

Determinants of Commercial Banks Profitability: Panel Data Evidence from Pakistan

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Abstract

Purpose- The rationale of this study is to investigate the determinants of commercial banks profitability in Pakistan over the period 2004-2010

Design/methodology/approach- Multiple regression analysis using cross sectional time series data is used to test the relationship between return on asset after tax as a dependent variable and various independent variables

Findings- The results indicate that internal factors such as liquidity, firm's efficiency, assets composition and deposit composition as well as external factors such as firm size have significant impact on the profitability of commercial banks.

Research limitations/implications- The sample size being taken in this study is small due to the unavailability of data because the most commercial banks annual reports are computerized since 2006. More evidence is needed on the determinants of commercial bank profitability in Pakistan to generalize the results beyond these five banks or to different study periods.

Practical implications- The study might help the commercial banks managers to concentrate on the factors actually determine the banks performance so that they will be able to take more strategic approach to add value to their organizations.

Originality/value- The study adds to the literature on the commercial banks profitability determinants and particularly such study has not been conducted in Pakistan so far.

Keywords: Commercial banks profitability, Banks, Pakistan

Introduction

Banking industry is perhaps most crucial financial intermediary in any country as it facilitate in two major services, liquidity in monitoring services and information creator (Diamond & Dybvig, 1983). The behind reason of economic growth of any nation depends upon the services provided by banking sector. Banks raise funds from suppliers, lend money to customers, work as a major actor in primary market and ultimately work as a backbone in the development of any economy.

Organizations competitiveness depends upon its competitive advantage, as there are two different views the Industrial organizational view and Resource based view. The industrial organizational view interpret that competitiveness can be achieved how a company respond to external opportunities and threats as competition, technological changes and economic changes etc. It means that an organization has competitive advantage if it is capable of exploit any opportunity in the market or respond to any external threat timely.

Whereas resource based view says that competitiveness can be achieved through how the organization is internally strong and its internal policies, procedures and systems are so strapping which enable an organization to gain competitive advantage. In this contemporary era the strategic approach articulated that the organization will only be able to gain competitive advantage if such polices, procedures, system, and internal resources are rare, dear, peerless, and nonsubstitutable. So in our study we are focusing both the internal and external factors as determinants of organizations success. Unique services are being provided by most of banks therefore there is a great competition in market. The current study is focusing which factors actually affect the organization performance in banking sector of Pakistan.

Due to terrorism and non state actors influence there is less focus of international banks in Pakistan. Since last many years there is less pressure from international banks but competition with in the country is still very high,

there is a great demand of funds as compared to supply. Due to inflation, rapid increase in population, rise in consumerism and change in life style of nation demand for money is increasing. Suppliers are demanding high yields for deposits as they have fewer saving. As a result commercial banks profits may be low due to unbalanced demand and supply. This unbalanced demand and supply for money is looking to affect the commercial bank profit. This concept is same as suggested by various researchers (Allen, 1988; Foyston & Almeida, 1992; Valverde & Fernandez, 2007; Poghosyan, 2010). We are going to suggest the managers what factors they should keep in view to boost the profitability of commercial banks in this tough situation of unbalanced demand and supply.

Commercial banks in Pakistan have to focus on both internal and external factors which affect their profitability recommended in various studies (Ben, Naceur, & Goaid, 2008; Omran & Naceur, 2011; Bonin, 2005; Bourke, 1989; Pasiouras & Kosmidou, 2007; Zopounidis, Tanna, & Pasiouras, 2009; Hassan & Bashir, 2003; Hawtrey & Liag, 2008; Molyneux et al., 1994; Short, 1979; Smirlock, 1985; Williams, 2003). Although little research had been conducted on, the determinants of profitability in the banking sector of Pakistan. According to the best knowledge of authors this is the first study to investigate the determinant of profitability by using panel data in Pakistan.

Section two will explain the literature review, section three present data and research methodology, section four highlights findings of study and last section cover conclusion and recommendation for future researchers.

Literature Review

Commercial banks profitability determinants can be grouped namely into internal factors which are under the management control as well as the external factors which are ahead of the management control. The internal determinants give a reflection how the management policies and decisions are different regarding the assets composition which means proportion of investment in current and non-current assets, capital adequacy which is the debt to equity ratio we are considering because the debt financing and capital financing vary with respect to risk and return, deposit composition interprets the proportion of current and fixed deposit, expense efficiency means how efficiently the organization is managing and controlling its operative expenses, and how much they depend on the debt leverage and liquidity management. These management induced determinants on the commercial banks performance can be analyzed through comprehensive analysis of statement of financial position and through statement of comprehensive income of the commercial banks. These internal determinants which are under the management control we are considering in this study are similar to those determinants and factors other researchers considering on the profitability of commercial banks (Bourke, 1989; Molyneux & Thornton, 1992; William et al., 1994; Molyneux et al. 1996; Pasiouras & Kosmidou, 2007; Zopounidis, Tanna, & Pasiouras, 2009; Habibullah & Sufian, 2010; Mamatzakis & Remoundous, 2003; Williams & Nguyen, 2005). Four internal factors which we have covered in this study are net advances as a percentage of total assets (NAPTA), Times and savings deposits as a percentage of total deposits (TSATD), total expenditures as a percentage of total assets (TEATA) and loan to deposit ratio (LTDR).

Net advances a percentage of total assets.

An important explanatory variable of bank performance is liquidity which is measured as a ratio of current assets to fixed assets investments. Meeting the decreases in liabilities or to accommodate the current need of cash by the bank, liquidity is very important for commercial banks profitability. There is a negative relationship between liquidity and profitability means higher the liquid firm, more funds are kept in current assets such as cash and cash equivalents, and less investment in advances and loans by the bank leads to lower return and profitability. Because there is a negative relationship between liquidity and net advances as a percentage of total asset the ratio which we have used for explanatory variable higher the ratio less the liquidity results in higher profitability. Bourke (1989); Eichengreen & Gibson (2001) had suggested positive relationship between net advances as percentage of total assets and profitability. Negative relationship is also suggested by Molyneux & Thornton (1992). They articulate that this negative relationship is due to difference in demand and supply elasticity for various loans combinations offered by the banks.

Time and savings deposits as a percentage of total deposits

The current deposits as a percentage of total deposits are the business current liabilities whereas the time and saving deposits as a percentage of total deposits are the business long term liabilities when the ratio of long term liabilities are high and ratio of short term liabilities is low mean high liquidity of the business and higher the liquidity is associated with less profitability of the business. The same relationship is suggested by (Guru, Stanton, & Shanmugan; Molyneux & Thornton, 1992).

Total expenditures as a percentage of total assets

Another internal aspect that can be projected to have significant outcome on profitability is efficiency in expenses management. It is very straight forward that there is inverse relationship between expense ratio and profitability suggested by many researchers such as (Kwan, 2008; Bonin et al., 2005). However it is not necessary that expenditures reduce the profit, because more expenditure reflects greater activities in business and

ultimately increase in revenues. So in order to access the efficiency of banks at expense-management it is necessary to mention the activity level as well. To this extent in line with Steinherr & Huveneers (1994), the banks total expenditures would be deflated by total assets to measure the firm specific expense management efficiency by measuring the cost incurred per monetary units of assets this ratio will be then total expenditures as a percentage of total assets hence it is expected that when the total expenditure as a percentage of total assets will be high it will affect the profitability negatively.

Loan to deposit ratio

As commercial banks major profits are from interest income so the fourth internal factor which we have included in the study is loan as a percentage of total deposit. High ratio is expected to have a positive relationship with commercial banks profitability because high ratio of loan from total deposits of the bank actually generates the return for bank. The variable we are including in our study is same as suggested by (Aysana & Pinar, 2008).

External determinants

Such factors which are beyond the management control namely external determinants those are the firm's specific determinants and environmental determinants. These includes firm size, inflation rate, market growth, market interest, market share and state bank of Pakistan regulations for commercial banks. Such determinants are as much important for our study as the internal determinants of commercial bank profitability after the literature reviewed the most researchers include in their study these variables determine the performance of commercial banks profitability (Bourke, 1989; Molyneux & Thornton, 1992; William et al., 1994, Molyneux et al., 1994; Ben, Naceur, & Goaid, 2008; Naceur & Omran, 2011; Bonnin, 2005; Bourke, 1989; Hassan & Bashir, 2003; Hawtrey & Liag, 2008; Molyneux et al., 1994; Short, 1979; Smirlock, 1985; William et al., 1994). In Pakistan inflation is very unpredictable in Pakistan and its statistics vary among different statistics departments so that we are incapable of including it into our study. Due to some limitations in current study we cover firm size and regulations as external determinants.

Logarithm of total assets

The bank size is included as an independent variable to account for size related economies and diseconomies of scale. It is worth noting that earlier researchers such as Heggstedt (1974); Smirlock (1985) has also considered firm size in their profitability of larger banks with greater loans and product diversification and accessibility to assets market that may not be available for smaller banks. In most literature the total assets of the banks are used as a proxy for bank size. However, since total assets deflated the other dependent variables in model such as ROA it would be inappropriate to include total assets in its absolute terms as an independent variable so it has to be transformed before including it into the model. Therefore the logarithm of the total assets will be included in the model to proxy for firm size. It is also necessary to obtain a more meaningful coefficient for bank size in the regression analysis since the other independent variables are also entered as ratios.

Regulations

Finally changes in the regulatory conditions in the banking sector can also affect the profitability of commercial banks. In Pakistan the regulatory conditions in relation to entry barriers have remained largely unchanged over the last decade. But the state bank of Pakistan had no major changes in banking regulations of Pakistan. That is why we exclude this variable as this is not a major determinant of profitability of banks in Pakistan specifically.

Table 1: Variables Description

4. Variable specification: Dependent Variable

The dependent variable in the model specified is some measure of commercial bank profitability. According to earlier studies on banks profitability different ratios are used as a measure of bank profitability because they are not affected by changes in general price level due to inflation. The return on assets (ROA) which is the ratio of net income to total assets, measures how profitably and efficiently the management is using the companies total assets. On the other hand the return on equity (ROE) which is the ratio of net income to total equity would indicate return to shareholders on the book value of their investment. According to Bourke (1989); Molyneux & Thornton (1992), total equity is assumed to indicate shareholders capital and reserve which are actually undistributed net profits.

A problem that needs to be removed is that total assets and equity capital may not remain constant the whole year. That's why according to Frame & Holder (1994) average of values is used in the study.

There can be a problem of choice between pre-tax and post-tax profits. So we conclude that in the boundaries of one nation there is same corporate tax for all the banks. So it cannot effect the significant of the profitability of banks. And if corporate taxes are considered as a cost for the firm then the after-tax profits will represent more appropriate results. We are using the return of assets after tax calculation as a dependent variable. But in line with the above discussion the following measure of profitability are considered as alternative measures for the dependent variable in this study:

PBTA:profit before tax as a percentage of total assets
 PATA:profit after tax as a percentage of total Assets
 PBTE:profit before tax as a percentage of total equity
 PATE:profit after tax as a percentage of total equity

Variable specification: Independent variable

According to Vong (1996) interest income accounts for about 80% of a countries commercial banks total income, are obvious. The interest rates change on loans and the numerous forms of deposits and these various forms of loans and compositions of deposits could be expected to have an impact on profitability. Also liquidity, firm’s efficiency, assets composition and deposit composition as well as external factors such as firm size also has significant impact on the commercial banks performance. So we are considering both internal and external factors as independent variables as shown in the above table.

3. Research methodology

The accord generally reflected from the literature on commercial bank profitability was that the most fitting model is of linear form. Many researchers Bourke (1989) ; Shorte (1979) had considered an array of other models but arrive at conclusion that the linear model gives outcome as reliable and fine as any other form of model. Hence we have also considered a multiple linear regression model to analyze the cross sectional time series data to determine the commercial bank profitability in Pakistan. The pooled cross sectional time series data is taken annually on random sample of five major commercial banks in Pakistan. These banks include Allied bank limited, Bank alflah limited, Askari bank limited, Meezaan bank limited and United bank limited. Due to lack of not easily quantifiable determinants of commercial banks performance like company image and service quality have not been accounted for.

By keeping in view accounting for cross sectional differences, that is the linear profitability model may change between cross sectional units and temporal differences that the linear profitability may change over time. The reason for temporal differences and cross sectional differences may be due to such circumstances like economic downturn or booms, different economic circumstances from year to year may be projected to have impact on commercial banks performance so we include two dummy variables for these temporal and cross sectional differences which are assumed to be limited to the intercept term in our model (Pindyck & Rubinfeld, 1991).

So our fully unrestricted model in which intercept change both from year to year and across cross sectional units can be stated as

Equation

$$Y_{it} = \beta_0 + \sum_{i=2}^N \gamma_i Z_{it} + \sum_{t=2}^T \lambda_i H_{it} + \sum_{k=1}^K \beta_k X_{kit} + \epsilon_{it} \quad (1)$$

Y_{it} = the y_{it} showing dependent variables which may be the return on asset or equity either before tax or after tax calculation

β_0 = it shows the intercept in the model

Z = It is the dummy variable showing the year to year differences

H = It is the second dummy variable showing the cross sectional differences.

X = it show all the independent variable we have included in the model

For the dummy variable H_{it} which is institution specific we assign value 1 for i_{th} firm and 0 otherwise. For the period $t=2$ up to T . similarly we assign the dummy variable Z_{it} the value of 1 for the t_{th} year and 0 otherwise for the year $I=2$ up to N years. Here we are assigning these values to the dummy variables for $N-1$ for differences in cross section units and $T-1$ for differences from year to year to avoid the problem of multicollinearity.

If there is temporal stability in our model but the differences are only with respect to cross section units then our model will be

Equation

$$Y_{it} = \beta_0 + \sum_{t=2}^T \lambda_i H_{it} + \sum_{k=1}^K \beta_k X_{kit} + \epsilon_{it}$$

If there is a cross sectional stability in our model but the differences are only with respect to time then the model will be represented as follows.

Equation

$$Y_{it} = \beta_0 + \sum_{i=2}^N \gamma_i z_{it} + \sum_{k=1}^K \beta_k X_{kit} + \varepsilon_{it}$$

If there are both temporal stability and cross sectional stability is present in our model then there are no differences both with respect to time and with respect to cross section units then our restricted model means the intercept remain constant for different years and with cross section units to decide whether to use unrestricted model or restricted model. The following F-test will be applied to compare both restricted and unrestricted model (Doran & Guise, 1984; Pindyck & Rubinfeld, 1991). The restricted model having both cross section and temporal stability will be as follows.

$$Y_{it} = \beta_0 + \sum_{k=1}^K \beta_k X_{kit} + \varepsilon_{it}$$

So here we will use the F- test to compare these different models.

$$F = \frac{RSS(R) - RSS(UR) / M}{RSS(R) - RSS(UR) / NT - K}$$

- RSS (R) Residual sum of square of restricted model
- RSS (UR) Residual sum of square of the unrestricted model
- M Number of linear constraints in the restricted model
- NT Total number of observations
- K Number of parameters in the unrestricted model

The procedure selected which model is to choose we compare the first model (which is fully unrestricted model with respect to both cross sectional and temporal stability) with second model (which is restricted model with respect to cross sectional stability). So if $F_{cal} > F_{CV}$ we reject the restricted model and fail to reject the unrestricted model. Then we compare first model (which is fully unrestricted model with respect to both cross sectional and temporal stability) and third model(which is restricted with respect to temporal stability) again our decision criteria will be same to chose the model. Now we compare the second model (which is restricted model with respect to cross sectional stability) and fourth model (which is fully restricted with respect to cross sectional and temporal stability). In last we compare the third model (which is restricted with respect to temporal stability) and forth one (which is fully restricted with respect to cross sectional and temporal stability).Following is the comparison of our four model in tabular form

Table. 2. Comparison

Table. 3. Comparison results are as per the F-test.

After applying the F test we reached at the conclusion of selecting the fully restricted model both with respect to temporal and cross sectional stability.

Findings:

3.1 Explanation

Table 4: Descriptive Statistics

The above table shows the descriptive statistics of the data on different variables we are including in the study. The mean standard deviation minimum and maximum value is shown in the table. The data was collected after a comprehensive analysis of balance sheet and profit and loss account using the standard formulas for different ratios.

Diagnostics: Multicollenearity and Hetrosekedasticity

Table. 5. Correlation between different variables in the model

The above table is showing correlation between different variable in the model along with their significance. The problem of multicollenearity arises when two independent variable are significantly correlated. The above table showing all the variables are not significantly correlated with each other but a doubt is about LTDR and TSATD.

So some researcher suggest to check the VIF between these variables and if VIF is greater than 5 or $1/VIF$ less than .20 then there is a problem of multicollinearity in the model. As both VIF and $1/VIF$ is calculated as shown in the table our model is free from the problem of multicollinearity.

Table 6: VIF

The second problem is of heteroskedasticity for which we are testing our model. When the independent variable and error term are correlated with each other then the problem heteroskedasticity is present in our model we are testing the model for this problem by applying the Breusch-Pagan / Cook-Weisberg test for heteroskedasticity. For this our hypothesis is

H0: There is a constant variance (There is no heteroskedasticity in the model)

H1: There is no constant variance (there is heteroskedasticity in the model)

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance

Variables: fitted values of ROAAT

chi2 (1) = 0.00

Prob > chi2 = 0.9906

After applying this test we are fail to reject H0 which means that we are accepting the null hypothesis that there is constant variance and there is no heteroskedasticity in the model.

Table. 7: Fully Resricted Model Regression Results

Results Interpretation

The above table shows the regression results of our model. According to our findings the net advances as a percentage of total assets have a negative relationship with profitability and are according to expectation which means that by 1 unit increase in NAPTA it causes decrease in the profitability by .0314537 units. There is also inverse relationship between TSATD and profitability and by 1 unit increase in TSATD it causes decrease in profitability by .0230072 units. By 1 unit increase in expenses it causes decrease in dependent variable by .10811 units. As the major profitability of the bank is from loan it gives to the customer the higher the loan to deposit ratio impact the profitability positively. So by 1 unit increase in LTDR it causes increase in ROAAT by .0302937 units as per our results. We also included one external factor in our study the logarithm of total assets having negative impact on the banks performance showing as the firm size increases it negatively impacting the profitability may be that the firm is not gaining the advantage of economy of scale and various other reasons may be that the increasing size may lead to various type of mismanagement and inefficiency in the business and may be due to complex environment. So by one unit increase in total assets it causes decrease in the dependent variable by .5267252 units.

Conclusion and Recommendations

These results provide a roadmap to commercial bank managers of the successful determinants of industry performance. After having these consequences the following recommendation can be beneficial to the industry management, policy makers and other stakeholders. The management should follow some sort of specific strategic planning instead of thumb rule while operating in the commercial bank industry. They have to keep in mind what factors actually influence their strategies to pursue the performance of the banking industry and these factors are both internal and external which we have included in the study. As some experts articulate that if we enhance expenditures then hopefully the business will perform in a better way, Aftermaths will effect positively, although our results are in a reverse way. So most important factor which we have considered is the expense efficiency as having negative impact on the profitability the managers should pay attentions on controlling the direct, operating and administration costs. The management can control cost may be through different type of bargaining with the employees, marketing strategies such as unique services to the customer to attract cheep deposits and compliance with corporate governance in the industry. The second important factor which we have considered is the advances as a percentage of total assets and higher this ratio is expected to have positive impact on the performance but our results are contrary. These contrary results suggest the management to focus on demand and supply elasticity of different loans combinations. The loan to deposit ratio have a positive relationship with profitability and more than 80% of the profit of commercial banks is from interest income, so management should maintain balance between the deposits and loan while keeping in mind the other factors such as liquidity. There is an unpredictable inflation in Pakistan and due to this many factors have totally contrary results, so it is suggested that the manager must estimate the return on advances in real term and must keep in mind the impact of this unpredictable inflation.

The eventual performance of commercial banks is entirely depends upon the management attitude toward risk. Higher the liquidity means less the risk have negative impact on the profitability as concluded by the important variable time and saving deposits as a percentage of total deposits, which we have considered in our study.

Higher the ratio mean the bank has lower current liabilities as compared to long term liabilities which means the bank in maintaining high liquidity which impacting the profitability negatively.

Managers must keep in mind not only the internal factors but also the external factors as higher the firm size is expected to impact profitability in positive way but this is also reverse as per our results. The reason actually is as business size is increasing the management is not taking advantage of the economy of production and economy of scale.

In last there are some limitations of our study. The sample size which we included is small because of unavailability of annual reports from various banks from the year 2004-2010 of Pakistani commercial banks. The reason was that the annual reports were computerized since 2006. Not only have these five variables which we considered actually impacted the profitability but there are many other variables also important like real interest rate and inflation. As the inflation in Pakistan is very unpredictable we find it difficult to consider because of differences in its disclosure by various statistics departments. We also ignored different variable which are not easily quantifiable like customer service quality and corporate image.

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Table 1: Variables Description

Variables	Definition/ Proxy	Data source	Expected Sign
ROAAT(Dependent)	Return on assets after tax calculations	Bank's annual reports, SBP Publications	
NAPTA	Advances net of provision as a percentage of total assets	Do	-
TSATD	Times and savings deposits as a percentage of total deposits	Do	-
TEATA	Total expenditures as a percentage of total assets	Do	-
LTDR	Loan to deposit ratio	DO	+
LTA	Logarithm of total assets	Annual reports of commercial banks	-
REGU	Regulations	State bank of Pakistan	+

Table 2. Comparison

First comparison	First model fully unrestricted both with respect to cross sectional and temporal stability	Second will be restricted with respect to cross sectional stability
Second comparison	First model fully unrestricted both with respect to cross sectional and temporal stability	Third will be restricted with respect to temporal stability
Third comparison	Second will be unrestricted with respect to temporal stability	Forth will be fully restricted model both with respect to cross sectional and temporal stability
Fourth comparison	Third will be unrestricted with respect to cross section stability	Forth will be fully restricted model both with respect to cross sectional and temporal stability

Table 3. Comparison results are as per the F-test.

Comparisons of Models	RSS _{UR}	RSS _R	F Stat.	Critical Value at 5% Significance	Decision criteria	Outcome
1 vs 2	2.959	5.479	1.3484	2.31	$F_{cal} < F_{tab}$	Fail to reject H_0
1 vs 3	2.959	4.853	1.2161	2.39	$F_{cal} < F_{tab}$	Fail to reject H_0
2 vs 4	5.479	7.646	1.51	2.53	$F_{cal} < F_{tab}$	Fail to reject H_0
3 vs 4	4.853	7.646	2.3980	2.49.	$F_{cal} < F_{tab}$	Fail to reject H_0

Table 4: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
ROAAT	1.107685	.6005417	.1237	2.3489
NAPTA	55.1987	9.338679	35.02055	89.63002
TSATD	37.11605	11.20327	5.1293	59.9043
TEATA	8.254763	2.475094	1.128	11.9719
LTDR	68.44886	15.00701	7.07	90.19
LTA	8.353172	0.3840851	7.294408	9.096323

Table 5. Correlation between different variables in the model

Variables	NAPTA	TSATD	TEATA	LTDR	LTA
NAPTA	1.0000				
TSATD	0.0572 0.7442	1.0000			
TEATA	-0.5446 0.0007	-0.0638 0.7157	1.0000		
LTDR	0.4190 0.0122	0.4431 0.0077	-0.0024 0.9892	1.0000	
LTA	-0.1698 0.3296	0.0803 0.6466	0.2544 0.1402	0.2772 0.1069	1.0000

Table 6: VIF

Variable	VIF	1/VIF
NAPTA	2.13	0.468745
TSATD	2.01	0.496596
TEATA	1.64	0.610770
LTDR	1.34	0.743504
LTA	1.23	0.810191

Table 7: Fully Resricted Model Regression Results

Variables	β	Stand. Error	T Stat.	P-value
NAPTA	-.0314537	.013773	-2.28	0.030
TSATD	-.0230072	.0091158	-2.52	0.017
TEATA	-.10811	.0455253	-2.37	0.024
LTDR	.0302937	.008327	3.64	0.001
LTA	-.5267252	.2547193	-2.07	0.048
_cons	6.916503	2.305483	3.00	0.005

Notes: $R^2 = 0.3764$, Adjusted $R^2 = 0.2689$, F stat. = 3.50 and Prob > F = 0.0135

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