Profitability of Foreign Banks Operating in India

An Empirical Study

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Abstract

Moving from the scenario that was dominated by nationalized banks, Indian commercial banking system has witnessed rapid spread of Foreign Banks (FBs). The operations of FBs received a considerable boost during the post-reform era beginning with the year 1993, providing opportunity for players to shape up and prepare for their growth. This paper is an attempt to determine the profitability of FBs operating in India, using the data for the period 1998-99 to 2007-08. The authors use Multi-Discriminant function analysis to identify the variables discriminating the high profitability bank groups from that of the low profitability groups. The study revealed that four ratios namely Burden to Working Fund, Burden to Total Income, Earning Assets to Shareholders Equity and Earning Assets to Working Fund discriminate significantly the high profitability group of FBs from the low profitability group.

1. Introduction

Foreign Banks (FBs) in India have been operating for more than a century and a half. Over a period, the foreign banks have become an important internal module of the Indian financial and banking system. In the era of financial sector reforms, the need for an expanded role and operation of foreign banks has gained further backing. At the end of March 2007 India had 33 FBs from a large number of countries cutting across Europe, the US and the Far East having as many as 275 offices operating across the country. India had already committed to World Trade Organization to permit 12 branches of FBs in a year subject to prevailing prudential consideration to enter or augment their presence in India and hence their profitability assumes greater significance and profitability denotes the efficiency with which a bank deploys its funds. In this context an attempt has been made to extend the Multi-Discriminant Model to the profitability of FBs operating in India.

2. Literature Review

Das (1998) in his study 'Determinants of Return on Equity of Commercial Banks in India', attempted to estimate the influences of various factors on ROE classifying the banks into larger banks and smaller banks. The empirical results

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underlined the need for differential policy measures for the two sets of banks.

Sanjay Kumar (1999) analysed the factors which have significant bearing on the profitability of banks in his research study Profitability of Commercial Banks in India. He concluded that a higher percentage of the variance in profitability is accounted for by four factors viz. earning assets, spread, non-interest expenditure and operating expenses.

Lakshmikanta Datta (2000) in his research work entitled 'Testing of Benchmark Level – An Application of Discriminant Analysis', measured the efficiency of the individual banks based on some key parameters such as capital adequacy, solvency, asset quality and profitability.

Sugata Ghosh (2005) in his study 'Foreign Banks: The Dilemma of Expansion' observed that the banking landscape of India has changed with the substantial presence of foreign banks in India.

The present study has made an attempt to fill the research gap with specified objectives.

3. Objectives of the Study

1. To group the select foreign banks based on their profitability into high and low profitability groups.
2. To identify the ratios discriminating the high and low profitability groups of foreign banks.

4. Methodologies and Analytical Tools

The study pertains to a period of ten years from 1998-99 to 2007-08. The required information relating to the FBs for the period 1998-99 to 2007-08 was collected from the publications of the Indian Bank's Association. Thirty One foreign banks were selected for the study out of the 33 banks so as to include all banks with similar periods of operations. Multi-Discriminant Function Analysis has been used to identify the ratios which contributed significantly to the differences in the profitability of the foreign banks classified into two groups such as high profitability group and low profitability group.

Discriminant model for profitability analysis is presented as follows :

Design

In profitability functional relationship is expressed as follows :

Profitability = f (spread, burden and financial leverage)

5. Measure of Profitability

Profitability has been defined in terms of net profit divided by working fund which is considered as the most preferred measure of profitability. For the purpose of grouping the banks mean profitability ratios were computed and the classification is given in Table 1.

As per Table 1, 13 banks come under high profitability group as they registered ratios above the grand mean ratio of 1.19 per cent while 18 banks exhibited their net profit to working fund

Table 1 : Banks Classified as High Profitability and Low Profitability Groups

High Profitability Bank Group	Mean Ratio	Low Profitability Bank Group	Mean Ratio
ABN-Amro Bank N.V.	1.66	Abu Dhabi Commercial Bank Ltd	0.05
Arab Bangladesh Bank Ltd	3.43	American Express Bank Ltd	0.4
Bank of America NA	1.82	Bank International Indonesia	-2.24
Bank of Ceylon	1.78	Bank of Bahrain and Kuwait BSC	-0.27
Barclays Bank PLC	2.18	BNP Paribas	0.42
Chohung Bank	2.64	Chinatrust Commercial Bank	-0.06
Citibank N.A	1.36	Calyon Bank	-1.43
Deutsche Bank AG	2.07	Credit Lyonnais	0.77
JP Morgan Chase Bank	1.92	Ing Bank N.V	-2.1
Krung Thai Bank Public Company Ltd	2.71	MashreqBank psc	-0.44
Sonali Bank	4.26	MIZUHO Corporate bank Ltd	-0.52
Standard Chartered Bank	1.48	Oman International Bank SAOG	-2.73
State Bank of Mauritius Ltd	1.82	Societe Generale	0.01
		The Bank of Nova Scotia	0.77
		The Bank of Tokyo - Mitsubishi Ltd	-0.12
		The Development Bank of Singapore Ltd	1.18
		The Hongkong & Shanghai Banking Corporation. Ltd	0.99
		UFJ Bank Ltd	1.15
Grand Mean Ratio: 1.19			

ratio below 1.19 per cent and hence classified under low profitability group.

Profitability has been viewed in qualitative term and hence measured on non-metric scale, while the variables spread, burden and financial leverage being quantitative have been measured in metric term. Thus the dependence relationship is that of one non-metric dependent variable (profitability) and several metric independent variables which conform to the application of multi-discriminant analysis.

In case of independent variables, 12 ratios representing spread and burden have been taken, while in case of financial leverage 2 ratios have been taken, thus 14 independent variables were included such as ratio of Spread to Working Fund (X_1), Spread to Total Income (X_2), Interest Earned to Working Fund (X_3), Interest Earned to Total Income (X_4), Interest Expended to Working Fund (X_5), Interest Expended to Total Income (X_6), Burden to Working Fund (X_7), Burden to Total Income (X_8), Non-Interest Expenditure to Working Fund (X_9), Non-Interest Expenditure to Total Income (X_{10}), Non-Interest Income to Working Fund (X_{11}), Non-Interest Income to Total Income (X_{12}), Earning Assets to Shareholders Equity (X_{13}) and Earning Assets to Working Fund (X_{14}).

Of these 14 variables, the variables which significantly discriminate the banks of one group (high profitability group) from the other group (low profitability group) have been analysed through Discriminant Function Analysis.

6. Construction of Discriminant Function

Discriminant Function Analysis attempts to construct a function with these and other variables so that the banks belonging to either of these two groups are differentiated at the maximum. The linear combination of the variables is known as Discriminant Function and its parameters are called Discriminant Function Co-efficients. A Discriminant Function will be of the form,

$$Z = a_0 + a_1 X_1 + a_2 X_2 + \ldots\ldots a_n X_n$$

Where, a_0 – constant

a_1, $a_2 \ldots a_n$ – Discriminant Function Co-efficients of the independent variables $X_1, X_2, \ldots X_n$, respectively.

In constructing the function, all variables which contribute to differentiate these groups at the maximum are examined. Among the several methods available for selection of variables, Mahalanobis Minimum D squared method, was employed. The Mahalanobis procedure is based on the generalised squared Euclidean distance that adjusts for unequal variances in the variables. The major advantage of this procedure is that it is computed in the original space of the predictor (independent) variables rather than as a collapsed version which is used in other methods.

7. Empirical Analysis

Table 2 shows the group means and standard deviations for each of the independent variables identified for analysis based on the sample size of 31 foreign banks.

Table 2 shows that variables viz., burden to working fund (X_7),

Table 2 : Group Statistics

Bank Group	Ratios / Variables	Mean	Std. Deviation
Low Profitability Bank Group	Spread / Working Fund	3.249	2.075
	Spread / Total Income	31.984	23.384
	Interest Earned / Working Fund	8.230	3.186
	Interest Earned / Total Income	76.782	20.273
	Interest Expended / Working Fund	5.031	3.073
	Interest Expended / Total Income	45.039	24.291
	Burden / Working Fund	0.615	3.870
	Burden / Total Income	10.335	39.231
	Non-Interest Expenditure / Working Fund	3.285	3.103
	Non-Interest Expenditure / Total Income	32.081	31.427
	Non-Interest Income / Working Fund	2.869	3.295
	Non-Interest Income / Total Income	23.987	25.711
	Earning Assets / Shareholders Equity	548.454	729.352
	Earning Assets / Working Fund	68.851	21.114
High Profitability Bank Group	Spread / Working Fund	3.668	1.023
	Spread / Total Income	32.128	7.450
	Interest Earned / Working Fund	8.598	2.098
	Interest Earned / Total Income	74.697	9.310
	Interest Expended / Working Fund	4.931	1.552
	Interest Expended / Total Income	42.583	9.250
	Burden / Working Fund	-0.033	1.026
	Burden / Total Income	-0.216	9.407
	Non-Interest Expenditure / Working Fund	2.841	0.787
	Non-Interest Expenditure / Total Income	25.076	6.460
	Non-Interest Income / Working Fund	2.874	1.095
	Non-Interest Income / Total Income	25.292	9.307
	Earning Assets / Shareholders Equity	1058.527	1441.820
	Earning Assets / Working Fund	81.756	9.090

burden to total income (X_8), earning assets to shareholders equity (X_{13}) and earning assets to working fund (X_{14})have major differences between high profitability bank group and low profitability bank group.

Table 3 : Standardised Canonical Discriminant Function Co-efficients

Variables	Function co-efficients
X_7	0.986
X_8	-0.078
X_{13}	-0.001
X_{14}	-0.042

Table 3 provides the overall discriminant analysis results after the inclusion of all variables in the discriminant function. This table gives the coefficients of the selected variables, called discriminant function coefficients.

Table 4 : Wilk's Lambda

Wilk's Lambda	DF	F Value	Prob.	Sig
0.8353	14	3.7185	0.0000	Significant**

** Significant at 1% level

The significance of the discriminating variables were tested using Wilk's Lambda and the test result shows that the Wilk's Lambda is 0.8353 and the associated 'F' value is 3.7185 which is found to be significant at 1% level.

This indicates that the discriminant model distinguishes between high profitability bank group and low profitability bank group based on the four ratios / variables indicated in the discriminant function.

Table 5 : Summary Of Canonical Discriminant Functions

Eigen Value	Percentage of Variance	Cumulative Percentage	Canonical Correlation
0.197	100	100	0.406

8. Canonical Discriminant Functions

Table 5 provides the multivariate aspect of the model given under the heading Canonical discriminant function. The discriminant function displays a correlation of 0.406. By squaring it we get 0.1648 and it may be interpreted that 16.48% of the variation in the dependent variables (type : high profitability banks / low profitability banks) is explained by the discriminating variables included in the model.

Discriminant co-efficients

From Table 5 the co-efficients of the discriminating variables finally is derived for the discriminant function. Then the discriminant function (Z) for the problem under study can be written as

$Z = 0.986\, x_7 - 0.078\, x_8 - 0.001\, x_{13} - 0.042 x_{14} + 0.546$

x_7 = Burden to Working Fund.

x_8 = Burden to Total Income.

x_{13} = Earning Assets to Shareholders Equity.

x_{14} = Earning Assets to Working Fund.

Constant = 0.546

Using the discriminant function coefficients and variables, discriminating scores for low profitability group and high profitability group are calculated, which are called group centroids or group means and it is shown in Table 6

Table 6 : Group Centroids And Prior Probabilities

Type of Bank	Group Centroids	Prior Probability
High Profit	0.217	0.5
Low Profit	-0.903	0.5

In the Discriminant Function Analysis applied to the banks based on the low profitability group and high profitability group, the following factors significantly discriminate the two groups. They are X_7 (Burden to Working Fund), X_8 (Burden to Total Income), X_{13} (Earning Assets / Shareholders Equity) and X_{14} (Earning Assets / Working Fund) (Significant at 1% level).

The following factors do not discriminate the two bank groups. They are spread to working fund, spread to total income, interest earned to working fund, interest earned to total income, interest expended to working fund, interest expended to total income, non-interest expenditure to working fund, non-interest expenditure to total income, non interest income to working fund and non interest income to total income.

9. Conclusion

This study reports the results of the analysis of the multi-discriminant model of the profitability of FBs operating in India. It is concluded from the analysis that of the 31 foreign banks selected for the study, 13 banks exhibited high profitability whereas 18 banks registered profitability below the grand mean of the profitability ratio of the select banks. Of the fourteen profitability determinants of FBs, only four ratios namely Burden to Working Fund, Burden to Total Income, Earning Assets to Shareholders Equity and Earning Assets to Working Fund discriminate significantly the high profitability group of FBs from the low profitability group.

10. Scope for Further Research

Over a period, the foreign banks have become an important module of the Indian financial and banking system. The study analysed the influence of important ratios on the profitability of foreign banks. It has a wider scope for further research to investigate the strengths and weaknesses of Indian banks in comparison with foreign banks.

11. References

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