Trends and Patterns of House Hold Saving In India (Pre and Post Economic Reforms)

Dr. Rekha Mehta
Associate Professor
Department of Economics, J.N.V. University
Jodhpur (Rajasthan) 342005
rekhamehta1960@yahoo.com

Abstract

Savings play an important role in economic development and the major objective of government policy has been promotion of savings and capital formation in the economy as primary instruments of economic growth. This study aims to analyze trends and patterns of household saving (1950-2010) and to determine different saving functions which would possibly explain the long term saving behavior and saving potentials of the household sector. An Autoregressive Model is also used to find out the short term and long term impact. Data base for empirical analysis has been furnished by time series data for a period of 60 years, from 1950-51 to 2009-10. Data has been taken from the Handbook of Statistics on the Indian Economy published by RBI (2010-11). The data for the time period 1950-2007 was for base year 1999-2000 have been converted to new series of database year 2004-05 to analyze the household and financial saving function. Regression analysis is done considering household and financial saving as the dependent variable and personal disposable income as the independent variable. The saving function has been analyzed for the whole period as well as the two sub periods, viz. pre economic reforms period and post economic reforms period. Different saving functions are determined which would possibly explain the long term saving behavior and saving potentials of the household sector. An Autoregressive Model is also used to find out the short term and long run impact. Results show that the household sector has been the main contributor to the total saving. MPS has shown improvement in the post economic reforms period over pre economic reforms period. Long run MPS is found to be higher than the short run. APS in the post economic reforms period is higher than pre-economic reforms period. The income elasticity of saving has dipped a little in the post economic reforms period. The accuracy of the analysis is dependent upon the accuracy of the data reported by the selected organization. The results shows that efforts are required to channel savings away from physical savings into financial savings, which will expand financial intermediation and provide more funds for investment. In the

coming years, improving demographics and the spread of banking (more branches, financial inclusion, UID) along with sustained economic growth will promote savings. To mobilize the savings of the household sector, we need more players (insurance, pension funds, banks, mutual funds, private equity) and more financial products (bonds, equity, derivatives).

Key Words: Private Saving, Autoregressive Model, Marginal Propensity to Save, Average Propensity to Save

Introduction

Savings and investment are important drivers in taking the economic growth process forward. Economic history suggests that countries that were able to accumulate high levels of domestic investment largely financed by domestic savings achieved faster rates of economic growth and development. This is the reason that so much importance is given to these variables as reflected in the large number of studies undertaken in this area of economic research. Savings play an important role in economic development and the major objective of government policy has been the promotion of savings and capital formation in the economy as primary instruments of economic growth. India, like many of the countries in Asia, enjoys a high domestic savings rate, which has risen from 23.1 percent in 1990-91 to 33.7 percent in 2009-10 (CSO data) and, according to some estimates, is poised to touch 40 percent by 2020. S&P (2010) has placed India's savings rate at 31.2 percent, which is higher than that of several countries with AAA rating: Australia (22.4 percent), Switzerland (30.2 percent), and Germany (22.5 percent). Among its peer group of BBB rated countries, India has the highest savings rate and even among the BRICS nations, India's savings rate is higher than that of Brazil (16.0 percent), Russia (28.2 percent) and South Africa (17.6 percent) except China (55.5 percent).

Keynes (1936) described the relationship between aggregate income, savings and consumption. Among existing earliest alternative hypotheses, Keynesian consumption function's implicit hypothesis is that the average propensity to save rises as the income rises. This implies household income is the major determinants of consumption and savings. Saving is excess of income over consumption (S=Y-C). Marginal propensity to spend on consumption is stable and lies in (0-1) range: $0 < dc/dy=MPC < 1$. It increases when income increases, but less than the increment of income. This behavior of consumption further explains the rise in saving as income

increases. Therefore, the marginal propensity to save should also be stable, positive and less than one. Marginal propensity to save increases when income increases and it falls when income falls.

Household financial savings is one of the most important indicators for setting up policy for household welfare. In India, in the absence of household income and expenditure survey, the household savings is estimated through indirect method. The household savings are complied for physical and financial assets separately. The financial savings which is compiled by the Reserve Bank of India is broadly based on the flow of funds method, while physical savings are compiled by the central statistical office. Over the years, in the absence of a direct method of estimation of household savings, the savings estimates are critically evaluated by various studies. More recently, the report of Rangarajan Committee (2009) had raised concerns on these issues to improve the estimation method. It may be true that the present methodology might have underestimated/overestimated the household savings due to data gaps, coverage and present methodology.

This paper is divided into seven sections. The first section is the introduction. The second section comprises the objectives of the study. A discussion of various studies undertaken in this area of research has been done in the third section. The sources of data and the methodology adopted for the study is mentioned in section four. The fifth section comprises the empirical analysis of the study. Conclusions of the study are mentioned in the final section of the paper.

Objectives of the Paper

- To study trends of Sectoral Saving as Percentage of GDP.

- To study trends and patterns of household saving (1950-2010).

- To calculate percentage of financial savings in the different instruments by the household sector.

- To determine different saving functions.

Review of Literature

Many studies have been undertaken so far in this area of research. A brief mention of these studies and their results is being made in this section. This will help make the present study more meaningful and fruitful. Important cross section studies among them are Ramanathan (1970), Bhalla (1978, 1979 and 1980) and National Council of Applied Economic Research (NCAER) studies (1985 and 1986). These studies reveal a weak version of the permanent income hypothesis. Other important studies by Krishnamurty and Saibaba (1984) and Krishnamurty, Krishnaswamy and Sharma (1987) use rate of growth of income to explain the saving rate mainly for the household sector.

Uma Datta Roychoudhary analyses household saving behavior using time series data since 1970-71. Her conclusions are that long run MPS has a higher value than the simple MPS or APS and also that the 'transitory' income has very little influence on household savings. Ghosh attempted to investigate the causes for shift in household savings from savings in physical assets to savings in the financial assets since 1970-71.

The study by Pandit (1991) is the comprehensive one of the structure and growth of saving in India. He also found that the composition of household financial saving is driven by the rates of return on each type of financial saving and to some extent, by bank expansion. Muhleisen (1997) conducted Granger causality tests by running bivariate VARs on the growth in real GDP and the levels of total, public and private saving rates. His study found causality from growth to saving and rejected causality from saving to growth for all forms of savings consistently. The study by Athukorala and Sen (2002) is the comprehensive Indian case study of saving, investment and growth in India. The empirical analysis found strong empirical support

for the view that the levels of investment as well as its efficiency are the proximate causes of growth. Saggar (2003) extended the period of Muhlesen (1997) to 2000-01 to analyze the consequences of India's financial reforms in the nineties. The result was similar to the one obtained in the study of Muhleisen wherein causality runs from output to savings and not in the opposite direction.

Upender et al. (2007) examined savings behavior in the Indian economy in terms of the shift in the growth rates of domestic savings, and in magnitude of income elasticity of the domestic savings at the aggregate and disaggregated levels during the post economic reform period. Some of the findings of their study are – (i) there is no shift in the growth rate of the domestic savings both at aggregate and disaggregated levels during post economic reform period; (ii) there is no shift in the magnitude of income elasticity of savings of household, private and public sectors during post economic reform period.

There is an ongoing debate on the role of savings and investment in promoting economic growth. While the Harrod-Domar Model identified investment as the prime contributory factor, the Solow Model emphasized savings. According to the conventional perception, savings contribute to higher investment and, hence, higher GDP growth in the short-run (Bacha, 1990; Jappelli). Conversely, several more studies have concluded that economic growth contributes to saving (Salz, 1999). Caroll, Overland, and Weil (2000) demonstrated that "if utility depends partly on how consumption compares to a habit stock determined by past consumption, an otherwise-standard growth model can imply that increases in growth can cause increased savings." Bacha (1990) and Jappelli and Pagano (1994) concluded that a higher savings rate led to higher economic growth. Furthermore, a study of 32 countries by Krieckhaus (2002) notes that

a higher level of national savings led to higher investment and consequently, caused higher economic growth.

Sources of Data and Methodology

Database for empirical analysis has been furnished by time series data for a period of 60 years, from 1950-51 to 2009-10. Data has been taken from the Handbook of Statistics on the Indian Economy published by RBI (2010-11). The data for the time period 1950-2007 was for base year 1999-2000 have been converted to new series of database year 2004-05. Trends and patterns have been analyzed using tables and graphs. To analyze the household and financial saving function, regression analysis is done considering household and financial saving as the dependent variable and personal disposable income as the independent variable. The present study has been undertaken for the time period from 1950-1 to 2009-10. The saving function has been analyzed for the whole period as well as the two sub periods, viz. pre economic reforms period and post economic reforms period. The justification behind dividing total period into two sub periods is that the Indian Economy's *modus operandi* underwent a huge change since 1991-2 and therefore it draws our attention to analyze the saving function for the time prior to economic reforms and after initiation of economic reforms.

Trends and Patterns of Domestic Savings

India continues to remain one of the high savings economies among the emerging market economies. Gross Domestic Savings (GDS) of the Indian economy constitutes savings of public, private corporate and household sectors. In the recent period, the high growth performance of the Indian economy is driven by rise in savings and investment. It is significant to note that the increasing trend in gross domestic savings as a proportion of GDP since the 1950s has continued with the savings rate rising sharply from 9.7 percent in the 1950s to 30.7 percent in the 2000s.

Table 1: Trends in Sectoral Savings as % of GDP

Item	1950s	1960s	1970s	1980s	1990s	2000s	2007-08	2008-09	2009-10
1	2	3	4	5	6	7	8	9	10
1.House hold Saving (A) Financial Saving (B) Physical Saving	6.6 1.9 4.7	7.6 2.7 4.9	11.4 4.5 6.9	13.5 6.7 6.8	17.7 9.9 7.8	23.1 11.2 11.9	22.5 11.7 10.8	23.8 10.8 13.1	23.5 11.8 11.7
2.Private Corporate Saving	1.0	1.5	1.5	1.8	3.8	6.3	9.4	7.9	8.1
3.Public Sector Saving	2.0	3.2	4.2	3.7	1.5	1.3	5.0	.5	2.1
4. Gross Domestic Saving	9.7	12.3	17.1	19.0	23.0	30.7	36.9	32.2	33.7

Source: CSO

At a disaggregated level, it is the household sector, which occupies a position of

dominance over the other institutional sectors like private corporate sector and the public sector

in terms of generating savings. Savings by public sector and private corporate sector are

improving in recent years. On account of sharp deterioration in the savings of the government

administration, the rate of savings of the public sector, which witnessed an increasing trend till

the 1970s, started declining thereafter, and turned negative since 1998-99. However, from 2003-

04 onwards savings of public sector turned positive, reflecting mainly the outcome of the

implementation of the Fiscal Responsibility and Budget Management Act (FRBM Act), 2003.

From 1999-2000 to 2002-03, the declining trend of the public sector savings (from 0.6 to -2.0

percent) was a cause of concern. However, during the recent period it witnessed improvement.

The rate of savings of the private corporate sector witnessed a steady increase from 1.0 percent

of GDP in the 1950s to 1.7 percent in the 1980s, to rise to 3.8 percent in the 1990s and further to

6.3 percent in 2000s. The rate of savings in private corporate sector since the last three years

followed upward momentum, reflecting higher retained earnings resulting from higher profits. It

may be mentioned that the savings rates of private corporate sector had been stagnant during the 1950s to 1990s.

Household savings is composed of both financial and physical savings. As a percentage of GDP at current market prices, the rate of savings of the household sector increased from around 6.6 percent in the 1950s to over 18.0 percent in the 1990s and 23.1 percent in 2000s. Within the household sector savings, the rate of savings held in financial assets steadily increased during this period. Since 2000-01 the household sector has shown a preference for savings in the form of physical assets, which could be attributed partly to the soft interest regime in recent years. Increase in the rate of household savings in physical asset in recent years reflects booming construction activities mainly of housing and accelerated industrial activities requiring machinery and equipment.

Table 2

Year	Share of financial saving in household Saving	Share of Physical saving in household Saving
1950-51	11	89
1960-61	**40**	**60**
1970-71	**31**	**69**
1980-81	**46**	**54**
1990-91	**47**	**53**
2000-01	**48**	**52**
2005-06	**49**	**51**
2006-07	**47**	**53**
2007-08	**52**	**48**
2008-09	**45**	**55**
2009-10	**51**	**49**

Saving in physical assets, which had a whopping share of 89.3 percent of total household saving in 1950-51, has came down to 49 percent by 2009-10. However, what is worrying is that while financial savings is fundamental to higher investment and growth, only around half of the household savings in India is invested in financial instruments.
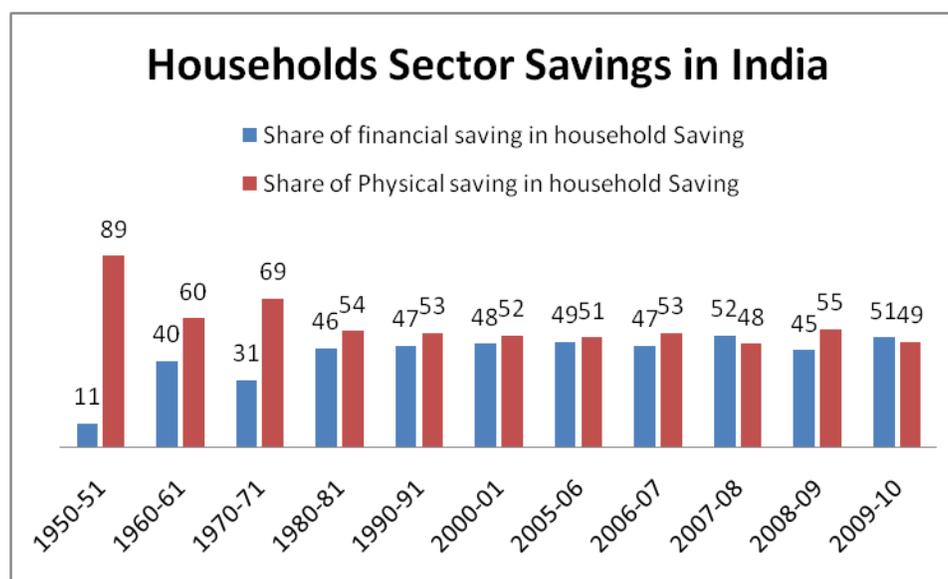
Source: Computed from Table 2

Table 3
Percentage of Financial Savings in the different instrument by the household sector

	Currency	Net Deposits	Shares & Debantures	Net Claims on Government	Life Insurance	Pension and Provident Fund
1950-51	130.6	-41	83.8	-135.4	32.2	30.64
1960-61	31.7	2.4	14.7	12.5	11.0	27.7
1970-71	25.1	19.3	6.8	-0.8	13.7	35.7
1980-81	18.87	34.67	5.15	6.69	9.98	24.65
1990-91	12.59	22.53	16.9	14.71	10.75	22.47
2000-01	7.2	33.6	4.1	17.5	15.1	22.2
2002-03	11.31	29.00	2.34	22.06	16.33	18.96
2004-05	11.62	13.46	2.78	33.60	20.87	17.67
2006-07	13.39	30.61	10.68	8.48	22.23	14.02
2008-09	12.7	60.7	-0.7	-3.8	21	10.1
2009-10	9.8	47.2	4.6	4.3	22.6	11.5
2010-11	13.3	47.3	-0.4	6.5	24.2	9.1

Source: Handbook of Statistics on The Indian Economy: RBI 2010-11

Savings by Households Sector in different instruments

The Table 3 provides the trend of financial savings in different instruments in total household sector saving. Savings in banks as net deposit, currency, shares and debentures, net claims on government, life insurance and provident funds are the major financial institutions,

where households save as form of financial savings. In 1950-51 the saving in net deposits and net claims on government was negative. In 1960-61, the saving in currency constituted the largest portion (31.7%), followed by provident fund (27.7%) and shares and debentures (14.7%). Savings in life insurance constituted (11%), when the net claim on government was 12.5%. In 1970-71, deposits was only 2.4%, the saving in provident fund constituted the largest portion (35.7%), followed by currency (25.1%) and net deposits (19.3%). Savings in life insurance constituted (14%), when the net claim on government was negative. The proportion of financial savings invested in shares and debentures which was 6.8 percent in 1970-71 has increased to 16.9 percent in 1990-91, perhaps then the market peaked. However, during 2001-02 to 2004-05 the investment in shares and debentures remained low, at about 2 %. But the investment in shares and debenture was 10.6 percent in 2006-07 which again become negative in 2008-09 and 2010-11. The household investment in shares and debentures is highly inconsistent and flexible downwards. This implies that households in India prefer to invest in traditional ways of savings and where there is no risk, but low return. Bank deposits remain the single largest instrument of financial savings, after 1980-81 but its share in the total household savings portfolio declined to 47.3 percent in 2010-11 from 60.7 percent in 2008-09. Life insurance is the next most preferred mode of financial savings at 24.2 percent in 2010-11, up from 21 percent in 2008-09. There has been rise in currency holdings with households from 9.8 percent of financial savings in 2009-10 to 13.3 percent in 2010-11, as fallout of high inflation and relatively low interest rates on bank deposits. The share of bank deposits in household financial savings remained steady around 36-38 percent during 2000-2005. However, in 2005-06, the sharp increase in share of bank deposits in household financial assets to 46.0 percent from 36.4 percent in 2004-05 was mainly because

of a marked rise in interest rates on bank deposits, narrowing the gap with interest on small savings.

Saving Functions

In this paper satisfactory saving functions are determined which would possibly explain the long term saving behavior. The relationship can be either a simple direct form where both variables change proportionately or of a slightly more complicated nature where savings rise at a faster rate than income when income increases. Thus, a logarithmic linear relation may also be meaningful in this context.

Different equations have been estimated ─

i. $S_t = a + b\ Y_t$, where S_t and Y_t are household savings, financial saving and personal disposable income respectively at time t.

ii. Log $S_t = a + b$ log Y_t, All the variables are in logarithm form.

iii. $S_t = a + b\ Y_t + \alpha\ S_{t-1}$, this is an autoregressive model. The coefficient b gives the short run impact and $\dfrac{b}{1-\alpha}$ gives the long run impact.

The 1st and 2nd equation had been also determined for two sub periods. One sub period is from 1950-1 to1990-1, i.e., pre economic reforms period and another sub period is from 1991-2 to 2009-10, i.e., post economic reform period. This is done to examine whether economic reforms in the country has in any way influenced the result of saving function.

The Empirical Results - The results are as shown in Tables 4 below-

Table 4 - House Hold and financial saving as a function of Personal Disposable Income (At Current Prices)

For the whole period of study 1950-1 to 2009-10

1. $Sh_t = -20335.8 + .306 \, Y_t$ $R^2 = 0.992$

      (-4.134)   (85.658)

2. $Log \, Sh_t = -4.678 + .1.236 \, log \, Y_t$ $R^2 = 0.997$

      (-46.265)   (147.126)

   a. $SF_t = -8446.44 + .145 \, Y_t$ $R^2 = 0.993$

      (-3.937)   (92.841)

   b. $Log \, SF_t = -7.217 + 1.369 \, log \, Y_t$ $R^2 = 0.972$

      (-19.590)   (44.745)

For the 1st sub period 1950-1 to1990-1

3. $Sh_t = -3761.382 + .217 \, Y_t$ $R^2 = 0.975$

      (4.579)   (3.976)

4. $Log \, Sh_t = -5.180 + 1.284 \, log \, Y_t$ $R^2 = 0.993$

      (-28.001)   (74.944)

   a. $SF_t = -1943.42 + .100 \, Y_t$ $R^2 = 0.979$

      (-5.621)   (42.75)

   b. $Log \, SF_t = -8.748 + 1.516 \, log \, Y_t$ $R^2 = 0.929$

      (12.048)   (22.534)

For the 2nd sub period 1991-2 to 2009-10

5. $Sh_t = -85764.3 + .329Y_t$ $R^2 = 0.991$

      (-4.646)   (43.430)

6. $Log \, Sh_t =- 4.466 + 1.218 \, log \, Y_t$ $R^2 = 0.992$

      (-11.964)   (46.860)

a. $SF_t = -2786.6 + .151Y_t$ $\qquad$ $R^2 = 0.989$

$\qquad$ (-2.9616) (38.653)

b. $\text{Log } SF_t = -3.375 + 1.094 \log Y_t$ $\qquad$ $R^2 = 0.989$

$\qquad$ (-8.590) (39.992)

Figures in the parentheses indicate 't' values.

Table5 - Results of Auto Regressive Model

1. $\text{LogSht} = -1.497 + .407 \log Yt + .675 \log Sh\, t\text{-}1$ $\qquad$ $R^2 = .998$

$\qquad$ (-2.746) (2.880) (5.862) $\qquad$ D.W = 1.7961

2. $\text{LogSFt} = -2.026 + .416 \log Yt + .690 \log SF\, t\text{-}1$ $\qquad$ $R^2 = .986$

$\qquad$ (-2.644) (3.053) (6.982) $\qquad$ D.W = 1.789

Figures in the parentheses indicate 't' values.

Table 6
APS, MPS & Income Elasticity of House Hold Saving and Financial Saving for the Whole Period and the Two Sub Periods

Period Covered		MPS	APS	Income Elasticity of Saving	Short Run MPS	Long Run MPS
1950-1 to 2009-10	**HHS**	0.306	0.267	1.236	0.407	1.252
	FS	0.145	0.267	1.369	0.416	1.341
1950-1 to 1990-91	**HHS**	0.217	0.189	1.284	-	-
	FS	0.100	0.189	1.516	-	-
1991-2 to 2009-10	**HHS**	0.329	0.28	1.218	-	-
	FS	0.151	0.28	1.094	-	-

All the functions indicate a good fit in view of the values of the 't' statistic. Comparing the two

periods, the value of Marginal Propensity to Save (MPS) has increased in post economic reforms

period. Though, the income elasticity of saving has declined in post economic reforms period. The long run MPS has a higher value than short run. Average Propensity to Save (APS) has shown improvement in the post economic reforms period over the pre economic reforms period wherein it has increased from 0.189 in the former period to 0.280 in the latter period. The APS for the whole period under study is to the tune of 0.267. The long run MPS is substantially greater than the Corresponding Short run MP i.e. when consumers have had time to adjust to the change in income, they will increase their savings.

Conclusion

However, efforts are required to channel savings away from physical savings into financial savings, which will expand financial intermediation and provide more funds for investment. In the coming years, improving demographics and the spread of banking (more branches, financial inclusion, BC/BF, UID) along with sustained economic growth will promote savings. To mobilize the savings of the household sector, we need more players (insurance, pension funds, banks, mutual funds, private equity) and more financial products (bonds, equity, derivatives). It is a well known fact that households are the largest saver which contributes as high as 94 percent of GDS in 2001-02. The share of public sector as % of GDS was negative during 2000-01 to 2002-03, whereas the share of corporate sector to GDS remained around 15 percent during the same period. The private corporate savings was 20.6 percent in 2004-05 has increased to 22.4 percent in 2006-07.

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