CHAPTER VII

GROWTH

This chapter relates to the study of growth of the banks during and after the financial sector reforms. The chapter is divided into four sections. In the first section, theoretical background on firms' growth is analyzed. The second section examines the trends of growth performance of main banking parameters during and after the reforms period. Section three relates to the model of growth of the firms. Section four interprets about the empirical findings. Section five concludes with summary of main findings.

7.1 Introduction:

The starting point for much of the empirical work in the area of growth of a firm is the Gilbrat's Law, a proposition stating that the probability of a given proportionate change in firm size during a specified period is the same for all firms in a given industry – regardless of their initial size. Sutton (1997) interpreted Gilbrat's law not as a prima facie law but rather pragmatically as an assumption by which "the probability that the next opportunity is taken up by any particular active firm is proportional to the current size of the firm". In other words, according to Gilbrat's law, firm growth is regarded as a purely stochastic phenomenon resulting from the chance operation of a large number of forces acting independently of each other. A wave of empirical studies has tested the validity of Gilbrat's law (Sutton 1997; Caves 1998). Empirical studies show mixed evidence about the relationship between firm size and growth. Some studies have found no relationship, others have found a positive relationship. The pertinent question here is – Does firm size make a difference for firm growth?

However, there are other factors apart from the firm size that may have a systematic influence on the growth performance of firms. The economic motivation behind this is that the chances of growth or shrinkage of firms will also depend on various firm specific variables like the quality of firm's management, the range of its products, availability of particular inputs, competition, cost efficiency, location and so on.

del based on certain bank specific characteristic variables troduced in the present study.

Hypothesis:

In the present study the growth of each bank group and for all banks will be compared. The growth on each indicator during the reform period is expected to be lower than the growth during the post-reform period. For this purpose, the hypothesis is tested.

Hypothesis: Growth during the reform period is lower than that of the post-reform period.

7.2 Trends of Growth Performance of various bank specific variables

The growth of the banks has been examined on the basis of five main banking indicators, namely, total assets (ii) total advances (iii) net profits (iv) net worth and (v) the number of branches. The entire period from 1991 to 2006 has been divided into two sub-periods - the period under reforms and the period after reforms i.e., - from 1991-92 to 1998-99 and from 1999-00 to 2006-07 respectively. Table 7-1 shows the growth of banks based on certain bank specific variables. A descriptive analysis based on each variable is given herewith. [**Table 7-1**]

7.2.1 Total Assets

The assets of the 27 public sector banks increased at 13.79 per cent per annum during the period from 1991-92 to 2006-07. Their assets showed an annual increase of 13.04 per cent for the first sub-period (1991-92 to 1998-99) and of 14.16 per cent for the second sub-period (1999-00 to 2006-07). For the SBI and its associated group, the per cent growth of assets was 12.67 per cent for the entire period (1991-92 to 2006-07), 12.20 per cent for the first period (1991-92 to 1998-99) and 13.01 per cent for the second period (1999-00 to 2006-07). As against this, the other Public Sector Banks (PSBs) group had a slight higher growth in their assets for the three periods, i.e., 13.88 per cent per annum for the first sub-period (1991-92 to 1998-99), 15.31 per cent for the second sub-period (1999-00 to 2006-07) and 14.91 per cent for the overall period (1991-92 to 2006-07).

The growth of assets of the other PSBs (14.91 per cent) is slightly higher than the SBI and its associates bank group (12.67 per cent per annum) for the entire period from

difference is observed in growth of assets during and after

7.2.2 Total Advances

The total advances of all the public sector banks increased at 16.21 per cent per annum for the period from 1991-92 to 2006-07. Their total advances showed an increase of 11.92 per cent per annum for the first sub-period (1991-92 to 1998-99) and 21.30 per cent in the second sub-period (1999-00 to 2006-07). The growth in the total advances was faster in the second sub-period than the first sub-period. This showed that banks produced comparatively more loans after the reforms. The scenario is also the same when taken separately for each bank group. For the SBI and its associated banks, the annual growth rate of 15.77 per cent in their total loans for the period from 1991-92 to 2006-07. Their total advances increased at 10.79 per cent per annum for the period from 1991-92 to 1998-99 and 20.74 per cent for the period from 1999-00 to 2006-07. Likewise, the other PSBs also registered an annual growth rate of 16.48 per cent during the period 1991-92 to 2006-07. And total advances grew at 11.33 per cent per annum in the period 1991-92 to 1998-99 and to 21.64 per cent in the second sub-period (1999-00 to 2006-07).

The growth of the total advances of all the banks as well as group-wise is faster than the rate of growth after the financial sector reforms, i.e., in the second sub-period (1999-00 to 2006-07).

7.2.3 Net Worth

Sound growth rate of the net worth is observed for all the banks over the period, but the rate of growth during the reforms' period is higher than after the reform periods. During the period from 1991-92 to 2006-07, the annual growth rate of net worth was 22.76 per cent. But, in the first sub-period, the growth rate was 31.65 per cent, whereas in the sub-period the per cent growth of net worth is relatively lower, i.e., 14.99 per cent. Similar is trend for each bank group. For the SBI and its associated bank group, the growth rates were 34.95 per cent in the first sub-period (1991-92 to 1998-99), 15.91 per cent in the period 1999-00 to 2006-07 and growth rate of 24.79 per cent during the whole period 1991-92 to 2006-07. As against this, growth rate of net worth for the other PSBs

67 per cent, 14.58 per cent and 22.09 per cent per annum 998-99, 1999-00 to 2006-07 and 1991-92 to 2006-07 respectively.

The higher growth rate of net worth for all banks and each for each group in the first sub-period indicated the effect of recapitalization. It was done for structural adjustments during the reforms period.

7.2.4 Number of Branches

There were not many new branches opened in post 1991 period. The growth in the number of branches of the 27 public sector banks was relatively low, showing a per cent of 0.79 per annum during the entire period 1991-92 to 2006-07. The growth rate was even marginal in each sub-period, unlike the other growth parameters. In the first sub-period (1991-92 to 1998-99), the branch expansion was 0.88 per cent and 0.70 in the second sub-period (1999-00 to 2006-07). Similar trend of branch expansion was exhibited in each bank group. For the SBI and its associated banks, the growth rate of branch was 1.05 per cent in 1991-92 to 1998-99, 0.64 per cent in the second sub-period and to 0.83 per cent over the entire period (1991-92 to 2006-07). The growth rate of number of branches for the other PSBs was 0.82 per cent in the first sub-period, 0.72 per cent in the second sub-period and to 0.77 per cent during the whole period 1991-92 to 2006-07.

The branch expansion by all the banks is very marginal and remains more or less stagnant over the entire period. One reason for negligible growth rate in branch expansion was that banks embarked on consolidation rather than new expansion to benefit from earlier expansion.

7.2.5 Net Profits

The growth rate of net profits was uneven for all the banks during the reforms period. For the 19 public sector banks, net losses were registered in three financial years. These are in the years 1992-93, 1993-94 and 1995-96. Growth rate of net profits was found from 1997-98, 77.64 per cent in 1997-98 and turned negative in 1998-99, i.e., -30.18 per cent. However, uneven growth rate was indicated in 2001-02, where the net profit figure jumped to Rs. 4855 crore from Rs. 2095 crore in the year 2000-01.

ıctuated over the period and registered 29.32 per cent 6-07.

In contrast to the other PSBs, the SBI and its associated groups earned profits during the reform period, even though there were declining trend over the entire period. The net profit grew at the rate of 14.18 per cent in 1992-93 and to 27.15 per cent in 1993-94. Uneven growth rate was noticed in 1994-95 and 1996-97, where the figure of net profits jumped more than doubled from its previous years. From the financial year 1997-98, growth rate was significant with 44.41 per cent and grew at 10.33 per cent in 2006-07.

During the entire time period, the growth rate of net profits for all the 27 public sector banks indicated uneven rates, mainly during the reforms period. The banks were earning large profits and although making losses (other 19 PSBs group) in initial years of the reforms period.

Table 7-1

Growth of banks on various banking parameters

(Per cent, per annum

Period	SBI and its associates	Other Public Sector Banks	All Banks
(1)	(2)	(3)	(4)
		(i) Total Assets	
1991-92 to 1998-99	12.20	13.01	12.67
1999-00 to 2006-07	13.88	15.31	14.91
1991-92 to 2006-07	13.04	14.16	13.79
		(ii) Total Advances	
1991-92 to 1998-99	10.79	20.74	15.77
1999-00 to 2006-07	11.33	21.64	16.48
1991-92 to 2006-07	11.92	21.30	16.21
		(iii) Net worth	
1991-92 to 1998-99	34.95	15.91	24.79
1999-00 to 2006-07	30.67	14.58	22.09
1991-92 to 2006-07	31.65	14.99	22.76
		(v) Number of Branches	
1991-92 to 1998-99	1.05	0.64	0.83
1999-00 to 2006-07	0.82	0.72	0.77
1991-92 to 2006-07	0.88	0.70	0.79

Source: Appendix A, Appendix D, Appendix E and Appendix H.

Table 7-2

e Net Profit (in crores) and annual growth rate of Net Profit during the period 1991-92 to 2006-07

Period	SBI & its assoc. Banks	Other 19 PSBs	All Banks
(1)	**(2)**	**(3)**	**(4)**
1991-92	245	601	846
	---	---	---
1992-93	280	- 3573@	-3293@
	(14.18)	(nil)	(nil)
1993-94	356	- 4705@	-4349@
	(27.15)	(nil)	(nil)
1994-95	846	269	1116
	(137.74)	(nil)	(nil)
1995-96	793	- 1165@	-371@
	(6.30)	(nil)	(nil)
1996-97	1670	1445	3115
	(110.54)	(nil)	(nil)
1997-98	2411	2567	4979
	(44.41)	(77.64)	(59.83)
1998-99	1466	1792	3258
	(-39.22)	(-30.18)	(-34.56)
1999-00	2677	2437	5114
	(82.64)	(35.96)	(56.96)
2000-01	2222	2095	4317
	(-17.00)	(-14.03)	(-15.58)
2001-02	3449	4855	8301
	(55.25)	(131.75)	(92.38)
2002-03	4512	7784	12295
	(30.79)	(60.32)	(48.05)
2003-04	5619	10901	16520
	(24.54)	(40.05)	(34.36)
2004-05	5676	9494	15170
	(1.02)	(-12.91)	(-8.17)
2005-06	5954	10021	15978
	(4.94)	(5.55)	(5.33)
2006-07	6572	12950	19522
	(10.33)	(29.32)	(20.18)

Source: Appendix F.

Note: Percentage growth rate in the parentheses. @ denotes net losses.

Bank Growth

idity of Gilbrat's Law for growth of banks. Following Gilbrat's law, a regression analysis is done. It is to estimate an equation of the following form:

$$Growth_{i,t} = \beta_0 + \beta_1 \ln (Size_{i,t-1}) + \varepsilon_{i,t} \qquad (7.1)$$

where,

Growth is define as the difference in the log of firm size between the current period t and previous period (t-1)

$$\text{i.e., } Growth_{i,t} = \ln (Size_{i,t}) - \ln (Size_{i,t-1})$$

β_1 represents the effect of initial size on the subsequent rate of a firm's growth. If $\beta_1=0$ then firm growth is independent of initial firm size and the central tenet of Gilbrat's law holds. If $\beta_1< 0$ this implies that small firms on average grow faster than their larger counterparts, whereas $\beta_1> 0$ then large firms tend to grow faster than smaller firms.

However, there are other factors apart from the firm size that may have a systematic influence on the growth performance of firms. Certain bank specific characteristic variables can be included in the firm growth model for improving specification of model to capture a better impact on firm growth. By including other bank specific variables, economic model of the growth can take a form of the following:

$$Growth_{i,t} = \beta_0 + \beta_1 \ln (Size_{i,t-1}) + \beta_2 \ln (Cost_{i,t-1}) + \beta_3 \ln (Efficiency_{i,t-1}) + \varepsilon_{i,t} \qquad (7.2)$$

where, growth for firm i in period t is a function of initial firm size, efficiency, cost variables and a stochastic error term $\varepsilon_{i,t.,}$ with **ln** is the natural logarithm. The above equation (7.2) considers other firm specific variables apart from firm size as a determinant of growth. The model is estimated by using the method of OLS, identifying the growth performance of banks.

Table 7-3

Variable Definitions and hypotheses

Variable names	Definitions
Firm Size ***(Size)***	Annual net total assets
Efficiency ***(Efficiency)***	Net interest spread [i.e. the difference between interest earned on assets , loans and securities and the interest paid on deposits and other interest bearing liabilities].
Cost of funds ***(Cost)***	The ratio of operating cost to total assets
Growth rate ***(Growth)***	The difference of size (Total Assets) in current period to its value in the previous period.

Hypotheses to be tested

H_0: (Gilbrat's Law) Other things being equal, differences do not exist in the Probability distribution of growth rates across size group of Public Sector Banks in India.

H_1: Other things being equal, growth rate of the firms are also influenced by other firm specific variables like cost and efficiency of production other than the size variable.

H_2: Firms with higher operating cost will perform less well than the firms with more cost efficient firms and so will grow more slowly.

The variables included in the study were measured according to the definitions given in **Table 7-3**. And also the hypotheses to be tested were also given in the same **Table 7-3**.

The sample means and standard deviation of the variables were also reported in **Table 7-4** in this section for the whole time period and for two distinct sub-periods. [**Table 7-4**]

The average asset size of the firms grew from an average of Rs. 18205 crore in 1991-92 to 1998-99 (period during and after reforms) to Rs. 54575.83 crore in 1999-00 to 2006-07. The average operating cost of the firms decreased steadily during the first sub-period from 2.85 per cent to 2.30 per cent in the second sub-period. It is clear from the standard deviations that large degree of within-sample variation occurred in all the

the same Table, a correlation matrix of the variables is the **Table 7-4** that correlation between the explanatory variables is relatively low, such that multi-collinearity issues should not be major problem in the regression analysis.

Table 7-4

A summary of Descriptive Statistics

	1991-92 to 1998-99 *(First Sub-period)*	**1999-00 to 2006-07** *(Second Sub-period)*	**1991-92 to 2006-07** *(Whole Period)*
	Mean (Standard Dev.)	Mean (Standard Dev.)	Mean (Standard Dev.)
Asset Size	18205.11 (26376.77)	54575.83 (74439.05)	36390.47 (50371.69)
Cost	2.85 (0.37)	2.30 (0.33)	2.58 (0.31)
Efficiency	2.87 (0.71)	2.91 (0.24)	2.89 (0.42)

Correlation Matrix (1991-92 to 2006-07)

	Growth	Size	Cost	Efficiency
Growth	1			
Size	- 0.44	1		
Cost	-0.01	- 0.30	1	
Efficiency	0.39	0.05	0.003	1

Note: The first part of this table shows the means and in the parentheses, the standard deviations of the variables which are included in the regression analyses for the two sub-periods (1991-92 to 1998-99) and (1999-00 to 2006-07) and for the whole period study. The lower part of the Table shows a correlation matrix for the variables particularly, that are included in the regression analysis for the period 1991-92 to 2006-07.

Equation (7.2) was estimated by OLS method for the whole year period and for two distinct sub periods for all the sample firms. The results of regression were reported in **Table 7-5** for each distinct two sub-period and for the whole time period.

Table 7-5

Regression results of the growth model for all Banks during the period from 1991-92 to 2006-07 and in each distinct sub-period.

Panel A: Regression results for All Banks during the period 1991-92 to 1998-99

Variables	Estimated Coefficients	Standard Error	t-values	R-square
(1)	**(2)**	**(3)**	**(4)**	**(5)**
Constant	2.199	0.715	3.077*	0.396
ln(*Size)*	- 0.143	0.054	- 2.642**	
ln(*Cost*)	- 0.093	0.272	- 0.341	
ln(*Efficiency)*	0.184	0.135	1.363	

Estimated model for the first sub-period (1991-92 to 1998-99) :

$$\textit{Growth}_{(i,T1)} = 2.119 - 0.143\ \textit{ln(Size)} - 0.093\ \textit{ln(Cost)} + 0.184\ \textit{ln(Efficiency)}$$

(F = 5.023* ; D-W =1.824*)

*, ** significant at 1 per cent and 5 per cent level respectively. T_1 denotes the first sub-period.

Note: Remember from equation (7.1) that growth is measured by using the formula: $ln(\text{Size})_t - ln(\text{Size})_{t-1}$, and setting t = (1998-99) and (t-1) = (1991-92).

Panel B: Regression results for all banks during the period 1999-00 to 2006-07

Variables	Estimated Coefficients	Standard Error	t-values	R-square
(1)	**(2)**	**(3)**	**(4)**	**(5)**
Constant	1.319	0.657	2.008	0.199
ln(*Size)*	- 0.059	0.49	- 1.215	
ln(Cost)	- 0.081	0.250	- 0.325	
ln(Efficiency)	0.380	0.220	1.724	

Estimated model for the Second sub-period (1999-00 to 2006-07):

Growth $_{(i,T2)}$ = 1.319 – 0.059 ***ln(Size)*** – 0.081 ***ln(Cost)*** + 0.380 ***ln(Efficiency)***

(F value = 1.910 ; D-W statistic = 2.638*)

*, significant at the 1 per cent level. T_2 denotes the second sub-period.

Note: Remember from equation (7.1) that growth is measured by using the formula: $ln(\text{Size})_t - ln(\text{Size})_{t-1}$, and setting t = 2006-07 and (t-1) = 1999-00.

Panel B: Regression results for all banks during for the period 1991-92 to 2006-07

Variables	Estimated Coefficients	Standard Error	t-values	R-square
(1)	**(2)**	**(3)**	**(4)**	**(5)**
Constant	3.541	0.938	3.777*	0.474
ln(*Size)*	- 0.196	0.071	- 2.757**	
ln(Cost)	0.088	0.357	0.245	
ln(Efficiency)	0.286	0.177	1.611	

Estimated model for the whole time period (1991-92 to 2006-07):

$$Growth_{(i,T)} = 3.541 - 0.196\ ln(Size) + 0.088\ ln(Cost) + 0.286\ ln(Efficiency)$$

(F value = 6.911* ; D-W statistic = 2.529*)

*, ** significant at 1 per cent and 5 per cent level respectively. T denotes the whole time period.

Note: For the entire time period study, Growth is measured the same as for two sub-periods, i.e. Growth is measured by the formula: ln (SIZE $_t$) - ln (SIZE $_{t-1}$), given in equation (7.1), setting t= 2006-07 and (t-1) = 1991-92 for the whole period.

he first sub-period (1991-92 to 1998-99) is reported in Panel A of **Table 7-5**. The F statistic is found highly significant (at 1 per cent), suggesting that the independent variables jointly have a statistically significant influence on the dependent variable. And, the value of test statistic d is found to be higher than the Upper critical value at the 1 per cent level, i.e. (d =1.824) > (d_U = 1.413), showing that there is no evidence that error terms are positively auto correlated. Except the size variable, the cost and efficiency variables have theoretically expected signs. But the estimated coefficient of size variable is found to be significant even though posses negative sign. The results indicated that only the size coefficient is significant although the expected sign is not theoretically correct but the coefficients of variables like cost and efficiency are not significant.

For the second sub-period (1999-00 to 2006-07), the regression result is reported in Panel B of the **Table 7-5**. None of the coefficients are found to be significant, although the coefficients of the cost and efficiency variables bound to have theoretically expected signs. The estimated coefficient of size variable is negative, but insignificant. Moreover, the F-value is also not significant. Only the d-statistic is found to be significant at the 1 per cent level, showing negative serial correlation as the value of d statistic is approaching the number 4. No changes in the variables are found after the reforms period.

And for the whole period study, the estimated coefficient of the size variable is found to be significant although the sign is negative. The estimated coefficient of the size variable is (- 0.143), which is less than 1. Similarly for the whole period study, it is again less than 1 (- 0.196). All the estimated coefficients of size variable are found significant at the 5 per cent level except for the second sub-period. The estimated coefficients of size variable and the cost variable give theoretically opposite signs and for the efficiency variable the expected sign comes true. However, even though the estimated coefficient of the size variable is negative, it is significant at the 5 per cent level. The rest two variables are not significant for the whole period study. The F- value is found to

cent level and the d-statistic is also significant, which ion among the residuals.

Looking at the tenet of Gilbrat's Law, it will hold if the estimated coefficient of the size variable (β_1) is found to be 1, and if ($\beta_1 < 0$) then small firms on average grow faster than the larger firms and on the other hand if ($\beta_1 > 0$) then large firms grow faster than that of the small firms. Whatever, the coefficient of the size variable reflects or represents the effect of initial size on the subsequent rate of a firm's growth. In the present analysis, since the estimated coefficients of the size variable is found to be less than 1, which is significant for the first sub-period and for the entire period, it can be concluded that small firms on average grow faster than the larger firms. The first hypothesis of Gilbrat's law does not hold and is rejected. And for incorporating other bank specific variables as an extension to the Gilbrat's model, none of the variables do not support the hypotheses even though the efficiency variables posses theoretically expected signs over the period and for the cost variable only in the two sub-periods.

7.5 Main Points

A descriptive analysis of growth rates based on total assets, total advances, net worth, number of bank branches/offices and net profit were worked out for the two distinct sub-periods and for the entire time period. The sub periods are the period during and after reforms (1991-92 to 1998-99) and second sub-period (1999-00 to 2006-07), the period after the reforms. The asset growth rate of the 19 PSBs group was found to be higher than that of SBI group in both the sub-periods and for the whole period. In terms of the total advances too, the growth rate of other public sector bank group was found higher than that of the SBI group in both the sub-periods and whole time period. But for the net worth, the SBI group has higher growth rate than the other 19 PSBs group in both the sub-periods and for the entire period. However, both the bank group has the rate of growth in the net worth was found higher in the first sub-period. It indicated the effect of recapitalization that was done for structural adjustments during the reforms period.

Regarding the branching variable, there were not many branches open after the reforms. The branch expansion by all the bank groups is very marginal and remains more or less stagnant over the entire period. One reason for negligible growth rate in branch

rked on consolidation rather than expansion. For the net rates were found for both the bank groups and the PSBs group experienced losses in the early and mid part of the 90s. In contrast to the PSBs group, the SBI group earned profits during the reform period, even though there were declining trend in growth rates over the entire period. However, PSBs group were earning large profits in the later part of the 90s although making losses in the initial years of reforms period.

A model of growth based on the Gilbrat's Law is formulated for all the firms by incorporating certain bank-specific characteristic variables. The regression is fitted for the two distinct sub-periods and for the entire period. Growth is measured by the difference of firm size (total assets) in the current period and previous period. The variables incorporated to explain the growth performance of the firms other than the size variable are cost and efficiency variables which are used in the analysis of profitability in the earlier chapter.

The Gilbrat's Law holds when the coefficient of the size variable is equal to 1, i.e. firm growth is independent of initial firm size. And if the estimated coefficient is found more than 1, the growth of the larger firms is faster than that of smaller firms and the opposite holds when the coefficient of the size variable is less than 1. In the present analysis, the estimated coefficients of size parameter are found less than 1 in each study period, i.e. (- 0.143), (- 0.059) and (– 0.196) respectively for the first sub-period, second sub-period and whole period. All these estimated coefficients except for the second sub-period are found significant at the 5 per cent level. The other coefficients are not significant and hence excluded from the analysis. The first hypothesis of Gilbrat's law does not hold and is rejected. And for incorporating other bank specific variables as an extension to the Gilbrat's model, none of the variables do not support the hypotheses even though the efficiency variables posses theoretically expected signs over the period and for the cost variable only in the two sub-periods.