growth rate of NDS is 20.36 per cent which is higher than the GDS. In case of sectoral distribution in gross, PCS is leading with 22.60 per cent growth rate, followed by HHS with 17.44 per cent, whereas PS is at the bottom. In fact, PCS registered a growth rate higher than that of HHS (18.89 per cent).

Regarding the component of HHS (gross), the growth rate of FA is 18.30 per cent which is higher than that of PA (16.71 per cent). Thus, during this period, PCS has registered the highest rate of growth followed by HHS and between the fragments of HHS, FA has registered the highest growth rate.

4.5 Summary

In this chapter behaviour of savings in Indian Economy since 1950-51 has been analysed. A critical evaluation of the overall trends of savings in section 4.2 suggests that savings as proportion of national income shows a steady trend till 1978-79. Starting at about 9 per cent in GDP in 1950-51, it has steadily gone up to 23 per cent in 1978-79. Thereafter, it has stagnated around 21 per cent till 1989-90, i.e. throughout the last decade. Trend of NDS also has reflected similar growth as GDS. With overall saving trend reported is that of increasing one, it is percentage share in national income which has shown stagnation during the last decade. An analysis of sectoral trend has also been carried out as an attempt to examine the stagnation. The overall evolution of savings (total) vis-a-vis sectoral have shown rising trend with HHS performing better than the other sectors. Noticeable surprise has been the net-PS which has exhibited a negative trend during the 1980's.

Out of the three sectors, performance of HHS has been better than others. We have also studied the composition of HHS in its two broad sub sectors viz. FA and FA in section 4.3. This is evident from the analysis that FA has shown a rising trend which gave rise to HHS and it finally lead to a rise in the total savings. We have presented various growth rates (e.g. quinquennial, overall

and decadal) which has supported the above findings.

Our observations tally with that of Shetty (1990a, 1990b), Rao (1983), Roy and Sen (1991), Pandit (1985) and Choudhury and Bagchi (1990).

Table 4.1

Total Net Domestic Savings and Gross Domestic Savings and their Share in Net Domestic Product and Gross Domestic Product

(Rs. crores)

Year	NDP at Factor Cost	GDP at Factor Cost	NDS	GDS	(4) as % of (2)	(5) as % of (3)
1	2	3	4	5	6	7
1950-51	8566	9366	562	917	6.56	9.79
1951-52	9023	9966	548	1005	6.07	10.08
1952-53	8862	9774	319	806	3.60	8.23
1953-54	9670	13638	412	922	4.26	6.76
1954-55	9003	10073	494	1054	5.49	1.46
1955-56	9116	10258	829	1430	9.09	13.94
1956-57	10932	12217	931	1599	8.52	1.09
1957-58	1134	12598	645	1370	5.79	10.87
1958-59	12421	14034	564	1409	4.54	10.04
1959-60	13017	14793	848	1765	6.51	11.93
1960-61	14231	16201	1041	2063	7.31	12.73
1961-62	14955	17177	951	2093	6.36	12.18
1962-63	15952	18476	1216	2476	7.62	13.40
1963-64	18253	21237	1408	2826	7.71	13.31
1964-65	21390	24765	1544	3135	7.22	12.66
1965-66	2271	26145	1999	3791	8.98	14.50
1966-67	25295	29571	2420	4514	9.57	15.48
1967-68	29855	34611	2165	4497	4.25	12.99
1968-69	31414	36674	2169	4697	6.90	12.81
1969-70	34530	40387	3246	6044	9.40	14.97
1970-71	36646	43163	3721	6783	10.15	15.71
1971-72	38874	46257	4134	7508	11.27	16.23
1972-73	42684	51005	4144	7833	9.47	15.36
1973-74	52566	62007	7044	11432	13.40	18.44
1974-75	61485	73235	7172	12726	11.66	17.38
1975-76	64786	78761	8513	14928	13.14	18.95
1976-77	69641	84894	11135	18030	15.99	21.24
1977-78	79904	96067	12783	20230	16.00	21.06
1978-79	85411	104196	15669	24138	18.35	23.17
1979-80	92161	114356	14417	24698	15.64	21.60
1980-81	110139	136013	16686	28773	15.15	21.15
1981-82	128417	159760	19209	33668	14.96	21.07
1982-83	141965	178132	17784	34670	12.53	19.46
1983-84	166586	207589	21812	41041	13.09	19.77
1984-85	185697	231387	23117	45201	12.45	19.53
1985-86	207848	261920	28935	55150	13.92	21.06
1986-87	230815	291974	33561	63426	14.54	21.72
1987-88	299774	332616	33808	65309	13.70	19.63
1988-89	355465	394992	43689	82600	14.00	20.91
1989-90	405055	442769	54924	100471	15.43	22.69
1990-91	478981	472660	73225	125109	17.46	26.47
1991-92	547691	541888	86230	148039	17.96	27.32

Source : Basic Data from 1) National Accounts Statistics, Central Statistical Organisation, New Delhi; 2) Economic Survey, Ministry of Finance, Economic Division, New Delhi. Percentage Distribution compiled by the author.

Table 4.2

Gross Domestic Savings and its Distribution by Type of Institutions and their Percentage Distribution (Current Prices)

(Rs. Crores)

Year	Gross Domestic Savings				Percentage Distribution		
	Total	HHS	PCS	PS	HHS	PCS	PS
1950-51	917	718	89	168	78.30	9.71	18.32
1951-52	1005	621	132	252	61.79	13.13	25.07
1952-53	806	601	60	145	74.57	7.44	17.99
1953-54	922	709	86	127	76.90	9.33	13.77
1954-55	1054	789	114	151	74.86	10.82	14.33
1955-56	1430	1128	130	172	78.88	9.09	12.03
1956-57	1599	1217	151	231	76.11	9.44	14.45
1957-58	1370	1008	117	245	73.58	8.54	17.88
1958-59	1409	1046	136	227	74.24	9.65	16.11
1959-60	1765	1349	180	236	76.43	10.20	13.37
1960-61	2063	1362	276	425	66.02	13.38	20.60
1961-62	2093	1284	315	494	61.35	15.05	23.60
1962-63	2476	1572	338	566	63.49	13.65	22.86
1963-64	2826	1730	387	709	61.22	13.69	25.09
1964-65	3135	1937	381	817	61.79	12.15	26.06
1965-66	3791	2586	396	809	68.21	10.45	21.34
1966-67	4514	3432	414	668	76.03	9.17	14.80
1967-68	4497	3431	399	667	76.30	8.87	14.83
1968-69	4697	3412	427	858	72.64	9.09	18.27
1969-70	6044	4475	536	1033	74.04	8.87	17.09
1970-71	6783	4873	657	1253	71.84	9.69	18.47
1971-72	7508	5477	753	1278	72.95	10.03	17.02
1972-73	7833	5713	788	1332	72.94	10.06	17.00
1973-74	11432	8562	1063	1807	74.90	9.30	15.81
1974-75	12726	8610	1440	2776	67.66	11.32	21.03
1975-76	14928	10534	1055	3339	70.57	7.07	22.37
1976-77	18030	12698	1147	4185	70.43	6.36	23.21
1977-78	20230	14686	1376	4168	72.60	6.80	20.60
1978-79	24138	17747	1611	4780	73.52	6.67	19.80
1979-80	24698	17379	2352	4967	70.37	9.52	20.11
1980-81	28773	21835	2284	4654	75.89	7.94	16.17
1981-82	33668	23918	2496	7254	71.04	7.41	21.55
1982-83	34670	23940	2908	7822	69.05	8.39	22.56
1983-84	41041	31088	3172	6781	75.75	7.73	16.52
1984-85	45201	34677	3991	6533	76.72	8.85	14.45
1985-86	55150	41142	5115	8892	74.60	9.82	15.58
1986-87	63426	50484	4924	8018	79.60	7.76	12.64
1987-88	65309	52733	5715	6861	80.74	8.75	10.51
1988-89	82600	65728	8733	8139	79.57	10.57	9.85
1989-90	100471	81319	12098	7054	80.94	12.04	7.02
1990-91	125109	105125	14393	5591	84.03	11.50	4.47
1991-92	148039	121230	16633	10176	81.89	11.24	6.87

Source: as in Table 4.1.

Table 4.3

Net Domestic Savings and its Distribution (by Type of Institutions and their Percentage Distribution) (Current Prices)

(Rs. Crores)

Year	Net Domestic Savings				Percentage Distribution		
	Total	HHS	PCS	PS	HHS	PCS	PS
1950-51	562	462	44	56	82.21	7.83	9.96
1951-52	548	336	80	132	61.31	14.60	24.09
1952-53	319	296	5	28	92.79	1.57	8.78
1953-54	412	388	30	-6	94.17	7.28	-1.46
1954-55	494	435	50	9	88.06	10.12	1.82
1955-56	829	757	58	14	91.31	7.00	1.69
1956-57	931	810	71	50	87.00	7.63	5.37
1957-58	645	570	28	39	89.61	4.34	6.05
1958-59	564	532	36	-4	94.33	6.38	-0.71
1959-60	848	807	66	-25	95.17	7.78	-2.95
1960-61	1041	774	140	127	74.35	13.45	12.20
1961-62	951	655	143	153	68.87	15.04	16.09
1962-63	1216	904	140	172	74.34	11.51	14.14
1963-64	1408	1013	143	252	71.95	10.16	17.90
1964-65	1544	1170	96	278	75.78	6.22	18.01
1965-66	1999	1726	94	179	86.34	4.70	8.95
1966-67	2420	2412	69	-61	99.67	2.85	-2.52
1967-68	2165	2281	34	-150	105.36	1.57	-6.93
1968-69	2169	2170	37	-38	100.05	1.71	-1.75
1969-70	3246	3075	127	44	94.73	3.91	1.36
1970-71	3721	3388	200	133	91.05	5.37	3.57
1971-72	4134	3856	256	22	93.28	6.19	0.53
1972-73	4044	3909	229	-94	96.66	5.66	-2.32
1973-74	7044	6512	414	118	92.45	5.88	1.68
1974-75	7172	6035	574	563	84.15	8.00	7.85
1975-76	8513	7623	16	874	89.55	0.19	10.27
1976-77	11135	9585	92	1458	86.08	0.83	13.09
1977-78	12783	11365	304	1114	88.91	2.38	8.71
1978-79	15669	13914	421	1334	88.80	2.69	8.51
1979-80	14417	12713	910	794	88.18	6.31	5.51
1980-81	16686	16343	584	-241	97.94	3.50	-1.44
1981-82	19209	17318	495	1396	90.16	2.58	7.27
1982-83	17784	16374	568	842	92.07	3.19	4.73
1983-84	21812	22697	390	-1275	104.06	1.79	-5.85
1984-85	23117	25205	795	-2882	109.03	3.44	-12.47
1985-86	28935	30280	1467	-2812	104.65	5.07	-9.72
1986-87	33561	38160	486	-5085	113.70	1.45	-15.15
1987-88	35808	42697	816	-7705	119.24	2.28	-21.52
1988-89	43689	50348	2751	-9410	115.24	6.30	-21.54
1989-90	54925	63842	4896	-13813	116.23	8.91	-25.15
1990-91	73225	85669	5681	-18125	116.99	7.76	-24.75
1991-92	86230	98661	5758	-18189	114.42	6.68	-21.09

Source : as in Table 4.1.

Table 4.4

Gross Domestic Savings (by Type of Institutions and their Percentage Share in Gross Domestic Product) (at Current Prices)

(Rs. Crores)

Year	Gross Domestic Savings				Percentage Distribution		
	Total	HHS	PCS	PS	HHS	PCS	PS
1950-51	6852.59	5046.32	625.52	1180.75	73.64	9.13	17.23
1951-52	6642.47	4104.45	872.44	1665.58	61.79	13.13	25.07
1952-53	5401.87	4027.95	402.12	971.80	74.57	7.44	17.99
1953-54	5990.46	4606.55	558.76	825.15	76.90	9.13	13.77
1954-55	6451.07	4829.12	697.74	924.20	74.86	10.82	14.33
1955-56	8899.29	7019.86	809.03	1070.40	78.88	9.09	12.03
1956-57	9594.82	7302.62	906.08	1386.12	76.11	9.44	14.45
1957-58	8518.08	6267.32	727.46	1523.31	73.58	8.54	17.88
1958-59	7452.31	5532.37	719.31	1200.62	74.24	9.65	16.11
1959-60	8977.09	6861.25	915.51	1200.34	76.43	10.20	13.37
1960-61	10013.33	6610.84	1339.64	2062.85	66.02	13.38	20.60
1961-62	9722.41	5964.44	1463.24	2294.73	61.35	15.05	23.60
1962-63	11198.89	7110.12	1528.77	2560.00	63.49	13.65	22.86
1963-64	12006.61	7350.12	1644.22	3012.27	61.22	13.69	25.09
1964-65	12749.00	7877.13	1549.40	3322.47	61.79	12.15	26.06
1965-66	14583.69	9948.15	1523.38	3112.16	68.21	10.45	21.34
1966-67	14737.54	11204.97	1351.65	2180.92	76.03	9.17	14.80
1967-68	13680.69	10437.73	1213.83	2029.14	76.30	8.87	14.83
1968-69	14051.50	10207.31	1277.41	2566.78	72.64	9.09	18.27
1969-70	16906.85	12517.90	1499.35	2889.61	74.04	8.87	17.09
1970-71	17888.90	12851.63	1732.72	3304.55	71.84	9.69	18.47
1971-72	18707.95	13647.24	1876.28	3184.44	72.95	10.03	17.02
1972-73	17942.68	13086.49	1805.03	3051.15	72.94	10.06	17.00
1973-74	22879.47	17135.59	2127.44	3616.45	74.90	9.30	15.81
1974-75	20291.78	13728.76	2296.10	4266.92	67.66	11.32	21.03
1975-76	22187.90	15656.98	1568.08	4962.85	70.57	7.07	22.37
1976-77	26067.53	18358.60	1658.32	6050.62	70.43	6.36	23.21
1977-78	28365.12	20591.71	1929.33	5844.08	72.60	6.80	20.60
1978-79	31600.43	23233.61	2109.05	6257.77	73.52	6.67	19.80
1979-80	27749.34	15926.11	2642.58	5580.65	70.37	9.52	20.11
1980-81	28786.00	21848.00	2284.00	4654.00	75.90	7.93	16.17
1981-82	30041.98	21292.67	2239.82	6509.48	70.88	7.46	21.67
1982-83	28440.84	19483.16	2427.67	6530.01	68.50	8.54	22.96
1983-84	29188.80	21734.12	2375.79	5078.89	74.46	8.14	17.40
1984-85	28719.07	21577.15	2691.60	4450.32	75.13	9.37	15.50
1985-86	32547.87	23891.73	3342.19	5313.95	73.40	10.27	16.33
1986-87	32451.16	24634.48	3082.42	4734.26	75.91	9.50	14.59
1987-88	38621.10	31343.03	3243.88	4034.19	81.16	8.40	10.45
1988-89	42358.34	33706.16	4478.39	4173.78	79.57	10.57	9.85
1989-90	46640.15	37749.50	5616.07	3274.57	80.94	12.04	7.02
1990-91	52077.66	43759.16	5991.21	2327.30	84.03	11.50	4.47
1991-92	50538.66	41386.40	5678.70	3473.96	81.89	11.24	6.87

Source : as in Table 4.1.

Table 4.5

Net Domestic Saving (by Type of Institutions and their Percentage Share in Net Domestic Product (at Current Prices)

(at Current Prices)

Year	NDP at factor cost	HHS	PCS	PS	(3) as % of (2)	(4) as % of (2)	(5) as % of (2)
1	2	3	4	5	6	7	8
1950-51	8566	462	44	56	5.39	.51	.65
1951-52	9023	336	80	132	3.72	.89	1.46
1952-53	8862	296	5	28	3.34	.06	.32
1953-54	9670	388	30	-6	4.01	.31	.06
1954-55	9003	435	50	9	4.83	.56	.10
1955-56	9116	757	58	14	8.30	.64	.15
1956-57	10932	810	71	50	7.42	.65	.46
1957-58	1134	578	28	39	5.19	.25	.35
1958-59	12421	532	36	-4	4.28	.29	-.03
1959-60	13017	807	66	-25	6.20	.51	-.19
1960-61	14231	774	140	127	5.44	.98	.89
1961-62	14955	655	143	153	4.38	.96	1.02
1962-63	15952	904	140	172	5.67	.88	1.08
1963-64	18253	013	143	252	5.55	.78	1.38
1964-65	21390	170	96	278	5.47	.45	1.30
1965-66	2271	726	94	179	7.75	.42	.80
1966-67	25295	412	69	-61	9.54	.27	-.24
1967-68	29855	281	34	-150	7.64	.11	-.50
1968-69	31414	170	37	-38	6.91	.12	-.12
1969-70	34530	075	127	44	8.91	.37	.13
1970-71	36646	388	200	133	9.25	.55	.36
1971-72	38874	856	256	22	9.92	.66	.06
1972-73	42684	909	229	-94	9.16	.54	-.22
1973-74	52566	512	414	118	12.39	.79	.22
1974-75	61485	035	574	563	9.82	.93	.92
1975-76	64786	623	16	874	11.77	.02	1.35
1976-77	69641	585	92	1458	13.76	.13	2.09
1977-78	79904	365	304	1114	14.22	.38	1.39
1978-79	85411	914	421	1334	16.29	.49	1.56
1979-80	92161	713	910	794	13.79	.99	.86
1980-81	110139	343	584	-241	11.21	.53	-.22
1981-82	128417	318	495	1396	13.49	.39	1.09
1982-83	141965	374	568	842	11.53	.40	.59
1983-84	166586	697	390	-1275	13.62	.23	-.76
1984-85	185697	205	795	-2882	13.57	.43	-1.55
1985-86	207848	280	1467	-2812	14.57	.71	-1.35
1986-87	230815	160	486	-5085	16.53	.21	-2.20
1987-88	299774	697	816	-7705	14.24	.27	-2.57
1988-89	355465	348	2751	-9410	14.16	.77	-2.65
1989-90	405055	842	4896	-13813	15.76	1.21	-3.41
1990-91	478981	669	5681	-18125	17.89	1.19	-3.78
1991-92	547691	661	5758	-18189	18.01	1.05	-3.31

Source : As in Table 4.1.

Table 4.6

Gross Domestic Savings in Household Sector and its Distribution by Asset Type (Current Prices)

Year	Household Savings			% Distribution	
	HHS	FA	PA	FA	PA
1950-51	718	62	656	8.64	91.36
1951-52	621	14	607	2.25	97.75
1952-53	601	72	529	11.98	88.02
1953-54	709	142	567	20.03	79.97
1954-55	789	282	507	35.74	64.26
1955-56	1128	429	699	38.03	61.97
1956-57	1217	333	884	27.36	72.64
1957-58	1008	291	717	28.87	71.13
1958-59	1046	362	684	34.61	65.39
1959-60	1349	433	916	32.10	67.90
1960-61	1362	456	906	33.48	66.52
1961-62	1284	489	795	38.08	61.92
1962-63	1572	499	1073	31.74	68.26
1963-64	1730	743	987	42.95	57.05
1964-65	1937	714	1223	36.86	63.14
1965-66	2586	1072	1514	41.45	58.55
1966-67	3432	864	2568	25.17	74.83
1967-68	3431	865	2566	25.21	74.79
1968-69	3412	795	2617	23.30	76.70
1969-70	4475	919	3556	20.54	79.46
1970-71	4873	1371	3502	28.13	71.87
1971-72	5477	1555	3922	28.39	71.61
1972-73	5713	2128	3585	37.25	62.75
1973-74	8562	3612	4950	42.19	57.81
1974-75	8610	2374	6236	27.57	72.43
1975-76	10534	3918	6616	37.19	62.81
1976-77	12698	4852	7846	38.21	61.79
1977-78	14686	5853	8833	39.85	60.15
1978-79	17747	6658	11089	37.52	62.48
1979-80	17379	6081	11298	34.99	65.01
1980-81	21835	8597	13238	39.37	60.63
1981-82	23918	9804	14114	40.99	59.01
1982-83	23940	12792	11148	53.43	46.57
1983-84	31088	13285	17803	42.73	57.27
1984-85	34677	18105	16572	52.21	47.79
1985-86	41143	18458	22685	44.86	55.14
1986-87	50484	24042	26422	47.62	52.38
1987-88	52733	27021	25712	51.24	48.76
1988-89	65728	29095	36633	44.27	55.73
1989-90	81319	41173	40146	50.63	49.37
1990-91	105125	45068	60057	42.87	57.13
1991-92	121230	58563	62667	48.31	51.69

Source : as in Table 4.1.

Table 4.7

Composition of Gross Household Sector Savings
(Quinquennial Averages)

(Rs. Crores)

Period	As percentage of GDF		As percentage of HHS	
	Financial	Physical	Financial	Physical
1	2	3	4	5
1950-51 to 1954-55	1.28	6.35	16.60	83.12
1955-56 to 1959-60	3.26	6.89	32.14	67.21
1960-61 to 1964-65	3.42	5.88	36.79	63.21
1965-66 to 1969-70	3.15	8.94	26.04	73.96
1970-71 to 1974-75	4.75	9.56	33.22	66.78
1975-76 to 1979-80	6.98	15.03	37.46	80.66
1980-81 to 1984-85	8.65	11.37	46.20	60.77
1985-86 to 1989-90	9.33	8.60	47.97	44.25
1985-86 to 1991-92	9.64	9.96	47.01	48.61

Source : Computed by the author based on data reported in Table 4.6

Table 4.8

Financial Savings by Component Items
(at Current prices)

(Rs. Crores)

Years	Currency	Net Deposits	Shares & Debentures	Net Claims on Government	Life Insurance Funds	Provident Funds
1950-51	81	-26	52	-84	20	19
1951-52	-116	-45	49	93	13	20
1952-53	-17	43	23	-22	18	27
1953-54	26	21	27	-2	25	45
1954-55	67	38	11	91	28	47
1955-56	203	24	41	76	31	54
1956-57	48	-19	71	141	30	62
1957-58	50	76	36	19	29	81
1958-59	111	42	34	71	32	72
1959-60	133	68	61	39	46	86
1960-61	145	11	67	57	50	126
1961-62	94	103	112	-12	65	127
1962-63	175	70	45	-20	82	147
1963-64	211	118	119	42	78	175
1964-65	135	253	64	-32	88	206
1965-66	285	309	175	-9	96	216
1966-67	118	337	114	-48	104	239
1967-68	145	268	78	-59	122	311
1968-69	263	72	84	-84	139	321
1969-70	334	85	65	-139	160	414
1970-71	345	265	94	-12	189	490
1971-72	381	574	61	-243	216	566
1972-73	616	773	26	-196	262	647
1973-74	812	1260	44	434	326	736
1974-75	17	1017	137	-95	322	976
1975-76	321	1131	115	742	385	1224
1976-77	1130	1902	87	95	480	1158
1977-78	705	2780	325	180	559	1304
1978-79	1482	2742	175	31	648	1580
1979-80	1338	1650	214	465	739	1675
1980-81	1625	2970	443	576	859	2122
1981-82	955	3001	724	1656	982	2486
1982-83	2017	4824	805	1134	1149	2863
1983-84	2784	3739	606	1806	1296	3054
1984-85	2938	5879	1142	1919	1465	3762
1985-86	2220	5222	1775	3335	1706	4200
1986-87	3065	6837	2118	2836	2026	5158
1987-88	4815	7529	2472	3232	3434	6539
1988-89	4256	5581	3416	4998	3267	7577
1989-90	7655	9464	4064	5931	4089	9508

Source : National Accounts Statistics, Central Statistical Organization, New Delhi.

Table 4.9

Components of Gross Financial Savings : Quinquennial Averages
(Percentages)

Period	Currency	Net Deposits	Shares & Debentures	Net Claims on Government	Life Insurance Funds	Provident Funds
1950-51 to 1954-55	7.17	5.42	28.32	13.29	18.18	27.62
1955-56 to 1959-60	29.49	10.34	13.15	18.72	9.09	19.21
1960-61 to 1964-65	26.20	19.13	14.03	1.21	12.51	26.92
1965-66 to 1969-70	25.36	23.72	11.43	-7.50	13.75	33.24
1970-71 to 1974-75	19.66	35.23	3.28	-1.01	11.92	30.93
1975-76 to 1979-80	18.19	37.30	3.35	5.53	10.27	25.37
1980-81 to 1984-85	16.49	32.62	5.94	8.26	9.19	22.83
1985-86 to 1989-90	15.75	25.13	9.90	14.54	10.39	23.59

Source : Computed by the author.

Table 4.10

Quinquennial Average Shares of Net Domestic Savings in Net Domestic Product (Percentages)

Period	Share
1950-51 to 54-55	5.20
1955-56 to 59-60	6.89
1960-61 to 64-65	7.25
1965-66 to 69-70	8.42
1970-71 to 74-75	11.19
1975-76 to 79-80	15.82
1980-81 to 84-85	13.64
1985-86 to 89-90	14.32 (13.07*)

Note : *Computed for 1985-86 to 1991-92 (average).

Source : Computed by the author.

Table 4.11

Composition of Net Savings : Quinquennial Averages

(Rs. crores)

Year	HHS		PCS		PS	
	% of total savings	% of NDP	% of total savings	% of NDP	% of total savings	% of NDP
1950-51 to 1954-55	82.10	4.29	8.95	0.46	9.38	0.49
1955-56 to 1959-60	91.28	6.15	6.79	0.46	1.94	0.13
1960-61 to 1964-65	73.31	5.33	10.75	0.78	15.94	1.16
1965-66 to 1969-70	97.21	8.14	3.01	0.25	-0.22	-0.02
1970-71 to 1974-75	90.75	10.20	6.41	0.72	2.84	0.32
1975-76 to 1979-80	88.30	14.08	2.79	0.44	8.92	1.42
1980-81 to 1984-85	142.75	13.53	4.13	0.39	-3.00	-0.30
1985-86 to 1991-92*	114.95	16.22	6.13	0.87	-21.08	-2.98
Total	113.04		5.50		15.76	

Note : *Consist of seven years.

Source : Computed by the author.

Table 4.12
Annual Growth Rate of Gross Savings and Its Components
(Current Prices)

Year	Gross Domestic Savings				Household Distribution	
	Total	HHS	PCS	PS	FA	PA
1950-51	-	-	-	-	-	-
1951-52	3.08	-13.51	48.31	50.00	-77.42	-7.47
1952-53	-19.80	-3.22	-54.55	-42.46	414.29	-12.85
1953-54	14.39	17.97	43.33	-12.41	97.22	7.18
1954-55	14.32	11.28	32.56	18.90	98.59	-10.58
1955-56	35.67	42.97	14.04	13.91	52.13	37.87
1956-57	11.82	7.89	16.15	34.30	-22.38	26.47
1957-58	-14.32	-17.17	-22.52	6.06	-12.61	-18.89
1958-59	2.85	3.77	16.24	-7.35	24.40	-4.60
1959-60	25.27	28.97	32.35	3.96	19.61	33.92
1960-61	16.88	0.76	33.33	80.08	5.31	-1.09
1961-62	1.45	-5.13	14.13	16.24	7.24	-12.25
1962-63	18.30	22.43	7.30	14.57	2.04	34.97
1963-64	14.14	10.05	14.50	25.27	48.90	-8.01
1964-65	10.93	11.97	-1.55	15.23	-3.90	23.91
1965-66	20.93	33.51	7.94	-0.98	50.14	23.79
1966-67	19.07	32.71	4.55	-17.43	-19.40	69.62
1967-68	-0.38	-0.03	-3.62	-0.15	0.12	-0.08
1968-69	4.45	-0.55	7.02	28.64	-8.07	1.99
1969-70	28.68	31.15	25.53	20.40	15.60	35.88
1970-71	12.23	8.89	22.57	21.30	49.18	-1.52
1971-72	10.69	12.39	14.61	2.00	13.42	11.99
1972-73	4.33	4.31	4.65	4.23	36.85	-8.59
1973-74	45.95	49.87	34.90	35.66	69.74	38.08
1974-75	11.32	0.56	35.47	48.09	-34.27	25.98
1975-76	17.30	22.35	-26.74	24.78	65.04	6.09
1976-77	20.78	20.54	8.72	25.34	23.84	18.59
1977-78	12.20	15.66	19.97	-0.41	20.63	12.58
1978-79	19.32	20.84	17.08	14.68	13.75	25.54
1979-80	2.32	-2.07	46.00	3.91	-8.67	1.88
1980-81	16.50	25.64	-2.89	-6.30	41.37	17.17
1981-82	17.01	9.54	9.28	55.87	14.04	6.62
1982-83	2.98	0.09	16.51	7.83	30.48	-21.01
1983-84	18.38	29.86	9.08	-13.31	3.85	59.70
1984-85	10.14	11.54	25.82	-3.66	36.28	-6.91
1985-86	22.01	18.65	35.68	31.52	1.95	36.89
1986-87	15.01	22.70	-9.07	-6.68	30.25	16.56
1987-88	2.97	4.45	16.06	-14.43	12.39	-2.76
1988-89	26.48	24.64	52.81	18.63	7.68	42.47
1989-90	21.64	23.72	38.53	-13.33	41.51	9.59
1990-91	24.52	29.27	18.97	-20.74	9.46	49.60
1991-92	18.33	15.32	15.56	82.01	29.94	4.35

Source : Computed by the author.

Table 4.13

Annual Growth Rate of Net Savings and Its Components (Current Prices)

Year	Total	Net Domestic Savings HHS	PCS	PS
1950-51	-	-	-	-
1951-52	-2.49	27.27	81.82	135.71
1952-53	-41.79	-11.90	-23.75	-78.79
1953-54	29.15	31.08	500.00	-121.43
1954-55	19.90	12.11	66.67	-250.00
1955-56	67.81	74.02	16.00	55.56
1956-57	12.30	7.00	22.41	257.14
1957-58	-30.72	-28.64	-60.56	-22.00
1958-59	-12.56	-7.96	28.57	-110.26
1959-60	50.35	51.69	83.33	525.00
1960-61	22.76	-4.09	112.12	-608.00
1961-62	-8.65	-15.37	2.14	20.47
1962-63	27.87	38.02	-2.10	12.42
1963-64	15.79	12.06	2.14	46.51
1964-65	9.66	15.50	-32.87	10.32
1965-66	29.47	47.52	-2.08	-35.61
1966-67	21.06	39.75	-26.60	-134.08
1967-68	-10.54	-5.43	-50.72	145.90
1968-69	0.18	-4.87	8.82	-74.67
1969-70	49.65	41.71	243.24	-215.79
1970-71	14.63	10.18	57.48	202.27
1971-72	11.10	13.81	28.00	-83.46
1972-73	-2.18	1.37	-10.55	-527.27
1973-74	74.18	66.59	80.79	-2225.53
1974-75	1.82	-7.32	38.65	377.12
1975-76	18.70	26.31	-97.21	55.24
1976-77	30.80	25.74	475.00	66.82
1977-78	14.80	18.57	230.43	-23.59
1978-79	22.58	22.43	38.49	19.75
1979-80	-7.99	-8.63	116.15	-40.48
1980-81	15.74	28.55	-35.82	-130.35
1981-82	15.12	5.97	-15.24	-679.25
1982-83	-7.42	-5.45	14.75	-39.68
1983-84	22.65	38.62	-31.34	-251.43
1984-85	5.98	11.05	103.85	126.04
1985-86	25.17	20.13	84.53	-2.43
1986-87	15.99	26.02	-66.87	80.83
1987-88	6.70	11.89	67.90	51.52
1988-89	22.01	17.92	237.13	22.13
1989-90	25.72	26.80	77.97	46.79
1990-91	33.32	34.19	16.03	31.22
1991-92	17.76	15.17	1.36	0.35

Source : Computed by the author.

Table 4.14

Growth Rate of Savings During 1950-51 to 1991-92

log Y = a + bt; where log is taken at base 10

(No. of observation = 42)

Sl. No.	Name	Constant	Coefficient	R^2	dw statistic	Growth rate£
1	2	3	4	5	6	7
1	Gross Domestic Saving (Total)	2.7137	.0581 (31.9677)*	1.00	2.01	14.30
2	HHS(Gross)	2.5297	.0601 (23.7095)*	.99	2.00	14.85
3	PCS(Gross)	1.7607	.0552 (20.1933)*	.98	1.90	13.56
4	PS (Gross)	2.1436	.0463 (5.6232)*	.98	1.59	11.25
5	Net Domestic Saving (Total)	2.4109	.0594 (29.1590)*	.99	1.91	14.66
6	HHS (Net)	2.2924	.0634 (28.5539)*	.99	1.83	15.72
7	PCS (Net)	1.2709	.0489 (6.7628)*	.71	1.88	11.91
8	HHS-FA (Gross)	1.8920	.0681 (16.4434)*	.96	1.48	16.98
9	HHS-PA (Gross)	2.4353	.0554 (20.6735)*	.99	2.32	13.60

Note : 1) Growth rate for Net Domestic Saving from Public Sector could not be computed since some of them are negative and, therefore, logarithmic transformation is not possible.

2) Figures in parenthesis are t-values.

3) £ Growth rate has been computed using the formula reported in Chapter 3.4.3.

4) *, **, *** denote significant at 1%, 5% and 10% level respectively.

Source : Computed by the author.

Table 4.15

Growth Rate of Savings During 1950-51 to 1959-60

$\log Y = a + Bt$

where log is taken at base 10

(No. of observation = 10)

Sl. No.	Name	Constant	Coefficient	$\bar{R}^2$	dw-statistic	Growth rate£
1	2	3	4	5	6	7
1	Gross Domestic Saving (Total)	2.8854	.0396 (3.5643)*	.75	1.83	9.55
2	HHS (Gross)	2.7277	.0410 (4.2637)*	.80	1.55	9.90
3	PCS (Gross)	1.9203	.0308 (2.5899)*	.39	2.30	7.35
4	PS (Gross)	2.1740	.0217 (1.1733)*	.20	1.52	5.12
5	Net Domestic Saving (Total)	2.5623	.0401 (1.7910)*	.37	1.83	9.67
6	HHS (Net)	2.4432	.0522 (3.0690)*	.61	1.53	12.77
7	PCS (Net)	1.4066	.0151 (.8562)*	0.11	2.13	8.42
8	HHS-FA (Gross)	1.6264	.1322 (4.0795)*	.63	1.58	35.58
9	HHS-FA (Gross)	2.6871	.0268 (2.43320)**	.51	2.10	6.37

Note : as in Table 4.14 above.

Source : Computed by the author.

Table 4.16

Growth Rate of Savings During 1960-61 to 1969-70

$\log Y = \alpha + \beta t$

where log is taken at base 10

(No. of observation = 10)

Sl. No.	Name	Constant	Coefficient	R^2	dw-statistic	Growth rate£
1	2	3	4	5	6	7
1	Gross Domestic Saving (Total)	3.2861	.0539 (14.9260)*	.97	1.73	13.21
2	HHS(Gross)	3.0510	.0674 (11.2266)*	.95	1.69	16.79
3	PCS(Gross)	2.4901	.0216 (5.1315)*	.80	1.65	5.10
4	PS(Gross)	2.7427	.0260 (1.8660)***	.68	1.17	6.17
5	Net Domestic Saving (Total)	2.9825	.0547 (9.5729)*	.91	2.04	13.42
6	HHS(Net)	2.7775	.0810 (9.2456)*	.92	1.52	20.50
7	PCS(Net)	2.1925	-0.0517 (2.4282)**	.35	1.51	-11.22
8	HHS-FA (Gross)	2.7325	.0290 (1.9329)***	.56	2.19	6.91
9	HHS-FA (Gross)	2.8611	.0739 (9.5122)*	.91	1.77	18.55

Note : as in Table 4.14 above

Source : Computed by the author.

Table 4.17

Growth Rate of Savings During 1970-71 to 1979-80

$\log Y = \alpha + Bt$

where log is taken at base 10

(No. of observation = 10)

Sl. No.	Name	Constant	Coefficient	$\bar{R}^2$	dw-statistic	Growth rate*
1	2	3	4	5	6	7
1	Gross Domestic Saving (Total)	3.8110	.0716 (19.3708)*	.97	1.79	17.92
2	HHS(Gross)	3.6780	.0679 (17.4945)*	.97	2.56	16.92
3	PCS(Gross)	2.8283	.0515 (4.5035)*	.77	1.71	12.59
4	PS(Gross)	3.0423	.0788 (4.5409)*	.94	1.02	19.89
5	Net Domestic Saving (Total)	3.5522	.0758 (12.6538)*	.95	2.31	19.07
6	HHS(Net)	3.5092	.0755 (20.5319)*	.95	2.31	19.00
7	PCS(Net)	2.1811	.0400 (.4646)	.05	1.85	9.65
8	HHS-FA (Gross)	3.1728	.0793 (9.9389)	.87	2.07	20.04
9	HHS-PA (Gross)	3.5126	.0626 (15.3635)*	.96	2.18	15.50

Note : as in Table 4.14 above

Source : Computed by the author.

Table 4.18

Growth Rate of Savings During 1980-81 to 1991-92

$\log Y = a + Bt$

where log is taken at base 10

(No. of observation = 10)

Sl. No.	Name	Constant	Coefficient	R^2	dw statistic	Growth rate*
1	2	3	4	5	6	7
1	Gross Domestic Saving (Total)	4.3750	.0171 (8.2518)*	.99	2.28	4.02
2	HHS(Gross)	4.2831	.0698 (23.8209)*	.98	1.15	17.44
3	PCS(Gross)	3.2391	.0885 (9.8087)*	.99	1.78	22.60
4	PS(Gross)	3.8002	.0099 (1.4010)*	.08	2.00	2.31
5	Net Domestic Saving (Total)	4.0324	.0805 (5.1849)*	.98	2.61	20.36
6	HHS(Net)	4.1325	.0751 (20.4236)*	.97	1.18	18.89
7	PCS(Net)	2.3254	.1301 (4.1613)*	.78	1.92	34.93
8	HHS-FA (Gross)	3.9297	.0730 (51.7148)*	.99	1.74	18.30
9	HHS-FA (Gross)	4.0243	.0671 (11.6901)*	.93	1.95	16.71

Note : as in Table 4.14 above

Source : Computed by the author.

Figure 4.1
Trends of GDS and NDS
(1950-51 to 1991-92)

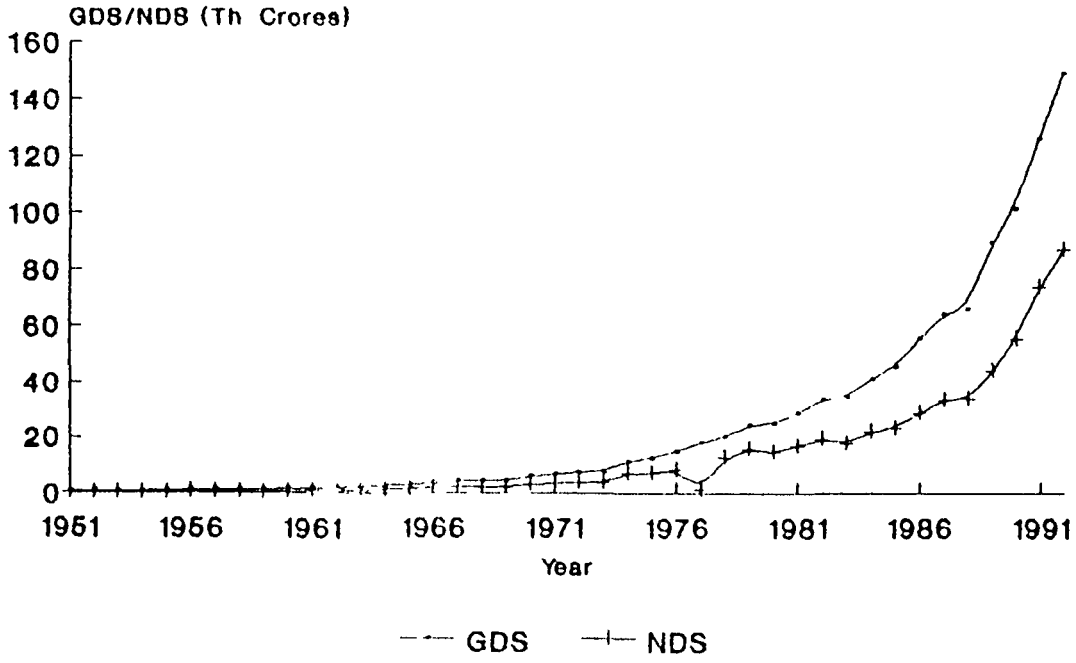
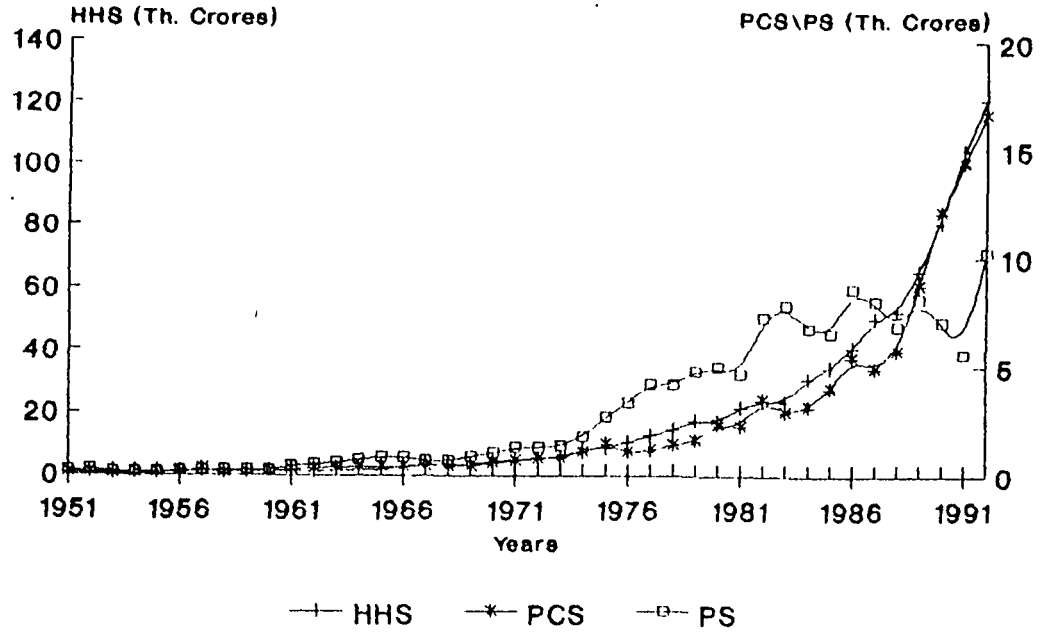


Figure 4.2
Trends of HHS, PCS AND PS (Gross)
(1950-51 to 1991-92)



Trends of HHS, PCS and PS (Net)
(1950-51 to 1991-92)

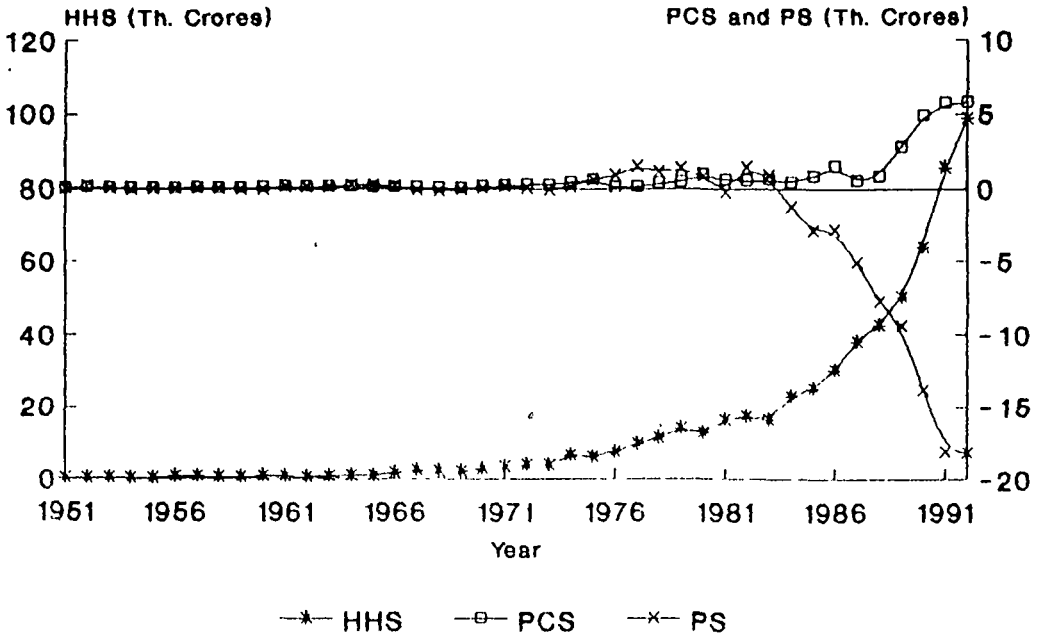


Figure 4.3
Trends of HHS-FA and HHS-PA
(1950-51 to 1991-92)

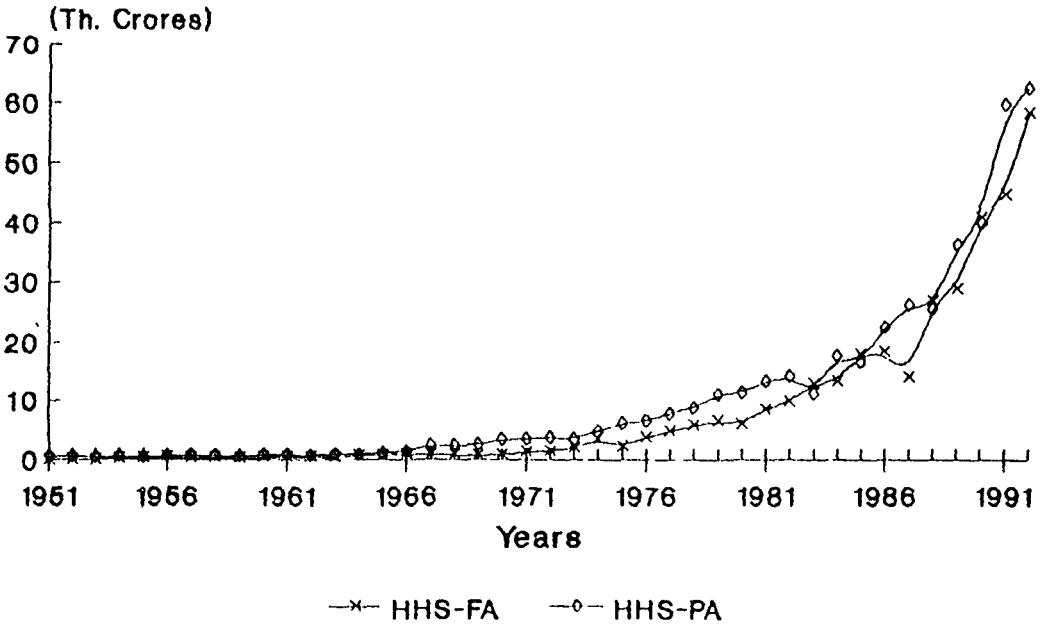
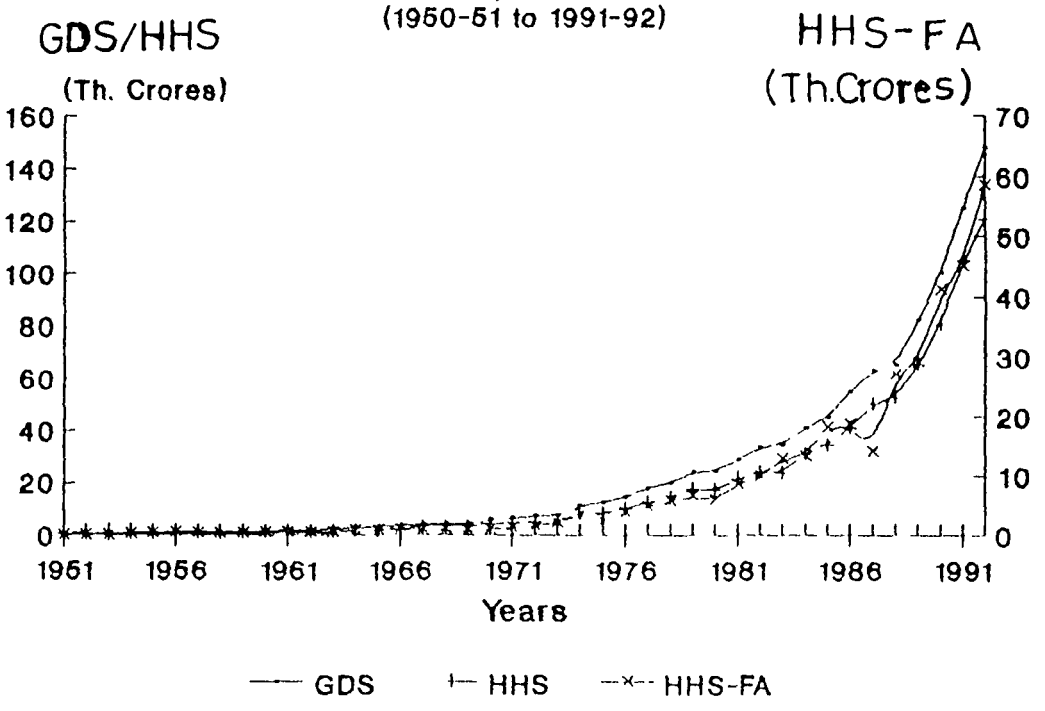


Figure 4.4
Trends of GDS, HHS and HHS-FA
(1950-51 to 1991-92)



Chapter-5

DETERMINANTS OF SAVINGS

5.1 Introduction

The main objective of this chapter is to study the factors which have affected growth of savings by HHS in financial (FA). In the last chapter we have noted that savings both gross and net have recorded manifold increase over last forty-two years - both in absolute term and also in terms of percentage of GDP/NDP. The distinguishing feature of this increase has been : (i) two distinct phases of growth; and (ii) structural shift not only in terms of institution but by object also.

The former refers to share of gross savings in GNP which has risen steadily from about 6 per cent in 1950-51 to touch a figure of about 24 per cent in 1978-79. Thereafter, stagnated around 21.50 per cent. In case of structural shift, proportion of HHS in Gross Savings has increased from about 70 per cent in 1950s to around 90 per cent in 1990s. While HHS reported maximum savings, structure of this sector too, has undergone most noticeable change. The share of savings by HHS in FA which was a mere 8.64 per cent has increased steadily to about 50 per cent during 1980's. In terms of annual average growth rate, too, this sector has recorded highest growth of about 17 per cent during 1950-51 to 1991-92. It would, therefore, be of interest to delineate the factors which have contributed to this shift in the structure of HHS and many fold increase in FA by HHS.

Rest of this chapter is organised as follows: In section 5.2 factors affecting the growth of savings have been identified. This is followed by specification of the model to study the effects of various variables in HHS by FA along with hypotheses about variables in section 5.3. In section 5.4 estimated results and discussion of these results are reported. Finally, we have summarised our findings in section 5.5.

5.2. Determinants of Savings

We have observed in the previous chapter that among the three sectors of domestic savings, HHS has shown right through an increasing trend not only in absolute terms but in terms of its share in total savings vis-a-vis as percentage of GDP. This observation is re-enforced by high growth rates of savings - both decadal and over all in HHS. Further, quinquennial data, too, provides us with the same conclusion. From our analysis of the HHS and its components (i.e. FA and PA), we have observed a changing scenario in HHS. We have seen that the HHS in terms of FA has been the one which has recorded phenomenal change during the period under investigation. Furthermore, if we look at the FA, we find that it is during last ten years or so, FA has shown a change (in percentage, absolute values, and as percentage of GDP). It implies that there have been substitution of FA for PA in HHS during this period. One would, then, like to

find out what are the factors that brought about this shift in the saving medium.

Another important observation is that during 1950-51 to 1978-79 Gross savings as percentage of GDP has continuously increased. Rao (1983) attributes this rise to increasing FER and savings in foodgrain procurement, but during the last decade (i.e. 1980-81 to 1989-90) it has stagnated. However, the stagnation in savings during 1979-80 to 1989-90 has raised debate as to why this kind of stagnation has set in.

Shetty (1990a, 1990b) argued that this stagnation has been observed due to persistent and growing dissaving in net terms by the public sector during this period. He has also argued that despite favourable condition prevailing in the decade, HHS saving potential has not been realised due to structural shift in the consumption pattern. Roy and Sen (1991) disputed Shetty's claim. They argued that structural shift has taken place in HHS. Further, the share of corporate securities in FA has increased, the share of machinery in FA has also increased and the share of non-residential construction of FA has fallen.

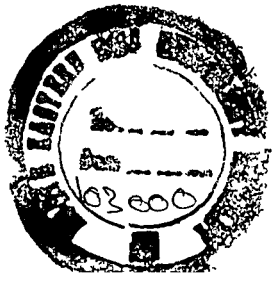
The first tendency suggests that more resources are going to private industrial investment via the capital market. The last two are consistent with a significant growth in informal and unorganised industry in recent times.

Therefore, one may say that HHS have been moving towards sectors and assets that involve lower capital output ratios and saving-investment behaviour of households bear a close relationship with changes in the capital and labour markets, especially in industry which is the cause of the stagnation in the overall saving ratio. While it is suggested that at macro level, this stagnation may have come about by falling rate of savings from Public Sector in gross terms, and even dissaving in the same sector in net terms, this does not tell the whole story about stagnation in the savings.

We have noted in Chapter-2 that role of savings in national economy is to channelize resources for investment (Rao 1983). Going by the analysis reported above and also in the last chapter, we may identify some of the factors which could have brought about this change. Rao (1983) has identified that it is increasing quantum of remittances from Indian nationals abroad as the basic factor responsible for the sharp rise of Household Sector Savings through a rise in the growth of bank deposits and foodgrain procurement and stocking on a large scale by the government during 1975-76 to 1979-80. Other factors identified by him are the Personal Disposable Income and Private Final Consumption Expenditures which are connected to Household Sector Savings. He has shown that there is a secular increase at current prices in the rate of household savings from disposable income. This supports the role of

disposable income as a determining factor of savings. Further, high income groups are having larger marginal propensity to save than the other income groups. Again, governments attempt on budgeting for revenue surplus also increases Public Sector Savings which has adverse effect on Household and Private Corporate Sector Savings. Moreover, increasing rate of return in the form of interest and tax concessions also affects Household Sector Savings positively. Rao (1990) also has pointed out the effect of inflation on savings in the Indian economy.

Krishnamurty and Sharma (1990) have discussed propensity to save in various sectors and considered normal income hypothesis which provides a supporting evidence towards disposable income as a determining factor of savings. They have considered the effect of intersectoral terms of trade on the aggregate saving rate, given other factors. From their analysis, the importance of Real Rate of Interest as a determining factor of the rate of savings in the household sector could be felt. Williamson (1968) and Gupta (1970a, 1970b) have found positive significant effect of nominal rate of interest on total and urban savings, whereas Mazumdar et al. (1980) have reported positive and significant effect of nominal interest rate on financial saving. However, Bhattacharya (1985) and Pandit (1985) supports the positive effect of Real Rate of Interest on



some components of Financial Savings, such as, currency and bank deposits. Real rate of interest as a determining factor of household savings have been regarded by Madhur (1984), Krishnaswami et al. (1987) also. Further, Krishnamurty and Sharma (1990) provides us strong base to consider taxation as an important determining factor of Household Sector Savings. Banking infrastructure is also related to the Household Sector Savings and it depends largely on the rate of interest it offers and the personal disposable income in the part of the individuals. In fact, unlike Rao (1983), Ghosh (1990) did not consider the remittances from expatriate Indians working abroad as a part of domestic savings. Choudhury (1990) also supported the views expressed by Krishnamurty and Sharma (1990) in case of considering inflation as an important determinant of the level of savings. Roy and Sen (1991)'s analysis provides a broad base to consider rate of return on investment in corporate sector as an important factor of Household Sector Savings.

Going by the above, we note that personal disposable income, rate of interest either real or nominal, inflation rate, taxation and rate of return on investment and remittances from abroad are the variables which appear to affect savings in general and savings by HHS in particular. We have noted above that in HHS, shift has occured in favour of FA and substitution of savings in FA for PA has taken

place. While the variables listed above have been found to affect savings, in general or some component of it, the direction causation appears to be far from settled as there are conflicting evidence. Our analysis reported below might help to clear some of the confusion.

5.3. Model Specification

It has been noted in the last section that the following variables may have some influence on savings by HHS in FA. These are - Price Level (P), Call Rate (CR), Net Worth (NW), Credit Ratio (CRAT), Personal Disposable Income (PDI) and Foreign Exchange Reserve (FER). Therefore, we may write savings in FA as function of these variables, i.e.

$$FA = f(P, CR, NW, CRAT, PDI, FER) \quad ..... \quad (5.1)$$

As far as the functional form of eq. (5.1) is concerned, we notice that variables P,CR, NW and CRAT are in percentage or ratio form and PDI and FER are in absolute form. For the correct specification of the model we suggest the form (Intrilligator, 1978).

$$FA = A. e^{(B_1 P + B_2 CR + B_3 NW + B_4 CRAT)} B_5 \log PDI \; B_6 \log FER + \log U \quad (5.2)$$

For the purpose of estimation, taking log of both the sides of eq. (5.2), we get,

$$\text{Log FA} = \log A + B_1 P + B_2 CR + B_3 NW + B_4 CRAT + B_5 \log PDI + B_6 \log FER + \log U \quad (5.3)$$

which may be rewritten as:

$$\text{Log FA} = B_0 + B_1 P + B_2 CR + B_3 NW + B_4 CRAT + B_5 \log PDI + B_6 \log FER + E_t \quad (5.4)$$

Equation (5.4) may, then, be estimated applying OLS technique.

5.3.1. Hypothesises

As reported above, our model has six independent variables which we have included on specific consideration. This leads to a priori hypothesis about coefficients of these variables.

We have considered B_1 as the coefficient of Price level. We know that if price increases, consumption expenditure has to go up and it might reduces the volume of savings. Thus, P appears to have an inverse relationship with savings by FA. We expect, therefore, B_1 to be negative and significant.

The relationship between interest rate and investment is assumed to be negative in the literature. It has been reported (Roy and Sen, 1991) that reason for growth in FA has been channelising of savings in investment via capital market. Thus, savings in FA may be directly related to investment. Thus, we may have an inverse relation

between savings in FA and rate of interest. However, choice of interest rate is a problem as there have been multiplicity of interest. We have overcome this problem by using Call Rate as proxy for interest rate as this works as 'seed rate' in determining interest rates. We expect the coefficient of B_2 to be negative and significant.

Net worth has been considered to have a direct effect on financial savings. If net worth increases savings also increases and a fall in net worth might lead to a fall in savings. Therefore, the coefficient of net worth, B_3 is likely to be positive and significantly different from zero.

In chapter-4, we have noted that bank deposits have recorded many fold increase. Out of these deposits, banks give credit advances to industry and government. If more of the credit goes to government, it reduces banks profitability. Inverse is true when more of the credit goes to commercial sector. We take this credit ratio to capture the influence of commercial banl credit advances on financial savings. We assumed CRAT as the ratio of Net Bank credit to Government to Bank Credit to commercial sector. Therefore, if Net Bank Credit to government happens to be higher than the Bank Credit to Commercial sector then the credit ratio will be higher than unity and vice-versa.

Thus, credit ratio appears to have a direct relationship with savings. Considering the relationship mentioned above, the coefficient of credit ratio, B_4 is expected to be positive.

The relationship between Personal Disposable Income and savings in financial assets is assumed to be positive. When PDI increases, it might increases the volume of savings and when PDI reduces it might reduce the volume of savings. Thus, personal disposable income seems to have a positive effect on savings and hence the coefficient of personal disposable income, B_5 is expected to be positive and significant.

Lastly, regarding foreign exchange reserve, there are two sources of the same, viz. (i) when export exceeds import, and (ii) inflow of foreign capital which is used in the highly productive sector to earn higher revenue. This might induce higher domestic savings in the financial assets. Therefore, the coefficient of foreign exchange reserve, B_6 is expected to be positive.

5.4 Results and Discussion

The data on relevant variables have been collected from secondary sources reported in Chapter-3. Then, equation 5.4 specified in section 5.3 has been estimated

using OLS technique and the results are reported in Table 5.1. As pointed out earlier, this analysis is limited to period 1980-81 to 1991-92 due to various constraints.

A glance through the estimated results suggests very good fit of the model as indicated by high value of R^2 which is 0.99. Further, we note that, Estimated Standard Error (ESE) of the coefficients is quite low which has resulted in high t-values and all the coefficients are significant at 1 per cent level.

Now, as reported in section 5.3.1, if we look at the individual coefficients we find that the variables Price level and Call Rate are negatively related to savings and their coefficients B_1 and B_2 are also negative. Both are significant at 1 per cent. This appears to provide some explanation for Shetty (1990a) conjectures that there have been shift in consumption. The price level coefficient being significant implies that out of PDI, if price changes by 1 per cent consumption will increase by about half percent, other things being equal. As prices have been rising, this might have affected HHS negatively.

The negative coefficient of representative interest rate (i.e. Call rate in our case) can be seen in conjunction with positive and significant coefficient of Net worth. Both these combined together along with positive coefficient

of credit ratio explain the consistent increase in savings in Financial assets.

In case of PDI and FER we find that both B_5 and B_6 have expected sign and significant at 1 per cent level. As these variables are in log form, we have partial elasticity coefficients. This implies that, ceteris paribus, PDI affects HHS savings more than proportionately. The change in FER operates through changes in Bank's reserve which induces increase the money supply in the economy. We have noted in Chapter-4, that among the components of FA, currency held has shown large increases. The positive association between FA and FER, thus, well accounted for through increase in currency increases as part of savings in FA.

5.5. Summary

In the analysis carried out above, we have identified the determinants of savings in Financial Assets. Our model includes the variables Price Level, Call Rate, Net Worth, Credit Ratio, Personal Disposable Income and Foreign Exchange Reserve which are reported to have influence on FA. Certain hypothesises have been made regarding the coefficients of the variables and are examined with the help of Regression analysis of these variables.

Our findings tally to the hypothesises made in section 5.3.1, that the variables Price Level and Call Rate

are negatively related to savings and there coefficients B_1 and B_2 are negative. On the other hand, the variables Net worth, Credit Ratio, Personal Disposable Income and Foreign Exchange Reserve are positively related with savings and their coefficients B_3, B_4, B_5 and B_6 are positive and significant.

Table-5.1

Regression Results for Determinants of PA

(Period 1980-81 to 1991-92)

Sl.No.	Variable	Co-efficient	T-Values
1	Intercept	-7.4739 (0.5381)	13.8885*
2	P	-0.0485 (0.0067)	7.2323*
3	CR	-0.0349 (0.0054)	6.4096*
4	NW	0.0206 (0.0045)	4.5307*
5	CRAT	0.2301 (0.0377)	6.1028*
6	PDI	1.3145 (0.0303)	43.4453*
7	FER	0.1814 (0.0321)	5.6500*

Note : 1. Figure in parenthesis are Standard Errors
2. * denotes significant at 1% level.

Source : Computed by the author.

Chapter-6

CONCLUSION

6.1. Review of the Main Findings of the Study

The objective of our study has been to look at the trends of savings behaviour and its sectoral composition, to identify the determinants of savings especially that of savings in Financial Assets and the relationship between financial savings and factors/variables affecting it.

The analysis of trends and growth rate in Chapter IV suggests that there are two distinct phases in savings during 1950-51 to 1991-92. Beginning from 1950-51 to 1978-79, it has increased on all accounts, viz. absolute terms as well as per cent of GDP/NDP. After 1978-79, it has stagnated at around 21 per cent and 14 per cent of GDP and NDP respectively till 1988-89. Thereafter, Gross savings picked up gradually and is reported at 22.69 per cent in 1989-90, 26.47 per cent during 1990-91 and 27.32 per cent in 1991-92 as percentage of GDP. (Similarly, NDS also has picked up gradually and is reported at 15.43 per cent in 1989-90, 17.40 per cent in 1990-91 and 17.96 per cent in 1991-92 in terms of NDP).

During 1979-80 to 1988-89, it has been on the stagnation phase for which conflicting explanation have been put forward by researchers. Shetty (1990a) has attributed this stagnation to falling contribution by public sector savings which in net terms has reported to be

negative and fall in the foreign remittances. Roy and Sen (1991) attribute this stagnation to falling return in the private corporate sector investments. Our analysis suggests that views expressed by Shetty (1990a, b) about stagnation may partly hold during 1979-80 to 1988-89 as public sector has been net dissaver during the said period. However, when we extend this analysis to year 1989-90 to 1990-92, we find that despite continued dissaving by public sector, there has been a turn around in savings as it has shown increasing trend, which has come mainly from HHS. Thus, Shetty's other argument does not seem to hold that drop in HHS can be attributed to conspicuous consumption. When this change is seen in conjunction with determinants of savings, we find that due to limited opportunity of substitution of savings in FA for PA, HHS might have stagnated. This appears to support Roy and Sen (1991) hypothesis. Another explanation may be added to these factors that lower growth in HHS sector savings both in Financial Assets and Physical Assets may also have contributed to this stagnation. The former has slowed because of fall in foreign remittances, marginal decline in net worth and more credit advances has been going to government sector.

Another objective of the analysis has been to examine the sectoral composition of savings. This aspect is reported in detail in Chapter-4. We note that saving in

Private Corporate Sector and Public Sector has stagnated right through as indicated by their share in GDP as well as NDP it is Household Sector which has increased from about 7.67 per cent of GDP in 1950-51 to about 22.37 per cent in 1991-92 (and from about 5.39 per cent of NDP in 1950-51 to about 18.01 per cent in 1991-92). Further, in household sector, it is savings in financial assets which has recorded dramatic increase from about 0.66 per cent of GDP in 1950-51 to 10.87 per cent in 1991-92, recording an overall annual growth of about 17 per cent. Thus, household sector saving which was predominantly in Physical Assets in 1950s (7 per cent of GDP) is now dominated by Financial Assets as per cent of GDP. Yet another objective of our study has been to identify the factors which affect savings in general.

Review of the studies on savings trend suggest that variables like Personal Disposable Income, Rate of Interest, Inflation Rate, Taxation, Rate of Return on Investment and Foreign Remittances affect savings either total or some components of it. But we have not come across a cause-effect relationship between savings or its components and other variables. Taking theoretical consideration about variables which are likely to affect savings or its components, we have carried out regression analysis. We have regressed savings in Financial Assets on Price Level, Call Rate, Net Worth, Credit Ratio, Personal Disposable Income and Foreign Exchange Reserve. Our results suggests that the coefficient

of price level and call rate are negatively related to savings in Financial Assets and that of net worth, credit ratio, personal disposable income and foreign exchange reserve are positive, which supports the conjecture by Rao (1983), Shetty (1990a, b), Krishnamurty and Sharma (1990), Choudhury (1990), Roy and Sen (1991).

6.2. Implications of the Findings

As reported above, analysis of trend of savings suggests two distinct phase and possibly making of another rising trend. This aspect is broadly similar to those reported by Shetty (1990) and Roy and Sen (1991). Sectoral composition too is similar to the one reported by Roy and Sen (1991) that a long term stable trend is evident in HHS saving in Financial assets.

Analysis of sectoral composition suggest that stagnation during 1980s may have come about due to falling share savings in Public sector and erratic performance on saving fron by PCS. During last five years as PCS has shown increase in percentage of GDP - from 1.69 per cent in 1986-87 to 3.07 per cent 1991-92, total Gross Saving too has shown increasing trend. This observation disputes the claim of Shetty (1990) that stagnation has come about due to structural shift in consumption and supports the views expressed by Roy and Sen (1991).

Study of determinants appears to be very interesting. First, most of the variables used as determinants were indicated by other researchers. But except for PDC and interest rate no cause-effect relationship has been carried out. Our multiple regression analysis sheds light on the direction of causation of these variables on HHS Savings in FA. With high value of R^2 and all the coefficients being significant 1 per cent level of confidence removes some of the confusion about the role of interest and prices in savings.

6.3. Limitations of the Study and Future Scope of the Research

There are a few limitations of the study which could not be overcome. First, in case of analysis of trend, we have used GDP or NDP. It has been pointed by other researchers that the stagnation in savings in eighties may have come because of shifts in consumption. This could not be investigated because income distribution data were not readily available. Secondly, determinant analysis is limited to HHS savings in FA only and that too at the aggregate level. There are various components of savings in FA. The variables which appear to explain the HHS in FA may not perform with same intensity on other components. Finally, our study has to be completed within a very short period because of time constraints on M.Phil dissertation.

This study raises a number of issues which can be profitably pursued. For example, how far shifts in consumption in HHS has been responsible for stagnation in total saving. Another aspect could be extending back the period of investigation of determinants of HHS saving in FA.

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