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RESEARCH ARTICLE

A comparison on efficiency of Domestic and foreign banks in Pakistan: A DEA Approach

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ABSTRACT

This study utilizes non parametric Data Envelopment Analysis (DEA) to analyze and compare the efficiency of foreign and domestic banks in Pakistan. The analysis is based on a panel data set of 3 domestic banks (MCB, NBP, and Bank Al Habib) and 3 foreign banks (SCB, DIB, Al Baraka Bank) in Pakistan over the period of 2009-2013. Regression and Ratio analysis approach is used to define the inputs and outputs in computerizing the efficiency scores means that which bank is more efficient performance in Pakistan. Unexpectedly, the findings are conflicting with most of the findings of previous studies where the foreign banks were outperforming their domestic peers in term of efficiency in the Pakistan. On the other hand, same in Pakistan the finding of this study shows that foreign banks have a higher efficiency level than domestic banks and that is only one foreign bank SCB this imply that domestic banks are relatively more managerially efficient in controlling their costs. The second stage of the empirical results is based on the regression model and the ratio analysis, which suggests that the efficiency of banks in Pakistan is mainly affect by capital strength, loan quality, expenses, and asset size, ROA, ROE and Liquidity through the EVEIWS.

Key words: *Data Envelopment Analysis (DEA), Regression, Ratio analysis, Local, Foreign, Pakistan, Comparison and Banks.*

INTRODUCTION

The banking sector in Pakistan has extreme changes over a period of 64 years since Country's independence in 1947. Initially it suffered from delicate shortage of resources and due to existing political and socioeconomic conditions. Lack of untrained human resource and professionals resulted into poor quality of products and services. However, State Bank of Pakistan was established as the central bank on July 1, 1948 to control the financial sector. Successive amendments were made to extend the control and functions of SBP through State Bank of Pakistan Act 1956. Jamal Abdul et al (2011).Pakistan as a developing country is in the process of market economy institution, where the State Bank of Pakistan (SBP) has the role of establishing correcting the banking sector of the Pakistan to move the Pakistan in the progressive Way, SBP encouraged the private sector to establish banks and financial institutions in the country ,Sate bank also encourage to open the multinational bank and foreign banks in Pakistan to development investment in Pakistan for the successive way Naveed(2014) ,Akmal and Saleem(2008),Muda ,Amir and Abdelhakim(2013).

The performance of nationalized banks gets worse due to government protection to employees, resulting lower products and poor services. It also discouraged the private investors and foreign financial institutions. The poor performance of nationalized banks caused the development of the privatization of banking sector and also grape to invite the foreign that comes in the Pakistan to start their business in 1990s. Bilal, Quraat-ul- Ain and Naveed (2014), Akmal and Saleem(2008),

Today, the Banking sector of Pakistan is playing central role in the growth of country's economy. In Pakistan have both structure conventional and Islamic banks runs for the prosperity of the Pakistan. These structural factors are essential in reviewing the connection between profitability of banks and fluxes in business cycle. The banking sector plays a essential role as financial mediators to help the flow of funds from savers to borrowers. The economy of Pakistan falls in developing countries so as the banking system of Pakistan demonstrate a crucial role in contributing to national economy and by filling a gap between the savers into dynamic investments. Ong Tze et al OCT (2011). Adiqa Kiani(2005)

A relatively new model was developed and employed to measure the relative efficiency for banks performance, this model called Data Envelopment Analysis (DEA). In this paper we analyze bank efficiency in Pakistan using Data Envelopment Analysis (DEA). Data Envelopment Analysis is a methodology for analyzing the comparative efficiency and managerial performance of constructive having the same various inputs and various outputs. It allows us to compare the relative efficiency of banks like foreign and domestic banks by determining the efficient banks Farhan and Khazir(2011) The most important advantage of DEA over traditional econometric that it is a non-parametric, deterministic method and therefore does not need a assumptions about the analytical form of the production function Igor and Boris (Feb 2002).

The DEA approach would also helping to an individual bank against the best performer of banks as well as evaluates the impact of various policy measures on the efficiency and performance of these financial institutions. We measured the relative efficiency of banks in the Pakistan market according to size, tenure structure, date of establishment and quality of assets also their cheapest product relate for the efficiency regarding fast transaction. . We found that foreign and domestic banks are the most efficient on average, We also found that there has been strong equalization in terms of average efficiency in the Pakistan banking market .Regarding particular inputs, the most significant cause of inefficiency among domestic banks vs. foreign like number of employees and fixed assets Hashim, Sajid and Adeel (2012).

Problem Statement

According the researcher knowledge, there are no previous studies handled the subject of check out efficiency of Domestic and foreign banks in Pakistan through a DEA Approach. The problem is that occurring to check financial position wise, customer satisfaction wise, there better performance interior management wise because It become increasingly difficult to evaluate economic entities based on reported financial statements ,which bank means foreign and domestic bank in Pakistan is good performer and how the DEA approach work to find out better result .The problem under the investigation through comparison of efficiency of the foreign and domestic bank by using of DEA Approaches by deciding how best to go about measuring it. The output of the both foreign and domestic like their sales ,sales growth accounts market share their facilities of the customer and also the comparison of the staff ,office spaces materials costs etc can be measured, it may also be exhibit considerable variations that depends on the performance indictor chosen.

OBJECTIVE

1. To identify whether domestic or foreign banks are more efficient for customer satisfaction.
2. To analysis and compare evaluate the performance of domestic and foreign banks in Pakistan during the period of 2010 to 2014.
3. To determine the stability of Bank shares in the market.

LITERATURE REVIEW

Yesim Helhel (2015) in his paper “Comparative Analysis of Financial Performance of Foreign and Domestic Banks in Georgia” location is Georgia in this articles there variables are used Return on asset (ROA), Return on equity (ROE), Net interest margin (NIM) and Profit expense margin (PEM). There methodology the study includes 6 domestic and 9 foreign commercial banks. The selection of banks was based on the data mainly obtained from the audited financial statements from 2009 to 2013 of commercial banks published by National Bank of Georgia and also survey websites (www.nbg.gov.ge), by applying the T- test and ANOVA .Conclusion was approved out a comparison of financial performance of domestic and foreign banks which operated in Georgia banking system .Differences of domestic and foreign banks in conditions of profitability were measured and the result is both banks is profitability.

Ismail et al (2015) they examined the “Profitability and Efficiency of Foreign and Domestic Banks: A Case Study of Pakistan” and there location focus basically in Pakistan, and in this paper researchers use the variables are the Profitability, Efficiency, Spread Ratio, Net interest margin, Non-interest income to total assets, Net Interest income to total assets, Interest Expense to Interest Income, Return on Assets (ROA) and Return on equity (ROE). And their method of collection data is like population of this included all the foreign and domestic banks operating in Pakistan therefore 14 foreign commercial banks and 27 domestic banks. Data was collected from Financial Statement issued by State Bank of Pakistan for the year 2006-2010 and by applying the complete testing of Descriptive statistics and also applying the T- test on the variables to get better results after applying test they concluded in this paper the foreign bank have better efficient and profitable then the local banks .

Ali , 2016 working on "Bank Portability and its Determinants in Pakistan: A Panel Data Analysis after Financial Crisis " and there geographical location is Pakistan and basically there variables used in this articles is ROA and ROE and In this study, panel data of total 26 banks, which included 17 conventional, 5 Islamic and 4 public Banks, were used. The selected sample consisted of five years' data from 2009 to 2013, which mainly focused the recent financial crisis in Pakistan and also apply correlation and ratio in this paper and their conclusion is The empirical results obtained from this study have reasonable policy relevance. It could be argued that more new products and services can help banks to be more profitable which the major advantage for the banks and assets size and On the other side, operating efficiency, gearing ratio, asset management, liquidity, deposits and real GDP have a positive impact, while financial risk, bank size, asset quality and inflation exert negative impact on the equity side.

Saeed et.al (2013) in their paper on "Examining Efficiency of Islamic and Conventional Banks in Pakistan: Using Data Envelopment Analysis (DEA Approach)" and there location is the Pakistan. In this articles variables are the use there ratio means like Profitability Ratios and the Liquidity Ratios and getting the data collecting by the financial reports from the balance sheet and the income statement from 19 different banks from the website of the SBP and applying the test through CRS Model on all variables if the banks and conclusion is findings from the ratio and there results is that the conventional banks have much efficient the Islamic banks.

Tze San, Yee Theng and Boon Heng Oct 2011 in his working "A Comparison on Efficiency of Domestic and Foreign Banks in Malaysia: A DEA Approach" and there geographical location Malaysia, in this article there variable are used both dependent and independent, the dependent variables are the Bank efficiency and the independent variable are the Capital strength, Loan quality, Expenses, Profitability, Asset size and Liquidity. In this article Malaysian banks use both locally and foreign banks use like 9 domestic banks and 12 foreign banks are included in this study and data collect from 2002 to 2009 from their operations of annual reports of the banks. In this article apply test complete Descriptive Statistics and Regression Model used in this research paper. Conclusion researcher found that the domestic banks exhibit higher level of efficiency than foreign banks ,the reflect that domestic banks are relatively more organizationally efficient in controlling their costs and the foreign banks will gain higher costs compared to domestic banks when providing the same financial services to customers.

SOURCE OF DATA

As the research work is based on the previous research studies used the secondary source has been chosen for to gather the data. In this study secondary source help out determine the efficiencies of the domestic and foreign banks in the Pakistan and this research type is descriptive. For the checking the impact of the data are collected from the annual reports of the domestic and foreign banks ,officially state bank of Pakistan KSC 100 index websites of the Pakistan from 2009 to 2013. Also include the case studies, and previous research work for their collection of data.

HYPOTHESIS

H0: There is a significant relationship between Strength of Capital with bank efficiency (ROE)
H1: There is not significant relationship between Strength of Capital with bank efficiency (ROE)
H0: There is a significant relationship between expenses with bank efficiency (ROE).
H1: There is not significant relationship between expenses with bank efficiency (ROE).
H0: There is a significant relationship between profitability with bank efficiency (ROE).
H1: There is not significant relationship between profitability with bank efficiency (ROE).

H0: There is a significant relationship between asset sizes with bank efficiency (ROE).
H1: There is not significant relationship between asset sizes with bank efficiency (ROE).
H0: There is a significant relationship between loan qualities with bank efficiency (ROE).
H1: There is not significant relationship between loan qualities with bank efficiency (ROE).
H0: There is a significant relationship between liquidity with bank efficiency (ROE).
H1: There is not significant relationship between liquidity with bank efficiency (ROE).

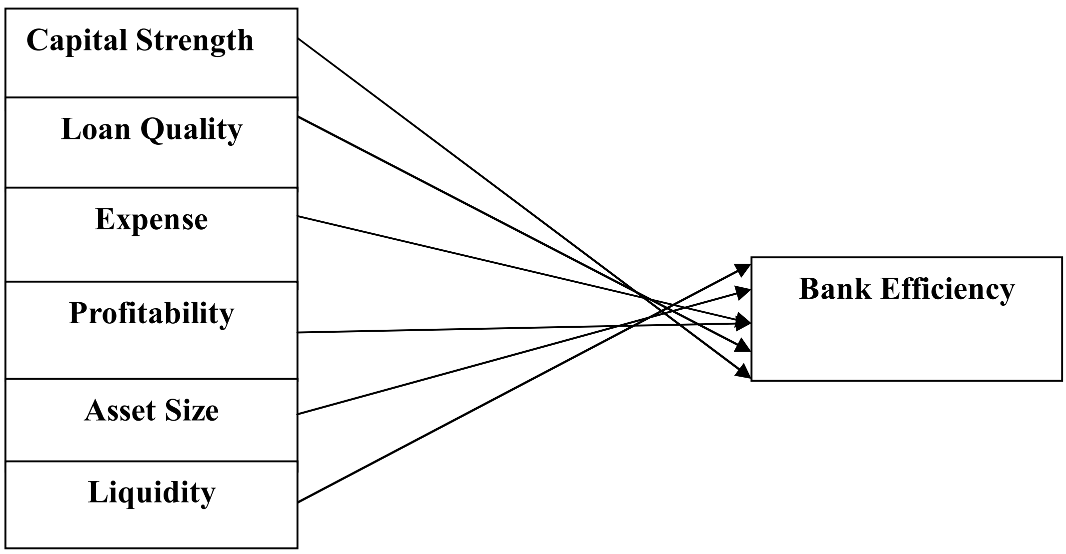
MODEL

Y= β0 + β1EQUITY/TA **+ β2**LLP/TL **+ β3**NIE/TA **+ β4**ROA **+ β5**LOGTA **+ β6**LOANS/TA+ e t

Theoretical Frame Work:

The banks efficiency used to be calculated through the traditional approach, where several accounting measures utilized financial statement for the coverage the different ratio and there administrative expenses to operating income, like the financial ratio can measure the present scenario of the performance and market position for different perspective (Qayyam and Khan,2007).The first time new technique which is the best and calculate the efficiency for sample size small and large in banks and other operating sectors that is DEA approach. In additional banking use the DEA approach for their own find out the efficiency where the bank stand as compare to the other and find out the solution how improve and converting the weakness into the strength to move to the progressive way in the future. In developed country the domestic banks is the much efficient as compare the foreign bank and there vice versa. In this way our research gains the confident level the ultimately leads us to the higher degree of precision by using the DEA ere approach for finding the efficiency and these efficiency based on our services of our customers, there expenses also their managerial management of the bank.

Conceptual Frame Work:



The all independent variables are dependent of the Bank efficiency .if one of the independent variable increase the bank efficiency will be increase and bank goes to the progressive way, if one of the independent variable decrease the bank efficiency low and bank rating goes to falls and bank have no profit.

RESULTS AND DISCUSSION

This study takes ROE (Return of Equity) for the Bank efficiency, with the aim to test the validity of the panel data of the significant variables. In this research study we used the EVEIWSS software analysis data to get the significant results. We have assuming to run the regression of dependent variable ROE on Independent variable Capital Strength, Loan Quality, Expenses, Profitability Asset

Size and Liquidity. The required analysis indicates researcher decision about the variables and dependent, Independent is based on the valid and reliable available of data.

Dependent Variable:
Bank's Efficiency (ROE)

Independent Variables:
1. EQUITY/ TA (Shareholders' Equity/ Total Assets) =Capital Strength
2. LLP/ TL (Loan Loss Provision/ Total Loans) = Loan Quality
3. NIE/ TA (Non-interest Expenses/ Total Assets) = Expenses
4. ROA (Return of Assets) = Profitability
5. LOGTA (Natural logarithm of Total Assets) = Asset Size
6. LOANS/ TA (Total Loans/ Total Assets) = Liquidity

X2= (Expense/E)	2.914371
X3= (Profitability/P)	23.34226
X4= (Liquidity/L)	0.495288
X5= (Loan Quality/LQ)	-14.15326
X1= (Capital strength/CAP)	0.44457
X6= (Asset size/As)	-0.006541

Dependent Variable: ROE
Method: Panel Least Squares
Date: 04/30/16 Time: 16:52
Sample: 2009 2013
Periods included: 5
Cross-sections included: 6
Total panel (balanced) observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.537981	0.921936	-0.583534	0.5652
E	2.914371	2.519347	1.156796	0.2592
P	23.34226	5.027086	4.643298	0.0001
L	0.495288	0.362520	1.366236	0.1851
LQ	-14.15326	7.390295	-1.915114	0.0680
CAP	0.444570	0.182872	2.431049	0.0233
AS	-0.006541	0.031753	-0.205983	0.8386

R-squared	0.563244	Mean dependent var	0.054381
Adjusted R-squared	0.449307	S.D. dependent var	0.349271
S.E. of regression	0.259189	Akaike info criterion	0.338445
Sum squared resid	1.545115	Schwarz criterion	0.665391
Log likelihood	1.923326	Hannan-Quinn criter.	0.443038
F-statistic	4.943494	Durbin-Watson stat	1.871831
Prob (F-statistic)	0.002207		

Over all probability of the result is significant and positive relation 0.002207 less than the 0.05 but some variables have the insignificant which are the greater then 0.05.

In the above table the term significance shows how much dependent and independent are significant results. The above table shows that model is significant or not significance value is 0.5652, 0.2592, 0.0001, 0.1851, 0.0680, 0.0233, 0.8386 which is lower 0.05 and this shows that model is significant.
The above model is examined and the value of beta is -0.537981, 2.914371, 23.34226, 0.495288, -14.15326, 0.444570 and -0.006541 significance of this model shows the positive relationship of variables. There comes the statistical significant of the relationship between the independent and dependent variables. It is observed that in our analysis in the above table the relationship is statistically significant at the 0.0001 level.
Loan quality and Asset size have negative impact on the return on equity they shows that they have negative relation with equity .In previous research also show that these variable have negative relation on equity side there have one research discussed as a reference to support the negative impact on equity like operating efficiency, gearing ratio, asset management, liquidity, deposits and real GDP have a positive impact, while financial risk, bank size, asset quality and inflation exert negative impact on the equity side.Ali.M.,2016 on Bank Profitability and its Determinants in Pakistan: A Panel Data Analysis after Financial Crisis, Vol. 1(1): 3-16.

Interpretation of the Regression Results:
Its show when the independent variable is zero the dependent variable is equal to β .Same like the B (slope/Coefficient of X) its represent that with unit change in X (independent variables) and Y (dependent variable) will be change by B.

R-square:
Measure the proportion of the variation in the dependent variable (ROE) that was the explained by the variations in the independent variables in our research work. In our research R-squared is 0.563244, and coefficient determination is says that it ranges from to 0 to 1.It means that our result 56.3244% variations.
The 56.3244 %represents that the variation in dependent variable ROE is explained there independent variables Capital Strength, Loan Quality, Expenses, Profitability Asset Size and Liquidity.

Adjusted R-square:
Measure the proportion of the variation in the dependent variable (ROE) that was the explained by the variations in the independent variables. In our research study the adjusted R-square is 0.449307 and there critical value is must the below 1.so our valued is less than 1.
The 44.9307%variations represents that the variation in dependent variables ROE is explained there independent variables Capital Strength, Loan Quality, Expenses, Profitability Asset Size and Liquidity.

Relation:
1. Positive relation means direct relationship with the variable.
2. Negation relation means that indirect or opposite relation with variables.

Standard Error of the Estimation
Standard error of the estimate measures the dispersion of the dependent variables estimate around its mean our results is less than 10, if the stand error is more than from 10 its means value is high in range like our research study our projection standard error is 0.259189 less the 10.

Ratio Analysis:
The data analysis of financial statement has been carried out by using ratio analysis. The ratio analysis is also used to better understand banking performance and evaluation of the foreign and domestic banks of the Pakistan. The following ratios are calculated and possible interpretation for the change in the ratio will be explained.

Liquidity Ratios:
Liquidity ratio measures the ability of the firm to meet its short-term obligations. These ratios are important the cause failure to pay such obligations can lead to bankruptcy. Bankers use liquidity

ratios to see whether to extend short -term credit to a firm. Tze San, Yee Theng and Boon Heng Oct 2011, Faisal , Tariq and Ali Jan (2015).
Liquidity=Total loan/total asset

Current Ratio:
The current ratio compares all the current assets (cash and other assets that can be easily converted to cash) to all the current liabilities (liabilities that must be paid with cash).
Faisal , Tariq and Ali Jan (2015).
Current Ratio = Current Assets/Current liabilities

Profitability Ratios:
Profitability ratio measures how the firm's returns compare to its sales. Profitability relates to a bank's ability to earn a satisfactory income. Basically we have profitability can measure by the return on assets (ROA) ratio indicates which means ROA income generated by each or assets . Tze San, Yee Theng and Boon Heng Oct 2011, Faisal , Tariq and Ali Jan (2015).
ROA= Net income/ total asset

Return on Equity (ROE):
The return on Equity ratio measures the income earned on the shareholders investment in the business. It is calculated by dividing net income by stockholders equity. Tze San, Yee Theng and Boon Heng Oct 2011, Faisal , Tariq and Ali Jan (2015).
Return on Equity = Income/ Shareholder equity

Debt Ratio:
The financial analysis use debt ratios to assess the relative size of a firm's debt load and evaluate the safety of long-term creditors and the firm's ability payoff the debts. Faisal , Tariq and Ali Jan (2015.
Debt ratio=Total Debt/Total Asset

Capital strength:
Capital is the ratio of book value of equity to total assets . Tze San, Yee Theng and Boon Heng Oct 2011
Capital strength= Shareholder equity/ total asset.

Loan Quality:
It is measured by the loss loan provision which is divided by total assets. Tze San, Yee Theng and Boon Heng Oct 2011.
LQ=Loss loan provision / total asset

Expenses:
This ratio of non interest expenses to average assets is the ratio that more frequently used on studies of bank efficiency in measuring the management. Tze San, Yee Theng and Boon Heng Oct 2011.
Expenses= Non-interest expense/total asset

CONCLUSION

Banking Industry plays a vital role in the economic development of Pakistan. This paper aims to identify the differences in the determinants of comparison of efficiency between domestic and foreign banks in Pakistan, using a DEA Approach and also with panel data for the period from the 2009 to 2013 for banks in Pakistan. And in the domestic there is MCB, NBP and Bank Al Habib and in foreign banks SCB, DIB and Al Baraka bank in our sample. In order to find out the differences in the profitability and efficiencies determinants, the sample of banks is divided into two sub-samples (domestic and foreign), these results are according to the present situation of the market and matched with the situation in banking industry.
Based on the empirical results, the banks' specific factors and financial ratios determinants are able to explain significant parts of domestic and foreign bank efficiency in Pakistan. The study concludes overall efficient and profitable bank that is the foreign bank which is only one bank is Standard

chartered bank whose all indicators ratios fulfill the criteria of the financial ratios in our the research .

In addition, the results further show clearly that the financial analysis of five years had shown remarkable all sample banks is fulfill their different financial criteria like MCB have the greater financial position in return on equity ROE and return on asset ROA high return on equity reflects that banks acceptance of strong investment opportunities & effective expense management and Bank Al Habib is better in loan quality and NBP is better in capital strength but the Standard Chartered bank is greater position in foreign banks and also be fulfill criteria of financial ratio not in one ratio that's why if evaluate the performance of this bank is better in all indicators of the financial ratios and In our research we observe values of return on equity ratio are very unpredictable for both foreign and domestic banks under the period of study. ROE shows an increase from year 2009 to 2010 for both, a modest decline for domestic banks and a small increase for foreign banks from year 2011 to 2013

This research study is an important contribution in order to meet up the gap of financial performance literature. The finding of the present study can be used for further studies about financial performance. And there is no significant difference between domestic and foreign banks; foreign banks have upward trend while domestic banks in some cases and domestic banks have upward trend ac compared to the foreign banks.

RECOMMENDATION

After a detailed analysis of financial statements this study offer new alarming to policy makers, practitioners, and bank managers on the implication of a increasing number of driving factors of the capability of banks that may possibly assist them to extend the effectiveness of the banking system and advance the superiority of services accessible and adopt through this way the recommendations which is to be given for the improvement of both the banks (foreign and Domestic).

The weakness of both banks must be changed into opportunity and make a strengths in organize to compete into the global competitive markets. The Domestic bank of Pakistan should adopt to utilize the technology and should computerization of different branches as well in short should invest more in information technology. There should be proper training for newly selected employees in order to make them more productive and to avoid over lapping of duties and the performance of domestic banks could be extended by considering the risk exposure factor.

At the end Both of the domestic and foreign banks should take advantage from existing the new technology in the banking sector so as to earn profit from those niche segmentation which is ignored for many years and to provide best available services according to the needs and demands of the people and as a result of technical change technological progress for the purpose of the employees and also for the customers.

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