

An Empirical Analysis of Factors Determining the Profitability of Conventional Banks in Pakistan: Panel Data Estimation: 2006-10

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ABSTRACT

The Objective of this study was to scrutinize the impact of bank-specific determinants, industry-specific determinants, and macroeconomic determinants on the profitability of Pakistani commercial banks. Whereas the dependent variables serving as measures of profitability included Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM). There was an extensive literature focusing on the determinants of bank profitability, but the empirical literature regarding the Pakistani banks profitability was scarce. Therefore, our study resorted towards the examination and analysis of the profitability of 34 Pakistani commercial banks for a period of 2006-2010. The ordinary least square method was embraced for the analysis of the data. Our study revealed that Pakistani conventional banking sector was less competent in expense management. Therefore, bank managers were suggested to enhance their operating expense management expertise for cost reduction. This would enable the banking industry, as a whole, to be more efficient, productive, effective, and profitable. We recommend the bank managers to increase their asset quality, capital adequacy, market power, operational efficiency, trading operations, expense managing expertise, asset utilization, monitoring and careful credit selection criteria in order to create a well-diversified loan portfolio, to reduce bad loan, financial intermediation cost, and to lower their reliance on interest operations.

KEYWORDS: profitability indicators, commercial banks, conventional banks, net interest margin, return on assets, return on equity

1. INTRODUCTION

An economy flourishes by adopting one of the two strategies: *First*, without changing the production processes, it should focus on more or full utilization of the existing resources. *Second*, it should introduce a better combination of the already employed resources.

But here, the question of interest is that how can the banking system facilitate such economic platform? Banking system can actually contribute a lot to the development of an economy. By keeping an optimal balance between aggregate demand for aggregate supply of the resources, that are responsive to the monetary policies and monetary demand, a country's banking system may cause acceleration in its potential for future development.

Over the last two decades, the banking sector, around the globe, has evolved dramatically with respect to its operating environment. Although its performance and structure were affected by both domestic and external factors, but the banking sector withstood through such challenges, and can still play a vital role in financing the economic activities of a country. A profitable and sound banking system may result in the stability of a country's financial system. The focus on the *determinants of bank profitability* has thus become much popular among bank supervisors, bank management, analysts, and academic researchers.

Bank's profitability is affected by both "endogenous" and "exogenous" factors. Endogenous factors are influenced by the commercial activities. On the other hand, exogenous factors are influenced by changes in the Central Bank's Policies, Government. The internal factors can be termed *bank-specific determinants of profitability* and are related to the decisions and activities of the bank's management. The external factors can be termed as *industry-specific and macroeconomic determinants of profitability*, and are not affected by management's decisions and activities; rather they reflect the influence of legal and economic environment that affects the performance and profits of a particular bank.

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Pakistan's banking sector has also undergone some important transformations, and has earned a rapid progress. In Pakistan's economy, commercial banks hold a prominent position for being a primary source of institutional credit in the economy. They form the hub of the Pakistan's financial system, as they represent the largest deposit institutions of the country, and act as the primary sources of short term funding in the economy.

2. Previous Research:

For the upcoming decade, the financial sector's strategy would be designed to cope up with the emerging challenges by strengthening the foundations of the financial system. Commercial banks would have to concentrate on innovations and diversification into their infrastructure, SME, microfinance industry and financial etc. Banks would now have to cater to these rising demands for continuation of their growth (Akhtar, 2007).

To measure bank performance (in terms of profitability), the accounting-based studies have utilized *bank-specific*, *industry-specific*, and *macroeconomic factors*. Studies by Kosmidou, Tanna, and Pasiouras (2005) concluded that a large portion of bank's profitability was explained by the internal factors. Among the internal factors, bank specific ratios have been labeled as "management-controllable factors" by Kosmidou *et al.*, (2005). However, external factors have their own significance and could not be excluded while conducting a study.

Kuntet *et al.*, (1999) provided an insight into the reasons behind the higher profitability and higher interest margins of foreign banks as compared to those of domestic banks of a *developing economy*. The most probable factual reason was the strong "technological edge" that a foreign bank (belonging to an industrial economy) enjoys while operating in a developing economy. However, foreign banks showed low profitability when their operations were analyzed in an industrial economy; where they may not be technologically compatible to the technologically-advanced local banks of a developed economy.

Buch and Golder (2001) explained that "foreign banks infiltration improved the technological skills and know-how of the host-country banking sector and allowed it access to foreign savings". But on the other hand, critics to above view emphasized on the competitive pressure faced by the relatively inefficient domestic banks by the entry of much-efficient and technologically well-equipped foreign banks, which in some cases lead to bankruptcies of local banks (Kosmidou *et al.*, 2006).

Dietrich *et al.*, (2011) and Athanasoglouet *et al.*, (2008) prejudiced about ROE on the bases of their studies that it might not turn out to be the best indicator of profitability as it does not take into account the high risk associated with high leverage. Therefore, Dietrich *et al.*, (2011) and Athanasoglouet *et al.*, (2008) rated ROA as a better measure of performance than ROE, but utilized both in the study. Banks having higher equity (lower leverage) would report lower ROE but higher ROA (Athanasoglouet *et al.*, 2008).

Kosmidouet *et al.*, (2005) used five bank-specific measures (internal factors) and four external factors to show the **impact of market and macroeconomic conditions**. Pasiouraset *et al.*, (2007) used four bank-specific measures (internal factors) and six external factors. Olson *et al.*, (2011) used ten bank-specific measures (internal factors) and eight external factors in their study. Fifteen bank-specific measures (internal factors) and three external factors were employed by Chen *et al.*, (2011). Seven internal factors and four external factors were used by Kuntet *et al.*, (2000). Dietrich *et al.*, (2011) employed eleven internal factors affecting profitability and four external factors in their study.

Cost-Income Ratio measures the cost of running a bank or overheads as percentage of income. Cost of running a bank is represented by occupancy expenses, staff salaries, and other related expenses (Dietrich *et al.*, 2011; Pasiouraset *et al.*, 2007; and Kosmidouet *et al.*, 2005). It typically depicts the management's efficiency and its willingness in controlling costs. Cost-income ratio is generally expected to have a negative relation with bank's profitability, because high expenses mean low profits. Pasiouraset *et al.*, (2007) ranked cost-income ratio as one of the main determinants of a bank's profitability, and found it to be the most significant determinant in case of foreign banks.

Ansari (2009), through CAMEL-indicator, stated that a lower cost-income ratio would indicate the strong financial position and high profitability of a bank. According to Dietrich *et al.*, (2011) and Pasiouraset *et al.*, (2007), a high ratio cost-income ratio is expected to impact profitability negatively.

Due to the inherent risky nature of banking business, efficient risk management in a bank is of vital significance. Accordingly, risk can be split into credit risk and liquidity risk (Athanasoglouet *et al.*, 2008). Low liquidity and poor asset quality form the two main factors may lead to bank failure (Ramlall, 2009).

"Loan Loss Provision Ratio" is used as an indicator of bank's asset quality and hence its risks. It shows the proportion of total loan for which provision has been created but has not yet written-off (Kosmidouet *et al.*, 2005). Generally, large figure of this ratio shows poor loan quality and greater related risks (Dietrich *et al.*, 2011). Banks should thereby improve their profits by monitoring and screening in

detail the credit risk, and also by forecasting the future levels and probabilities of risks (Athanasoglouet *al.*, 2008).

Similar to loan-loss provisions, and according to risk-return hypothesis, banks with lower equity ratio gain higher returns. Also, a higher equity to total assets ratio confirms the existence of non-banking items on bank's balance sheet (Athanasoglouet *al.*, 2006). But, on the contrary, better- or highly-capitalized banks remain profitable and safer even during bad economic times. Additionally, creditworthy banks face lower risks and comparatively reduced financing costs (Dietrich *et al.*, 2011; and Pasiouraset *al.*, 2007).

Dietrich *et al.*, (2011) measured "Interest Income Share" by dividing interest income to total income of a bank. They found a significant impact of interest income share on profitability. Banks with more diversified sources of income were found to be more profitable as compared to banks that depended heavily on interest income.

As a matter of fact, banks transfer their operating costs to their lenders and depositors. Accordingly, variations in operating costs and overheads bring about variations in banks' interest margins and profits (Kuntet *al.*, 1999).

According to Goddard *et al.*, (2004) "macroeconomic factors" are important and significant profit-determining factors, as their study reveals significant results of real GDP growth and Herfindahl Index variables by running banks' dynamic panel profit regression.

Bank's profitability is affected by the functioning of the market in which it is operating (Ramlall, 2009). In addition to bank-specific variables, we expect profitability to be influenced by macroeconomic and industry-specific characteristics also.

Researchers and policy-makers, at international level, are keen towards the issues of concentration and competition of the banking industry resulting from the recent mergers and acquisitions. High concentration provokes collusive behavior among the participants which may obstruct competition in the banking industry (Khan, 2009). According to Dietrich *et al.*, (2011), this collusive behavior leads banks to earn "monopoly rents".

A bank might get forced to reduce its price and earn lower profits when high competition prevails in a well-diversified market. Contrary to it, a bank might enjoy discretionary profits when imperfect competition prevails in the market (Goddard *et al.*, 2004; and Ramlall, 2009). Hence, it is not possible to suggest the direction of their relationship theoretically (Dietrich *et al.*, 2011).

Ramlall (2009) defined Herfindahl-Hirschman Index (HHI) as the summation of each banks' market share (squared) for a particular year. For *perfectly competitive* market, HHI would be slightly greater than 0 and for *monopoly*; it would be equal to 1. The less concentrated a banking market is, the more it is dominated by smaller banks, (Chen *et al.*, 2011) and the higher the value if HHI is. Kuntet *al.*, (2000) argued that competition among banks is the result of development of country's banks. As banks get developed, competition gets fueled up and as a result banks become more efficient, but their profitability gets reduced.

Pasiouraset *al.*, (2007) found a negative association between total assets of deposit money banks to GDP ratio and bank's profitability in EU countries. This showed that banks were less profitable and had smaller margins in countries where banking assets constituted a large chunk of GDP.

Pasiouraset *al.*, (2007) found that a bank's profits were positively affected by increase in the size of stock markets as compared to increase in the banking sector.

Our research caters for bank-specific, industry-specific, and macroeconomic determinants of profitability by resorting towards panel data approach. The majority of studies on determining bank profitability, such as, Athanasoglouet *al.*, (2008), Dietrich *et al.*, (2011), Pasiouraset *al.*, (2007), Bhattiet *al.*, (2010), Kuntet *al.*, (2000), Goddard *et al.*, (2004), used linear models to estimate the impact of important variables on bank's profitability.

Mamatzakakis, E., Remoundos, P. (2003) also combined cross-section variables with time series to yield 'panel data'. The reason for opting panel data technique was to take account of the Greek banking sector's dynamic developments, and also to include the major commercial banks operating in that period. Since dynamic models can better incorporate bulk information which results in efficient estimation of profitability factor, therefore Mamatzakiset *al.*, (2003) conducted his study based on a dynamic model estimated with fixed effect. Ramlall (2009) also used the same approach.

Kosmidouet *al.*, (2005) adapted the fixed effect formulation to distinguish between internal and external factors affecting profitability, covering a period of 1995-2002 for United Kingdom-owned commercial banks. Kosmidouet *al.*, (2005), by eliminating the firm-level heterogeneity, estimated all models using fixed-effects regression. But for incorporating the impact of firm-level effects over the period, they included a linear time trends.

3. RESEARCH METHODOLOGY

The study examined the bank-specific factors of profitability for conventional banks of Pakistan. The ordinary least square method is embraced for the analysis of the data. Our independent variables consist of ‘**bank-specific determinants**’, ‘**industry-specific determinants**’, and ‘**macroeconomic determinants**’. Whereas the dependent variables serving as measures of profitability include **Return on Assets (ROA)**, **Return on Equity (ROE)**, and **Net Interest Margin (NIM)**.

Our study includes a careful selection of twenty-two (19) variables; sixteen (16) representing independent variables and remaining three (3) representing dependent variables.

Dependent Variables		
1	Return on Assets	ROA
2	Return on Equity	ROE
3	Net Interest Margin	NIM
Bank-Specific Characteristics		
1	Equity over Total Assets	CAPSTR
2	Cost-Income Ratio	CIR
3	Loan-Loss Provisions over Total Loans	CRISK
4	Inefficiency Ratio	INEFF
5	Interest Income Share	IIS
6	Funding Cost	FC
7	Banks Total Assets	SIZE
8	Loan Specialization Ratio	LSR
9	Deposit Specialization Ratio	DSR
10	Operating Expenses Management Ratio	OEM
Macroeconomic and Industry-specific Characteristics (External / Market-specific factors):		
1	Herfindahl-Hirschman Index	HI
2	Gross Domestic Product	GDPcapw
3	Inflation	INFDL
4	Stock Market Capitalization to Total Assets	MACPASS
5	Total Assets of Deposit Money Banks to Gross Domestic Product	ASSGDP
6	Real Interest Rate	RIR

Our sample is an unbalanced panel dataset of thirty (34) scheduled commercial banks operating in Pakistan. We collected data from 2006 to 2010... Six Islamic banks were omitted from sample because Islamic banks do not deal in interest.

We also introduced macroeconomic variables and industry specific variables in our empirical analysis. The GDP per capita annual growth rates (%), annual inflation % in term of GDP deflator, Real interest rate (%) were taken from World Development Indicators. In nutshell, our data collection sources were SBP website, scheduled commercial banks’ own websites and their regional headquarters, federal bureau of statistics, Economic Survey of Pakistan, Lahore stock Exchange and World development Indicators.

4. EMPIRICAL RESULTS

Empirical results are given below

4.1. Descriptive Statistics

Table 4.1 shows the descriptive statistics for dependent variables, bank specific characteristics (internal factors), Macroeconomic and industry specific factors (external factors) in our empirical analysis. Our analysis focuses on three performing measures ROA, ROE and NIM. On the average, ROA is -0.000580. This show there exists a profitability difference as the maximum value is 0.053034 and minimum value is -0.221694. Same is the case with ROE and NIM on average as they are -0.037898 and 0.016068 respectively. Now have a look on independent variables, the best bank in our sample has capital strength of 0.787969 and least capitalized bank has -5.372120. Worth mentioning funding cost, interest income share and cost income ratio have minimum values -0.066971, -4.538895 and -388.8272 respectively. GDP per capita annual growth rates (%) maximum value is 3.92 as GDP rates are important for economic stability. Herfindahl index, which is a measure of bank concentration, has mean value 0.002233.

Table 4.1: Descriptive Statistics

Dependent Variables:	Mean	Median	Standard Deviation	Maximum Value	Minimum Value
Bank Profitability					
ROA	-0.0006	0.00738	0.03055	0.05303	-0.2217
ROE	-0.0379	0.06378	2.26115	21.4385	-14.743
NIM	0.01607	0.02186	0.03111	0.09617	-0.1229
INDEPENDENT VARIABLES					
Bank-specific characteristics (internal factors)					
Capital strength	0.0223	0.09353	0.76257	0.78797	-5.3721
Credit Risk	0.14812	0.06034	0.3784	4.30234	0
Loan Specialization Ratio	42.772	5.22247	446.479	5703.56	-0.2951
Deposit Specialization Ratio	0.72324	0.82366	0.24844	0.97279	0
Operating Expense Management	0.03052	0.02588	0.02532	0.18879	-0.0569
Funding Cost	0.13085	0.07308	0.27987	2.67236	-0.067
Interest Income Share	1.10535	0.6496	4.31472	41.2677	-4.5389
Cost Income Ratio	-2.5854	1.60682	39.0874	27.2463	-388.83
Inefficiency Ratio	0.38984	0.55224	16.5508	126.197	-167.52
SIZE	17.9899	18.0447	1.51795	20.7577	14.8065
Macroeconomic and Industry-specific Factors(External factors)					
GDP (%)	2.07903	2.14588	1.59496	3.9272	-0.5573
Inflation (%)	12.9414	10.4603	4.52665	20.0141	7.65309
Real Interest Rate (%)	-0.7774	-1.1845	3.22702	3.82269	-4.5633
Assets to GDP	1.51E+16	5.22E+15	2.01E+16	8.79E+16	0
Stock Market Capitalization to Asset	1.38E+08	45296083	2.20E+08	1.49E+09	2269779
Herfindahl Index	0.00223	0.0001	0.00498	0.02415	0

4.2: Correlation Matrix

Correlation matrix for all variables is shown below. Significant positive correlation was found between SIZE to hi and ASSGDP as well as strong negative correlation of CIR with IIEFF, GRD and IIS. Also, positive correlation of IIS with INEFF, of ASSGDP with HI, of MACPGDP with RIR and negative correlation of ROE with LSR, CAPSTR with CRISK, DSR with FC, SIZE with MACPASS, INFDFL with MACPASS and RIR. GRD and MACPGDP were excluded from sample.

TABLE 4.2: CORRELATION MATRIX

Given below is the Correlation Matrix:

	ROA	ROE	NIM	CAPSTR	CIR	CRISK	DSR	FC	IIS	INEFF	LSR	OEM	SIZE	GDP	INDFL	MACPASS	ASSGDP	RIR	HI	
ROA	1																			
ROE	0.432	1																		
NIM	-0.551	0.347	1																	
CAPSTR	-0.041	0.002	0.297	1																
CIR	0.085	0.028	0.089	-0.093	1															
CRISK	-0.228	-0.081	-0.138	-0.688	0.011	1														
DSR	-0.068	0.116	0.0549	0.404	0.053	-0.483	1													
FC	-0.153	-0.324	-0.121	-0.029	-0.015	0.177	-0.73	1												
IIS	-0.118	-0.022	-0.089	0.102	-0.991	-0.0048	-0.028	-0.004	1											
INEFF	-0.03	0.049	-0.023	0.102	-0.958	-0.01	-0.047	-0.012	0.942	1										
LSR	-0.299	-0.952	-0.271	0.0254	0	0.0074	-0.028	0.201	-0.07	-0.073	1									
OEM	-0.344	-0.068	0.174	-0.068	0.176	0.457	-0.181	0.23	-0.147	-0.134	0.0152	1								
SIZE	0.294	0.104	0.134	0.1794	0.195	-0.419	0.409	-0.226	-0.0194	-0.218	0.0512	-0.271	1							
GDP	0.128	0.015	0.074	0.0157	0	-0.022	-0.002	-0.027	-0.007	0	-0.01	-0.099	-0.022	1						
INDFL	-0.206	-0.167	-0.136	-0.0249	0.11	0.057	-0.0148	0.064	0.128	0.098	-0.128	0.072	0.024	-0.66	1					
MACPASS	-0.111	0.027	0.04	0.234	-0.265	0.529	-0.439	0.153	0.265	0.283	-0.134	0.026	-0.81	-0.399	-0.14	1				
ASSGDP	0.362	0.145	0.278	0.0761	0.07	-0.22	0.307	-0.23	-0.0708	-0.088	-0.029	-0.2	0.827	0.033	-0.075	-0.407	1			
RIR	0.2035	0.152	0.133	0.0246	0.099	-0.055	0.0138	-0.061	-0.1163	-0.088	-0.116	-0.079	-0.025	0.742	-0.994	0.132	0.073	1		
HI	0.3023	0.115	0.263	0.0459	0.04	-0.1322	0.2422	-0.201	-0.0403	-0.054	-0.04	-0.141	0.653	0.005	-0.019	-0.31	0.944	0.018	1	

In our study, CAPSTR turned out to be the most important determinant of bank profitability. On the basis of this result, we would suggest the banks to achieve and maintain higher capitalization ratio. This would help the adequately capitalized banks to remain efficient, strong, secured, and stable during adverse environments. Such banks would be able to reduce bankruptcy risk, and funding and other costs, increase customer’s confidence on banks.

On the basis of our results, it is observed that Pakistani conventional banking industry is highly exposed to credit risk. To cater this issue, it is recommended to bankers and policy-makers to employ risk-averse strategy by improving screening and monitoring activities while granting loans and advances. In this way, risk associated with loan defaults would reduce and hence profitability could increase substantially. In addition, State Bank of Pakistan should devise more strict Prudential Regulations regarding loan-loss provisions for banks to make them able to cater to credit risk.

In the past, banks did not seem to anticipate real inflation rate and as a result they were not able to determine appropriate interest rates. This caused bank’s cost to increase more than its revenue; hence leading to increased collective losses. To cope up with this issue, policy-makers are recommended to involve bank managers during the course of anticipation of inflation rates, so that banks could better adjust their interest rates accordingly to meet their profit-objective.

On the whole, we recommend the bank managers to increase their asset quality, capital adequacy, market power, operational efficiency, trading operations, expense managing expertise, asset utilization, monitoring and careful credit selection criteria in order to create a well-diversified loan portfolio, to reduce bad loan, financial intermediation cost, and to lower their reliance on interest operations. These measures would enable the bank managers to easily fulfill their profit-maximization motives.

5. Suggestions for prospective studies

For the upcoming researchers, we make following recommendations to be employed on for a broader and more comprehensive research in the same field

- *First*, the time span can be extended to a decade to incorporate better variables’ trends and time series movements.
- *Second*, the study can be extended to the comparison of profitability between foreign and domestic banks.
- *Third*, the comparison and contrast of Islamic and Conventional banks can be conducted to see the impact of bank-specific, industry-specific, and macroeconomic determinants on their respective profits.
- *Fourth*, the sample of banks can be divided on the basis of their sizes into small, medium sized and large banks to compare the Structure-Conduct-Performance (SCP) Hypothesis with the Efficient Market Hypothesis.

- *Fifth*, the empirical work can be conducted by using other latest software like Microfit for the estimation of econometric models.
- *Sixth*, profitability can be determined by introducing structural breaks in the time series data for the purpose of conducting a study for analyzing the impact of financial crisis.

Finally, our study is conducted to fill a research gap in the empirical literature related to Pakistan's commercial banks with a detailed analysis of internal and external determinants of profitability. This competitive edge of our study is expected to make an important addition to the existing recent literature regarding the determinants of Pakistan's commercial banks.

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