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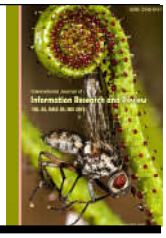

Research Article

DETERMINANTS OF PROFITABILITY IN BANKING SECTOR

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ABSTRACT

The purpose of this research is to examine the relationship between bank specific and macro-economic characteristics over bank profitability by using data of forty-four Pakistani banks over the period 2005-2009. This paper uses the pooled series method to investigate the impact of assets, loans, equity, deposits, economic growth, Inflation and market capitalization on major profitability indicators i.e. Spread ratio. The empirical results have found strong evidence that both internal and external factors have a strong Inflation on the profitability. The results of the study are of value to both academics and policy makers.

INTRODUCTION

Banking sectors are considered as the life blood of the modern trade and commerce because banks are the major source of providing funds to them. As globalization is increasing so it has made Efficiency as the most important factor for the both financial and nonfinancial institutions and banks are also part of the financial institutions. Banks majorly depends on the competitive marketing strategy that determines their Growth and success. Commercial banks have dominated the financial system of Pakistan. In 1970s, the nationalization of domestic banks and growth of public sector development finance institutions has changes the financial history of country. By the end of 1980s, it became quite clear that through nationalization, the national socio-economic objectives could not be achieved. The public sector in banking and non-bank financial institutions was responsible for financial inefficiency, declining quality of assets and growing threats of downfall of financial institutions. By the end of 1990, public sector's shared almost 90 per cent of the total assets in banking industry, while the rest belonged to foreign banks because domestic private banks did not exist at that time. Besides this high shares existed for deposits, advances and investments.

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After 1997, the structure of banking system in Pakistan made significant changes because the banking supervision process was aligned with international best practices. Privatization of public sector banks and the on-going process of merger/consolidation brought visible changes in the ownership, structure, and concentration in the banking sector (State Bank of Pakistan, 2009)

Research objectives

The objective of this study is to find out the relationship between internal and external factors on Bank's profitability in 44 banks of Pakistan. Based on the objective, the present study seeks to test the following hypothesis:

H_{0e}: There is not a significant relationship between internal/external factors and bank's profitability
H_{1e}: There is a significant relationship between internal/external factors and bank's profitability

Methodological Framework

The model shows the determinants of banks' profitability which are usually divided into internal and external factors. Internal factors focuses on bank specific features i.e. SIZE, CAPITAL, LOAN and DEPOSITS, while external factors consider Macro-economic factors i.e. GDP, Inflation and MC.

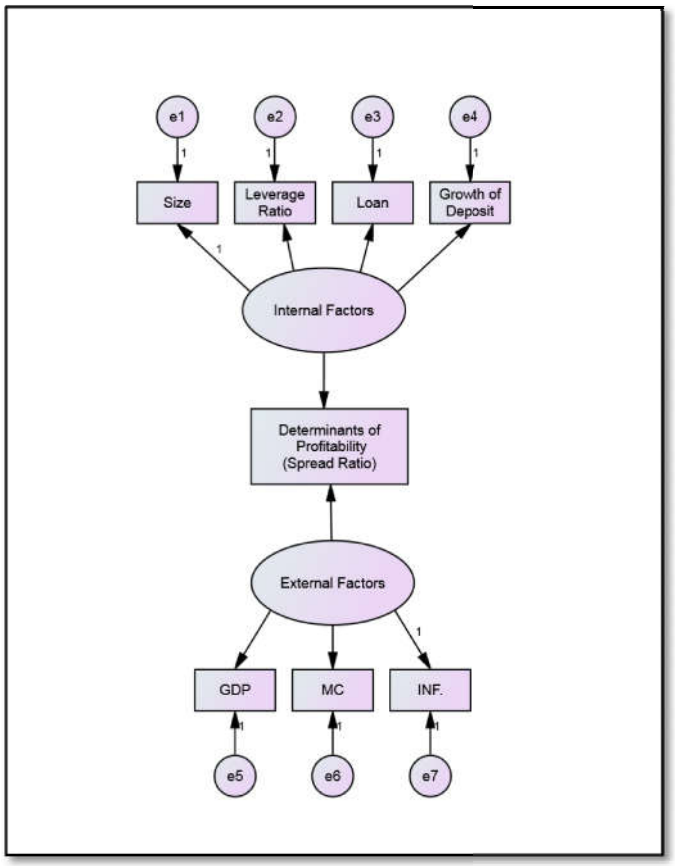

Figure. 1

Development of Hypothesis

We are going to check the effect of internal and external environment at the bank's profitability**.** Based on the objective, the present study seeks to test the following hypothesis

H_0: There is not a significant relationship between internal factors andbank's profitability.
H_{0a}: There is not a significant relationship between SIZE and bank's profitability.
H_{0b}: There is not a significant relationship between CAPITAL and bank's profitability
H_{0c}: There is not a significant relationship between LOAN and bank's profitability.
H_{0d}: There is not a significant relationship between DEPOSITS and bank's profitability.
H_{0e}: There is not a significantrelationship between GDP and bank's profitability.
H_{0f}: There is not a significant relationship between INFLATION and bank's profitability
H_{0g}: There is not a significant relationship between MC and bank's profitability.
H_{1a}: There is a significant relationship between SIZE and bank's profitability.
H_{1b}: There is a significant relationship between CAPITAL and bank's profitability
H_{1c}: There is a significant relationship between LOAN and bank's profitability.
H_{1d}: There is a significant relationship between DEPOSITS and bank's profitability.
H_{1e}: There is a significantrelationship between GDP and bank's profitability.
H_{1f}: There is a significant relationship between INFLATION and bank's profitability
H_{1g}: There is a significant relationship between MC and bank's profitability.

Literature Review

There is a large literature dealing with factors that influence the profitability of banks. The factors that are affecting the bank's profitability are assorted into internal and external factors.These studies specify Spread ratio as the dependent variables and considering the internal and external factors as independent variables. Bhatia, Mahajan, and Chander (2012) worked on determinants of Profitability of Private sector banks in India and a sample of 23 private sector banks in India has been taken. They conclude that Spread ratio, Credit deposit ratio, Profit per employee, Business per employee, Capital adequacy ratio and Noninterest income that show a positive association with profitability measured in terms of ROA. However, one variable, that is, Investment deposit ratio has a negative relationship with profitability against the expected relationship. Gul, Irshad, and Zaman (2011) studied that the Factors Affecting Bank Profitability in Pakistan year (2005-2009) Individual bank characteristics(internal and external factors) are considered as determinants of bank profitability in Pakistan. TwoHypotheses was developed for analysing bank's profitability over specific determinants i.e., Hypothesis 1 states that microeconomic factors have significant impact on profitability. Whereas, hypothesis 2 states that external factors of the banks have significant impact on the profitability. The result shows that both hypotheses have accepted and have a significant impact on profitability of the Bank's in Pakistan.

Staikouras and Wood (2011) worked on the Determinants of European Bank Profitability and took the sample 685 European banks (138 large banks and 547 small banks)The estimation results suggest that the profitability of European banks is affected not only by factors related to their management decisions but also to changes in the external macroeconomic environment. Equity to assets ratio's level of significance suggests that banks with greater levels of equity are relatively more profitable. The loans to assets ratio appears to be inversely related to banks return on assets. This implies that banks which have large non-loan earning assets are more profitable than those which depend more heavily on assets. Rachdi (2013) studied the determinants of Profitability of Banks During and before the International Financial Crisis study from Tunisia. They investigate the impact of bank-specific, industry-specific and macroeconomic determinants on the profitability of 10 commercial Tunisian banks over the period 2000-2010. To check the impacts of the recent financial crisis, they subdivide the period into two sub periods: before the crisis (2000-2006) and during the crisis (2007-2010). Mainly, they find that, before the US subprime crisis, capital adequacy, liquidity, bank size and yearly real GDP growth affect positively the performance of the banking sector. However, cost-income ratio, yearly growth of deposits and Inflation rate are negatively correlated across all measures of bank profitability. In crisis period, bank profitability is mainly explained by operational efficiency, yearly growth of deposits, GDP growth and Inflation. Their findings support the argument for continuing the banking sector reform programme in Tunisia.

Smaoui and Salah (2011) studied theProfitability of Islamic Banks in the GCC Region and collect the data of 44 Islamic Banks over the period 1995-2009. The similarity of results of the determinants of profitability between conventional and Islamic Banks strongly indicates that the techniques and the tools developed in the literature on conventional banking are potentially applicable for an Islamic Banking system. NOUAILI, Abaoub, and Anis (2015) worked on the determinants of Banking Performance in Front of Financial Changes, evidence from Trade Banks in Tunisia. The sample consists of 17 credit institutions over a period of 16 years. They conclude that the performance indicators' progress during the period of study lets notice that the financial reforms didn't succeed to improve Tunisian banks performance.

Hoffmann (2011) worked on Determinants of the Profitability of the US Banking Industry. The hypothesis was based on the relationship between profitability and capital. That is, an unexpected increase in capital tends to lead to a decrease in the bank's profitability. Haron (1996)was the first to examine the effects of competition and external factors on the profitability of Islamic Banks. He shows that, in competitive market, Islamic Banks earned more than those which operate in a monopolistic market. Furthermore, interest rates, Inflation and size have significant positive impact on the profits of both conventional and Islamic Banks. Onuonga (2014)studied the effects of internal determinants of profitability on Kenya`s top six commercial banks over the period 2008 to 2013. The findings revealed that bank size, capital strength, bank operation expenses, ownership, and the ratio of loans to assets are the major significant determinants of the profitability of the top six Kenya commercial banks.The results also confirmed that improvement in capital strength of commercial banks leads to higher profits. Molyneux and Thornton (1992) examine the profitability of banking zone on different countries. They take about 18 European countries' data during the 1986-1989 periods.

They found a significant positive association with the return on equity and the level of interest rates bank concentration and government ownership during their study.The above discussion confirms a strong linkage between internal and external factors on bank's profitability. This article addresses the gap in the literature by using challenging econometric techniques to testify the bank's profitability in terms of the individual country assessment case like Pakistan. In this study, country related specific issues are absorbed and data are refined accordingly. According to the nature and purpose of each study mentioned in literature review, a number of explanatory variables have been proposed for internal and external determinants of bank's profitability. We have taken bank loans to total assets (LOAN); equity capital to total assets (CAPITAL); Natural log of total assets (SIZE) and total deposits to total assets (DEPOSITS) and Spread Ratio.

Data Source

The panel data set covers a 5-year period from 2005 to 2009, with a sample of 44 banks of Pakistan (see appendix). The data were taken from the central bank of the country i.e., State bank of Pakistan, various reports. Economic Growth (GDP), Consumer Price Index (INFLATION) and Market Capitalization (MC) data were obtained from the World Bank (WDI, 2009). All financial data is nominated in terms of Pakistani rupees (millions). The basic estimation strategy is to pool the observations across banks and apply the regression analysis on the pooled sample. That is, a pooled OLS (POLS) equation will be estimated in the form of:

$$Yit= \beta o+\beta\ 1\ X1it+ \beta 2X2it + \beta 3\ X\ 3it+ \beta 4X\ 4it + \beta 5X\ 5it +\beta 6X6it + \beta 7X\ 7it + u$$

Where;

Y = Represents Spread ratio
$X1$ = Represents natural logarithm of Total Asset (SIZE)
$X\ 2$ = Represents ratio of Equity Capital to Total Asset (CAPITAL)
$X\ 3$ = Represents ratio of Total Loans to Total Asset (LOAN)
$X\ 4$ = Represent ratio of Total Deposits to Total Assets (DEPOSITS)
$X\ 5$ = Represents Gross Domestic Product (GDP)
$X\ 6$ = Represents Consumer Price Index (INFLATION)
$X\ 7$= Represents Market Capitalization (MC)
i= 44 banks
t=2005-2009
μ = error term

This paper does not include all dimensions of the internal & external factors on the profitability but limited to the following variables:

Independent variables

Leverage Ratio

A leverage ratio is any one of several financial measurements that look at how much capital comes in the form of debt (loans), or assesses the ability of a company to meet financial obligations.

$$\text{Total Debt} + \text{Total Liabilities}/\text{Total Income}$$

Size

Logarithm of total assets (log C).In most of the finance literature, the total assets of the banks are used as a proxy for bank size.

Growth of Deposit

The growth of deposit is equals to

$$\text{Current Year Deposit}\quad \text{Previous Year Deposit}/\text{Previous Year Deposit}$$

Loan

$$\text{Gross Advance}/\text{Deposit}$$

GDP

GDP is the market value of all goods and services a country can produce. Pakistan has less GDP rate than south region countries. GDP captures upswings and downswings manifesting in the business cycles.

Inflation

Inflation affects companies pricing behaviour. Banks limit the Inflation and avoid deflation, in order to keep the economy

running smoothly. If companies expect general Inflation to be higher in the future, they may believe that they can increase their prices without suffering a drop in demand for their output.

Market Capitalization (MC)

In case of developed capital markets, banks derive more Inflation. About customers so that Inflation dissymmetry problem is handled to thereby enhance banks' profits.

Dependent Variables

Spread Ratio

In banking, the net interest rate spread is the difference between interest earned on loans, securities, and other interest-earning assets and the interest paid on deposits and other interest-bearing liabilities.

$$\frac{\text{Interest Income}}{\text{Interest earned}} \text{X100}$$

Calculated Analysis

Further are the performed analysis of our study, which includes data of 44 banks from 2005 to 2009 of Pakistan.

GDP and Spread Ratio is negative with -0.1662 and the significance level is 1%. The mean value of VIF (variance Inflation factor) is 2.6 which is falling under 5%, this shows that we can include all the predictor and outcome variables for the further data analysis. Above table shows that the Adjusted R^2 values is 0.4883 or 49%. And R^2 value is 0.5046, which indicates that all the Independent variables (Size, Loan, Leverage Ratio, Growth of Deposit, GDP, Inflation) are occurring 50% change in D.V (Spread Ratio). The coefficient values indicates that if we change 1 unit in independent variable Size, 5.847336% change will be there in dependent variable (Spread Ratio). Independent variables size, LR (Leverage Ratio) and GDP are significant with values falling in 1% significance level respectively.

REGRESSION PREDICTED: LSDV (Least Squares Dummy Variable Model)

The model determine the dummy variables to eliminate the effect of different entities in data set. We have created dummy variables to control the effects of individual entities. The prob. value, 0.00 shows significant impact on outcome variable. In the analysis there are three predictor variables(Size, LR (Leverage Ratio) internal factor and GDP external factor) which have significant impact on bank's profitability.

Table 1. Descriptive Statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
Spread Ratio	220	30.38745	31.05269	-134.56	100
Size	220	6.442727	2.881161	0	9.1
Loan	220	1.677682	8.011485	0	113.84
LR	220	0.0589545	0.5542919	-4.79	0.97
GOD	220	0.6905909	7.269165	-0.98	107.69
GDP	220	13.562	1.245595	12.38	15.69
Inflation	220	11.704	4.820511	7.6	20.29
MC	220	30.966	12.46871	13.81	46.11

Table. 2-Correlation Analysis

	Spread Ratio	Size	Loan	LR	GOD	GDP	Inflation	MC
Spread Ratio	1							
Size	0.4814	1						
	0.00***							
Loan	0.0972	0.0826	1					
	0.15**	0.2221						
LR	0.5316	0.0595	0.0648	1				
	0.00***	0.3798	0.3389					
GOD	0.0174	0.0342	-0.0145	0.0461	1			
	0.7970	0.6137	0.8301	0.4966				
GDP	-0.1662	-0.5545	-0.0912	-0.0371	-0.0684	1		
	0.01**	0.00***	0.17**	0.5840	0.3128			
Inflation	0.0974	0.2507	0.1258	0.0419	0.0179	-0.6271	1	
	0.15**	0.00***	0.0626	0.5365	0.7922	0.00***		
MC	-0.1075	-0.3285	-0.1072	-0.0315	-0.0491	0.6797	-0.8976	1
	0.11**	0.00****	0.11**	0.6418	0.4684	0.00***	0.00***	

Above mentioned table shows the descriptive statistics results for all the variables. Mean is the centred significance of entire data or set. The mean of all dependent and independent variables are in the range of $0.05 \leq \text{Mean} \leq 30.96$ and are positive. Spread Ratio's Standard Deviation is 31.05 which indicates that the observations in data set are more close to the Mean. The minimum and maximum Spread Ratios are 134.55 and 100 respectively. Total observations in our study data set are 220. Above table defines that the correlation between LR (Leverage Ratio) and Spread Ratio is positive with 0.5316 and the significance level is 1%. Same as, the correlation between

Table 3. Variance Inflation Factor

Variables	VIF	1/VIF
MC	5.88	0.170059
Inflation	5.33	0.187465
GDP	2.45	0.408101
Size	1.49	0.669046
Loan	1.02	0.977123
GOD	1.01	0.988776
LR	1.01	0.98946
Mean VIF	2.6	

REGRESSION PREDICTED: Fixed Effect Model

The fixed-effects model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics.

these variables are absorbed by the intercept. Random effects assume that the entity's error term is not correlated with the predictors which allows for time-invariant variables to play a role as explanatory variables. In random-effects we need to specify those individual characteristics that may or may not Inflation the independent variables.

Table 4. Regression Analysis

Number of obs = 220
F(7, 212) = 30.85
Prob > F = 0
R-squared = 0.5046
Adj R-squared = 0.4883
Root MSE = 22.214

Spread Ratio	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
Size	5.847336	0.636952	9.18	0.000***	7.102906	4.591765
Loan	0.114275	0.189546	0.6	0.547	-0.25936	0.487911
LR	28.13072	2.722477	10.33	0.000***	22.76412	33.49731
GOD	-0.04488	0.207667	-0.22	0.829	-0.45424	0.364476
GDP	4.46387	1.886431	2.37	0.01***	0.745306	8.182435
Inflation	0.658633	0.719198	0.92	0.361	-0.75906	2.076329
MC	0.147474	0.291931	0.51	0.614	-0.42799	0.722933
_cons	-81.9188	31.70847	-2.58	0.01***	-144.423	-19.4145

Table 4.1-LSDV (Least Squares Dummy Variable Model)

Number of obs = 220
F(7, 212) = 12.83
Prob > F = 0
R-squared = 0.7915
Adj R-squared = 0.7299
Root MSE = 16.14

Spread Ratio	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
Size	6.105834	0.653564	9.34	0.00***	4.815634	7.396035
Loan	0.124881	0.164962	0.76	0.45	-0.20077	0.450533
LR	30.52506	4.00356	7.62	0.00***	22.62163	38.42849
GOD	0.013428	0.173333	0.08	0.938	-0.32875	0.355604
GDP	4.891701	1.518989	3.22	0.00***	1.893065	7.890338
Inflation	0.69332	0.530229	1.31	0.19**	-0.35341	1.740045
MC	0.155837	0.213043	0.73	0.465	-0.26473	0.576405

Table. 4.2. Fixed Effects

Number of observations= 220
Number of groups= 44
Observations per group: min = 5
Avg = 5
Max = 5
F(7,169) = 28.3
Prob > F = 0

Spread Ratio	Coef.	STd. Err.	T	P>|t|	[95% Conf. Interval]	
Size	6.105834	0.653564	9.34	0	4.81563	7.396035
Loan	0.1248805	0.164962	0.76	0.45	-0.2008	0.4505326
LR	30.52506	4.00356	7.62	0	22.6216	38.42849
GOD	0.0134281	0.173333	0.08	0.938	-0.3287	0.3556043
GDP	4.891701	0.518989	3.22	0.002	1.89307	7.890338
Inflation	0.6933198	0.530229	1.31	0.193	-0.3534	1.740045
MC	0.1558369	0.213043	0.73	0.465	-0.2647	0.5764054
_cons	-90.25066	26.62262	-3.39	0.001	-142.81	-37.69494
sigma_u	16.861816					
sigma_e	16.139723					
Rho	0.5218701		(fraction of variance due to u_i)			

REGRESSION PREDICTED: Random Effect Model

The basic principle behind random effects model is that, the variation across entities is assumed to be random and uncorrelated with the independent variables included in the data set. The advantage of random effects is that you can include time invariant variables (i.e. gender). In the fixed effects model

Regression Predicted: (Hausman Test) Fixed or Random?

Fixed or Random: Hausman test

Hausman test Model

This test runs to determine fixed or random effects. It basically tests whether the unique errors are correlated with the repressors'. Here we generate H_o and H_1 for our study.

H_0: Difference in coefficients are not systematic
H_1: Difference in coefficients are systematic

By running a fixed effects model and save the estimates, then running a random model and save the estimates, then perform the hausam test:

Breusch and Pagan Lagrangian multiplier test for random effects

Spreadratio [bankid,t] = Xb + u[bankid] + e[bankid,t]

Table.4.3. Random Effects

Number of observations	= 220
Number of groups	= 44
Observations per group: min	= 5
Avg	= 5
Max	= 5
wald chi2(7)	= 237.42
Prob > chi2	= 0

Spread Ratio	Coef.	STd. Err.	t	P>|t|	[95% Conf.	Interval]
Size	6.049044	0.59822	10.11	0	4.87656	7.221532
Loan	0.1207805	0.15713	0.77	0.442	-0.1872	0.428758
LR	29.44289	3.21284	9.16	0	23.1458	35.73994
GOD	0.0000574	0.16658	0	1	-0.3264	0.326539
GDP	4.790464	1.46552	3.27	0.001	1.91809	7.662836
Inflation	0.6903398	0.52346	1.32	0.187	-0.3356	1.716309
MC	0.1551842	0.21103	0.74	0.462	-0.2584	0.568795
_cons	-88.37679	25.525	-3.46	0.001	-138.4	-38.34866
sigma_u	15.977844					
sigma_e	16.139723					
Rho	0.4949599		(fraction of variance due to u_i)			

Table 4.4 Hausman Test Analysis

	Coefficients			
	(b) fixed	(B) random	(b-B) Difference	Sqrt (diag (V_b-V_B)) S.E.
Size	6.105834	6.049044	0.0567903	0.2632104
Loan	0.124881	0.1207805	0.0041001	0.0502136
LR	30.52506	29.44289	1.082169	2.388754
GOD	0.013428	0.0000574	0.0133707	0.0479259
GDP	4.891701	4.790464	0.1012378	0.3994619
Inflation	0.69332	0.6903398	0.00298	0.0844333
MC	0.155837	0.1551842	0.0006527	0.0292201

b = consistent under H_o and H_1; obtained from xtreg
B = consistent under H_1, efficient under H_o; obtained from xtreg
Test: H_o: difference in coefficients not systemic
chi2(7) =(b-B)'[(V_b-V_B)^(-1)](b-B)
=0.44
Prob>chi2 =0.9996

Table 4.5. Lagrange multiplier analysis

	Var	sd = sqrt(Var)
Spread Ratio	964.2694	31.05269
E	260.4907	16.13972
U	255.2915	15.97784

Test :Var (u) = 0
chibar2(01) =97.91
Prob > chibar2 =0

The estimation said that if the result is less than 0.05, use fixed effects. But according to our data set the hausman test result is 0.9996 so we will use random effects.

Testing for random effects: Breusch-Pagan Lagrange multiplier (LM)

The LM test helps to decide between a random effects regression and a simple OLS regression. The null hypothesis in the LM test is that variances across entities is zero. This is, no significant difference across units (i.e. no panel effect). The command in STATA is xttset0 type it right after running the random effects model.

Estimated results

According to our results we will use random effects regression and accept H_1.

Conclusion

This study investigates the impact of bank-specific characteristics and macroeconomic indicators on bank's profitability in the Pakistan's banks for the 2005-2009 periods. 44 banks were selected for this purpose.The internal factors (Size, Loan, Leverage Ratio and Growth of Deposit) are firms specific or controllable while external factors (GDP, Inflation

and Market Capitalizationare country's specific which means uncontrollable.Individual bank characteristics (internal and external factors) are considered as determinants of bank profitability in Pakistan. Banks with more equity capital, Total Assets, Loans, Deposits and macro factors i.e., economic growth, Inflation and stock market capitalization are perceived to have more safety and such an advantage can be translated into higher profitability. For this purpose, two hypotheses have been developed for analysing bank's Profitability over specific determinants i.e., Hypothesis 1 states that microeconomic factors have significant impact on profitability. Whereas, hypothesis 2 states that external factors of the banks have significant impact on the profitability. The factors that have significant impact on bank's profitability are Size, leverage ratio and GDP. All these three factors are significant at 1%. It means that there is 99% chances that factors are problematic to the bank's profitability under the normal circumstances. While the other factors Loan Growth of Deposit Inflation and Market capitalization have insignificant impact on bank's profitability which means these factors are non-problematic for the banks under normal circumstances. The result shows factors (Size, leverage ratio and GDP) have a significant impact onprofitability of the Bank's in Pakistan.So we can conclude that the results suggest that the profitability of banks isinfluenced not only by factors related to their management decisions but also to changes in the external macroeconomic environment so the managers must take these factors into concern while determining the bank's profitability.

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