

## Chapter V

COST EFFICIENCY OF UNIVERSAL BANKING IN INDIA :EVIDENCES FROM CROSS SECTION DATAPart I : INTRODUCTION

We are now equipped to appraise the cost efficiency of universal banking within the commercial banking set up in the district of Darjeeling, West Bengal. To assess its efficiency we have collected data through conducting field survey among the commercial banks in the district. The findings of the survey are presented and interpreted in this chapter with the help of the models developed in the last chapter. This chapter is divided into three parts. Study area and financing to industries are considered in part II, while the subject-matter of part III is related to emperical result analysis. These are followed by conclusion in Part IV.

Part II : STUDY AREA AND FINANCING TO INDUSTRIES

For the purpose of model estimation, cross-section data were collected on the following series : (a) annual operating expenditure under the heads of rent, electricity, stationery and interest expenses (b) wages and salaries along with number of employment, and (c) the level of output in respect of deposits (fixed, saving and current), term loans and working capital loans.

There were 61 branches of different commercial banks in the study area of Darjeeling district.<sup>1</sup> Instead of sampling such a thin set of population, we had initially sought to enumerate census, and had accordingly approached all of them with a structured questionnaire. Out of sixty-one, twenty branches responded fully to what we designed to yield for the model estimations with eleven partial respondents. The sample set covering one-third of the population was thus fairly representative in character, and showed a high degree of randomness in view of no preconceived design in sample selection. The respondents, however, belonged to eight commercial banks, viz., Central Bank of India, State Bank of India, United Commercial Bank, United Bank of India, Indian Bank, Bank of India, Indian Overseas Bank and Allahabad Bank. Requisite data were collected for three consecutive years so that the estimations could be repeated to ensure temporal stability of results.<sup>2</sup>

The data generated from the survey are presented below in aggregative forms for the economy of space. These are also discussed in a nutshell to gather an initial impression about the scope of universal banking and the nature of scale economies among the sample branches.

Table 5.1

## Deposit Level of Sample Branches

(Amount Rs. in crores)

(Account (A/C) in '000)

Year	Fixed		Saving		Current		Total	
	Amount	A/C	Amount	A/C	Amount	A/C	Amount	A/C
1990	54.09 (48.00)	31.42 (17.89)	39.97 (35.47)	144.16 (81.92)	18.62 (16.53)	.40 (.23)	112.68 (100.00)	175.98 (100.00)
1991	73.39 (48.51)	33.97 (18.09)	60.76 (40.17)	153.34 (81.68)	17.11 (11.32)	.43 (.23)	151.26 (100.00)	187.76 (100.00)
1992	83.07 (47.11)	37.00 (18.20)	69.53 (39.44)	165.82 (81.57)	23.70 (13.70)	.46 (.23)	176.30 (100.00)	203.28 (100.00)

Notes : Figures in Parentheses represent percentage

Source : Field Survey.

Bank output is represented, inter alia, by deposits measured in terms of amount or the number of accounts, <sup>in</sup> the rupee term, fixed deposits shared the highest proportion in total deposits during the study period. It accounted for nearly one-half of the same during 1990-92. The saving deposits were less than 40 per cent and the current deposit, in the neighbourhood of 15 per cent. The lion's share of fixed deposits among the sample banks indicated that they were well in a position to engage in term financing without a stake in liquidity. In terms of the number of accounts, however, a different scenario emerged. The saving accounts had the largest share, viz. around 82 per cent, followed by fixed and current deposits with respective shares at 18 and 23 per cents.

There was, however, some growth, in the amount of aggregate deposits during 1990-92. Its growth rate is worked out at 34 per cent in 1990-91 and 16 per cent in 1991-92. The number of account grew less smartly, at a rate of only 6 per cent in 1990-91 and 8 per cent in 1991-92. Table 5.2 highlights break-up of total expenditure among sample branches.

Table 5.2

## Total Expenditure and their Components

(Rs. in Crores)

Year	Wages	Interest	Rent	Stationery	Electricity	Total
1990	2.20 (34.48)	3.78 (59.25)	0.36 (5.64)	0.01 (0.16)	0.03 (0.47)	6.38 (100.00)
1991	2.28 (32.95)	4.23 (61.13)	0.37 (5.35)	0.01 (0.14)	0.03 (0.43)	6.92 (100.00)
1992	2.33 (27.04)	4.96 (57.54)	0.37 (4.29)	0.02 (0.23)	0.94 (10.90)	8.62 (100.00)

Notes : Figures in parenthesis represent percentage

Sources : Field Survey.

Total expenditures are seen to grow from Rs.6.38 crores in 1990 to Rs.6.92 crores in 1991 and again to Rs.8.62 crores in 1992 showing growth rates of 8.46 per cent and 24.56 per cent respectively. Given 34 per cent and 16 per cent growth rates in deposits during the corresponding years, as pointed out above, these growth rates in total expenditures indicate lower average expenditure per unit of deposit. These

are indicative of higher capacity utilization and the prevalence of scale economies among the sample banks.

The component analysis of total expenditures, however, shows that interest payment constituted the highest share in total expenditures (around 60 per cent), followed by wage bills (30-35 per cent) and rent (around 5 per cent). The stationery and electricity constituted 2-5 per cent of total expenditures. Be it noted from the table above that all the components, save interest, showed downward trends during 1990-92 and these were balanced by higher payments of interest. In so far as higher interest payments represent higher deposit mobilisation activities, the compositional change in total expenditure indicates a cost effective development among sample branches.

The employment level remained almost stationary during the period. It was 407 in 1990, 418 in 1991 and 426 in 1992, constituted 19.65%, 20.33% and 20.65% respectively of the managerial cadre, and 80.34%, 79.66% in the clerical and other posts. The average rate of salary is calculated at Rs.0.54 lakhs for 1990, Rs.0.55 lakhs in 1991 and Rs.0.56 lakhs in 1992. The stationary state of employment against a higher output levels is again indicative of scale economies.

Sample banks' assistances towards working capital

and term loans during 1990-92 are furnished in the following table :

Table 5.3  
Working Capital and Term Loans

(Rs.in crores)

Year	Working Capital loan	Term loan	Total
1990	15.65	16.27	31.92
1991	19.61	19.85	39.46
1992	21.28	25.63	46.91

Source : Field Survey

Industrial financing by sample branches, however, revealed a striking balance between term loans and working capital loans. The quantum of the former was higher only by 0.62% in 1990, 0.24% in 1991, and 4.35% in 1992 than that of the latter. The sample branches were thus adequately exposed to the principle of universal banking. A preliminary analysis of the survey data thus shows : (1) that a high proportion of fixed deposits made term-financing a feasible business among sample branches, (2) that they did carry out a good deal of such business and (3) that they experienced some degree of scale economies by way of conducting larger deposit mobilisation within a virtually stationary cost structure.

Part III : EMPIRICAL RESULT ANALYSIS

We have estimated the conventional translog and hybrid translog cost functions with two sets of independent variables :  $(x_1, x_2, W)$  and  $(x_1, x_2)$ . Each of these sets has been estimated for three consecutive years, 1990-92. We have thus twelve estimated relationships denoting  $TR_{ij}$  for the conventional translog function and  $Hy_{ij}$  for hybrid translog function. The subscript  $i$  runs over  $(1, 2)$  for the sets of independent variables  $(x_1, x_2, W)$  and  $(x_1, x_2)$  respectively and with  $j$  running over  $(1, 2, 3)$  for the years 1990, 1991 and 1992 respectively. We have not presented the estimated values of the parameters and the relevant statistics for the economy of space.

As much as eleven out of twelve estimated relationships have been found to yield F statistic significant at more than 99% level and the rest, namely  $TR_{12}$ , at more than 95% level. The  $R^2$ -values for those estimates range over 0.63-0.93. Five models, viz.  $TR_{12}$ ,  $Hy_{12}$ ,  $TR_{22}$ ,  $Hy_{22}$  and  $TR_{32}$ , have triggered the value of the statistic in the range of 0.63-0.76, two models ( $TR_{21}$  and  $TR_{31}$ ) in the range of 0.84-0.89 and the remaining five above 0.90. Most of the estimated relationships are thus found significant from the statistical viewpoint.

The Durbin-Watson DW statistic calculated for the estimated relationships show on comparison with its tabulated

values with appropriate degrees of freedom that the DW values for six estimates, lie above the upper limit  $d_u$  indicating the absence of autocorrelation in those estimations. For the remaining models the observed DW values lie within the indeterminate zone  $d_L - d_u$ . These relationships (excepting Hy 32), however, involve  $w$  and its associated variables. Dissociation of the model from those variables would eliminate the possibilities of autocorrelation.

In regard of estimates for individual parameters, the observed values of t-statistic have been found significant at more than 90% level for as much as fifty out of ninety six estimates. Only five estimates are insignificant at 60% level, the significant level of other estimates lying within 60-90% point.

This exercise has indicated by large commercial banking ( $x_1$ ) more significant than the development banking ( $x_2$ ). The estimated co-efficients for the former have yielded t-statistic significant at more than 80% level in eleven out of twelve models and at more than 90% level in nine models. Those respective levels of significance have been attained by the later in seven and four models. The squared forms of both of those variables have also been found highly significant in most models. More than 80% significant level has been attained by them in nine and eight models respectively. Their

joint variation represented by the variable  $x_1x_2$  has mostly been found less significant, however. Its observed value of the Student's  $t$  has been significant at above 80% point only in five models and above 90% point in only two models. The wage rate has also cut a poor level of significance (less than 80%) in as much as seven models. Its interaction with the variables commercial and development banking, captured by  $x_1x_3$  and  $x_2x_3$  respectively, have also been less satisfactory from the viewpoint of estimated  $t$ . Eight models yielded less than 80% significant level for both of them.

The models with and without wage rate as independent variable do not however yield much difference in terms of the number of significant variables. While the former generates 71% co-efficients with significant level above 80%, the latter yields 69% such co-efficients. The co-efficients with significant level at more than 90% are also almost the same, namely 56% and 50% in the respective models. The variation in functional form does not yield a difference in the number of significant co-efficient. Thirtyfour co-efficient are found significant at more than 80% level in both translog and hybrid functional forms. A variation in data set over year, however, leads to difference in this regard. Around twentyfive co-efficient have been significant at more than 80% for the data set of 1991 and 1992 and nineteen such co-efficients for that of 1990.

The overall and product-specific scale economies are calculated from the estimates of different models and are presented in the following table.

Table 5.4

## Product specific and 'overall' scale economies

Model	$\eta_{cx_1}$	$\eta_{cx_2}$	'Overall'
TR 11	0.5464	0.6171	1.1635
TR 12	0.3644	0.5829	0.9473
Hy 11	0.1276	-0.4117	-0.2841
Hy 12	0.1167	0.4475	0.5642
TR 21	0.4387	0.1166	0.5553
TR 22	0.4147	0.2966	0.7113
Hy 21	0.1459	0.1305	0.2764
Hy 22	0.1298	0.2959	0.4257
TR 31	0.1092	0.2578	0.3670
TR 32	0.2332	0.2908	0.5240
Hy 31	0.1021	0.0424	0.1445
Hy 32	0.1399	0.1032	0.2431

There is only one unwanted sign for the estimates of overall scale economies. Almost all of the remaining estimates indicate the existence of substantial scale economies among the sample banks. Barring the models TR 11 and TR 12 which yield constant return to scale, the estimates range over 0.14 - 0.71 implying that an overall scale expansion

would be cost-saving by 29-86% points. The hybrid models are however indicative of higher levels of scale economies than those indicated by the conventional ones.

The scale economy estimates with respect to both commercial banking ( $\eta_{cx_1}$ ) and development banking ( $\eta_{cx_2}$ ) also confirm the existence of substantial scale economies. The estimates reveal the extent of cost savings by 44-90% for the expansion of commercial banking activities and 39-96% for the augmentation of development banking activities. Although cost saving variations in respect of these activities appear quite insignificant in terms of their range values, a modelwise comparison between them show that the development banking activities are less cost saving for seven models. Out of eleven (abandoning one negative estimated-value) and more cost saving for only two models. The remaining two models, however, indicates both the activities almost similar in this respect. On the strength of these evidences, we conclude that in the present product-mix, expansion of commercial banking activities would be a more judicious choice.

The firm level scale economies, both 'overall' and product specific, are estimated for all the models. Instead of presenting the scale economic values for the economy of space, we present the values of simple correlation co-efficients.

calculated between the size of the firm (defined in terms of deposit level) and the scale economies.

Table 5.5

Simple Co-relation co-efficient between  
the firm size and scale economies

Model	Commercial Banking	Development Banking	'Overall'
Hy 11	-0.157	-0.2751	-0.213
Hy 12	0.045	0.204	0.371
TR 11	-0.038	0.685	0.004
TR 12	-0.413	0.564	0.390
Hy 21	-0.938	0.819	0.629
Hy 22	-0.714	0.748	0.378
TR 21	-0.219	0.428	0.185
TR 22	-0.230	0.706	0.467
Hy 31	0.165	-0.367	-0.274
Hy 32	-0.528	0.513	0.366
TR 31	0.639	0.064	0.087
TR 32	-0.135	0.132	-0.070

The values of  $r$  are seen negative only in three models, viz. Hy 11, Hy 31 and TR 32, which indicate higher level of scale economies along with the expansion of a branch's scale. But the majority of the models do not corroborate this

proposition. They confirm per contra a lower value of scale economies associated with larger scale. It should be noted that even this majority indications are not strong statistically since  $r$  values in almost all the models are found at less than 0.5 mark. A more plausible inference is, therefore, a weak relationship between the size of the bank and economies of scale.

The firmwise results of scale economies specific to development banking are more similar to those for 'overall' scale economies in that all models, barring two, yield positive co-relation co-efficient. Sixty per cent of positive  $r$  values are, however, found to lie above 0.5. This indicates a relatively stronger evidence in support of the hypothesis that scale economies gradually disappears along with the expansion of firm size. The Commercial banking activities, however, bear different nature. The firmwise scale economies specific to these activities have revealed a negative co-relation co-efficient with firm size in all but three models. Moreover, three of ten models trigger above 0.5 mark of  $r$ .

Table 5.6

## Scope economies

Models	$a_1 \times a_2 + a_{12}$	$SC_2$
Hy 11	-46.8877	127.79
Hy 12	0.0746	1.4732
TR 11	-7.65019	-0.4226
TR 12	0.1290	0.1429
Hy 21	0.4166	6.8904
Hy 22	0.0554	1.3872
TR 21	2.4407	1093.6087
TR 22	0.2004	0.1127
Hy 31	1.4488	62.2814
Hy 32	0.01395	1.2201
TR 31	0.1844	-0.0898
TR 32	0.0634	0.4454

Table 5.6 contains the model-wise results of the verification of sufficient condition of scope economies as also the values of scope economies. Most of the results relating to the former are indicative of non-fulfilment of the sufficient condition by virtue of their positive signs. But the non-fulfilment of sufficient conditions does not necessarily imply that scope economies would not exist. Estimate of the measure of scope economies indeed indicate

by virtue of their positive signs that there is cost complementarities in the prevailing banking technology among our samples. The average cost is therefore, expected to fall if the commercial banks undertake development banking activities along with commercial banking.

Part IV : CONCLUSION

Based on three consecutive years' cross section data for 20 sample branches of various nationalised commercial banks in Darjeeling district, this study has estimated four alternative models of conventional and hybrid translog specifications. Statistically significant on the strength of F-ratio and  $R^2$ -coefficient, these estimated relationships have indicated certain economic characteristics of Indian commercial banking technology akin to the observation of the study under reference. Both the exercises confirm the prevalence of 'overall' scale economies, and of scale economies specific to the commercial and development banking activities separately. Secondly, the existence of cost complementarities has been indicated among the commercial and development banking activities by both the studies.

But dissimilarities also crop up in a number of fronts. The present study disagrees firstly with the extent of scale economies that the earlier study has observed.

The scale economies are 0.14-0.71% in the present one and 0-0.14% in the earlier one for the 'overall' measure, 0.10- 0.54% and 0.02-0.60% respectively in respect of commercial banking, and 0.04 - 0.61% and 0.39-0.69% respectively in respect of development banking. Secondly, the present study has revealed a fall in the extent of scale economies, specific to development banking activities and a rise in respect of commercial banking activities, just in contrary to the observation of the previous study.

Notes and References :

- 1 Central Bank of India, "Service Area Credit Plan for the District of Darjeeling", (1990), p.26.
- 2 Humphrey, D.B., "Intermediation and Cost Determinants of Large Bank Liability Composition", Journal of Banking and Finance 5 (June, 1981), pp.167-85.

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