

Investigation of Profitability of Banking Sector: Empirical Evidence from Pakistan

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Abstract

This empirical work investigates banking sector of Pakistan and comments on bank's profitability in the post crisis scenario. Study explores how sector specific variables are involved in profitability when there is process of financial liberalization, and the repercussion of financial fragility persists due to severe financial crises. A sample of 26 banks were selected on the basis of financial deepness of each bank for a period 6 years ranging from 2006-2011 (short panel). The study used fixed effect regression model for estimation, the viability of which was confirmed statistically by executing Hausman test. White cross section covariance approach was adopted to achieve consistency in parameters. Findings help to conclude that sector specific variables have considerable gravity to effect banking profitability but inexorable link between macroeconomic soundness and financial stability could not be confirmed, believing thereby that Pakistani macroeconomic scenario stands an outlier and deviating from rest of the world.

Keywords: IMF, SBP, DFI

Introduction

Financial soundness is the key concern of the policy makers. It has role in enhancing economic activities which would not be possible when system is facing resilience and fragility. Furthermore, pace of economic progress can only be kept when financial system is sound and stable. It demises market risk and restores investor's confidence. It levers growth and terms financial stability a pre-requirement for sustainable growth. Coordinated markets minimize asymmetry and translate market signal of sustained growth in the presence of optimistic expectations into macro stability. Traditionally, central bank is responsible for providing stable macroeconomic environment by monetary management in the domestic economy. Under normal conditions role of the central bank is to maintain and manage inflationary pressures that arise because of day to day requirements, but under financial stress its role as a regulator becomes too important in providing safeguard to financial system and liquidity management. Crises have taught us lesson that there may be instability in the financial market even when there exists stable inflation. This implicates that sustained growth cannot be achieved without having stability in the financial market along with sound macroeconomic environment. Financial Stability Review of bank of Tanzania reports similar observations in its 2007 periodicals. There is no doubt that banking system is back bone of the financial system and Rajan and Zingales (1998) argue that well functioning banking system has key role in economic growth. It also provides opportunities for efficient allocation of savings, and returns on savings and investments. It also has role in better fiscal management by solving budget adversaries of government. This shows how much important a profitable banking system is for the economy. Understanding vitality of risk associated with macroeconomic environment and key role of policy economists in their mitigation in economic stability and there also appears financial (bank specific) risk as well. These risks deteriorate banks' balance sheet and impede bank profits. In a rare moment of solidarity, economists by and large agree on the subprime debacle as the root cause of our financial malaise.

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It is by this extension of the subprime mortgage mess as being at the heart of the economic crisis that most people blame the rating agencies and deem them as the prime suspects for the ruin. Securitization and its inherent complexity exposed the weaknesses of the issuer pay business model of the rating agencies. It also adversely affected transparency and simplicity, the two defining factors essential for the success of the altered business model. In addition, since these subprime mortgage securities were conceived by the big investment banks, counted by the fingers, rating agencies were exposed to immense issuer pressure as the client switching costs became real and substantial. Another clear deviation within the workings of these credit rating agencies in the subprime mortgage securities risk assessment was their close involvement with the issuers in the design of these securities. More often the credit rating agencies acted as consultants. Issuers of subprime mortgage securities were actively advised on the design of these debt vehicles in order to improve the credit ratings of these instruments (Mason and Joshua, 2007). The subsequent higher credit ratings of the securities meant greater profits for the issuer and hence more business for the credit rating agencies. In essence, the financial crisis underscored the inherent flaws within the business model of these credit rating agencies. The credit rating agencies failed to perform their basic task of risk assessment. Conversely, these agencies became part of the risk frenzy through their active involvement in the design of the hugely toxic subprime securities and exposed the system to unprecedented level of risk.

The whole financial paradigm took a new look when the process of financial innovation and securitizations started in the 1980. This increased the borrowing cost as trend from the low rate saving account and demand deposits into deposits bearing market rates made balances less stable and more volatile. This process of converting financial assets into marketable securities is called securitization. There is no doubt that profitability of banking sector depends on both internal determinants and external determinants. The external determinants include macroeconomic environment and internal determinants are attributed to industry specific characteristics. As far the macroeconomic environment is concerned, many countries adopted financial liberalization in the late 1980s and early 1990s. Since the Asian financial crises, the role of financial liberalization has become too important because crises seriously heeded economic growth. In general, booms and bursts are the general market phenomena but when they take the shape of contagion, become too fatal and severely hurt the economic activity. Continuing growth of unemployment even in the time of economic recovery poses serious threats when the most governments are seen to allowing a fiscal injection in the form of bail out programmes. There is unanimity of views that in amid financial crises when labor market dynamics has fully changed, there is need to address the question of long run employment which is both structural and cyclic in nature. Banking sector which works as backbone of economic system generally dominates the non banking sector and facilitates funds mobility from surplus units to deficit units by restoring market equilibrium. Banks allow parking excess liquidity and work on extremely competitive strategies of modern financial engineering. With the advent of paradigm shift in financial sector, banking system has taken a totally new turn. It has been the case that banking has changed completely since last decades as compared to those practices that were routine in years bygone (Hussain and Bhatti, 2010).

Banking sector of Pakistan is completely diversified and had followed international best practices. Even though till 1990 there were only five state owned commercial banks adopting best practices. According to 1990 amendments in banking companies' ordinance process of financial sector reforms started which allowed privatization of nationalized banks. Following to these reforms banking industry showed enormous growth and many new banks came on the surface and banking industry started to expand. Many regulatory constraints were also relaxed so as the entrants and foreign banks could be encouraged to open branches in Pakistan. It increased high level competition in the banking sector which was in a state of inertia before that. It further enhanced competition and quality of banking services enormously improved and justifies that a growing and sustained growth in banking industry is pre-condition if policy makers are wishing to achieve sustained economic growth as both are positively correlated (SBP, 2004). Current dynamism and robustness in banking sector ensure it high standing from its level of 1990 when financial system was dominated by public sectors. Bank specific indicators confirm that banking system is standing at a level of Rs 4.1 trillion deposits and Rs 3.3 trillion in advances. As venture banking has attracted almost \$4 billion in the form of foreign direct investment during 2006-2008. The process of diversification that started in the 1990 proved a successful step in banking industry in Pakistan as it caused to increase in banking assets and innovation. Now almost half of the current banking assets portfolio is owned by foreign banks and there happened technological change in banking industry. This technological improvement has caused bank to provide better services. Efficient management of regulatory framework caused in lowering non performing loans which are touching to its historic low level.

These reforms have significantly contributed in supporting the financial soundness indicators in industry as well. Accordingly, reform plan over the next decade has been prepared which does not limit itself to banking sector only but incorporate financial soundness responsibility of State Bank of Pakistan. Supplementing to it, emergence of Development Finance Institutes (DFI), most specifically public sector development institutes have completely changed the financial history of country. It categorically underscored poor assets quality and existent inefficiencies in public sector of banking industry and asset quality to deteriorate. This paved the way for structural changes in banking industry. Wave of privatization of public sector banks and process of merger/consolidation caused visible change in market concentration, ownership, capital structure in banking industry of Pakistan (State Bank of Pakistan, 2009). Financial stability in the emerging economies became more worsen due to poor domestic corporate governance in both financial institutes and corporations, insufficient regulations and supervisory framework, feeble institutions and insolvent fiscal system. There is no doubt that much progress has been made to correct these deficiencies in system at all levels even adverse circumstances prevails. But there is no doubt that strict prudential regulation, stable macroeconomic fundamentals, better and improved risk management practices and high degree of transparency are generally considered necessary but not sufficient for drawing the assurance of market stability (EPEMG, 2001). In first phase, focus remains to make an intervention so as contagion effects of crises can be controlled followed by the restoration of confidence over the financial markets and later the whole system. It is indeed a difficult job and requires extraordinary measures to be taken in respect of cost incurred, scope of the action and extent of the government reach to tackle it.

In second phase, when governments become successful in managing the crises the most and immediate effect that is deemed is to take stance to cope with the secondary effects of the crises particularly in the emerging markets which appears in the form of capital flight that happened due to vulnerable nature of currency markets in these countries. Third phase requires making changes in the financial market structure to minimize crises effects and reduce / minimize risks so that system could come out successfully if in future crises re-strike the system. This phase is really very important as it requires enormous support at political levels. So to come up with successfully from the proposal stage to implementation stage world leader have called for international meeting of G-20 leaders on Sep 2009 to address changes at policy, regulation and enforcement level in Pittsburgh to address the global financial crisis. The fourth phase traces what crises had harmed to political stability, social divide and security as a whole and on the global interface the most dominant is the strengthened role of China in financial markets. Careful analysis of economic downturn that appeared in the past highlight conditions which when set in, making markets fail to clear and cause vulnerabilities in the system. This fragility also appears in the banking sector due to its dominance in financial system. This revelation from history helps in identification of those determinants that likely cause crises in the banking industry and give wake up call to take up preemptive measures and if possible steps for its solution or minimizing its repercussions.

So there is greater need to look into those factors that are involved in the process of variation in the profitability in the banking industry. Some banks which are not even having deep penetration are showing huge profit and some that are not different in cost structure and even having big market share fail to show profitability. The variations in profitability also exist from commercial to public banks and the variations also exist due to endogenous factor that cause to change profitability. Quite parallel to this there is also need to quantify the effects of exogenous factors that are responsible for profitability. So tracing the determinants of bank profitability need a comprehensive analysis in time when system is completely liberalized i-e financial liberalization. On the other hand, if macroeconomic shocks prevail, pressure over policy makers to strengthen financial surveillance so as fragility in the financial sector could be avoided specially in a time when economy is falling in the recessionary phase. The system may need to be checked if bank's reactions against these shocks exacerbate downturn. Lending importance to the stylized facts there has been seen cycles and swings in economic activities. In the expansionary phase, firms' profits increase that increase firms / institute's internal soundness. Due to optimistic market trends investment increases. Market confidence restores and exposure is underestimated. But when recessionary phase starts creditworthiness decreases and volume of nonperforming loans increases which deteriorates financial health of customers. It enhances market risk leading to depress collateral via increase in value of haircut.

This all increases bank's exposure which signals an increase in the provisions and demands higher level of capital as increase in risk weighted capital trim lending due to thin buffer above minimum capital requirements and necessitates reforms in bank capital requirements making it more risk sensitive as well. Thus, shocks in the macro economy is transferred into financial system and making it too vulnerable and resultantly deteriorates its profitability. It strongly covers that one cannot neglect the macroeconomics environment while tracing the deterrents of profitability in the banking sector. Pakistan is also an emerging economy and its markets (capital, currency and banking sector) exhibit almost similar characteristics as other emerging economics. Specifically, its banking sector is completely diversified and well connected to both international and local markets and had adopted international best practices which have made it an ideal case for the study. Recognition of sound and efficient financial system provides strong rationality to explore what internal and external factors are involved in financial health of a banking industry and how these variables cause to financial soundness of the banking industry when globe has accepted the need of financial liberalization for achieving market stability. This also develops a question of what policy implication could be drawn to help banking industry and strengthen the financial sector with a minimum deterrence against the both internal and external shocks. To address these questions, following specific research objectives are set.

The objective of the study is to

- Find out effect of financial sector specific variables on profitability of banking sector of Pakistan.
- Draw a comprehensive analysis over bank market concentration under neo liberal financial agenda and changing macroeconomic regime.
- give policy recommendations

Review of Literature

The financial fragility of 1990s has aggravated manifestation and analysis across the globe on ways to strengthen the international financial system which otherwise hurts economic growth in large scale. It caused poor economic growth and low productivity. This productivity loss because of market failure gave birth to macroeconomic shocks, income instability and volatility in financial markets. Globalization and market integration caused it to surge into neighboring markets making it a contagion. It also crushed the global financial market and took shape of financial crises. This happening at the global front led to rememorize the famous proposition of American economist; James Tobin suggesting the need of capital control as economic policy in his lecture at Preston that financial transaction should be taxed-what is now traditionally called Tobin Tax. While proponents of capital control suggest, in line with Tobin (Tobin, 1978), to throw some 'sand in the well-greased wheel' of international financial flows, the advocates of liberalization view capital controls, as put-forth by Forbes (2004), not just as 'sand' but rather 'mud in the wheels' of market efficiency. This necessitates that stability and smooth functioning of financial markets is by and large a precondition for financial soundness which later leads to achieve profitability and finally economic wellbeing and prosperity.

Although banking industry is too complex and dynamic in nature but there is evidence that it is possible to explore those indicators that are mainly responsible for the profitability in banking sector (Scot and Arias, 2011). In current decade the financial sector in general and banking sector in specific has gone under enormous changes both in structure and management. Most of the empirical work on the profitability to date, includes the working of Short (1979), Molyneux and Thornton (1992), Demirguc-Kunt and Huizinga (2000) and Goddard, Molyneux, They used different linear models for estimating the impact of different variables on profit. Contrarily, many researchers found that the role of local indicators is quite certain in affecting financial soundness of the banking industry. Calomiris and Mason (2000) confirmed that several country and state specific variables affected financial health of the banking industry during great depression. Avery and Gordy (1998) argued that half of the change in bank's loans performance could be explained by state / country specific variables. Their conclusions rest on a data set which covers a data range of 1984 to 1995. Berger *at al.* (2000) worked on USA banking sector and found that state level variables have significant role in explaining bank performance but this statistical significance fade away when disaggregation appears in defining economic variables. Zimmerman (1996) and Meyer and Yeager (2001) focused on the small banks and viewed how much vulnerable they might be to economic shocks and be linked to local economy. Zimmerman worked on economy of California and found that community banks of south California performed worse as compare to their counterpart in north California in 1990-1995

Balling and his colleagues (2000), made a theoretical contribution in the literature of international economics. They define financial instability by considering two important market indicators. They discuss that financial instability account two type of phenomenon: assets price movements and financial distress of institutions. Authors report close association among these two. They mentioned that short run market movements are quite common and may not raise concern but rather medium-term sway which place market far away from its fundamental value (as commonly called by economists) with no trend to restate. These market swings make prices highly volatile and unsustainable. Such price misalignments don't let market to clear and cause it to crash but financial distress usually occurs without price misalignment phenomenon. Instead, it appears due to firm or institute specific factors which make system internally feeble. Among these factors most prominent and usual factor is poor management. These factors in combination affect large portion of financial system and so policy response is supposed to be systemic not individual, but there is no doubt in accepting that market segments cause systemic distress in general.

Sundararajan *et al.*, (2002) urges to have broad set of macroeconomic variables associated with financial system vulnerability and market based indicators for providing support and periodic monitoring to financial system. This realization sets in motion international societies, national authorities and private sector, to work out a master plan for defining FSIs. Along these lines, a parsimonious and operationally useful set of "core" and encouraged financial soundness indicators was identified by International Monetary Fund (IMF). In the last decade of twentieth century, use of FSIs has increased largely in financial system surveillance. The international bodies like International Monetary Fund (IMF) and World Bank (WB) have started using FSIs most specifically in the context of Financial Sector Assessment Programme (FSAP). Body of literature confirms endogenous relationship between macroeconomic indicators but main focus remains on the banking sector. Caprio and Klingebiel (2003), Hermasillo *et al.*, (1999), Demirguc and Detragiache (1998), Hardy and Pazarbasioglu (1998) and Kaminsky (1998) focus on the role of macroeconomic variables in explaining the specific episode of banking crises. Conversely, periodic study contribution by renowned economist focuses on investigation of causes of 1997-98 Asian crises. Notably, Adelet and Sachs (1998), Chang and Velasco (1998), concentrate on the adverse consequences for macroeconomic stabilization of a weak financial sector. Multiple studies also scan if any, role of FSIs in predicting the financial crises.

Above empirical findings provide reasonable empirical support about the role of bank specific and macroeconomic factors in determining profitability. But quite parallel to these findings, it is equally important to meet research demands for tracing theoretical reasons so as arguments for and against could be made more balance and more analytical. Economic theory underpins operational inefficiency of a financial institute if high capital ratio realize. It shows bank management is missing profitable options and is jittery and conservative. High capital also delineate that bank is not ready to bear risk and lower return actualized on equity. Berger (1995) also confirmed a positive relation between capital and return on equity by drawing empirical analysis in the light of Granger-Causality test. Many studies have revealed a positive relationship between real interest rate (RI) and bank profitability (Bourke, 1989). For conventional banks, high real interest rate generally leads to higher loan rates, and hence higher revenues. In the same line, Saddiqui and Saddiqui (1998) tried to analyze the determinants of profitability of banking sector of Pakistan.

Materials and Methods

3.1 Theoretical Understanding of the Empirical Methodology

Most suitable, approach is being adopted for selection of statistical modulation so as consistent results can be achieved. This approach helped too much in providing due justification that all those literal assumption which arise during rationality of study, are better addressed in the model. Final decision about selection of statistical modulation is also supported empirically and is based on the nature of data being used for empirically investigation. Statistical approach uses a panel data. Panel data consist of both time series and cross section elements. The time series characters appear in the data set when investigation comprises many periods and cross-sectional behavior appears when we study different banks at a time. The nature of panel is best supported because it helps in achieving more consistent results. It is also argued that the use of panel data improves results and helps in better identification and makes results more consistent and efficient. Baltagi (2005) reports that panel data enables us to deal with errors in variables problems and heterogeneity problems under a few restrictions. Heterogeneity in banks is considered that all banks are not same. Statistically speaking, heterogeneity is related to those unobserved characteristics of banks that cannot be captured by the explanatory variables.

For estimation purposes research design is build up by preparing two econometric equations. First equation tries to answer what affect sector specific variables will have on profit when then profitability increases. Second equation include both sector specific variables and macroeconomic variables in order to make investigation regarding assumption that macroeconomic conditions has major effect on the profitability.

First econometric model

$$P_{it} = \alpha_0 + \gamma_t M_t + \varepsilon_{it} \quad \varepsilon_{it} = u_i + v_i \quad \text{-----1}$$

Second econometric model

$$P_{it} = \alpha_0 + \beta_i B_{it} + \gamma_t M_t + \varepsilon_{it} \quad \varepsilon_{it} = u_i + v_i \quad \text{-----2}$$

Where,

i is for bank and t is time. $i = 1 \dots N$ and $t = 1 \dots T$. N is cross-sectional observation and T measures time periods of study, which is length of sample under study.

P_{it} = is profitability measure i.e. ROA. It is dependent variable.

B_{it} = are bank variables for bank i at time t;

M_t = is the Macroeconomic variables in time t.

And, α_0 is a constant, and β and γ are coefficients, while ε_{it} is an error term. It captures bank specific of fixed effect and idiosyncratic effect that vary over time between banks (v_{it}).

Table 3.1: Difference between Fixed Effect Model and Random Effect Model

Sr.#	Description	Fixed Effect Model	Random Effect Model
1	Functional form	$Y_{it} = (\alpha + \mu_i) + \beta X_{it} + V_{it}$	$Y_{it} = \alpha + \beta X_{it} + (\mu_i + V_{it})$
2	Intercept	Varying across group and/or time	Constant
3	Error variance	Constant	Varying across group and/or time
4	Slope	Constant	Constant
5	Estimations	LSDV, Within effect model	GLS ,FGLS
6	Hypothesis Tests	Incremental F test	Breusch-Pagan LM test

$V_{it} \sim N(0, \sigma^2)$

3.3 Data Sources

The data for this empirical work about industry (bank) specific variables as well as; microeconomic indicators was taken from the financial statements of banks available in the data base of State Bank of Pakistan (SBP) and individual data base of respective banks. Data about the macroeconomic indicators was extracted from the Economic Survey of Pakistan (ESP), Federal Bureau of Statistics (FBS), Library of Planning Commission of Pakistan, Economic Intelligent Unit (EIU) and International Financial Statistics (IFS). The data so collected from various sources was made uniform across the series and empirically workable by standard procedure.

3.4 Sample Selection

Sample under study includes 15 banks of Pakistan. Sample selection was made on the bases of financial deepness and market penetration of each bank. It is assumed that all banks in the sample follow same prudential regulations.

3.5 Time Period

The study covers a period of post financial liberalization: 2006 to 2011. As all the banks in the sample will be observed for the entire period (2006 to 2011) so empirical work will use balanced panel data. This is short panel which constitutes on 6 periods and 26 cross sections. There are multiple entities; each is being studied over time intervals.

3.6 Data Arrangement

In panel data contains 26 entities (banks) spread over 60years, ranging from 2006 to 2011. Thus there are 156 observations. Innate property of panel is that it is measured over regular time intervals (years, quarters, months). Cameron and Trivedi (2005) mention that panel is further classified into short and long panels. In short panel there are present many entities and a few time periods but in long panel there are many time period and few entities. Here nature of data is long panel.

3.7 Functional Form

The empirical analysis examines profitability of banking sector in the regime of financial liberalization. The ROA will be taken as proxy variable for profitability. A linear equation that relates to the performance measures to bank specific, macroeconomic variables / indicators is represented as under

Profit: F [Bank specific variables (it), macro variables (kt)]

i = Bank specific variable (microeconomic financial soundness indicators)

k = Macro variable (Macroeconomic Financial Soundness Indicators)

t = Time in years (2006 to 2011)

3.8 Selection of Variables

Variables are classified into dependent and independent variables. Dependent variable is banks profitability. Profitability is ability of the banking sector to earn profit or earning. A proxy variable is taken for considering bank's profitability. Subsequently independent variables are selected taking lead from the literature considering the economic environment of Pakistan and macroeconomic situation in Pakistan.

3.9 Selection of Dependent Variable

Empirical work will analyze the effect of various independent variables on profitability of banks applying econometric modulation. There may be different estimation techniques which are supported by researcher according to gross economic realities. Analysts measure profitability by adopting several measures. In general there are two methods that are commonly used to measure profitability. One is accounting based procedure and other is economic based procedure.

3.10 Bank Specific Variables

1. Size of bank
2. Cash & cash equivalent to total assets
3. Spread ratio
4. Earnings per share
5. Non-performing loans to total assets
6. Capital Ratio
7. Return on assets (ROA)

3.10.1. Size of Bank

Definition: Size of the bank means the total assets of the bank. In financial system, it may be termed as the financial penetration or financial deepness of the bank as well. It is assumed that size of banking or financial institute synergies up to some standard level as financial system becomes too complex. It effect there for become non linear.

Objective: It is assumed that size of bank significantly contribute in profitability of banks.

Method of calculation: total assets of the bank divided by total assets of the banking sector.

3.10.2. Cash and Cash Equivalent to Total Assets

Definition: Current ratio measures the percentage of total assets is present in highly liquid form. It is a measure of short run solvency and operating efficiency of an organization or institute.

Objective: It is assumed that increase in cash ratio from specific level causes erosion in bank profitability.

Method of calculation: cash and balances with treasury and balances with other banks divided with total assets of the bank

3.10.3. Spread Ratio

Definition: Spread ratio is the difference between lending and borrowing rate of a bank. Positive change in the spread is an indicator of profitability as the spread is where a bank makes its money.

Objective: It is assumed that increase in banking spread cause bank profitability to increase

Method of calculation: {Interest income divided interest expense} * 100

3.10.4. Earnings Per Share (EPS)

Definition: Earning per share is profit which is allocated to each outstanding share (common stock) and measures financial health of the bank or financial institute.

Objective: It is assumed that increase in earnings per share have a positive effect on bank's profitability

Method of calculation: Profit or loss after tax divided by number of share outstanding.

3.10.5. Capital Ratio

Definition: Capital ratio is percentage of total shareholder's equity to total assets and measures the residual claims of the shareholder on the assets in case of liquidation. Capital Adequacy Ratio (CAR) would be preferred over capital ratio for analytical purposes.

Objective: It is assumed that increase in capital have a positive effect on bank's profitability

Method of calculation: Share capital plus Reserves plus un-appropriated profits / divided by total assets.

3.10.6. Concentration Ratio

Definition: Concentration ratio indicates that what the pattern of asset density is across the banking sector. Concentration ratio reports the relative size of the firm/ banks in relation to the whole industry. It mentions that what is individual share of bank in the whole banking market (Demsetz and Strahan 1997).

Objective: It is assumed that increase in concentration ration indicates inefficiency and indicates that banking sector is dominated by some major player. It also indicates some poor level of regulatory frame work that does let other to enter into banking industry.

Method of calculation: Share of total assets of large 4 or 8 banks in baking industry. It is calculated by dividing the assets of individual banks over the total assets of all banks sectors. It appears in percentage form and mentions percentage of assets that a bank holds out of total banking industry (Percentage accumulation CR-4). It is also calculated for top eight banks as well.

3.10.7. NPL/Total Assets

Definition: Nonperforming loans are those extension to clients (borrowers) on which bank fails to collect interest payment for 90 days. Such banks extensions (assets) are called nonperforming assets or non performing loans. Change in nonperforming loans happens due to change in economic condition in the economy. It is banks inefficiency at the bank's end (Hou, 2007)

Objective: It is assumed that increase in nonperforming loans heart profitability of banking sector.

Method of calculation: It is absolute value of those loans in rupees that borrow cannot pay in stipulated time period of 90 days.

3.10.8. Return on Assets (ROA)

Definition: This ratio measures ability of the bank's assets to make earning. In other words it measures what is capacity of make earning using all employed assets. It is healthy indicator of banking industry.

Objective: It is assumed that return on assets will determine capacity of banks to make profit. So, high ratio indicates better profitability.

Method of calculation: It is calculated by dividing total earning (after tax) by total assets. Later percentage amount is calculated.

Macroeconomic variables

1. GDP per Capita
2. Inflation
3. Interest Rate

3.12 explanation of Variables

1. GDP per Capita is a measure of economic prosperity of a country. Demirgüç- Kunt (1998) considers it as a better indicator for economic growth. Neeley and Wheelock (1997) find that bank performance is positively related to the annual percentage changes in the state's per capita income.
2. Inflation is general increase in price level of goods and services in an economy which causes purchasing power of consumer to fall. High inflation is associated with high interest rate and so more income. But Naceur (2003) argues that it may increase bank cost if it is not properly anticipated.
3. Interest rate is price of money. High interest rate mobilizes saving and is generally considered as an important variable for the financial liberalization. According to Fry (1997), "empirical studies of financial liberalization have often used real interest rate as proxy for financial liberalization".

It is submitted that addition of new variables or omission of existing variables would be possible in case of unavailability and or suitability of data

3.13 Variables' Definition

The Microeconomic financial soundness indicators / variables are described following the definitions of IMF. IMF publication of Macroeconomic Indicators of financial soundness, occasional paper 192 is basic writing for variable explanation. Financial structure variables will be described as per the local state policies of government of Pakistan.

Results and Discussions

4.1 bank Specific Variables and Profitability

4.1.1 Results from First Econometric Equation

First econometric equation was estimated under assumptions of fixed effect model for panel data. Model remained best fitted and well predictive. Panel specification guides to arrange data in cross sections (N) and periods (T). Here cross sections are "banks" and time periods mention year over year (YOY) study of underlying cross sections. Estimation for 26 banks (cross sections) and 6 (periods) was executed. It is short panel. Model proved predictive with R^2 value equal to 70 percent even data limitations do exist. It reports that 70 percent of variations in the dependent variable are being explained by explanatory variables. It also signals right selection of exogenous variables as well. Adjusted R-square falls well in limits also and reports that nearly 62 percent variance in the outcome that model explains in population. Adjusted R square explains as "variance in the outcome that the model explains in the population (instead of just the sample)". F and Durban-Watson statistics is also reasonable. Model results are very much consistent with theory. All variables are highly significant at $\alpha = 5\%$. Size of the bank (abbreviated as S) is market share (in percentage) a bank has out of total banking sector. Estimation results confirm that size of a bank significantly contributes in profitability of banking industry. Interpretation goes if there happen a one percentage change in size of the bank it will cause an increase of 0.02% in profitability of banking sector. This shows that greater the size of the bank, more profitable it will be.

The second explanatory variable is non performing loans (NPLs). The relationship between NPLs and profitability appeared to be negative. In other words, NPLs deteriorates profitability. Results indicate that if there appears one percent increase in the NPLs, it will decrease profitability on average by 0.037%, keeping all other factors constant. Third variable is earning per share (EPS) or it is level of earning on an outstanding share. Results depicts that EPS is significantly contributing in profitability and confirms a positive causal relationship. Precisely, if price of a share increases by one percent, it cause an on average increase of 0.0002 percent in ROA (profitability). Presence of well defined secondary market makes banks to list themselves on stock exchanges. In boom when market value of share increases so as profitability. Fourth variable is cash and cash equivalent (CCE). It consists of banks' highly liquid assets and explains solvency status. This variable is also highly significant in model as well and indicates a positive association between cash reserves and bank profitability. The increase in assets may be because of inflation in the economy and increase in profitability may be because of time trend and there is no causal relationship between these two variables. Capital ratio appears to be statistically significant. It report that there is inverse relationship between capital of banking industry and profitability (returns per unit of investment). Model predicts that if capital ratio increases by one percent, keep all other factors constant there will be on average 0.2 percent decrease in profitability.

Summarizing results, bank capital and non performing loans cause to deteriorate profitability while size of bank, earning per share and cash and cash equivalents have positive effect on profits. Results confirm that in banking industry of Pakistan, sector specific variables have a considerable affect on profitability. Returns per unit of invested money decrease due to changes in the sector. Here five sector variables are used for the analysis. Four variables are profitability variables and one, cash and cash equivalent measures credibility of the financial entity. Even though this variable is not concerned to profitability of the banking system but in estimation it shows a positive relationship with ROA and is highly significant. This is due to fact that there is high inflation in Pakistan. In fact increase in the cash and cash reserves are due to the increase in inflation, and on the other hand increase in the return on assets is due to time trend. Thus even though there is not a single reason of increase in ROA if cash and cash equivalent increase, in the banking channel. Statistical significance confirms that there is positive association among these two variables.

EPS is profitability variable and appears to be highly significant, mentioning that if the value of share increases then as result profitability increases. The results represents in the time periods when financial system is recovering from the financial stress and resilience. In time of stress share prices fell significantly too. In phase of recovery prices are increasing so profitability also increases. NPLs are highly significant mention that there is negative relationship between profitability and non performing loans. This shows that bank management is becoming more efficient and effective. They have learned lesson that for a financial institute to be profitable, management should follow policies that may help for right selection of borrower considering credit history, ability to pay. Banking capital appears to be significant but having negative effect on the profitability. This mentions that as decision of financial institutes to increase capital structure will cause to decrease profitability. This is again a phenomenon that appeared in the financial sector during and after financial crises. During financial crises it was found that those financial entities that were having more buffers against financial shocks escape from default. So following bank regulations banks started following high capital to assets ratio. This accumulation of capital made less funding for credit extension, which directly cause to decrease in assets and resultantly profitability increases.

The size of the banking is also a profitability indicator and appears to be significant in the econometric analysis. It reports that if banks size increase then it will cause to increase profitability. Greater the size of the financial institute, greater will be profitability. This shows that as bank size increases, its ability to generate more profit increases as well. This also shows that banking industry of Pakistan is less competitive and there appears market monopoly by the large banks. Results confirms that Pakistani banking industry is still facing effects of financial repercussion and could not ruff out ugly effects of recession.

Table 4.1: Regression between ROA and Independent Variable

White cross-section standard errors and covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
S	0.024601	0.070199	0.350449	0.0266
NPL	-0.037288	0.023824	-1.565149	0.0202
EPS	0.000212	1.17E-05	18.21731	0.0000
CC	9.44E-11	3.71E-11	2.546709	0.0122
CAP	-0.002015	0.001016	-1.982676	0.0497
C	0.005693	0.003134	1.816675	0.0718

Source: Results taken from E-views output

4.1.2 Results from Second Econometric Model

Second econometric equation not only includes bank specific variables but it also incorporates institutional and macroeconomic variables. Gross domestic products (GDP), interest rate and inflation are macroeconomic variables. Institutional behavior is represented by concentration ratio (CR) in banking industry. Estimated results show that addition of macroeconomic indicators and institutional specific indicators made almost all exogenous variables insignificant. The only two variables remained significant were earning per share and capital ratio. Focusing over model's estimation power or R² we could report more reasonably that effect of institutional and macroeconomic variables was not significant in Pakistani banking sector. Model was also best fit on the estimating criteria as well. It also confirms volatile nature of the macro economy which makes system less stable. In fact this is due to high political and country risk which is being reflected by high level of interest rate that prevail in the country even many financial reforms has made significant changes in the system.

There is also process of financial liberalization even then there is present high risk in the country as well. Due to very unstable nature of financial as well as macroeconomic behavior, high institutional and political risk there it has been reasonably concluded that addition of macroeconomic variable makes system completely fragile and less stable. This unstable environment changes the direction of financial sector variables and makes them to move away for the equilibrium, and objective of attaining profitability remains unsuccessful justifying that all important profitability variables become insignificant within unstable macro environment.

Table 4.2: Regression between ROA and Explanatory Variables (Bank Specific and Macroeconomic Variables)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
S	0.016552	0.070558	0.234580	0.8150
NPL	-0.038134	0.028128	-1.355710	0.1779
IR	0.126053	0.090128	1.398599	0.1646
INF	-0.013300	0.009451	-1.407255	0.1621
GDP	-0.000130	8.93E-05	-1.452559	0.1491
EPS	0.000213	1.90E-05	11.24347	0.0000
CR4	-0.985979	0.970520	-1.015929	0.3118
CC	7.11E-11	4.34E-11	1.639569	0.1039
CAP	-0.001926	0.000123	-15.61535	0.0000
C	3.178031	2.234711	1.422122	0.1577

Source: Results taken from Eviews output

4.1.3 Analysis of Institutional Behavior

Banking sector of Pakistan constitutes on public, private, corporate and scheduled banks. Since last two decades number of banks has increased enormously as government of Pakistan (GoP) made significant reforms in banking industry. Many new local and foreign banks entered into banking industry. There also happened regulatory level changes in financial sector as well. In order to see the effects of financial reforms in banking industry market concentration really matter so as real effect of reforms could be traced out. For this purpose top four banks were find out on the basis of assets base. Following tables indicates that National Bank of Pakistan (NBP), Habib Bank Limited (HBL), United Bank Limited (UBL) and Muslim Commercial Bank (MCB) were found biggest banks in Pakistani banking industry on the basis of assets base. Year over year results shows that NBP is the biggest bank among all. It remained on the top from 2006 to 2011 except in 2009, when HBL appeared holding biggest assets base. This also shows that public banks hold the major assets in Pakistani banking industry. This also indicates that even process of reforms in banking industry has welcomed many new local and foreign banks but still monopoly positions of state owned banks exist. This could reason that even competition has increased in Pakistani banking industry which gave many facilities to consumer but still consumers have more trust over public banks and consider them (public banks) the first option for their investments due to better security to their investments.

Table 4.3: Assets of top 4 banks Criteria: Assets base

Bank/Year	NBP	HBL	UBL	MCB
2006 – assets	635,132,711	563,920,184	423,265,873	342,108,243
Bank	NBP	HBL	UBL	MCB
2007- Assets	762,193,593	655,838,856	530,283,956	410,485,517
Bank	NBP	HBL	UBL	MCB Bank
2008- Assets	817,758,326	717,282,010	620,707,389	443,615,904
Bank	NBP	HBL	UBL	MCB
2009 – Assets	944,232,762	820,981,347	640,449,529	509,223,727
Bank	HBL	UBL	MCB	ABL
2010- Assets	887,052,411	698,784,979	567,552,613	449,931,526
Bank	NBP	HBL	UBL	MCB
2011- Assets	1,153,480,100	1,139,554,205	807,204,788	656,324,807

Source: Author's calculation

4.1.4. Robustness Tests

Numbers of robustness checks to confirm the validity of the empirical estimations were carried out as mentioned in the table 07 and 08. For estimating the panel data, hausman test was carried out in testing central assumption of random effect estimation which assumes that random effects are uncorrelated with explanatory variables. Hausman specification compares the fix and random effect estimates. Baltagi (2001) also discussed Hausman test. Under the null hypothesis Hausman assumes that both the estimators are consistent but b_1 is efficient, and under the alternative hypothesis b_0 is consistent but b_1 is not. In line with the both econometric equations (1&2) of the model, hausman test was required for finalizing that whether fixed effect is to consider or random effect, both along the rows and along the periods as well. For this, first of all equation 1 was estimated via random effect approach. And considering its output, Correlated Random Effects - Hausman Test was applied by running the auxiliary regression. It was found that null hypothesis could not be rejected and presence of fixed effect appeared along the cross section. Top portion of output describes test statistics and provides summary of results. Second portion provides additional details showing the coefficient estimates from both random and fixed effect estimates. It also mentions p-values and standard error about the hypothesis testing. And bottom portion mentions results from the corresponding fixed effects estimation.

The tables (4.4 and 4.5) show explanation

Table 4.4 : Correlated Random Effects - Hausman Test

Test period random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob
Period random	0.000000	5	1.0000

Source: Eviews output

Table 4.5: Correlated Random Effects - Hausman Test

Test cross-section random effects		Test period random effects	
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob
Cross-section random	0.000000	5	1.0000

Source: Eviews output

For cross section, again random effect model was executed and to test the fixed and random verification, again Hausman test was employed by running the auxiliary regression. The output confirms that null hypothesis is not being rejected and probability of fixed effect is confirmed. The following table 4.5 shows corresponding results. Table 4.5 provides additional details about p-values and standard error about the hypothesis testing. Above working confirms that econometric equation was tested both along period and along cross sections to trace out reasonability of fixed or random effect model for estimation purposes.

4.1.5 White Cross Section Covariance Approach

Current econometric specification adopts fixed effect model and assumes that both b_0 and b_1 are consistent but b_1 inefficient. Model constitutes on short panel, which means that numbers of periods (T) are less and cross section (N) are more. Short panel raises some issues over the consistency of estimates due to presence of high degree of serial correlation and heteroskedasticity. This problem was solved by adopting white cross section covariance option. And it was defined that in the presence of cluster variable identifying the cross sections dimensions, white cross section covariance option estimate using what Arellano (2003) terms the fixed T and large N robust standard errors that is robust to heteroskedasticity and serial correlation (within cluster) of arbitrary form. So in a panel data specification in form of large N (banks) and small time period T, for cross section heteroskedasticity which reports different residual variance for each cross sections and serial correlation with in cluster, consistent results are achieved as white cross section covariance option successfully solve both problems.

4.2 Bank Concentration and Macroeconomic Regime

Macroeconomic conditions play an important role in attaining financial soundness. It paves the way for normal functioning of financial market.

High income level, increased employment and low cost of capital makes economy to grow at high pace. World macroeconomic environment has changed enormously since sub-prime lending. Exposure in the financial market increased which caused a contagion and made global market severely resilient. In time of financial resilience there happens to appear structural changes in the global interface which do not limit only to financial markets but also includes bond, money, capital and labor market. The globe which was already having digital division also gets emerged into market segmentation. Resultantly coherence and coordination decreased and asymmetry increased in the global market, causing a severe unrest and unease. It spurred volatility in the financial market and both money and capital market became too uncertain. This economic resilience that was caused by the financial resilience dropped real world GDP to 3.2 percent in 2008, which further dropped to -1.3 percent in 2009 (WEO, 2009). Poor economic activity appeared in the form of negative GDP that kept trend as well. Banking sector of Pakistan also went under stress. Many sector and prudential level changes appeared. Even the process of reforms started quite earlier but results shows that concentration ratio is too high. The concentration ratio shows the amount of share being kept by large banks as compare to the whole banking sector. It is calculated for four big sector or industry players. In very specific to the banking industry, it is share kept by top four banks out of whole banking industry. CR-5 and CR-8 represent concentration of big 5 and big 8 banks in the industry. In addition CR-4 remains around 46 percent over six years. This means that there is happening any change in this ratio. The CR-5 reports that more than half of the banking assets is kept by the five big banks of Pakistani banking industry. CR-5 also has the same trends. CR-8 reports that 67 percent of banking assets are kept by eight banks. It is noted that this ratio nearly constant with just a variation of less than a percent. This all confirms that banking is following typical practices and reforms could not result into fruitful outcome.

Table 4.6: Concentration Ratio (CR)

Ratio/Year	2006	2007	2008	2009	2010	2011
CR -4	46.62%	45.61%	46.06%	45.02%	42.44%	45.29%
CR -5	53.16%	51.97%	52.56%	51.48%	49.15%	51.51%
CR -8	68.93%	67.65%	67.09%	66.25%	63.55%	66.18%

Author's calculation

Table. 4.7: Banking Assets (000)

Years	2006	2007	2008	2009	2010	2011
Top 4 Banks	407230375	548781172	596845405	699075230	638204928	925651082
Top 5 Banks	2240112552	2687697074	2966059298	3333261696	3014805368	4272452512
Top 8 Banks	2904490652	3498326206	3785858378	4289533409	3898423304	5489511726
Total Banking Assets	4213698311	5171373204	5643086097	6474405776	6134110046	8295085054

Conclusions and Recommendations

Banking sector of Pakistan has key role in economic flourishing. A sound and profitable banking sector is pre-requirement to achieve long run productivity. Better financial management increases institute's efficiency and makes it profitable. This also increases productivity which paves the way for economic growth. It makes available financial requirements for the business and helps to achieve long run profitability. Under current circumstances when economic and financial climate has changed, current study makes an attempt for tracing the profitability under financial sector specific variables. The study also makes an analysis when macroeconomic indicators are also incorporated. After financial liberalization and post crises, financial sector of Pakistan has changed a lot. Furthermore changing global financial landscape triggered process of reforms in banking industry of Pakistan. Deregulation process started which allowed new entrants and influx of information technology causing increase competition and better facilities. Even though process of reforms changed the financial paradigm but this empirical investigation confirms that there is need to reorient new role of sector specific variables to achieve profitability in banking sector. The study confirms that size of the bank is positively related to profitability. This indicates that big banks are earning more as compare to small banks. Moreover it can be concluded that big bank can manage their investments more efficiently. The presence of high concentration ration indicates that big banks also have market power as concentration ratio (CR-4) is considerably high. On the basic of above empirical findings it is recommended that financial reforms must be more objects oriented. Government should also allow a healthy competition to achieve better service delivery. Public sector internal monopoly should be abolished to achieve profitability. Mainstreaming prudential requirements is also required. In order to achieve financial soundness, risk weighted assets must fall in desirable limits. Adopting BASEL requirements is also mandatory for sector profitability.sco, 26-40. pp.

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