

## INTERNAL FACTORS, EXTERNAL FACTORS AND BANK'S PROFITABILITY

Zia ur Rehman, Assistant Professor, Department of Management Sciences, University of Haripur. Email: [zia.rehman@uoh.edu.pk](mailto:zia.rehman@uoh.edu.pk)

Sher Ali Khan, PhD Scholar, Durham Business School, Durham University, United Kingdom. Email: [sher.a.khan@durham.ac.uk](mailto:sher.a.khan@durham.ac.uk)

Asad Khan, Lecturer, Department of Management Sciences, University of Haripur. Email: [asadkhan@uoh.edu.pk](mailto:asadkhan@uoh.edu.pk)

Asim Rahman, Lecturer, Department of Management Sciences, Abbottabad University, Abbottabad. Email: [rahman\\_yz@hotmail.com](mailto:rahman_yz@hotmail.com)

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**Abstract.** *A developed banking sector provides the impetus for the economy to grow. However, in order to maintain financial stability and sustain negative shocks, it is important to understand the factors that influence the profitability of banks. The aim of the study was to analyse the effect of internal and external factors on the profitability of banks in Pakistan for the period 2007-2015. Fixed effects model was used to analyse the effect of internal and external factors on the profitability of banks in Pakistan. The findings of the study revealed that among internal factors only bank size and asset composition significantly influences the profitability of banks whereas in the external determinants only real interest rates and GDP growth rates has a significant effect on the profitability of banks.*

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**Keywords:** Bank profitability, Internal factors, external factors, panel data

### Introduction

Banking sector is considered to be the backbone of the economy. A developed and profitable banking sector facilitates access to finance at competitive rates and therefore, provides the impetus for economic growth in an economy (Petria, Capraru & Ihtanov, 2015). Considering the importance of banking sector for the stability of the economy in this globalised world, where financial markets are now integrated, it is important to understand what determines the profitability of banks.

The financial sector of Pakistan comprises of various financial institutions like commercial banks, insurance companies, investment banks, micro finance banks, stock exchange, development finance institutions etc. Banking sector of Pakistan underwent significant changes in late 90s as a result of aligning the

bank supervision process to international best practices. The on-going process of consolidation/merger and privatization of public banks resulted in significant changes in the banking sector with respect to their structure, ownership and concentration.

Empirically, factors influencing banking profitability have been explored particularly in developed economies where the banking sector is well developed as compared to the developing economies where it is somewhat under researched and the banking sector is not as developed as in the developed economies (see Abreu & Mendes, 2000; Bourke, 1989; Dietrich & Wanzenried, 2011; Garcia & Guerreiro, 2016; Menicucci & Paolucci, 2016; Petria et al., 2015). In banking literature, we find numerous measures that have been used for profitability. They include ROA, ROE and EPS etc. As far as the determinants of bank's profitability, most studies identified that expense ratio, loan-loss reserve and capital ratio are some of the common factors that influence bank's profitability.

Generally, it is agreed that an efficient and effective banking sector is critical for the sustainable growth of an economy. A developed banking sector provides the impetus for the economy to grow. However, in order to maintain financial stability and sustain negative shocks, an understanding of factors influencing bank profitability is important. Therefore, the main aim of the paper is to analyze the effect of internal (bank specific) and external (financial structure and macroeconomic) factors on the profitability of banks in Pakistan. Furthermore, to the best of our knowledge, this is probably the first study in Pakistan that has used internal and external factors combined to measure the profitability of banks.

## **Literature Review**

### ***Internal Factors***

Internal factors are those factors that are influenced by the managerial decisions of the bank. Management decisions with respect to these internal factors do influence the operating results of the bank. Good management decisions will lead to increased profitability and higher firm value and vice versa. Almost all of the internal factors that affect profitability can be derived from the financial statements. However, the profit and loss statement and balance sheet are the two principal financial statements from where information about these internal factors can be extracted.

### ***Balance sheet***

Balance sheet, an important financial statement, shows the total wealth of a bank at a particular time. Although, there are several internal factors mentioned on the balance sheet that could influence bank's profitability, factors that received most attention are bank size, the composition of assets and liabilities and costs.

In order to determine riskiness and soundness of a bank, capital ratio as a measure of bank cost has been the most preferred variable while assessing the capital adequacy of banks. Generally, it is understood that probable costs of financial distress are comparatively lower for banks that are well capitalized and efficient. A number of studies (Alshatti; 2016; Angbazo, 1997; Berger, 1995; Bourke, 1989; Menicucci & Paolucci; 2016; Nessibi, 2016) have concluded that capital ratio not only positively influences bank profitability but the relationship is statistically significant. They further elaborated that higher capital ratio leads to increase in bank profitability and vice versa. Similarly, Molyneux and Thornton (1992) also found positive relationship between capital ratio and bank's profitability. However, the results are confined only to the state-owned banks. Demirguc-Kunt and Huizinga (1999) argued that domestic banks perform better than foreign banks in developed economies whereas in developing economies the performance of foreign banks is superior to that of domestic banks. However, despite contrasting results in developing and developed economies, overall results of their study provide support for the positive influence of capital ratio on the profitability of banks.

The composition of assets and liabilities is another important balance sheet based internal factor that has been used to determine the profitability of banks. Accepting deposit and lending loans is the primary function of banks and since bank loans are considered to be the main source of revenue for the banks therefore, it is expected that it will have positive effect on bank profitability. However, the empirical evidence is rather mixed. Studies from Bashir and Hassan (2003) and Staikouras and Wood (2003) found an inverse relationship between bank loan and bank profitability. On the contrary, Abreu and Mendes (2000) concluded that there is a positive relationship between bank loan and profitability.

Lastly, bank size has also been used in empirical studies to analyse its effect on bank's profitability. Size is critical factor in achieving economies of scale. Good strategy by the bank may lead to increase in its size but it does not guarantee that excess returns can be earned. Studies by Athanasoglou et al. (2006), Boyd and Runkle (1993), Kosmidou, (2008), and Naceur (2003) found that bank size has a negative influence on the profitability of banks. At the same time, Sinkey (1992) argued that bank profitability is negatively related to

bank size for large banks but for small banks it is positively related. Furthermore, Staikouras and Wood (2003) also concluded that in medium and small size banks profitability is positively related with bank size. However, Goddard et al., (2004) and Nessibi (2016) finds weak relationship between profitability and bank size.

### **Profit and Loss Account**

As balance sheet depicts the financial position and wealth of a bank, profit and loss account, on the other hand, measures earnings of the bank in a given period of time. One of the most common internal factors derived from bank's profit and loss account and used in empirical studies is the bank's efficiency in managing its expenses. Theoretically, higher expenses by the bank would mean lower profitability and vice versa. Studies from Jiang et al., (2003) and Akbas, (2012) found negative relationship between expenses ratio and profitability suggesting that profitable banks are able to keep their costs down. At the same time, Molyneux and Thornton (1992) found that bank expenses positively influences bank's profitability. They further highlighted that increase in salaries although increases the expenditure of the bank but at the same time increases bank's profitability. The reason being that increase salaries motivate employees to more efficiently, hence, results in increase in bank's profitability. Similar positive results were also experienced by Guru et al., (2002) and Naceur (2003).

Tax expense is another profit and loss account based internal factor used to analyse its impact on bank's profitability. Banks are subject to corporate and income taxes. Although the rate of corporate tax is not in control of the bank and they are supposed to pay the taxes at the rate set by the state, yet the management of bank must find ways how to minimize its tax expense.

Empirical studies from Demirguc-Kunt and Huizinga (1999), Jiang *et al.* (2003), Albertazzi and Gambacorta (2006) provide evidence that tax expense has a positive effect on bank profitability. The result seems quite surprising as conventional wisdom would say that increase in tax expense should lower profitability. However, since the demand for banking is inelastic among bank customers, therefore, most of the banks pass on the tax burden on to their customers.

### ***External Factors***

External factors are those factors that cannot be controlled by the management and influences the decision making process of the bank. However, managers can analyse the external environment for anticipated changes and position itself accordingly in order to benefit from these changes. External

factors are divided into two broad categories i.e. macroeconomic factors and financial structure factors.

### **Macroeconomic Variables**

Macroeconomic variables may significantly influence the performance of banks. In periods of economic growth, demand for banks loans increase whereas in times of recession they decrease. Credit risk may decline during periods of higher growth because profitability increases during periods of economic growth which strengthens the debt serving capacity of the borrowing firms. On the contrary, adverse growth rates negatively affect bank's performance as the result of rise in non-performing loans. Hence, it is expected that bank performance improves with improvement in growth rates and vice versa. Studies from Bourke (1989), Guru et al., (2002) and Sufian and Chong (2008) provide evidence that positive growth rates have a positive influence on bank's profitability. Apart from growth rates, interest rate also influences bank's profitability. Bank's profitability tends to rise with increase in interest rates as a result of increased spread between borrowing and saving rates. Empirical studies from Staikouras and Wood (2003) and Cheang (2005) provides evidence that interest rates positively influence bank profitability.

### **Financial structure variables**

Many studies have attempted to explore the impact of financial structure variables on the performance of the banks. Generally, a higher ratio of bank asset to GDP indicates that financial development is critically important for the development of the economy. The importance of financial development with respect to economy may indicate greater demand for banking services, thus encouraging potential new entrants entering into the market. Moreover, banks need to revisit their strategies and modify them accordingly in order to protect their market share in case of increase competition in the banking sector. Demirguc-Kunt and Huizinga (1999) while emphasizing on the importance of financial development and structure variables and argue that in competitive banking sectors where the ratio of bank assets to GDP is comparatively high are less profitable due to their lower margins. They further elaborated that the banking sector was less efficient and prices were less competitive in countries where the financial systems are underdeveloped. Hence, financial development can greatly enhance the efficiency in such countries. Studies from Petria et al., (2015) concluded a positive relationship between GDP growth rates and bank profitability.

Furthermore, market structure can also significantly influence the profitability of banks. The monopolistic power of banks will be greater in banking sectors where the industry is highly concentrated. The profitability of

bank improves as a result of this monopolistic power that it enjoys in the industry. Studies from Bourke (1989), Chirwa (2003) and Staikouras and Wood(2003) reveal that industry concentration positively influences the profitability of banks. On the contrary, Naceur (2003) and Petria et al. (2015) finds an inverse relationship between industry concentration and bank profitability. Moreover, Flamini et al. (2009) argued that there is no direct relationship between industry concentration and bank's profitability.

### **Data and Methodology**

Since the objective of the study is to examine the effect of internal and external factors on the profitability of banks therefore secondary data is used for this purpose. Financial data is collected for the period 2007-2015. Data related to internal factors and Herfindahl-Hirschman Index (HHI) is collected from the financial statements of banks available on the database of State Bank of Pakistan. Whereas data for GDP growth rate and real interest rate is collected from the World Bank database. Furthermore, data for banking sector development is collected from financial statements of banks and World Bank Database. The sample of the study comprised of all banks including public, private foreign and investments that remain listed throughout the study period. The final sample comprised of 33 banks.

### ***Measurement of Variables***

#### ***Bank Profitability***

In this study, bank's profitability is measured through Return on Assets (ROA). Return of Assets is calculated as Net income divided by total assets \*100.

#### ***Internal Factors***

*Capital Ratio* (CAP) is measured as total equity divided by total assets. Capital ratio measures the average level of safety and financial soundness of the bank. Theoretically, higher capital ratio should have a positive influence on the performance of banks; however, the empirical evidence is rather mixed.

*Asset Composition* (AC) is generally used to measure the income source of the bank and is measured as total loans divided by total assets. Banks primary source of income come from lending activities. Bank's income can increase significantly if it can efficiently and effectively transform most of its deposits into loans.

*Fund Source* (FS) measured as total deposits divided by total assets. Deposits from customers are considered to be the cheapest source of funding

available to banks. Generally, it is agreed that customer's deposits positively influences the performance of banks provided there is demand of loans from the borrowers.

*Asset Quality* (AQ) is measured as loan loss provision divided by total loans. Asset quality is also used as measure of credit quality and capital risk. Higher loan loss provisions are expected where the operating environment of bank is risky. Hence, a negative relationship expected with bank's performance where loan loss provision ratio is high.

*Expense Ratio* (ER) is measured as non-interest expenses divided by total assets. Expense ratio provides information about operating costs and variations in it over a period of time.

*Fee Based Services* (FBS) is measured through non-interest income divided by gross income. Apart from its primary earning source (interest income), banks earn from their investment portfolios and provides additional services like consultancy services for which it charges its clients. Although the contribution of non-interest income towards bank's profitability is comparatively small yet bank's income may decline as a result shift in focused on fee based services over interest based income.

*Tax Ratio* (TR) is measured as taxes divided by profits before taxes. Increase in bank profits means that higher taxes have to be paid. Hence, a positive relationship is expected between tax ratio and bank profitability.

*Market Share* (MS) of bank is measured through natural log of deposits. Higher deposits will enable a bank to lend more thus increasing bank's profitability.

### **External Determinants**

Annual growth rate is used as a measure of GDP growth rate. Real interest rate is calculated through nominal interest rate minus inflation (measured through GDP deflator<sup>1</sup>). Size of banking sector (SIBS) is measured as total assets of all banks divided by GDP. Empirically, there is mixed evidence as far

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<sup>1</sup> In macroeconomic theory we find a number of measures including Consumer Price Index (CPI) and GDP deflator to measure of inflation. CPI measures inflation through changes in prices of a basket of goods whereas GDP deflator considers the prices all goods and services produced in an economy to measured inflation. In this study we have used GDP deflator as it is considered to be a better measure of inflation.

as the effect of SIBS on bank performance is concerned considering the relative importance of bank financing in the growth of an economy. Lastly, Industry concentration is measured through Herfindahl-Hirschman Index (HHI) (Sufian & Chong, 2008). HHI is measured through squaring the market share of each firm and then adding them. HHI is used measured to measure the market power of the firm with respect to its influence on prices. High HHI means that there are very few firms in the market and firm may have influence over prices whereas a lower HHI means that the market is competitive as no firm is in a position to influence prices.

### **Estimated Model**

Panel data regression is used to measure the effect of internal factors and external factors on the performance of banks in Pakistan. Comparatively, panel data has certain advantages like data is more efficient and informative with more degrees of freedom and lower collinearity among independent variables. Employing panel data analysis is particularly important in studies where annualized data is used like ours because it offers large number of data points to the researcher (Hiaso, 1986). Additionally, panel data technique is more efficient in measuring effects that a pure time series or cross section data cannot observe (Baltagi, 1995). The model used to measure the effect of internal and external factors on the performance of banks is given below:

$$ROA_{it} = \alpha_0 + \beta_1 FS_{it} + \beta_2 GDP_{it} + \beta_3 CAP_{it} + \beta_4 HHI_{it} + \beta_5 SIBS_{it} + \beta_6 AC_{it} + \beta_7 ER_{it} + \beta_8 RIR_{it} + \beta_9 TR_{it} + \beta_{10} FBS_{it} + \beta_{11} AQ_{it} + \beta_{12} MS_{it} + \mu_{it}$$

There are two common panel data models i.e. random effects and fixed effects that are mostly used by researchers in their studies. According to random effects model, each individual firm's intercept is randomly drawn from a much larger population with constant mean value whereas fixed effects models assumes that the intercept may vary across firms but each firms intercept does not vary overtime, i.e. it is time variant. In case of a balanced panel, fixed effects model is more appropriate as in our case whereas random effects is appropriate in cases where the number of observations in a given sample of existing cross-sectional units is comparatively small (Gujarati, 2004). To eliminate selection bias Hausman test a specification test; introduced by Hausman in 1978 is used to identify whether to used random effects model or fixed effects model. Basically, Hausman test determines the consistency of an estimator when it is compared with an estimator that is already known to be consistent but is less efficient. Based on the findings of Hausman test, fixed effects model is used in this study.



Table 1 *Correlated Random Effects - Hausman Test*

Test Summary	Chi-Sq. Statistic	df	Prob.
Cross-section random	43.38	12	0

Before running regression there are several aspects like multicollinearity, heteroscedasticity etc. that must be considered. Table 2 presents the correlational matrix of variables whereas Table 3 presents variance inflation factors of variables used in this study. Values from Table 2 and 3 suggest that multicollinearity is not an issue in our study. If the value of VIF is less than 10 then multicollinearity is not an issue (Gujarati, 2004). Multicollinearity exists when two or more independent variables are highly correlated. The presence of multicollinearity among explanatory variables makes precise estimation difficult as a result of high R-Square, insignificant t-values, large variances and co-variances.

Another key assumption of regression model is that there must be equality of variances or error term across all observations. Heteroscedasticity occurs due to inequality of variances of error term across all observations and can nullify our tests of significance because these tests were based on the assumption that the error term is uncorrelated and constant in the regression model. In order to overcome the issue related with heteroscedasticity, white cross section test is applied and the model was estimated by assigning estimated Generalized Least Squares (EGLS) weights (cross-sectional) of the balanced panel where a single observation for each firm constituted a cross-section.

Table 2 *Correlation Matrix*

	ROA	FS	GDPR	CAP	HHI	SIBS	AC	ER	RIR	TR	FBS	AQ	MS
<b>ROA</b>	1.00												
<b>FS</b>	-0.57	1.00											
<b>GDPR</b>	0.00	0.00	1.00										
<b>CAP</b>	0.10	-0.30	-0.07	1.00									
<b>HHI</b>	-0.05	-0.02	0.13	-0.12	1.00								
<b>SIBS</b>	0.03	-0.04	0.28	0.02	0.19	1.00							
<b>AC</b>	-0.19	0.04	0.02	-0.14	0.03	-0.05	1.00						
<b>ER</b>	0.02	-0.26	-0.08	0.30	-0.02	-0.08	0.25	1.00					
<b>RIR</b>	-0.06	0.01	0.47	0.00	0.01	0.31	0.01	-0.06	1.00				
<b>TR</b>	0.03	0.04	-0.09	-0.11	0.05	-0.08	-0.26	-0.18	-0.12	1.00			
<b>FBS</b>	0.26	-0.39	0.11	-0.20	0.13	0.19	0.02	-0.16	0.09	0.10	1.00		
<b>AQ</b>	0.08	-0.05	-0.05	-0.08	-0.05	-0.08	0.26	0.09	-0.15	-0.09	0.09	1.00	
<b>MS</b>	-0.31	0.64	0.07	-0.37	0.10	-0.07	-0.24	-0.45	0.03	0.19	-0.11	-0.09	1.00

Table 3 *Variance Inflation Factors*

<b>Variable</b>	<b>Inflation Factor</b>
RIR	2.96
MS	2.64
GDPR	3.05
CAP	1.47
TR	1.61
FS	3.56
SIBS	1.46
FBS	2.31
ER	4.62
HHI	1.26
AC	9.13
AQ	7.09

**Descriptive Statistics**

Table 4 *Descriptive Statistics*

	<b>ROA</b>	<b>FS</b>	<b>GDPR</b>	<b>CAP</b>	<b>HHI</b>	<b>SIBS</b>	<b>AC</b>
<i>Mean</i>	5.39	62.2	3.58	12.5	238.7	6.96	100.8
<i>Median</i>	2.44	74	4	8.54	193	6.9	91.51
<i>Maximum</i>	84	90.9	6.1	97	603	7.48	362.9
<i>Minimum</i>	-4.61	0.01	1.6	0.1	174	6.71	34.67
<i>Std. Dev.</i>	1.56	27.9	1.4	1.51	0.37	0.22	48.31
<i>Skewness</i>	0.31	-1.05	0.13	1.25	1.3	0.95	1.04
<i>Kurtosis</i>	3.5	3.35	2.09	6.01	6.63	3.88	9.8
<i>Jarque-Bera</i>	7.68	88.6	10.69	183.4	411.7	84.57	717.8
<i>Probability</i>	0.02	0	0	0	0	0	0

	<b>ER</b>	<b>RIR</b>	<b>TR</b>	<b>FBS</b>	<b>AQ</b>	<b>MS</b>
<i>Mean</i>	3.45	1.3	27.43	24.7	1.03	7.8
<i>Median</i>	2.84	1.83	32.63	16.5	0.89	7.91
<i>Maximum</i>	16.1	7.9	124	65	2.96	9.21
<i>Minimum</i>	0.69	-6.2	-58.19	-0.26	0.09	5.19
<i>Std. Dev.</i>	0.47	4.35	20.73	0.8	0.69	0.81
<i>Skewness</i>	0.23	-0.48	-0.38	0.33	0.72	-0.57
<i>Kurtosis</i>	3.64	2.24	7.71	5.37	2.54	2.78
<i>Jarque-Bera</i>	7.54	18.1	273.4	72.4	27.3	16
<i>Probability</i>	0.02	0	0	0	0	0

Table 4 provides the descriptive statistics of variables. Values of the variables are evenly distributed as evident from the mean and median values.

### Empirical Results

Based on the results derived through panel data regression, we can see in Table 4 that among internal factors only market share and asset composition has a statistically significant relationship with bank's profitability. Moreover, the relationship between fund source and tax ratio is positive whereas the rest of the internal factors have a negative relationship with bank's profitability. The value of bank size measured through market share indicates that larger bank's profitability declines possibly due to cost increases as they grow as compared to smaller banks. Asset composition, contrary to our expectations, not only has a negative relationship with bank's profitability but also the relationship is statistically significant. The negative relationship between asset composition and bank profitability supports the earlier findings of Vong (2005) and Vong and Chang (2006) that intense competition in the credit market reduces the profitability of the banks.

Table 5: *Regression Analysis*

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-statistic</i>	<i>Prob.</i>
<i>C</i>	6.412	1.434	4.47	0
<i>FS</i>	0.004	0.003	1.11	0.268
<i>GDPR</i>	0.02	0.006	3.06	0.003
<i>CAP</i>	-0.004	0.009	-0.52	0.603
<i>HHI</i>	0.018	0.03	0.59	0.555
<i>SIBS</i>	0.122	0.065	1.89	0.06
<i>AC</i>	-0.789	0.245	-3.22	0.002
<i>ER</i>	-0.214	0.173	-1.24	0.218
<i>RIR</i>	-0.005	0.002	-2.07	0.04
<i>TR</i>	0.023	0.003	-0.10	0.918
<i>FBS</i>	-0.074	0.04	-1.85	0.066
<i>AQ</i>	-0.037	0.026	-1.44	0.15
<i>MS</i>	-0.37	0.101	-3.68	0
R-squared	0.707	Durbin-Watson		1.804
F-statistic	55.166	Prob (F-statistic)		0

Among the external determinants only GDP growth rate and real interest rate has significant effect on the profitability of banks. GDP growth rate, HHI and SIBS has a positive relationship with ROA whereas real interest rate is negatively related with ROA. In periods of rising growth rates investment opportunities tends to rise which not only lead to increase in demands for funds but also provide an opportunity for banks to invest their surplus funds in

profitable investment opportunities. Studies from Guru et al., (2002), Sufian and Chong (2008) and Bolt et al., (2012) provide strong evidence that there is a positive relationship between GDP growth rate and bank profitability. The negative relationship between real interest rate and ROA indicates that profitability declines as interest rates increases. There are two possible reasons for this: firstly, rising interest rates may lead to loan default which reduces bank profitability and secondly increase in interest rates may discourage new borrowers to borrow, therefore, to encourage such borrowers, banks may reduce their spreads which results in decline in bank profitability.

### **Conclusion**

Generally, it is agreed that an efficient and effective banking sector is critical for the sustainable growth of an economy. A developed banking sector provides the impetus for the economy to grow. However, in order to maintain financial stability and sustain negative shocks, an understanding of factors influencing bank profitability is important. Therefore, the aim of the study was to analyse the internal and external factors that influence the profitability of banks in Pakistan. The findings of the study revealed that among internal factors only bank size and asset composition significantly influences the profitability of banks whereas in the external determinants only real interest rates and GDP growth rates has a significant effect on the profitability of banks.

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