REPORT OF THE SUB-GROUP ON PRIVATE CORPORATE SECTOR SAVING – TWELFTH FIVE YEAR PLAN, 2012-13 TO 2016-17

INTRODUCTION

Indian economic growth has been largely enabled by the availability of domestic saving. The continuous acceleration of its growth over the decades has been accompanied by a sustained increase in the domestic saving rate. Thus, forward looking estimation of domestic saving of the economy has been an integrated process of various Plan formulations.

The Working Group on Saving for the Twelfth Five Year Plan (2012-13 to 2016-17) set up in March 2011, constituted various sub-groups to estimate sector-wise saving. The composition of the Sub-group on Private Corporate Sector Saving set up for the purpose is given in ***Annex1***. The terms of the reference of the Sub-Group are set out as:

i) To review the developments in overall economy and private corporate sector, particularly, in the 11^{th} plan and likely behavioral pattern during the 12^{th} Plan

ii) To estimate the private corporate saving in light of the policy and structural changes in the real and financial sectors during 12^{th} Plan

iii) To explain the procedures followed for estimation.

The estimates of gross domestic saving (GDS) for the Indian economy are compiled for three major institutional sectors, viz., public sector, private corporate sector and household sector. The private corporate sector comprises- (i) non-government non-financial companies, (ii) non-banking financial companies in the private sector (iii) commercial banks and insurance companies working in private sector, (iv) co-operative banks, credit societies and non-credit societies, and (v) non-profit corporate institutions. The first three groups are also together referred to as joint stock companies.

As far as the private corporate sector is concerned, retained profits adjusted for non-operating surplus/ deficit is considered as its Net Saving. Retained profits are those which are ploughed back into business after making commitments to depreciation provision for various fixed assets, debts (in the form of interest payments), government (tax provisions) and to share-holders (dividends). Non-operating surplus/ deficit (NOP) comprises (a) profit/ loss on account of sale of fixed assets, investments, etc., (b) Provisions no longer required written back, (c) insurance claims realized and (d) income or expenditure relating to the previous years and such other items of non-current nature. Depreciation provision (DEPR) at book value, as provided in the profit/loss account, is added to the net saving to obtain the gross saving (GS). As per the recommendations of the Advisory Committee on National Accounts, the CSO is making an adjustment towards the reinvested earnings in the private corporate saving estimates obtained as above since 1999-2000. Reinvested earnings of FDI companies are excluded from the private corporate sector saving and are included instead in the net factor income and net capital inflow from abroad.

The Sub-group held its first meeting on June 3, 2011, at Reserve Bank of India (RBI), Mumbai and discussed methodologies to be adopted for projecting the saving of the sector for the 12th Plan period. A draft report was placed before the members in the second and final meeting of the Sub-Group held on July 7, 2011 at RBI, Mumbai. The Department of Statistics and Information Management (DSIM), RBI, provided the secretarial support to the Sub-group. The Sub-group acknowledges with thanks the technical support and assistance rendered by Shri Ramesh Jangili, Research Officer and Smt. Geeta Giddi, Assistant Adviser. Shri N.S.Rawat, Director, Shri A. Hait, Assistant Adviser and Shri S.Bordoloi, Assistant Adviser of DSIM, RBI, Mumbai also took part in the deliberations of the Sub-group. The Sub-group also acknowledges with thanks the valuable contribution made by Shri S V Ramana Murthy, Deputy Director General, National Accounts Division, Central Statistical Office who actively participated in both the meetings.

The Report is organized as follows. Section II presents the macroeconomic performance during the 11th Plan period, while Section III discusses the trends in the performance of non-financial corporate sector as seen through selected indicators, during 2002-03 to 2009-10. Section IV presents the assumptions made for projecting the saving of the sector. The methodology of estimates is given in Section V, while the last section presented the estimates of private corporate saving for the Twelfth Plan period.

II. Performance of the Economy during the Eleventh Plan Period (2007-08 to 2011-12)

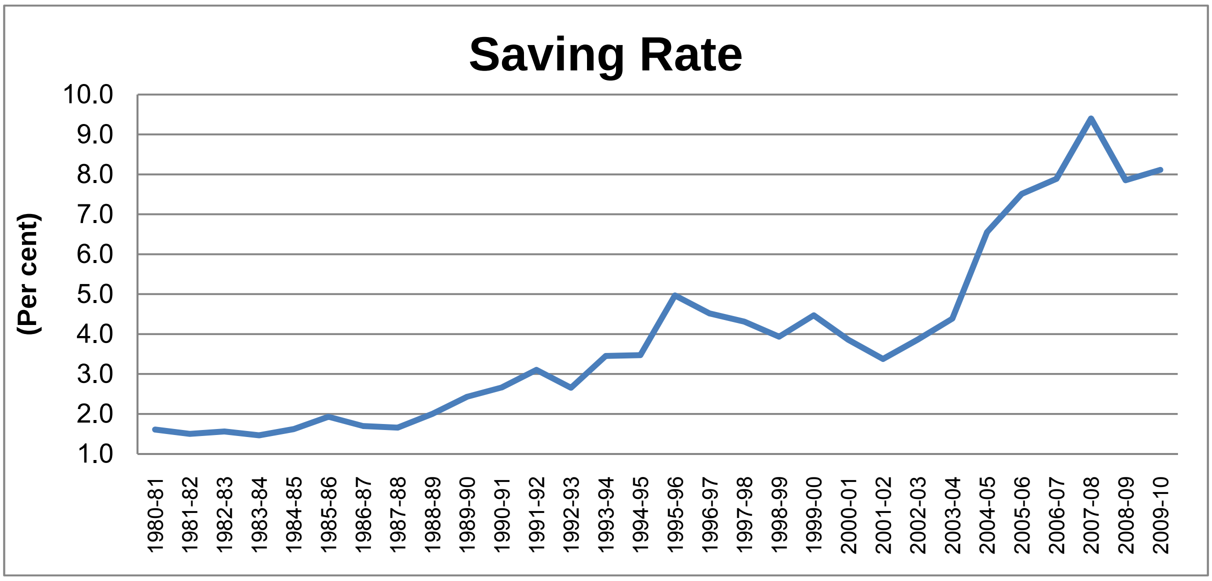
The Eleventh Five Year Plan aimed at delivering faster and more inclusive growth and the average growth was targeted at 9 per cent per annum. The economy achieved 9.3 per cent growth in the first year of the Plan but the global economic crisis during 2008 took its toll in the following year. The impact of the crisis was seen in the domestic financial markets first and then on the real economy through the trade and finance channel. Lower demand across various sectors pushed GDP growth to a low of 6.8 per cent in 2008-09. However, the economy bounced back remarkably and clocked 8.0 and 8.5 per cent growth in the next two years. With GDP growth projected at 8 per cent or thereabout in 2011-12, the average growth is expected to be 8.2 per cent for the entire plan period. The growth rate in the current Plan period is higher than that (7.8 per cent) registered for the Tenth Plan Period. The GDP at current market prices registered an annual average growth rate of 16.4 per cent during 2007-08 to 2010-11.

The achievement of the 11th Plan in terms of inflation is less impressive. Average WPI based inflation shot up from 4.8 per cent in 2007-08 to 8 per cent in 2008-09 due to all round increase in commodity prices. Crash in global commodity and crude prices together with lower demand conditions in the manufacturing sector brought down the inflation level in the following year. But beginning with high food inflation that became more broad based in due course, saw the inflation level reach near double digit (9.6 per cent) in 2010-11. The average annual inflation rate was at 6.6 per cent during the first four years of the Eleventh Plan Period, which was higher than the inflation (5.3 per cent) registered in the Tenth Plan Period.

The gross domestic saving rate (gross domestic saving (GDS) as percentage of GDP at current market prices), hereafter referred to as GDS peaked at 36.9 per cent in 2007-08 but declined to 32.2 per cent in the next year largely reflecting lower public sector saving on account of fiscal accommodation (Table 1). GDS increased to 33.7 per cent in 2009-10 with similar recovery in the public sector saving. Private sector (comprising of household and corpoprate sector) saving remained sticky in the range of 30.1 per cent to 31.9 per cent in the last six years. With further improvement expected in 2010-11, and hopefully also in 2011-12, we could end the Eleventh Plan with a GDS of around 35 per cent. Allowing for some further improvement during the 12th Plan, particularly in government saving, we can reasonably plan for an average saving rate of around 37 per cent in the 12th Plan Period (Ahluwalia, 2011).[1] Gross domestic capital formation (or investment) rate also moved in tandem - peaking at 38 per cent in 2007-08 and declining thereafter to 35.4 per cent and 35.8 per cent in 2008-09 and 2009-10 respectively. With envisaged saving rate of 37 per cent and current account deficit of around 3 per cent, investment rate can reach 40 per cent during the 12th Plan.

[1]Ahluwalia, M S (2011), Prospects and Policy Challenges in the Twelfth Plan, *Economic and Political Weekly*, Vol. 46, No. 21, May 21-27, 2011, 88-105.

The saving of the private corporate sector accounted for 25.5 percent of the Gross Domestic Saving in the first year of the Eleventh Plan Period, which marginally decreased to 24.4 per cent in 2008-09 and further to 24.1 per cent in 2009-10. In terms of GDP at current market prices, the gross saving of the private corporate sector peaked at 9.4 per cent in the first year Eleventh Plan Period but declined thereafter to 7.9 per cent in 2008-09 and 8.1 per cent in 2009-10 in the crisis period. The private corporate sector has remained vibrant and has benefitted from increasing consumption and investment demand arising out of consistently high economic growth. With robust sales growth and healthy profit margin, corporates recorded good growth in profits which translated into higher saving. The private corporate sector is expected to continue its good performance during the 12th Plan and post higher saving in this period.



Among the constituents of the private corporate sector, the joint stock companies (financial and non-financial) accounted for more than 90 per cent of the saving in the current decade and its share reached about 95 per cent in the latter half of the decade. Correspondingly, share of the cooperative banks and societies including a few non-profit corporate institutions steadily decreased from 7.8 per cent in 2004-05 to 6.3 per cent in 2006-07 and further to reach 5.0 per cent in 2009-10. Within the joint stock companies, the share of non-financial companies remained at the level of 95 per cent while the financial companies, covering private banks and insurance companies, and non-banking financial companies accounted for the remaining 5 per cent.

As the non-financial private corporate sector constitutes the major part of the private corporate sector, trends in selected variables, such as sales, total expenditure, gross profits, and profitability ratios of select non-financial companies are presented in the next Section.

III. Trends in selected variables in Private corporate sector

The performance of the private corporate sector, as evidenced from the results of the non-government non-financial public limited companies was very impressive in the Tenth Plan period. Both sales and gross profits went up markedly - the growth rate of sales increased from 8.5 per cent in 2002-03 to 26.5 per cent in 2006-07 (Table 2). Concomitantly, the growth of gross profits increased from 9.8 per cent in 2002-03 to 44.7 per cent in 2006-07. Profitability of the sector also increased significantly – while gross profit margin rose from 10.3 per cent to 14.2 per cent, net profit margin more than doubled from 4.2 per cent to 9.6 per cent between 2002-03 and 2006-07. The period also saw rise in the retained profit to PAT ratio from 56.3 per cent to 78.9 per cent which was instrumental in lowering of the debt-equity ratio from 64.7 per cent to 47.3 per cent.

The performance of the non-government non-financial public limited companies in the Eleventh Plan was less spectacular. Sales growth of the selected companies slowed down to 21.1 per cent in 2007-08 and growth of gross profits decelerated to 29.8 per cent. However, gross profit margin of the selected companies further improved to 16 per cent. Debt-equity ratio declined to its lowest level of 42.8 per cent. The global financial crisis in the following year viz., 2008-09 had a significant impact on the performance of the private corporate sector, especially on the profitability. While the growth rates in major parameters like sales, manufacturing expenses, net worth and assets further moderated, profitability parameters like gross profits and profits after tax declined in 2008-09. Gross profit margin declined to 12.6 per cent. Indian economy saw some signs of recovery in 2009-10, especially from the second half of the year. While on annual basis sales of selected public limited companies further decelerated, profit parameters recorded substantial growth. Gross profit margin improved to 13.5 per cent. Based on the data for the listed companies, which is more biased towards larger size, sales growth of 2010-11 is estimated at 21.1 per cent, however, input cost pressures (raw material, staff and interest cost have risen substantially) has led to some moderation in the profit margin. Going forward, it is expected that the corporate sales growth during the 12th Plan will be quite robust and with good prospect of high GDP growth and moderation in inflation, the profit margin would improve.

IV. Assumptions for the projection exercise for the 12th Plan

The projections of gross saving of the private corporate sector for the 12th Plan will crucially depend on the growth path of the economy, with some feedback from saving to growth channel. In order to have some uniformity in the saving projections for various sectors, the respective sub-groups were provided with assumed trajectory of two important variables, viz., real GDP growth and inflation rate for the entire duration of the 12th plan period. Three alternative scenarios for growth rate of GDP at factor cost, at 2004-05 prices were given as 8.5 per cent, 9 per cent and 9.5 per cent respectively. Each growth path was also associated with an inflation (WPI based) path. Thus the following five alternative scenarios were given to the Sub-group to base their projections on:

Scenario	Real GDP Growth (%)	WPI Inflation (%)
I	8.5	5.0
II	9.0	5.0
III	9.0	6.0
IV	9.5	5.0
V	9.5	6.5

The growth path projected above assumes continuance of the boom cycle seen prior to 2008-09. However, considering high inflation at the present juncture, the policy measures aimed at reducing inflation may have some adverse effect on growth at least in the short to medium term. Thus, the members felt that in addition to the given scenarios, one more scenario with GDP growth at 8.5 per cent and annual inflation of 6 per cent during the 12th Plan may also be considered. This has been taken as the sixth scenario in the projection.

As regards other variables used in the projection exercise, assumed path was decided based on the recent trend and judgment of the members. They are described in the next section.

V. Methodology

Following the practice in similar exercises undertaken in the past, the saving estimates of the private corporate sector have been worked out using ratio and regression approaches. Under the ratio approach, savings are estimated for various constituents of the sector separately. For the nonfinancial corporate sector, sales growth, the most important determinant of their saving, is estimated first and assuming certain ratios, retained profits out of generated sales are worked out. For other sectors, past trend in growth and ratios has been adopted. In the regression approach, gross saving rate for the private corporate sector is arrived at directly on the basis of an appropriately fitted regression equation. Details of the methodology followed in each case are further discussed below.

V.1. Ratio Approach

V.1.1. Non-Financial Companies

Under this approach, the trends observed in sales, and in certain ratios like profit margin (i.e., profits before tax (PBT) to sales), effective tax rate (i.e., tax provision to PBT), dividend payout ratio (i.e. dividend paid to profit after tax) etc. in the recent past formed the guiding factors in projecting the saving of the non-financial private corporate sector during the Plan period (Table 3). At the first stage, growth in sales of non-financial corporate sector is modeled with explanatory variables as growth in real GDP, Inflation and time dummies (to capture effects of some abnormal years) in an OLS framework (Annex-2, Equation 1). Past data for the period 1980-81 to 2009-10 are used in this exercise. Sales growth is based on the sample companies covered in the studies of non-financial public limited companies of various years by DSIM, Reserve Bank of India. For projecting sales growth beyond 2009-10, latest available estimates of real GDP growth and inflation for the remaining years of 11th Plan period, viz., 2010-11 and 2011-12 have been used. For the 12th Plan period, alternate scenarios of real GDP growth and inflation have been used. Projected annual sales growth varied from 18.9 per cent corresponding to the lowest rate of GDP growth of 8.5 per cent and WPI inflation of 5.5 per cent to 23.6 per cent corresponding to the highest rate of GDP growth of 9.5 per cent and WPI inflation of 6.5 per cent. From the projected sales data, the profits before tax (PBT) is worked out based on PBT to sales ratio. Based on the trend observed in the recent past, and continuance of good economic growth, the PBT to sales ratio is assumed at 12 per cent for the Plan period at the minimum. Given alternate scenarios of GDP growth, slightly higher profit margin of 12.5 per cent and 13 per cent was assumed corresponding to projected GDP growth rates of 9 per cent and 9.5 per cent respectively. The tax provision to PBT ratio during the first four years of 11th Plan has been around 25 per cent and the same rate has been assumed during the

Twelfth Plan. Effect of proposed Direct Tax Code (DTC) and possible introduction of GST on overall tax rate was considered. But it was felt that the tax rate will at best be neutral with respect to the proposed changes. Similarly, the dividend- payout ratio has been assumed to be around 25 per cent based on the past trend. The non-operating surplus in the current year, which is deducted from the retained profit to arrive at the net saving, is assumed around 0.9 per cent of sales for the Plan period. In addition, we have assumed depreciation to sales ratio to be around 5 per cent during the Plan period.

Having obtained the projected gross/ net saving of the sample companies in various years, the implied growth rates are applied on the latest available saving of the non-financial joint stock companies (for the year 2009-10) to arrive at the overall saving of the non-financial joint stock companies in future years.

Some of the parameters like Sales growth, PBT to Sales ratio, etc., for the manufacturing and non-manufacturing companies are found to be somewhat different (Table 3). Therefore, in an alternate procedure, the sales growth model is fitted for manufacturing/non-manufacturing non-financial companies separately (Annex-2, Equation 2 and 3). Projected annual sales growth for manufacturing companies varied between 17.8 per cent and 22.2 per cent for different GDP growth and inflation scenarios. The corresponding sales growth for the non-manufacturing companies was projected at 22.3 to 27.1 per cent. Further, based on the recent trend, PBT to Sales ratio for the manufacturing companies has been assumed to be at 11 per cent, 11.5 per cent and 12 per cent for the alternate GDP growth scenarios of 8.5 per cent, 9 per cent and 9.5 per cent respectively. Correspondingly, PBT to Sales ratio for the non-manufacturing companies has been assumed to be at 13 per cent, 13.5 per cent and 14 per cent for the above growth scenarios respectively. Finally, gross saving of sample manufacturing and non-manufacturing companies are aggregated and the same was blown up using the latest available aggregate saving of the non-financial joint stock companies and the implied growth rates of saving of sample companies, as before.

V.1.2. Non- Bank Financial Companies

While HDFC is a major player in this segment, it includes several other financial and investment companies. There has been a sizeable growth in the total income of these companies which grew at an average rate of more than 40 per cent in each of the years 2005-06 to 2007-08 but recorded a lower growth of 21 percent in the crisis year 2008-09. Gross saving of this segment fluctuated a lot, but based on 3-year moving average, saving growth exceeded more than 40 per cent in 3 out of the last 4 years (Table 4). Based on the recent trend, the growth in saving of NBFC sector is assumed at 40 per cent per annum for the GDP growth rate of 8.5 per cent and 45 and 50 per cent per annum corresponding to the GDP growth rates of 9.0 and 9.5 per cent respectively during the 12th Plan period (Table 5).

V.1.3. Commercial Banks, Insurance Companies, Cooperative Banks/ Societies and Other Quasi-Corporate Bodies

Contribution of private commercial banks, non-life insurance companies, cooperative banks/societies and other quasi-corporate bodies in gross saving of the private corporate sector is quite small. For this segment also, projections for the 12th Plan period has been based on recent trends. As per the latest data released by CSO for the period upto 2009-10, gross saving of the private commercial banks after growing at an annual average rate of about 40 per cent between 2005-06 and 2007-08, decelerated in the next two years (Table 4). Considering that some more banks may be licensed in the private sector in near future, gross saving of private commercial banks is assumed to grow at 30 percent, 35 per cent and 40 per cent per annum corresponding to projected GDP growth rates of 8.5 per cent, 9 per cent and 9.5 per cent respectively (Table 5). Similarly, the private insurance sector which has immense potentials of growth in the coming years is assumed to clock 30 to 40 per cent growth in gross saving annually under alternative GDP growth scenarios. The gross saving of cooperative banks and societies (including quasi-corporate bodies) is assumed to rise by 12 per cent annually during the 12th Plan period. It may be, however, mentioned that overall saving of the private corporate sector has very low sensitivity towards the assumed growth rates of this segment.

V.1.4. Reinvested Earnings

Reinvested earning is the portion of the retained profit of the foreign owners of a company and as such is to be counted as foreign saving for the economy. Thus, this amount is to be deducted from the gross saving of the private corporate sector. Reinvested earnings for the year 2009-10 are available from the estimates of CSO. Going forward it is assumed that the stock of FDI in India will grow annually at the rate of 30 per cent and return on FDI (expressed as ratio of reinvested earnings to stock of FDI) will remain at the same level as prevailing now.

V.2. Regression Approach

Empirical evidence across many countries confirms a strong association between saving, investment and growth. Love (2011) provides an overview of the determinants of the private corporate sector saving in Egypt. In the Indian context, Bhole (2005) and Jangili (2011) studied the determinants of the private corporate sector saving. On the other hand, Loayza and Shankar (2000) analyzed the private sector saving in India along with the determinants.[2] Based on the survey of the existing literature the private corporate sector saving is affected by:

- Economic growth, with much of the causation running from growth to saving;
- Financial liberalization, with the impact on saving of interest rate deregulation mixed, but a strong effect from expanding the supply of credit to corporates that had been credit-constrained;
- Availability of external finance either through capital market or through debt from financial institutions - the development in the financial sector or capital market would ease out the fund constraints;
- Productivity - productivity enhancement would help to produce the higher output with the same level of inputs and hence higher net profit /retained earnings. However, as higher productivity may require less resources to produce the same output, propensity to save may decline;
- Real interest rate - the aggregate private saving rate would increase with the increase in real interest rate. However, the presence of imperfect, segmented capital markets with administered rates of interest in India make estimation of the interest elasticity of private saving difficult.

The gross saving of the private corporate sector is expected to be positively affected by the growth in GDP. In addition, the saving is expected to be negatively affected by the domestic credit to industry to GDP ratio. The private corporate saving is expected to be positively affected by the capital market development. Foreign Direct Investment (FDI) also has an impact on the corporate performance as it eases financing constraints on domestic firms.

Under the regression approach, saving rate of the private corporate sector (as a percent of Gross Domestic Product at current market prices) is regressed over a set

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[2] Bhole, L M and Mahakud, Jitendra (2005). 'Trends and Determinants of Private Corporate Sector Savings in India', *Economic and Political Weekly*, Vol. 40, No. 39, September 24-30, 4243-4250.

Jangili, R and Kumar, S (2011), Determinants of Private Corporate Savings - An Empirical Study, *Economic & Political Weekly*, Vol 46, No 8, February 19-25, 49-55.

Loayza, N and Shankar, R (2000), Private Saving in India, *The World Bank Economic review*, Vol. 14, No. 3, 571-594.

Love, Inessa (2011), Empirical Analysis of Corporate Savings in Egypt, *Policy Research Working Paper*, 5634, The World Bank.

of explanatory variables based on the data for the period 1980-81 to 2009-10. The list of variables considered is as follows:

a. GDP growth in real terms (per cent)

b. Inflation based on wholesale price index (per cent)

c. Capital Market Development Index (Market capitalisation as per cent to GDP)

d. Bank credit to commercial sector/Non-food credit (per cent to GDP)

e. Foreign direct investment, net inflows (per cent to GDP)

f. Real interest rate

g. Total Factor Productivity Index[3]

h. Corporate leverage ratio

Real GDP growth and WPI based inflation are compulsorily included in the set of explanatory variables[4] - other variables are included in alternative equations. However, the results are presented only for the final selected model. Initially, OLS method was used to estimate the saving equation. Major difficulty arose in modeling the path from 2004-05 onwards when the private corporate saving rate jumped from 4.3 per cent to 6.6 per cent and continued the pace of acceleration till 2007-08. In the OLS framework, a time dummy is used from 2004-05 onwards to track this shift. However, in an alternative formulation, spline regression method was used.

(i) Simple Linear Regression

A linear relationship is assumed between corporate saving rate and its explanatory variables. Therefore, the model of the following type is estimated:

$$Y = \alpha + \sum_{i=1}^{k} \beta_i X_i + u$$

Where Y is the private corporate sector saving rate

X_i's are the explanatory variables

u is the random error variable

and β's are marginal contribution with respect to each explanatory variable.

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[3] The series is obtained from Trivedi, P., Lakshmanan, L., Jain, R. and Gupta, Y.K. (2011) Productivity, Efficiency and Competitiveness of the Indian Manufacturing Sector, *DRG Study*, Reserve Bank of India.

[4] As we need to predict the saving rate under the various growth and inflation scenarios, we compulsorily included these as the explanatory variables in the model.

The results of the regression are presented in below:

Explanatory variables	Estimate	Standard Error	P-Value
Constant	1.60	0.51	0.0043
Inflation	-0.08	0.04	0.0725
Growth (previous year)	0.12	0.06	0.0783
Capital Market Development Index	0.06	0.007	0.0000
Year dummy (which takes value 1 from the year 2004-05 onwards)	1.36	0.50	0.0117

(For more details see Annex 2, Equation 4)

Number of observations: 28
Adjusted R-squared: 0.93
Durbin-Watson stat: 1.91
Jarque-Bera Stat.: 1.82

(ii) Spline Trend Regression

By looking at the graphical view of the private corporate sector saving rate, it may be observed that there could be acceleration since 2004-05. Hence, we have fitted the following linear spline trend function on the private corporate sector saving rate.

$$Y = \alpha + \beta_1 t + \beta_2 (t - t^*)D + \sum_{i=3}^{k} \beta_i X_i + u$$

Where Y is the private corporate sector saving rate

X_i's are the explanatory variables

t is the time variable

t* is taken as value of t corresponding to the year 2003-04

D is the dummy variable such that D=0 when t<=t* and D=1 when t>t*

u is the random error variable

α is the intercept parameter

β_1 is the basic trend rate in Y

β_2 is the rate of acceleration (or deceleration) in Y after t*

and β_i, i=3,4,…k are the marginal contributions of the explanatory variables.

In this model also, capital market development index has become a significant factor among many other alternative formulations, along with growth and inflation (though inflation is not a significant factor, the same has been retained in the equation as per footnote 3). The results of the regression are presented in below:

Explanatory variables	**Estimate**	**Standard Error**	**P-Value**
Constant	0.29	0.44	0.5103
Basic Trend	0.10	0.02	0.0001
Acceleration	0.22	0.08	0.0138
Inflation	-0.03	0.03	0.4050
Growth	0.14	0.05	0.0053
Capital Market Development Index	0.04	0.007	0.0000

(For more details see Annex 2, Equation 5)

Number of observations: 28
Adjusted R-squared: 0.96
Durbin-Watson stat: 2.08
Jarque-Bera Stat: 0.45

Besides the alternative scenarios assumed on growth rates of GDP and Inflation rates, the market capitalization is assumed to grow at 22 per cent, 24 per cent and 26 per cent annually during the 12th plan period for GDP growth of 8.5 per cent, 9 per cent and 9.5 per cent, respectively.

VI Projections for the 12th Plan Period

Projected saving of the private corporate sector, based on alternative approaches and scenarios, are presented in Table below.

VI.1. Ratio Approach

Under ratio approach, gross saving of the private corporate sector is projected to rise from Rs. 5,31,403 crore in 2009-10 to Rs. 9,27,537 crore in 2012-13 (the initial year of the 12th Plan period) and further to Rs. 18,47,361 crore in 2016-17 (the terminal year of the 12th Plan period) corresponding to GDP growth rate of 8.5 per cent and annual inflation rate of 5 per cent when sales growth is modeled for the non-financial private corporate sector. In terms of saving rate it translates to 9.0 per cent in 2012-13 and 10.7 per cent in 2016-17. Using the same model, the saving rate is projected to rise to 9.2 per cent in 2012-13 and 12.8 per cent in 2016-17 if GDP grows at the rate of 9.5 per cent and annual inflation rate is 6.5 per cent.

If sales growth is modeled for the manufacturing and non-manufacturing companies separately, which captures the recent growth dynamics of the services sector better, saving rate is set to grow to 9.3 per cent in 2012-13 and 11.2 per cent in 2016-17 corresponding to GDP growth rate of 8.5 per cent and annual inflation rate of 5 per cent. Under the same model, the saving rate is projected to rise to 10.0 per cent in

2012-13 and 13.3 per cent in 2016-17 if GDP grows at the rate of 9.5 per cent and annual inflation rate is 6.5 per cent.

In the scenario of GDP growth rate at 8.5 per cent, inflation at 6 per cent and PBT to sales ratio of 11.0 per cent in aggregate, the saving rate is projected at 8.5 per cent in 2012-13 which rises to 10.2 per cent in 2016-17. However, when sales growth for the manufacturing companies and the non-manufacturing companies are estimated separately and PBT to sales ratio of manufacturing companies and non-manufacturing companies are assumed to be 11 per cent and 12 per cent respectively, the projected saving rates are quite similar to those obtained with GDP growth rate at 8.5 per cent and inflation at 5 per cent.

Projected Saving Rates for the Private Corporate Sector during 12th Plan

	Growth	8.50%	9.00%	9.00%	9.50%	9.50%	8.50%
	Inflation	5.0%	5.0%	6.0%	5.0%	6.5%	6%
Model	Year						
Ratio Approach – Sales Growth for All Companies	2012-13	9.0	9.1	9.1	9.2	9.2	8.5
	2013-14	9.4	9.9	9.9	10.3	10.4	8.9
	2014-15	9.8	10.4	10.5	11.0	11.1	9.3
	2015-16	10.2	11.0	11.1	11.8	11.9	9.7
	2016-17	10.7	11.7	11.8	12.7	12.8	10.2
Ratio Approach – Sales Growth for Manf and nonManf Companies	2012-13	9.3	9.6	9.6	10.0	10.0	9.1
	2013-14	9.7	10.2	10.2	10.7	10.7	9.5
	2014-15	10.2	10.8	10.8	11.4	11.4	10.0
	2015-16	10.7	11.5	11.5	12.3	12.3	10.5
	2016-17	11.2	12.2	12.2	13.3	13.3	11.0
Regression Approach – Least Squares method	2012-13	9.0	9.2	9.0	9.3	9.1	8.9
	2013-14	9.5	9.8	9.6	10.1	9.8	9.3
	2014-15	9.9	10.3	10.0	10.7	10.3	9.6
	2015-16	10.3	10.8	10.5	11.4	10.8	10.0
	2016-17	10.8	11.5	11.0	12.1	11.4	10.4
Regression Approach – Spline Regression Method	2012-13	10.2	10.3	10.3	10.4	10.3	10.1
	2013-14	10.9	11.1	11.0	11.3	11.2	10.8
	2014-15	11.5	11.8	11.6	12.1	11.8	11.3
	2015-16	12.1	12.5	12.3	12.9	12.5	11.9
	2016-17	12.7	13.2	12.9	13.7	13.2	12.5

VI.2. Regression Approach

As discussed earlier, in the regression approach, gross saving rate of the non-financial companies was projected directly under six alternative scenarios of GDP growth and inflation. As evident from the estimated regression coefficients, GDP growth has positive impact on private corporate saving rate but inflation has a negative impact. Based on OLS estimates, saving rate is set to grow to 9.0 per cent in 2012-13 and 10.8 per cent in 2016-17 corresponding to GDP growth rate of 8.5 per cent and annual inflation rate of 5 per cent. The estimates are very similar to those obtained by ratio approach and sales growth modeled for the non-financial private corporate sector. Under the same model, the saving rate is projected to rise to 9.1(9.3) per cent in 2012-13 and 11.4 (12.1) per cent in 2016-17, if GDP grows at the rate of 9.5 per cent and annual inflation rate is 6.5 (5.0) per cent. In these projections, effect of higher GDP growth on saving rate is much less pronounced as compared to ratio approach.

Estimates of saving rates under the Spline Regression model are higher than all other models. In this case, saving rate is set to grow to 10.2 per cent in 2012-13 and 12.7 per cent in 2016-17 corresponding to GDP growth rate of 8.5 per cent and annual inflation rate of 5 per cent. Under the same model, the saving rate is projected to rise to 10.3 (10.4) per cent in 2012-13 and 13.2 (13.7) per cent in 2016-17 if GDP grows at the rate of 9.5 per cent and annual inflation rate is 6.5 (5.0) per cent.

In the regression framework, projected saving rates for the scenario of GDP growth rate at 8.5 per cent, inflation at 6 per cent are quite close to those obtained with GDP growth rate at 8.5 per cent and inflation at 5 per cent.

Based on different approaches adopted, the Sub-group projects the gross saving rate (in terms of GDP at current market prices) of the private corporate sector to be 8.5 per cent in 2012-13 and 10.2 per cent in 2016-17 in the most pessimistic scenario and 10.4 per cent in 2012-13 and 13.7 per cent in 2016-17 in the most optimistic scenario.

Annex 1

Members of the Sub-Group

1. Dr. Goutam Chatterjee, Adviser, Reserve Bank of India	Convenor
2. Shri Ashish Kumar, Addl DG, CSO, New Delhi	Member
3. Shri Radhey Shyam, Director, Ministry of Company Affairs, Govt. of India*	Member
4. Prof. Susan Thomas, IGIDR, Mumbai	Member
5. Shri D.K. Joshi, Chief Economist, CRISIL	Member
6. Dr. Sarat Kumar Malik, Joint Director, SEBI, Mumbai	Member

*: Represented MCA in place of Dr. Joseph Abraham, Economic Adviser who was initially nominated

Annex 2

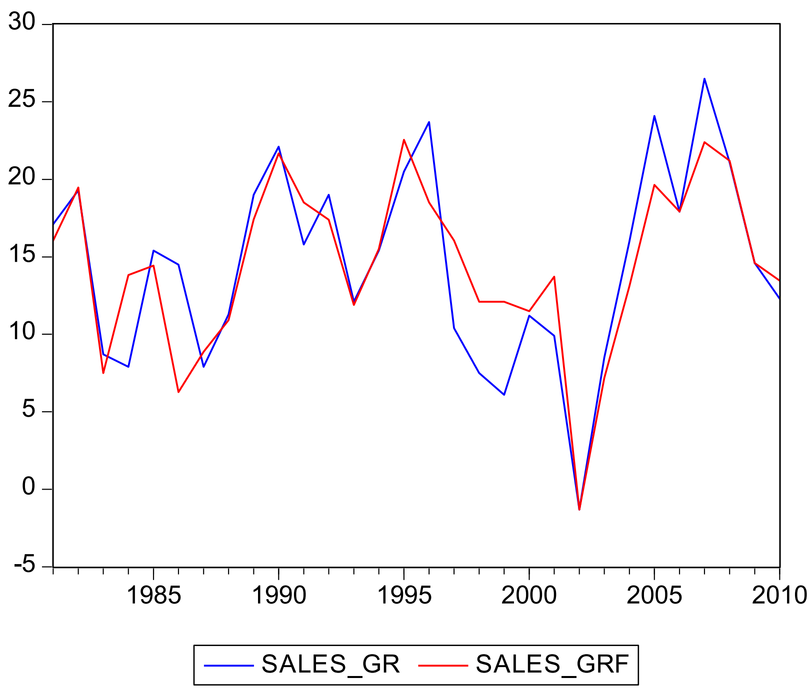
Regression results for Non-Financial Private Corporate Sector Saving

Equation 1

Dependent Variable: SALES_GROWTH_ALL
Method: Least Squares
Sample: 1981 2010
Included observations: 30

	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.29788	3.805235	-2.706242	0.0123
INF	1.340855	0.250379	5.355289	0.0000
GROWTH	1.265189	0.312741	4.045488	0.0005
GROWTH(-1)	1.385436	0.283400	4.888628	0.0001
D2002	-9.206198	3.808743	-2.417122	0.0236
D2009	-7.559488	3.817788	-1.980070	0.0593

R-squared	0.733869	Mean dependent var	14.48333
Adjusted R-squared	0.678426	S.D. dependent var	6.273100
S.E. of regression	3.557320	Akaike info criterion	5.552748
Sum squared resid	303.7086	Schwarz criterion	5.832988
Log likelihood	-77.29123	Hannan-Quinn criter.	5.642399
F-statistic	13.23626	Durbin-Watson stat	1.893067
Prob(F-statistic)	0.000003		



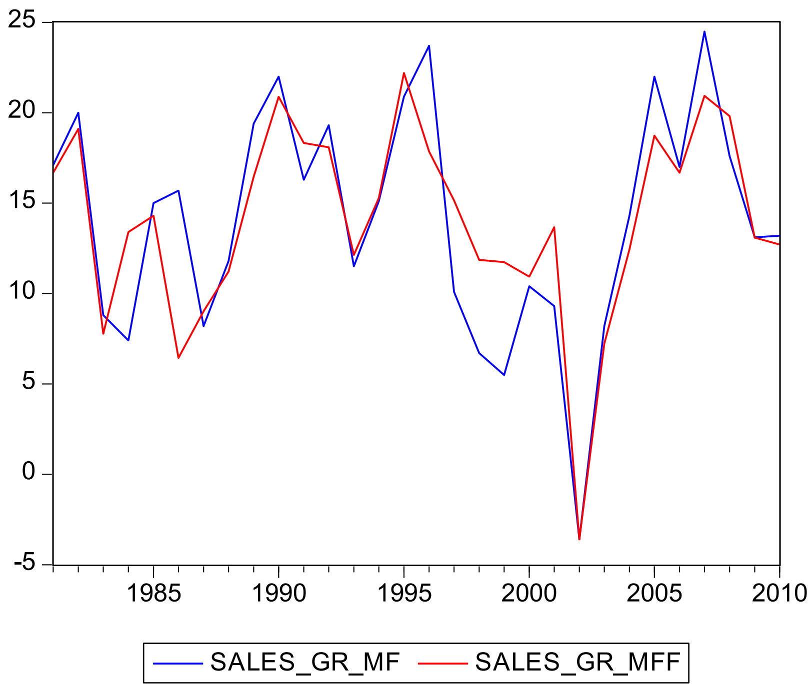
Annex 2 (contd.)

Equation 2

Dependent Variable: SALES_GROWTH_MANUFACTURING
Method: Least Squares
Sample: 1981 2010
Included observations: 30

	Coefficient	Std. Error	t-Statistic	Prob.
C	-8.944652	3.909814	-2.287744	0.0313
INF	1.351772	0.257261	5.254484	0.0000
GROWTH	1.063306	0.321336	3.309018	0.0029
GROWTH(-1)	1.288442	0.291188	4.424771	0.0002
D2002	-11.30362	3.913419	-2.888425	0.0081
D2009	-8.252985	3.922713	-2.103897	0.0460

R-squared	0.721486	Mean dependent var	14.01667
Adjusted R-squared	0.663462	S.D. dependent var	6.300579
S.E. of regression	3.655086	Akaike info criterion	5.606973
Sum squared resid	320.6317	Schwarz criterion	5.887212
Log likelihood	-78.10459	Hannan-Quinn criter.	5.696624
F-statistic	12.43430	Durbin-Watson stat	1.885095
Prob(F-statistic)	0.000005		



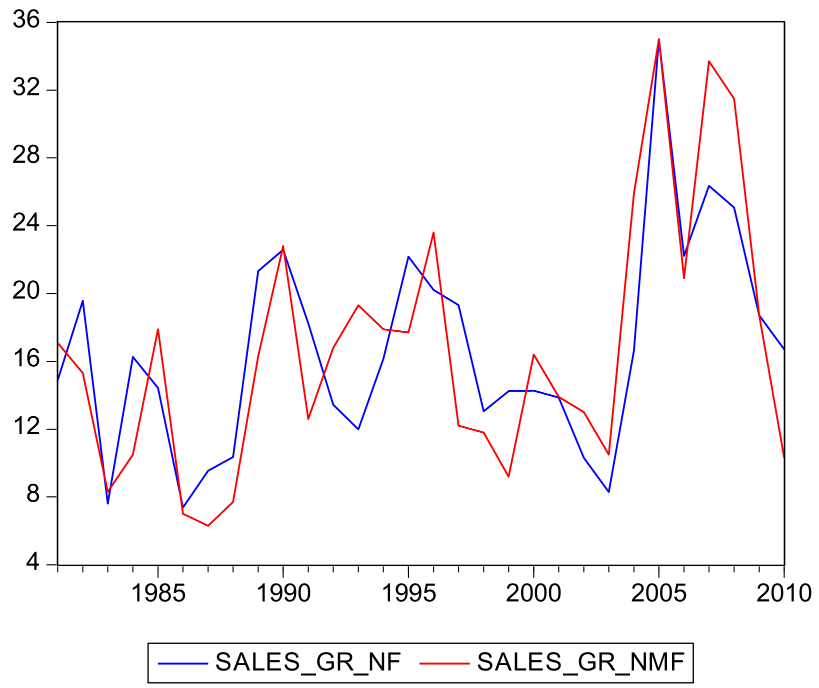
Annex 2 (contd.)

Equation 3

Dependent Variable: SALES_GROWTH_NONMANUFACTURING
Method: Least Squares
Sample: 1981 2010
Included observations: 30

	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.12283	4.989521	-2.028817	0.0537
INF	0.999824	0.326460	3.062620	0.0053
GROWTH	1.902006	0.427089	4.453420	0.0002
GROWTH(-1)	1.327074	0.382331	3.471010	0.0020
D2005	13.13368	5.063691	2.593696	0.0159
D2009	-4.530312	5.208385	-0.869811	0.3930

R-squared	0.661368	Mean dependent var	16.67000
Adjusted R-squared	0.590819	S.D. dependent var	7.560156
S.E. of regression	4.836024	Akaike info criterion	6.166919
Sum squared resid	561.2911	Schwarz criterion	6.447159
Log likelihood	-86.50379	Hannan-Quinn criter.	6.256570
F-statistic	9.374661	Durbin-Watson stat	1.836349
Prob(F-statistic)	0.000047		



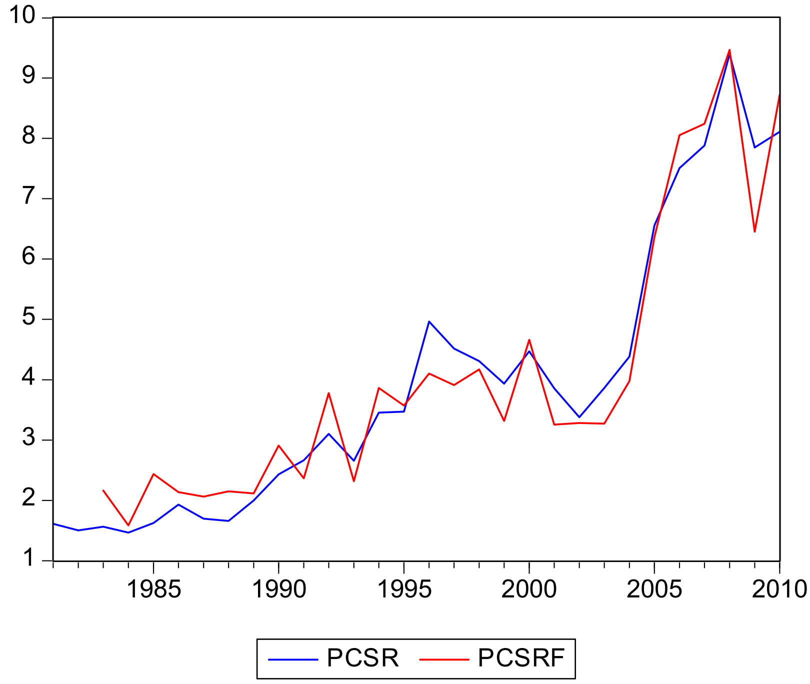
Annex 2 (contd.)

Equation 4

Dependent Variable: PVT CORP SAVING RATE
Method: Least Squares
Sample (adjusted): 1983 2010
Included observations: 28 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	1.604065	0.506006	3.170054	0.0043
INF	-0.081030	0.043055	-1.882008	0.0725
GROWTH(-1)	0.117157	0.063568	1.843010	0.0783
CMD	0.055830	0.007151	7.806791	0.0000
D2005	1.360098	0.496459	2.739596	0.0117

R-squared	0.945023	Mean dependent var	4.095704
Adjusted R-squared	0.935462	S.D. dependent var	2.287059
S.E. of regression	0.581011	Akaike info criterion	1.912339
Sum squared resid	7.764201	Schwarz criterion	2.150233
Log likelihood	-21.77275	Hannan-Quinn criter.	1.985065
F-statistic	98.83982	Durbin-Watson stat	1.905660
Prob(F-statistic)	0.000000		



Annex 2 (contd.)

Equation 5

Dependent Variable: PVT CORP SAVING RATE
Method: Least Squares
Sample (adjusted): 1983 2010
Included observations: 28 after adjustments

	Coefficient	Std. Error	t-Statistic	Prob.
C	0.293990	0.439261	0.669284	0.5103
T	0.095167	0.019973	4.764705	0.0001
T1*D2005	0.222286	0.083093	2.675138	0.0138
INF	-0.029612	0.034878	-0.849015	0.4050
GROWTH(-1)	0.144515	0.046711	3.093791	0.0053
CMD	0.038063	0.006951	5.476323	0.0000

R-squared	0.969357	Mean dependent var	4.095704
Adjusted R-squared	0.962393	S.D. dependent var	2.287059
S.E. of regression	0.443518	Akaike info criterion	1.399254
Sum squared resid	4.327586	Schwarz criterion	1.684726
Log likelihood	-13.58956	Hannan-Quinn criter.	1.486526
F-statistic	139.1904	Durbin-Watson stat	2.081767
Prob(F-statistic)	0.000000		

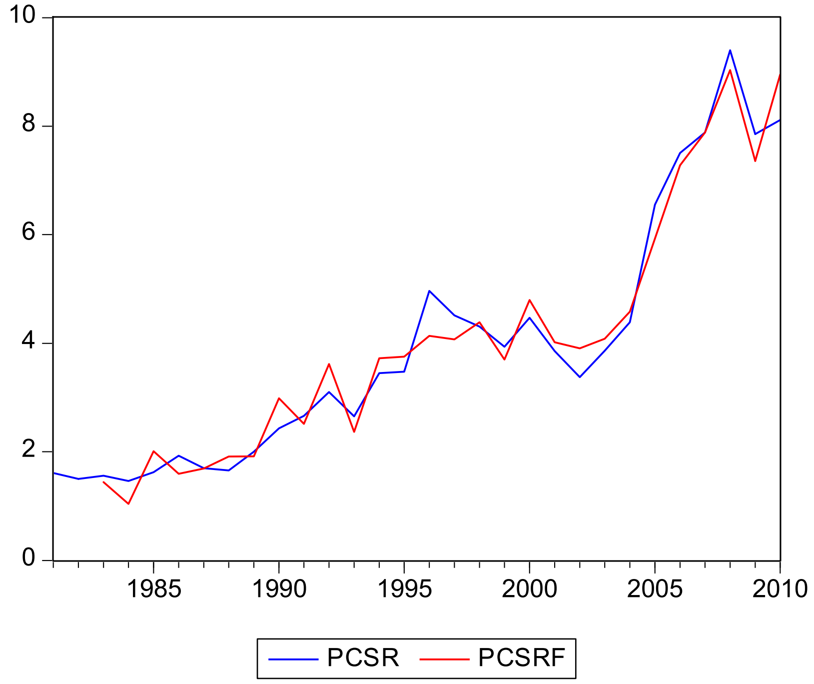


Table 1: Estimates of Domestic Gross Saving by Sectors (Amt. in Rs. Crore)

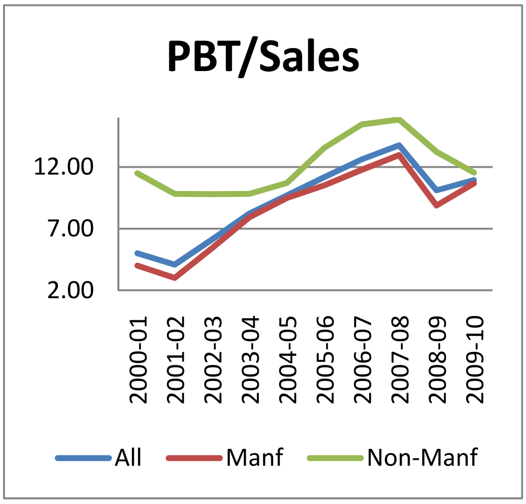
		2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
1	**household sector**	**569134**	**670776**	**763685**	**869176**	**994631**	1119829	1331033	1536071
		(87.8)	**(81.7)**	**(72.7)**	**(70.4)**	**(66.9)**	**(60.9)**	**(74.0)**	**(69.6)**
1.1	financial saving	253255	313260	327956	438331	484303	581935	600141	771527
1.1.1	gross financial saving			447730	621812	766692	769881	763499	969433
1.1.2	financial liabilities			119774	183481	282389	187946	163358	197906
1.2	saving in physical assets	315879	357516	435729	430845	510328	537894	730892	764544
2	**private corporate sector**	**94772**	**120730**	**212519**	**277157**	**338484**	**468707**	**438376**	**531403**
		(14.6)	**(14.7)**	**(20.2)**	**(22.4)**	**(22.8)**	**(25.5)**	**(24.4)**	**(24.1)**
2.1	joint stock companies	86845	111807	195910	257490	317283	446187	414544	504683
		(91.6)	(92.6)	(92.2)	(92.9)	(93.7)	(95.2)	(94.6)	(95.0)
2.1.1	non-financial	91298	113925	192855	246301	330566	450999	433573	520952
2.1.2	financial	4413	6153	11610	23409	13088	26104	22512	24856
2.1.3	less: Reinvested Earnings of Foreign Companies	8866	8271	8555	12220	26371	30916	41541	41125
2.2	cooperative banks & societies	7927	8923	16609	19667	21201	22520	23832	26720
		(8.4)	(7.4)	(7.8)	(7.1)	(6.3)	(4.8)	(5.4)	(5.0)
3	**public sector**	**-15936**	**29521**	**74499**	**88955**	**152929**	**248962**	**28938**	**139949**
		(-2.5)	**(3.6)**	**(7.1)**	**(7.2)**	**(10.3)**	**(13.5)**	**(1.6)**	**(6.3)**
4	**gross domestic saving (1+2+3)**	**647970**	**821026**	**1050703**	**1235288**	**1486044**	**1837498**	**1798347**	**2207423**
5	**less: consumption of fixed capital**	**250477**	**279980**	**319891**	**363713**	**418611**	**484558**	**563290**	**655673**
6	**net domestic saving (4-5)**	**397493**	**541046**	**730812**	**871575**	**1067433**	**1352940**	**1235057**	**1551750**
7	GDP current market prices	2526888	2835789	3242209	3692485	4293672	4986426	5582623	6550271
7.1	gross domestic saving rate (as % of GDP), of which	25.6	29.0	32.4	33.5	34.6	36.9	32.2	33.7
7.2	household sector	22.5	23.7	23.6	23.5	23.2	22.5	23.8	23.5
7.3	private corporate sector	3.8	4.3	6.6	7.5	7.9	9.4	7.9	8.1
7.4	public sector	-0.6	1.0	2.3	2.4	3.6	5.0	0.5	2.1

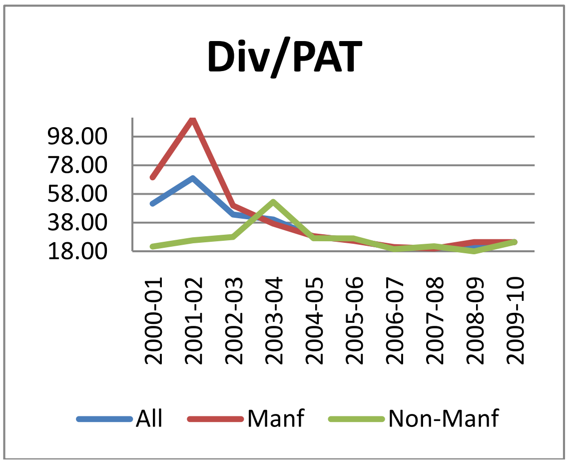
Table -2: Selected Indicators of Performance of Non-Govt. Non-financial Public Limited Companies

Year	Growth Rates (per cent)				Select Ratios (per cent)			
	Sales	Gross profits	Interest Payments	Profits after tax	Gross Profits to Sales	Profits After Tax to Sales	Debt to Equity	Internal Sources of Funds to Total Sources of Funds
1991-92	19.0	22.2	28.7	6.5	11.9	3.9	99.5	28.1
1992-93	12.1	3.7	21.6	-5.1	11.0	3.3	90.4	26.1
1993-94	15.4	22.5	3.1	68.6	11.9	5.5	74.9	28.9
1994-95	20.5	31.7	8.1	59.2	13.0	7.3	65.5	28.8
1995-96	23.7	31.0	25.0	23.9	14.2	7.8	58.7	36.6
1996-97	10.4	-1.9	25.7	-26.6	12.6	5.2	61.6	35.1
1997-98	7.5	-2.8	12.5	-13.7	11.6	4.4	63.0	34.3
1998-99	6.1	-3.2	11.1	-20.9	10.6	3.3	68.2	37.8
1999-00	11.2	9.0	6.7	14.7	10.5	3.4	68.4	40.3
2000-01	9.9	5.8	7.1	8.3	10.1	3.4	67.0	59.6
2001-02	-1.3	3.0	-5.1	-17.8	10.2	2.6	70.5	65.3
2002-03	8.5	9.8	-9.8	76.2	10.3	4.2	64.7	64.9
2003-04	16.0	25.0	-11.9	59.8	11.1	5.9	58.6	53.5
2004-05	24.1	32.5	-5.8	51.2	11.9	7.2	52.7	55.5
2005-06	17.9	20.5	1.7	28.2	12.4	8.4	46.8	42.6
2006-07	26.5	44.7	24.9	44.0	14.2	9.6	47.3	35.9
2007-08	21.1	29.8	32.7	26.6	16.0	10.4	42.8	35.5
2008-09	14.6	-9.8	42.7	-16.7	12.6	7.5	43.6	31.6
2009-10	12.3	26.8	12.9	31.8	13.5	7.9	43.6	49.2

Table -3: Trend in Select Ratios required for Estimation of Saving of Non-Govt. Non-financial Public Limited Companies

Ratio	Industry	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
PBT/Sales	All	5.02	4.09	6.13	8.23	9.70	11.17	12.61	13.75	10.12	10.93
	Manf	4.01	3.01	5.42	7.93	9.49	10.51	11.76	12.96	8.88	10.67
	Non-Manf	11.48	9.83	9.80	9.83	10.71	13.55	15.44	15.84	13.23	11.55
Tax/PBT	All	32.26	36.66	31.34	28.13	25.70	24.63	24.01	24.43	25.39	27.31
	Manf	39.38	47.67	33.96	28.31	26.21	25.47	25.22	24.98	27.30	27.29
	Non-Manf	16.19	18.78	23.83	27.36	23.53	22.29	20.94	23.24	22.14	27.34
Div/PAT	All	51.24	69.06	43.68	40.25	28.32	25.89	20.63	20.52	22.02	24.47
	Manf	69.58	110.42	49.93	37.34	28.61	25.44	21.06	19.99	24.51	24.48
	Non-Manf	21.33	25.72	28.07	52.47	27.16	27.09	19.58	21.64	18.06	24.45
RP/PAT	All	48.77	30.94	56.32	59.75	71.68	74.20	78.92	79.47	77.97	75.50
	Manf	30.42	-10.44	50.06	62.67	71.39	74.44	79.51	80.00	75.46	75.50
	Non-Manf	78.70	74.28	71.93	47.53	72.84	73.59	77.50	78.34	81.94	75.51
NoP/Sales	All	0.96	-0.16	0.75	0.52	0.41	1.01	0.64	0.36	0.77	0.61
	Manf	1.03	-0.25	0.77	0.51	0.29	0.93	0.62	0.62	0.33	0.37
	Non-Manf	0.46	0.30	0.61	0.58	0.99	1.33	0.69	-0.33	1.89	1.18
DEPR/Sales	All	5.04	5.42	5.24	4.61	4.13	4.17	3.86	3.92	3.96	4.23
	Manf	5.02	5.30	5.08	4.56	4.06	3.69	3.42	3.29	3.36	3.57
	Non-Manf	5.11	6.06	6.03	4.86	4.48	5.90	5.34	5.60	5.49	5.78


PBT/Sales
12.00
7.00
2.00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
All
Manf
Non-Manf


Div/PAT
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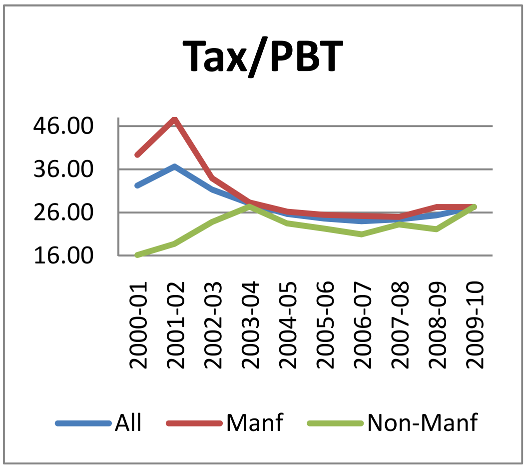
78.00
58.00
38.00
18.00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
All
Manf
Non-Manf


Tax/PBT
46.00
36.00
26.00
16.00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
All
Manf
Non-Manf

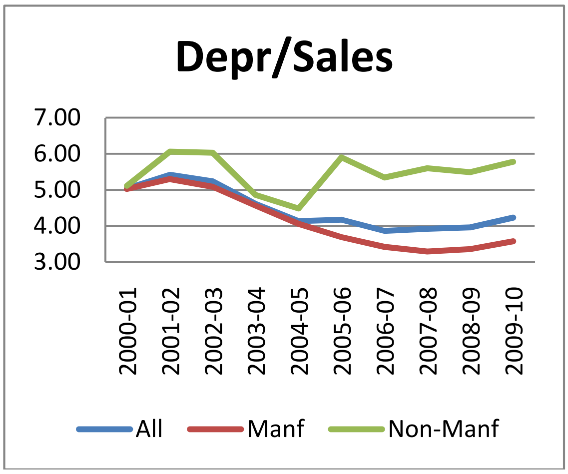

Depr/Sales
7.00
6.00
5.00
4.00
3.00
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
All
Manf
Non-Manf

Table 4: Growth Rates of Gross Saving of Constituents of Private Corporate Sector

Year	Non Financial Companies	Non-Bank Financial Companies	Private Banks (Non nationalised banks)	Private Non Life Insurance	Co-operative Banks and Societies	Reinvested Earnings of Foreign Companies*
1	**2**	**3**	**4**	**5**	**6**	**7**
2000-2001	11.6	-118.3	-3.4		-60.8	95.6
2001-2002	-10.9	-335.3	49.8	246.2	72.2	26.9
2002-2003	23.2	3.9	44.4	-164.4	94.7	13.1
2003-2004	24.8	49.9	21.2	158.6	34.9	-24.3
2004-2005	69.3	136.9	-3.7	89.3	17.4	27.5
2005-2006	27.7	114.8	45.9	13.4	18.4	42.8
2006-2007	34.2	-56.4	37.4	30.4	7.8	115.8
2007-2008	36.4	128.0	45.9	-76.7	6.2	17.2
2008-2009	-3.9	-21.9	13.9	28.6	5.8	34.4
2009-2010	20.2	16.1	-2.9	0.0	12.1	-1.0

Table 5: Assumed Growth Rates of Gross Saving of Constituents of Private Corporate Sector during the 12th Plan Period

Constituents	Under alternative GDP Growth rates of		
	8.5 per cent	9 per cent	9.5 per cent
1. Commercial Banks, Insurance Companies			
	30 per cent	35 per cent	40 per cent
2. Cooperative Banks/Societies and Other Quasi-Corporate Bodies			
	12 per cent	12 per cent	12 per cent
3. Financial and Investment Companies			
	40 per cent	45 per cent	50 per cent

Table - 6: Projected Saving Rates for the Private Corporate Sector during 12th Plan

	Growth	8.50%	9.00%	9.00%	9.50%	9.50%	8.50%
	Inflation	5.0%	5.0%	6.0%	5.0%	6.5%	6%
Model	Year						
Ratio Approach – Sales Growth for All Companies	2012-13	9.0	9.1	9.1	9.2	9.2	8.5
	2013-14	9.4	9.9	9.9	10.3	10.4	8.9
	2014-15	9.8	10.4	10.5	11.0	11.1	9.3
	2015-16	10.2	11.0	11.1	11.8	11.9	9.7
	2016-17	10.7	11.7	11.8	12.7	12.8	10.2
Ratio Approach – Sales Growth for Manf and nonManf Companies	2012-13	9.3	9.6	9.6	10.0	10.0	9.1
	2013-14	9.7	10.2	10.2	10.7	10.7	9.5
	2014-15	10.2	10.8	10.8	11.4	11.4	10.0
	2015-16	10.7	11.5	11.5	12.3	12.3	10.5
	2016-17	11.2	12.2	12.2	13.3	13.3	11.0
Regression Approach – Least Squares method	2012-13	9.0	9.2	9.0	9.3	9.1	8.9
	2013-14	9.5	9.8	9.6	10.1	9.8	9.3
	2014-15	9.9	10.3	10.0	10.7	10.3	9.6
	2015-16	10.3	10.8	10.5	11.4	10.8	10.0
	2016-17	10.8	11.5	11.0	12.1	11.4	10.4
Regression Approach – Spline Regression Method	2012-13	10.2	10.3	10.3	10.4	10.3	10.1
	2013-14	10.9	11.1	11.0	11.3	11.2	10.8
	2014-15	11.5	11.8	11.6	12.1	11.8	11.3
	2015-16	12.1	12.5	12.3	12.9	12.5	11.9
	2016-17	12.7	13.2	12.9	13.7	13.2	12.5