DOI : 10.18843/ijms/v5i4(1)/09
DOIURL :http://dx.doi.org/10.18843/ijms/v5i4(1)/09

Decoding Profitability Black Box of Indian Banking Sector – An Empirical Study

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ABSTRACT

The aim of this research study is to decode the profitability black box of Indian banking sector so as to identify important determinants of their profitability. Banking sector is closely interlinked with all sectors of economy and hence their financial health is a matter of importance not only for themselves but also for their share holders, vast customer base, employees, policy makers and economy as a whole. This research study comprises seven variables viz. Profit After Tax to Total Revenue, Capital Adequacy Ratio, Cash to Deposit, Employee Cost to Total Expenses, Growth in Net Profit, Total Debt to Equity and Yield on Advances. These variables were critically investigated over a period of ten years employing various statistical techniques including multiple regression analysis. The Yield on Advances emerged as the most important variable influencing the profitability of Indian banking sector. The Employee Cost to Total Expenses was found to be moderately influential on profitability. However, Capital Adequacy Ratio, Cash to Deposit, Growth in Net Profit and Total Debt to Equity were detected as statistically irrelevant variables in this attempt of decoding the profitability black box of Indian banking sector.

Keywords: Yield, Profitability Black Box, Banks, India, Advances.

INTRODUCTION:

Banking is normally understood as business activity of accepting deposits and providing financial facilities. In any country banking is contemplated as backbone of the economy primarily because the performance of almost every sector of economy in one or another way is reflected in the performance of banking sector. At the same time a financially sound bank has the potential to support financial well being of several industrial enterprises. In addition they touch almost every citizen as custodian of their hard earned money besides being cheaper and fair source of funds both in the short run and long run. The banking sector in India, besides being mark of trust for general public at large have also played significant role in the economic development of the nation. Responding to the changing needs of the economic environment Indian banking sector has adopted customer centric multi product approach in their endeavor to substantially extend their reach. Advent of information technology has brought along with it substantial reduction in transaction time and cost. Advanced artificial intelligence is on its way to further revolutionize entire banking sector in India. However amidst the promising developments a high degree of surveillance on profitability is a must as it is the profitability which would ensure long term financial health of the banking sector. At the same time decoding profitability black box of Indian banking sector is not an easy task as profitability in itself is a complex and dynamic function of several variables such as deposits, advances, investments, last mile reach, infrastructure cost, interest differential, employee cost, cost of developing innovative products etc. therefore Profit generation task of bank managers is extremely complex and laden with enormous difficulties. It is neither feasible nor desirable for bank managers to concentrate on all the parameters affecting the profitability. It is therefore imperative that a research based approach is adopted to identify key parameters. In this research paper the author has attempted to decode profitability black box of Indian banking sector.

NEED FOR THE STUDY:

The Indian banking sector is of considerable importance for individuals, business enterprises and the nation as a whole. In the times to come it will have to continue to contribute to the financial well being of all the stake holders and thereby support creation of national prosperity. Profitabilty of Indian banking sector, therefore, is a matter of concern not only for bankers, individuals, business enterprizes, economic policy makers and researchers but also for the nation as a whole. In an humble attempt to contribute to the scarce literature on research related to Indian banking sector the author decided to decode the profitability black box by examining few micro factors influencing profitability of Indian banking sector. The variables considered in this research are:

1. Profit After Tax / Total Revenue (PATTR)
2. Capital Adequacy Ratio (CAR)
3. Cash To Deposits (CTD)
4. Employee Cost to Total expenses (ECTE)
5. % Growth in Net Profits (GNP)
6. Total Debt to Equity (TDTE)
7. Yield on Advances (YOA)

From amongst the variables enumerated above PATTR is the dependent variable and the remaining are independent variables.

LITERATURE REVIEW:

The researchers have evaluated the different aspects of banking from multiple angles to develop better understanding of variables affecting profitability of banking sector. Some authors have examined macro economic factors while others have looked into micro economic factors, A few authors have also looked into comparison of public sector banks with that of private sector banks. Their research outputs are further discussed below.

David B. Humphrey and Lawrence B (1997) critically investigated the profitability of 683 banks of United States of America. According to them input prices and output prices had influence on profitability of the banks. Interest on deposit emerged to be one of the important factor having negative effect on profitability. Demirguc-Kunt, Asli, Huizinga and Harry (1999) conducted a global study using bank-level data for 80 countries in the year's 1988-95. They noticed that in developing countries foreign banks enjoyed higher profits than domestic banks. However, in the developed nations the trend was exactly reverse i.e. domestic banks enjoyed higher profits than foreign banks. They further noticed that the corporate tax burdenwas fully passed onto the customers of the banks. Lawrence M. Seiford and Joe Zhu (1999) in their study of 55 banking companies of United States of America detected an interesting aspect that larger banks performed better in terms of profitability while smaller banks performed better in terms of marketability. Chaudhuri Sumitra (2002) in a national level study carried out detailed investigation of State bank of India with its seven subsidiaries and nineteen nationalized banks from the year 1995-2001. Net Interest Margin of loans, Advances Cost of Deposits, Investments, Net Interest Spread and Yield from Loans were the variables considered in detail. It was noticed that performance of public sector banks was on a clear decline on all the parameters and there was no indication of improvement in the near future due to substantial burden of Non Performing Assets. John Goddard, Phil Molyneux and John O.S Wilson (2004) examined 583 European banks from the year 1992-1998 and clearly noticed that current profit was an important prerequisite for future growth. As banks grew larger their performance had the tendency to improve. However they cautioned that excessive current growth had the potential to damage the future profit. Ram Mohan T.T. and Ray Subhash C.(2004) evaluated the performance of public and private sector banks from a period during 1992-2002 using net interest spread criteria and obsereved that public sector banks performed better than private sector banks. Manish Mittal and Aruna Dhade (2007) compared various categories of banks on their profitability and productivity. They observed that there was no remarkable difference in the spread ratio, but there was a significant difference in Burden ratio among the public sector and private sector & Foreign banks. Tanveer Ahmed and Waseem Ahmed (2008) examined 33 Pakistani commercial banks using Data Envelopment Analysis technique. They observed that the commercial banks can improve their performance by increasing deposits and by decreasing bills payable. Sayilgan Güven and Yildirim Onur (2009) examined of Turkish banks for period 2002-2007 and concluded that macro economic factors such as consumer price index had negative and significant impact on profitability of the banks. Ghulam Ali Bhatti and Haroon Hussain (2010) investigated 20 scheduled commercial banks incorporated in Pakistan during the period from 1996 to 2004 considering the effects of market structure on profitability of the banks..Their research findings pointed out that market concentration determined profitability

in Pakistani Commercial banks. They further noticed the existence of negative association between competition and profitability in Pakistani Commercial banks.

HYPOTHESES DEVELOPMENT:

The literature review and the variables mentioned above lead us to formation of the following hypotheses :

1. Ho: Capital Adequacy Ratio does not exert influence on PATTR
   H1: Capital Adequacy Ratio does exert influence on PATTR
2. Ho: Cash To Deposits does not exert influence on PATTR.
   H1: Cash To Deposits does exert influence on PATTR.
3. Ho: Employee Cost to Total Expenses does not exert influence on PATTR.
   H1: Employee Cost to Total Expenses does exert influence on PATTR
4. Ho: % Growth in Net Profits does not exert influence on PATTR.
   H1: % Growth in Net Profits does exert influence on PATTR
5. Ho: Total Debt to Total Equity does not exert influence on PATTR
   H1: Total Debt to Total Equity does exert influence on PATTR
6. Ho: Yield on Advances does not exert influence on PATTR.
   H1: Yield on Advances does exert influence on. PATTR

RESEARCH DESIGN:

Research Objectives:

The research objectives, hence, are:

(1)To understand the association of CAR,CTD, ECTE, GNP,TDTE, YOA and with PATTR of the Indian banking sector

(2)To examine the degree of influence CAR, CTD, ECTE, GNP,TDTE, YOA exert over PATTR of the Indian banking sector.

(3)To gain insight into decoding profitability black box of banking sector in India.

Data Collection and Techniques of Analysis:

In this research paper we have considered only the Indian banking companies registered with the Reserve Bank of India and listed on Bombay Stock Exchange and /or National Stock Exchange. The data required was historical and enormous in nature. For collection of data f published audited annual reports and data bases such as CAPITAline were relied upon. The data for all the variables viz. CAR,CTD, ECTE, GNP,TDTE, YOA and PATTR was collected for each bank for a period of 10 years with a view to remove cyclical effects of the economy and get better understanding of the behaviour of the said variables. Thereafter, various statistical techniques including Multiple Regression were used to decode the relationship of independent variables with dependent variable and to know the extent of influence independent variables exert over the dependent variable. F test and Multi co linearity Test - VIF Statistics were worked out to provide greater validity to the results so arrived.

RESULTS AND DISCUSSIONS:

(1) The standardized β depicting regression co-efficients of the independent variables with their corresponding direction, values and significance level are stated in the Table – 1. The standardized β of CAR, as stated in Table -1, is – 0.051 pointing out that CAR has negative relationship with PATTR and its significance level of 0.0.471 makes it statistically insignificant. The weight of evidence advocates that null hypothesis H0 (CAR) be accepted and the alternate hypothesis Ha (CAR) be rejected. This means CAR does not exert any significant influence over PATTR.

(2) The standardized β of CTD is +0.008 points out that CTD has positive relationship with PATTR, but its significance level of 0.886 does not allow it to be statistically significant at all. The weight of the evidence therefore propounds that null hypothesis H0 (CTD) be accepted and the alternate hypothesis Ha (CTD) be rejected. This means CTD does not exert influence over PATTI.

(3) As depicted in Table-1, the standardized β of ECTE is -0.094 suggesting that ECTE has negative relationship with PATTR. The corresponding significance level 0.193 indicates that this regression co-efficient is statistically significant in a moderate manner. The weight of the evidence, thus, propounds that null hypothesis H0 (ECTE) be rejected and the alternate hypothesis Ha (ECTE) be accepted. Hence a change in ECTE has moderate influence over PATTR.

(4) The standardized β of GNP, as shown in Table 1, is + 0.038 indicating that GNP has positive relationship with PATTR. However its significance level 0.535 renders β of GNP statistically insignificant. The evidence, therefore clearly suggests that null hypothesis H0 (GNP) be accepted and the alternate hypothesis Ha (GNP) be rejected. This leads us to conclude that GNP does not exert any influence over PATTR.
(5) Table – 1 shows the standardized β of TDTE as + 0.060 indicating that TDTE has positive association with PATTR, however with the corresponding significance level of 0.391 the said regression co-efficient is rendered statistically insignificant. The evidences clearly advocate that null hypothesis H0 (TDTE) be accepted and the alternate hypothesis Ha (DTE) be rejected. TDTE does not exert influence over PATTR.
(6) The standardized β of YOA as stated in Table -1, is + 0.995 indicating that YOA has a strong positive relationship with PATTR. The corresponding significance level of 0.000 certainly suggests that the standardized β of YOA is statistically very significant. The evidences clearly propounds that null hypothesis H0 (YOA) be rejected and the alternate hypothesis Ha (YOA) be accepted. This leads us to believe that YOA does exert substantial influence over PATTR in Indian banking sctor. A change in YOA will bring about a change in the profitability by number of times the standardized β value of YOA. Thus YOA emerges as the most important determinant of PATTR.
(7) The results of F test given in Table – 2, clearly shows F = 67.458 at a significance level of 0.000 with df (6, 31). This suggests that all regression co-efficients will be non zero.
(8) The multi co linearity amongst the independent variables has been examined with the help of Matrix of Co-efficients of Correlations provided in Table – 3. The said matrix of reveals that none of the six independent variables has the co-efficient larger than + 0.7 . Consequently, there does not appear to be any cause of concern from viewpoint of multi co linearity amongst the independent variables. This is further substantiated by the VIF (Variance Inflation Factor) statistics stated in Table-1. Each of VIF statistics is less than 10 and in fact closer to 2.0 and each of the VIF centering around the mean thereof.
(9) The test outputs elaborated at points (7) and (8) above render substantial reliability to the results. The emerging Multiple Regression Equation is brought out as under:

PATTI = + 0.027 – 0.051 (CAR) + 0.008 (CTD) - 0.094 (ECTE)
+ 0.038 (GNP) + 0.060 (TDTE) + 0.995 (YOA)

(10) The adjusted R2 i.e. the co-efficient of determination, as mentioned in Table-1, stands at 0.915 which conveys that the equation can explain 91.5 % variations in PATTR. For the remaining variations i.e. unexplained variations, some other variables are responsible.
(11)The descriptive statistics pertinent to the analysis are given in Table -4
The predictive value of the analysis will be greater if the data set of the banking companies to be examined closely resemble the pattern of descriptive statistics placed in the said table.

FINDINGS:

Capital Adequacy Ratio (CAR):
The CAR carries negative relationship with the PATTR. However, it's unacceptable significance level does not permit it to be important. Consequently CAR is not considered as important variable exerting any influence on the profitability of the bank. However it does have importance from view point of statutory compliance.

Cash To Deposits (CTD):
The Cash to deposit ratio displays positive relationship with profit to after tax to total revenue ratio, but the significance level thereof makes it very irrelevant. As a result CTD is not viewed as an important variable influencing the profitability.

Employee Cost to Total Expenses (ECTE):
The, ECTE carries a negative relationship with PATTR with significance level standing at 0.193. This propels us to accept that ECTE ratio has moderately important role in exerting influence on the profitability. Lesser the ECTE better it is for the bank. This professes that the bank management should keep ECTE at lower level.

% Growth in Net Profits (GNP):
The, GNP is found to have positive relationship with PATTR but its unacceptable significance level leaves it to be insignificant Consequently GNP is not viewed as an important variable exerting any influence on the profitability.

Total Debt To Equity (TDTE):
The TDTE displays positive relationship with PATTR but it's unacceptable significance level does not permit it to play any significant role in exerting influence on the profitability

Yield On Advances (YOA):
The YOA has a positive relationship with PATTR. Amongst all the independent variables the power of this regression coefficient is the maximum at 0.995. It's significance level standing at 0.000 is also highly acceptable. Consequently YOA is considered as a very important variable exerting its influence on the profitability. Higher the YOA better it is for the bank. This propels us to believe that Advances as a portfolio – the traditional bastion of bankers – is still the most important generator of profitability for banks. As a result management of banks, would prefer to keep it at the highest possible level.

RECOMMENDATIONS & MANAGERIAL IMPLICATIONS:

Reckoning with the analysis and findings described above YOA with highest power of regression coefficient and highly acceptable level of significance emerges to be the most important determinant of profitability of Indian banking sector. YOA is followed by ECTE which has moderate influence. The remaining variables are not found to be important. This research study clearly points out that the "Advances portfolio" a traditional portfolio of present day bankers is the largest contributor to the profitability of banks. Naturally the practicing managers in the Indian banking sector should give more importance to management of YOA and ECTE to improve profitability of the banks. This has wider ramifications in the sense that management of YOA, and ECTE, will become critical performance criteria for managers. The academicians should devise superior models for Management of YOA, and ECTE.

FUTURE RESEARCH DIRECTIONS:

This research study has investigated only Indian banking companies listed on Bombay Stock Exchange and National Stock Exchange. Replica research studies can be undertaken to assess the influence of variables used in this study for banking industry in other developing countries. A global research study to critically examine profitability determinants of banking sector in developed nations and the ones in developing nations can also be carried out. Further research can also be conducted by considering more variables such as growth rate of economy, inflation and foreign exchange reserve etc.

Table No 1: Regression Co-efficients, Significance Level & VIF- Indian Banks

	Standardised Regression Co-efficients (Beta)		t	Significance Level	Collinearity Statistics VIF
	Direction	Value			
Constant	+	0.027	1.059	0.298	
CAR	-	0.051	-0.730	0.471	2.168
CTD	+	0.008	0.144	0.886	1.294
ECTE	-	0.094	-1.329	0.193	2.198
GNP	+	0.038	0.628	0.535	1.581
TDTE	+	0.060	0.870	0.391	2.081
YOA	+	0.995	14.523	0.000	2.041

Independent variables= CAR, CTD, ECTE, GNP, TDTE, YOA,.
Dependent variable= PAT TR N= 38 Adjusted R square= 0.915

Table 2: ANNOVA - Indian Banks

Model	Sum of Square	df	Mean square	F	Significance
Regression	0.066	6	0.011	67.458	0.000
Residual	0.005	31	0.000		
Total	**0.072**	**37**			

Table No 3: Matrix of Co-efficients of Correlations- Indian Banks

	CAR	CTD	ECTE	GNP	TDTE	YOA
CAR	1.000	-0.052	-0.283	-0.056	-0.565	+0.623
CTD	-0.052	1.000	-0.359	+0.075	-0.097	-0.041
ECTE	-0.283	-0.359	1.000	+0.382	+0.560	+0.260
GNP	-0.056	+0.075	+0.382	1.000	+0.073	+0.296
TDTE	-0.565	-0.097	+0.560	+0.073	1.000	-0.412
YOA	+0.623	-0.041	+0.260	+0.296	-0.412	1.000

Table 4: Descriptive Statistics - Indian Banks

Parameters	Mean	Standard Deviation
CAR	11.928	1.923
CTD	0.077	0.024
ECTE	0.142	0.044
GNP	-0.046	2.130
TDTE	17.271	4.952
YOA	0.016	0.009
PATTR	0.094	0.044

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