

“DETERMINANTS OF CAPITAL ADEQUACY RATIO” A PERSPECTIVE FROM PAKISTANI BANKING SECTOR

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Abstract

The survival of Banks is vested with the maintenance of sufficient capital and it serves as buffer in the event of liquidity crunch. This study analysed the bank specific factors which had an impact on the determination of Capital Adequacy Ratio (CAR). The impact of ROA(Return on Assets), ROE (Return on Equity), LAT (Loan to Asset ratio), LLR (Loan Loss Reserves), NPL (Non-Performing Loans), DAR (Deposit Asset Ratio), EAR (Equity Asset Ratio) and Ownership concentration with a level of more than 10%, 25% and 50% was analysed by using Fixed Effect Method and the validity was tested by Hausman test. The results proved that Random Effect Model is better suited in this case. The data of 14 Pakistani Commercial Banks which were included in the KSE (Karachi Stock Exchange) 100 Index was gathered for the period 2008-2014. The results revealed that the LAT and ownership concentration of more 50% had a significant but a negative impact on the CAR. The EAR, DAR, LLR had a significant and positive impact the determination of CAR, whereas the Size of the Bank, ROA, ROE and NPL had no impact on CAR.

Keywords: Capital Adequacy Ratio, Pakistani Banks, Bank specific, ownership concentration, Loan Loss Reserves

INTRODUCTION

The recent financial plunge of 2008 was triggered by the Banking Industry due to the default of the mortgage loans in USA. The spill over affect not only affected the institutions in the United States but also had an impact on the overall Global economy. The financial brunt was so gigantic that various financial institutions had to be bailed out by Government. The Banks which suffered huge losses had to sacrifice their capital as it was seriously impaired. Therefore it was about time to take corrective and extra ordinary stringent measures to strengthen the foundations of the financial institutions. The survival of a banking company vests with its capital as it is the backbone of the Bank.

The Banks play a major role in fostering the economic well-being of a State. Their basic objective is to bridge the gap between the people who have surplus funds and the ones who have the scarcity of funds. The role of financial institutions as financial intermediaries is well established and is highly regulated throughout the world. As the basic objective of a Bank is to collect money from depositors and lend money to the borrowers therefore the need for a healthy credit portfolio is always needed to retain a good earnings stream. Since the Banks are the Custodians of Public money and when they lend money to potential borrowers even after rigorous scrutiny the chances of loan default cannot be neglected. The loan defaults are not always wilful it has been observed that the loan defaults are also circumstantial where in the borrower has little control on the externalities. The Banks have to suffer huge losses due to their non-performing loans and the Banks Capital is badly impaired. Therefore it is very necessary to dig out the factors which determine the Capital adequacy ratio so that the other elements may also be taken in to account for a better capital management.

The assets of a Bank are the loan extended to its borrowers and the deposit taken from its Customers. The insolvency surfaces when the asset value deteriorates with respect to its liabilities mainly due to its incapacitated borrowers. Moreover by introducing foreign banks in the local market the competition in the local financial sector can be boosted and the regulatory authority can be compelled to induce banking reforms for provision of progressive banking (Demirgüç-Kunt & Detragiache, 1998).

The Banking Companies have always been restricted to lend money with respect to the laid down criterion or a bar on advances up to a certain level. Whereas the Bankers have their own viewpoint regarding the lending decisions and they believe that the retention of high equity capital ratios will be cost ineffective as the debt is cheaper than equity to hold. Therefore the banks will adhere only to the minimum capital adequacy standards (Berger, DeYoung, Flannery, Lee, & Öztekin, 2008).

The Bank of International Settlement introduced the first accord, Basel I for calculation of capital adequacy ratios for banks in 1988. The accord was enforced for a resilient and vibrant banking industry throughout the world. As the world has become a global village and the local banks have correspondent banks overseas and there are various banking products in which international transactions takes place. Therefore in order for a local bank to go global the sufficiency of Capital became a necessity. The capital acts as a buffer for the banks in the time of liquidity crunch. The first Basel Accord could not satisfactorily measure the risk intricacies. Therefore Base II accord surfaced in 2004 and was to be enforced up to 2008 and due to financial instability in USA the focus of the regulators was to settle the financial unrest in the first place. The lessons learnt after the crisis led the central bankers and banking regulatory authorities of the whole world to come up with more stern capital reform with obligatory amendments in the mandatory capital requirements. This has given birth to the third accord for calculation of mandatory capital requirement, Basel III. The features of the Basel III included the inclusion of common equity and retained earning along with maintenance of capital cushions during the peace times and the retention of a rational liquidity (Eubanks, 2010).

The Banks are compelled to hold capital by the regulatory authorities. The capital needed is assessed by taking into account the bank's own requirement and cost associated with it. The Bank management intends to hold the least capital when the cost of equity is great and in case of high risk capital needs to be augmented (Romdhane, 2012).

Due to the nature of the Banking Sector it is embedded with risks and do function efficiently the ability to deal with such risk must be held. The credit risk is the main threat to banks and stringent measure should be taken to address it. The genuine capital strength of a Bank is gauged after the analysis of the riskiness of its assets (Pasha, Srivenkataramana, & Swamy, 2012).

After the monetary turmoil of 2008 the confidence in the Banking System the world over became dubious as the financial empires which were established for more than half a century became insolvent. The learning comes with experience and afterwards the regimes throughout the world are pursuing the Banks to elevate their capital, amplify their financial footing and curtail their risk associated assets. In the case of failure of injecting fresh capital the perilous assets must be curtailed (Abba, Peter, & Inyang, 2013).

Asarkaya and Özcan (2007) explained that the banks hold a strong capital base when the economy is flourishing and the same is sacrificed during the financial crisis. The growth phase tends to be a capital building up time for Turkish Banks as the profits increase in the development phase and the same is contributed to the capital. When the industry average of

capital ratio escalates it puts pressure on the peer banks to follow suit as a retention of a healthy capital adequacy ratio signal the financial strength.

The worldwide financial principles as recommended by the Basel Committee have widely been accepted and implemented by monetary regulators across the world. The objective was to direct the banks to foresee the risk associated with their assets and must address those risks in order to sustain a sound capital. Because a distressed financial system not only weakens the local economy but also extends its hazards to the whole globe. The worldwide financial authorities have granted special consideration to the Capital Adequacy Ratio (CAR) and it has served as an instrument to gauge the financial health of a Bank. The need for capital sufficiency aroused in the half of 70's where the Bank practised excessive lending without elevating the capital in parallel. This element compelled the regulators to adopt control mechanisms in order to protect the shareholders rights and maintain financial discipline by the Banks. It was also noticed that in case of monetary unrest in a country in which the subsidiaries of Foreign Banks are operating. The overseas bank lend full support to their business units in the host countries to combat the liquidity crunch (Mili, Sahut, & Trimeche, 2014).

The banks may keep capital lower than the ideal capital requirement while taking into account its risk based assets and the probability of default. Such circumstances require regulation of capital by the regulators. The main aim of the capital regulation is to ensure the stability of the financial system by curtailing risk and enhancing the reliance by providing the appropriate levels of capital. Consequently the banks will remain to function as financial mediators without any hindrances. The financial crisis of 2008 exposed the reality that there is a great parity between the regulatory requirement of capital and the market requirement (Aktas, Acikalin, Bakin, & Celik, 2015).

In Pakistan the Banks are regulated by the Central Bank, State Bank of Pakistan (SBP) and it issue directives from time to time for maintenance of Credit Discipline by the Banks. The Pakistani financial market is dominated by 5 public sector banks, 2 specialized banks, 17 private sector banks, 7 foreign banks, and 5 Islamic banks. The Banking Companies operating in Pakistan have to retain a minimum paid up capital requirement and the banks which fail to do so are merged with other banks or taken over by peer Banks.

The Central Bank has established a regulatory and policy implementation department for implementation of Base III capital accord. The Banks are bound to maintain a certain level of statutory liquidity reserves and a capital adequacy ratio in order to safeguard the financial health of the Bank. As per the State Bank of Pakistan the Banks operating in Pakistan have to assess the capital requirements with respect to the risks confronted (*Instructions for Basel III implementation in Pakistan*, 15 August 2013).

Contextual Analysis

One of the main pillars of Pakistan's financial health is its banking industry. For a smooth flow of funds to the developing sectors is vital for vigorous growth. Therefore if the banking industry is confronted with the threat of financial distress then its survival will be at stake. Consequently this may lead to bailing out of Banks by the Government not just causing financial plunge but also investor panic and this again can fuel another monetary mayhem for the rest of the world. In this context the elements which impact the adequacy of capital need to be explored in order to ascertain that the Banks stay vibrant and solvent.

Identification of Gap

The research on the drivers of capital adequacy ratio is at embryonic phase. Few studies have been done with focus on the capital sufficiency of Pakistani Banks. This study has focused on the elements which are in the ambit of the monetary institutions and they can control their risky assets portfolio by identifying the relevant causes. Like the rest of the world Pakistan is also in the phase of implementation of Basel III accord for the determination and retention of regulatory capital. We have taken into account the impact of ownership concentration, delinquent advances, reserves and size of the banks on the capital sufficiency of Pakistani Banks.

Problem Statement

The monetary turmoil of 2008 which spilled over from US to the world over was ignited by the default of mortgage loans (Saba, Kouser, & Azeem, 2012). The Pakistani Banks system due to their stringent measures survived and no bailout of any banking institution was required. The post crisis period of 2008 onwards directed the international financial regulators to review the capital sufficiency parameter adopted by the Banks. Consequently the Basel III accord surfaced in 2010 where in more rigorous parameters were introduced for the financial institutions for avoidance of insolvency and capital damage in the crisis period. Therefore the need to dig out the elements which contribute to the capital adequacy ratio gained additional attention.

For the perseverance of a sound monetary regime the sufficiency of capital is needed as it acts as a buffer in the recession period. Due to the strict monitoring of Central Bank of Pakistan the financial system absorbed the shocks of 2008 crisis however the need to probe the institution wide analysis is mandatory for avoidance of downfall of specific financial institution.

Significance of Study

This research is a further insight to diagnose the elements which derive the Capital Adequacy Ratio in the banking horizon of Pakistan. The study took into account the factors influencing the

Capital sufficiency ratio of Banks which are in control of Banks. The internal environment factors which have contributed to the calculation of adequacy of capital can be curtailed as the same are in the control of the management and they know how to manipulate them. Moreover the external environmental factors in which the Banks operate and have no control upon them and the same are not accounted for.

The results of the study are beneficial for all stake holders to visualize the contribution of the internal factors in deriving a sustainable capital ratio. On the basis of the results at the institutional level particularly the financial institution's management at the Board level can devise strategies to promote the prudent practices and identify investments in least risky assets. Previous research has also postulated that with the increase on the return on equity the capital sufficiency decreases. The shareholders can also be informed that the real sense of ownership will prevail if they will sacrifice the high return temporarily in order to strengthen the capital base of the Bank. The regulatory authorities can also identify the factors which negatively affect the capital adequacy and can initiate remedial measures to control them. In Pakistan it has been evidenced that various Banks are owned by families and a certain group. Therefore a new investor interested in setting up or acquiring a banking company can also lend support from the findings in order to understand the elements influencing the capital adequacy ratio of the Banks. In addition it is also productive for the researchers to supplement the findings of this research with the addition of other explanatory variables. As there are only few studies which have been conducted on the determinants of capital adequacy ratio in Pakistan and this study has identified this gap and has tested certain variables which have not been verified yet.

Research Objective

To examine the bank specific determinants of Capital Adequacy Ratio (CAR) of commercial banks in Pakistan.

Research Question

What are bank specific determinants of Capital Adequacy Ratio?

Delimitation of the Study

- The sample of this study is limited to the financial sector of Islamic Republic Pakistan only and the Banks offering Commercial Banking Services were accounted for.
- The sample size was taken from the year 2008-2014. Due to the scarcity of time and the availability of requisite information the data collection was limited to 7 years from year (2008-2014).

LITERATURE REVIEW

There has been considerable research done on the subject of Capital Adequacy ratio determinants. This area of research attracted the attention of the further research after the banking crisis of 2008. The crisis should be rightly termed as Banking Crisis because it was triggered by the Sub Primer or mortgage lending and initiated from the United States of America. This financial explosion was so mighty that it spilled over the globe and the world witnessed bailing out of financial empires by Governments. This crisis could have been averted if prudent lending practices and sufficient capital buffers had been at place. The financial regulators took notice of this and issued the guidelines for implementation of BASEL III capital accord to strengthen the foundations of a vibrant and resilient banking system throughout the entire world. The research conducted on the factors affection the capital adequacy have focused on institutional related and key macroeconomic indicators.

In Pakistan all Banks are governed by the State Bank of Pakistan (SBP) which regulates the banks and issues directives form time to time. No Banking Company or financial institution can start functioning unless it meets the minimum paid up capital requirements. The SBP's regulatory department has issued a comprehensive booklet for the implementation of the latest capital adequacy accord. All the procedure is laid down in the book let along with the calculation of different capital Tiers. The Capital adequacy for a Bank as per SBP has to be met at three levels. First is as mentioned earlier is the minimum capital requirement. Afterwards the Banks have to maintain a certain capital adequacy ratio and a leverage ratio. The calculation of adequacy ratio is done on the parameters laid down by the Basle III accord The Capital Adequacy Ratio (CAR) is calculated as Eligible Regulatory Capital to Risk Weighted Assets (RWA).

$$\text{CAR} = \frac{\text{Total Eligible Capital}}{\text{Credit RWA} + \text{Market RWA} + \text{Operational RWA}}$$

At present the SBP has set the minimum CAR to be 10%. (*Instructions for Basel III implementation in Pakistan*, 15 August 2013).

An extensive cross country study was conducted by Shehzad, de Haan, and Scholtens (2010) where in data for three years from 2002 to 2007 just before the economic turmoil was collected. The sample comprised of 500 banks from 50 countries across the globe. The study had the novelty of having two dependent variables simultaneously and involved the risk and the buffer against the risk i.e. non-performing loans and capital adequacy.

The main idea was to gauge the deriving power of ownership concentration on the stuck up loans and capital sufficiency. The study was motivated to segregate the notion associated

with the ownership that the concentrated ownership can always make things better because the interest of the owner is involved in managing the business affairs smoothly. The study results disclosed that when the ownership is concentrated the non-performing loans are curtailed. The concentrated ownership has a significant negative relationship with the delinquent advances. Likewise the results revealed that the higher the ownership concentration stronger will be the capital base. The ownership concentration was segregated into three levels. The categories of concentration were more than 10%, 25% and 50%. The first two levels were insignificant whereas the highest concentration level proved to be affirmative and significant.

A study was conducted by Büyükaşalvarcı and Abdioğlu (2011) on Turkish Banks for the period 2006-2012 to find out the determinants of capital adequacy ratio. A sample of 24 banks was taken from the financial institution population of 32 banks. Only bank centric variables were considered to be the drivers of CAR. Bank Size, Deposits, Loans, Loan Loss Reserves, Liquidity, ROA, ROE, Net Interest Margin and Leverage. Out of the nine variables the Loans, ROE and Leverage are negatively related to CAR and with the rise in the loan loss reserves and return on assets the capital adequacy Ratio also increases whereas the remaining four variables have no significance. Multivariate panel regression model was formed and later on checked for fixed effects model and random effects model and after the application of the Hausman test the fixed effect model was considered to be appropriate.

A study was conducted by Bokhari, Ali, and Sultan (2012) gathering the data of 12 banks for period 2005-2009 from the Pakistani Banking Sector. The variables Deposit, ROE, Average Capital ratio, Capital Ratio Requirement, Portfolio Risk and GDP were tested to gauge their explanatory power on the Capital Adequacy ratio. The correlational results revealed that ROE and deposits are negatively associated with the CAR whereas Average Capital ratio, Capital Ratio Requirement, Portfolio Risk and GDP failed to explain the CAR. On the Contrary the regression results show that the Portfolio risk is has a negative significance on CAR.

Romdhane (2012) gathered bi annual data of eighteen banks operating in Tunisia in order to find out the explanatory variables of the capital sufficiency ratio. The financial reforms took place in Tunisian in 2001 and the time period ranged from 2002 to 2008. The study variables included the provision held by the bank against the loans, the variation of deposit based on the influx and outflow, the widely used ration of loan to deposits, and average capital adequacy ratio of all sample banks and size of the institution on the basis of total assets. The findings revealed the advances to deposit ratio has a significant positive impact the capital adequacy as with the maximum share of loans in deposits the risk and profitability both increase. The size of bank negatively influences the capital sufficiency. The variability of deposit also positively affects the adequacy ratio.

Moh'd Al-Tamimi and Obeidat (2013) gathered 9 years data for the Jordanian listed banks to explore the factors influencing their capital adequacy ratio. The study was motivated by the fact that the banks are instrumental in the economic wellbeing of a Country. Therefore it is needed to unfold the factors affecting the capital sufficiency and risk associated with the Banking Sector in order to take corrective measures and devise the appropriate strategies to strength the financial institutions. The capital of banks acts as cushion against the instability of the banking system. It acts as a buffer against any unforeseen financial loss which can be passed on to the depositor as the banks operate in a highly volatile environment where in various risks are present. It is therefore needed to forecast the intensity and size of the losses

The time period ranged from 2000 to 2008 which was just the start of the banking crisis. The study postulated that ROA has a positive and significant influence on CAR whereas the ROE has a significant negative impact on the adequacy ratio. The results also showed that the interest rate and the liquidity risk have a positive and negative influence respectively.

Sivarama Krishnan and Sukar (2014) conducted a study on the capital ratio of US Bank for the period of 1992 to 2012 after the financial crisis in order to assess the parity between the existing ratio and the proposed future standards of capital adequacy requirements under the BASEL III. After the crisis it has been learned that apart from the bank's ability to absorb monetary shocks there is a dire need to also address the risk management and governance issues. Four determinants of Capital ratio were proposed in the model viz a viz. Profitability, Asset Quality, Liquidity and size. The asset size was the only significant determinant of Capital Ratio and the profitability is not a significant determinant of Capital ratio.

Bateni, Vakilifard, and Asghari (2014) investigated the factors impacting the capital adequacy ratio of Banks in Iran. The study period spanned over 2006 to 2012 and a data of 6 banks working in the non-governmental sector was gathered due to easy access of data. In Iran the regulatory requirement is to keep capital adequacy ratio of 8%. The study was motivated by the aftershock of financial crisis of 2008 which compelled the regulators to take more stringent measures for a sufficient capital buffer in order to sustain any future financial shock. The explanatory variables were tested using the panel data estimation technique and Fixed Effects Model was used. The results concluded that the Deposits and Risk weighted assets to total assets have no explanatory power of capital adequacy ratio. Whereas the increase of Equity, ROE, ROA and Loans also increase the CAR. The size of the Bank is negatively associated with the CAR.

Raharjo, Hakim, Manurung, and Maulana (2014) analysed the capital sufficiency of Indonesian public sector banks. The study was motivated due to the vital role of sufficiency of capital in the sustainability of the financial system and the public sector banks are the heart of

the Banking sector because they are stake of the government. The variables tested included the stuck up loans, net interest margin, and the magnitude of the banks in terms of growth of assets and the liabilities financed by equity. Since banks have the privilege of highly indebted due to the nature of their business. The minimum threshold for retention of capital adequacy ratio is set at 8% in Indonesia. In addition the banks in Indonesia are required to retain three levels of capital. First level of capital retention act as a buffer and is solely devoted to confrontation the crisis. Second level is countercyclical and its objective is to ensure the financial health of the banking system in case of extra lending and the last level is the domestic capital surcharge which is used to combat any systemic crisis. The quarterly data of 4 state owned Indonesian banks for a period of 9 years was gathered for the analysis.2004-2012. Due to the nature of the data the panel regression was used and onwards the appropriate model was selected on the basis of Hausman test. The delinquent advances had a positive and significant impact on the capital adequacy ratio which signified that the public sector banks capital will be impaired with the mushrooming of non-performing loans. This was in concurrence with the previous findings. The share of equity in liabilities has a positive and significant impact on CAR which signalled that the state owned institutions have no bar in acquiring in capital. The net interest margin was also positive and significant in explaining the CAR and it signalled that the increased income through retained earnings help build up the required capital.

Mili et al. (2014) studied the factors affecting the CAR of 340 foreign Bank Subsidiaries of 123 Multinational banks. The research took into account the bank specific factors of the subsidiary and its parent bank and the macroeconomic factors of the home country and the host country in order to gauge their impact on the Capital Adequacy ratio. The variable of Size had a negative impact on the CAR whereas the Loan Loss Provision and Net Interest Margin had a positive and significant role in deriving the capital adequacy ratio. The ROA, ROE, Deposits and Loans had no explanatory power

Abusharba, Triuwono, Ismail, and Rahman (2013) conducted a study on the determinants of capital adequacy ratio of Indonesian Islamic Banks. The study was undertaken to unveil the factors responsible for the manipulation of the capital adequacy ratio in the Indonesian Islamic banking setup. The Islamic banking sector in Indonesia has to comply to the regulations of Basel Committee as well as Islamic Financial Standard Board and the banks are compelled to retain a higher CAR as required by the Basel Committee's minimum benchmark. The month wise data from 2009 to 2011 was gathered from 11 Islamic Commercial Banks. The independent variables like ROA, Non-Performing loans, Deposit, liquidity and operational efficiency were tested. Multiple regression was used to find out the explanatory power of the aforementioned variables. The profitability and liquidity by proxy of financing to deposit ratio was

found to have a positive impact on the CAR. Likewise deposit and operational efficiency proxy by operating expense/ operating income has no explanatory power towards capital adequacy ratio of Islamic Commercial Banks in Indonesia.

Abba et al. (2013) highlighted the banking parity of holding the capital on the basis of paid up instead of risk based in Nigerian financial regime. He collected five years data from the 12 Nigerian Banks. The period selected was 2007 upto 2011. The explanatory power of the risk weighted assets, the deposit base and the inflationary impact on the capital appropriateness was checked. The various statistics highlighted the condition of Nigeria's Banking sector. The adequacy ratio had a mean of 27 against the regulatory requirement of 17.4 % which signified that the banking industry has sufficient capital to absorb the risks and the banks in the sample showed a strong capital base by having not only complied with the minimum capital ratio but also exceeding it. The results further proved the negative relationship of the CAR with Risk Weighted assets and Deposit Asset ratio. It was postulated by the author that with the increase of deposit base the capital sufficiency decreases.

Moreover the inflationary pressures proved to be positively linked with the ratio however it was insignificant. The findings were in concurrence with the previous literature that banks should focus on the retention on low risk based asset in order to attain a solid capital base. It was also emphasized that prudent measures should be adopted to ascertain the return of deposit to the account holders as by merely building the deposit base is not sufficient to for a viable capital adequacy ratio.

Ahmad, Ariff, and Skully (2008) the capital adequacy measures and the main study variables included were the delinquent advances, the size of the bank based on assets and the share of mark-up income earned on total earning. The findings confirmed the positive relationship of NPLs with the Capital Adequacy ratio whereas the Size has proved its significance has a negative influence on the CAR. The Net Interest Margin showed a negative coefficient which was contrary to the earlier research.

Octavia and Brown (2010) performed the comparative analysis of the factors deriving the capital structure in an emerging economy. The regulatory capital requirement was compared with the standard capital requirement. The cross country data was gathered for the period of 1996 to 2005 with an enlarged sample of 121. The results proved that the size, profit and collateral are significant variables in explaining capital structure.

Asarkaya and Özcan (2007) explored the factors determining the strength of Turkish Banking Empire based on the adequacy of the capital. The data gathering was done for the period of 05 years and ranged from 2002 to 2006. The objective was to unveil the factors which compelled banks to retain capital in excess of regulatory threshold. The tested variables were

related to both internal and external environment of the Banks. Apart from the regulatory pressure to retain a certain amount of capital there are other bank related key variables which are vital in determination of Capital sufficiency. The evolution of banking with the advent of technology, the changing banking behaviours of account holders have motivated banks to come up with tailored products. The foremost element of capital determination is the risk associated with it. The capital level determined by the regulators rests on the level of risk the banks are willing to take. From the regulator's view point the asset termed risky may not be perceived as same by the Managers. The financial giants can retain less capital due to their easy access to other avenues. The study explored the impact of risk weighted assets, the magnitude of the its assets, the adjustment cost of capital based on the previous year's ratio, the alternate capital cost proxied by ROE, the deposit share held as a part of liabilities other than equity.

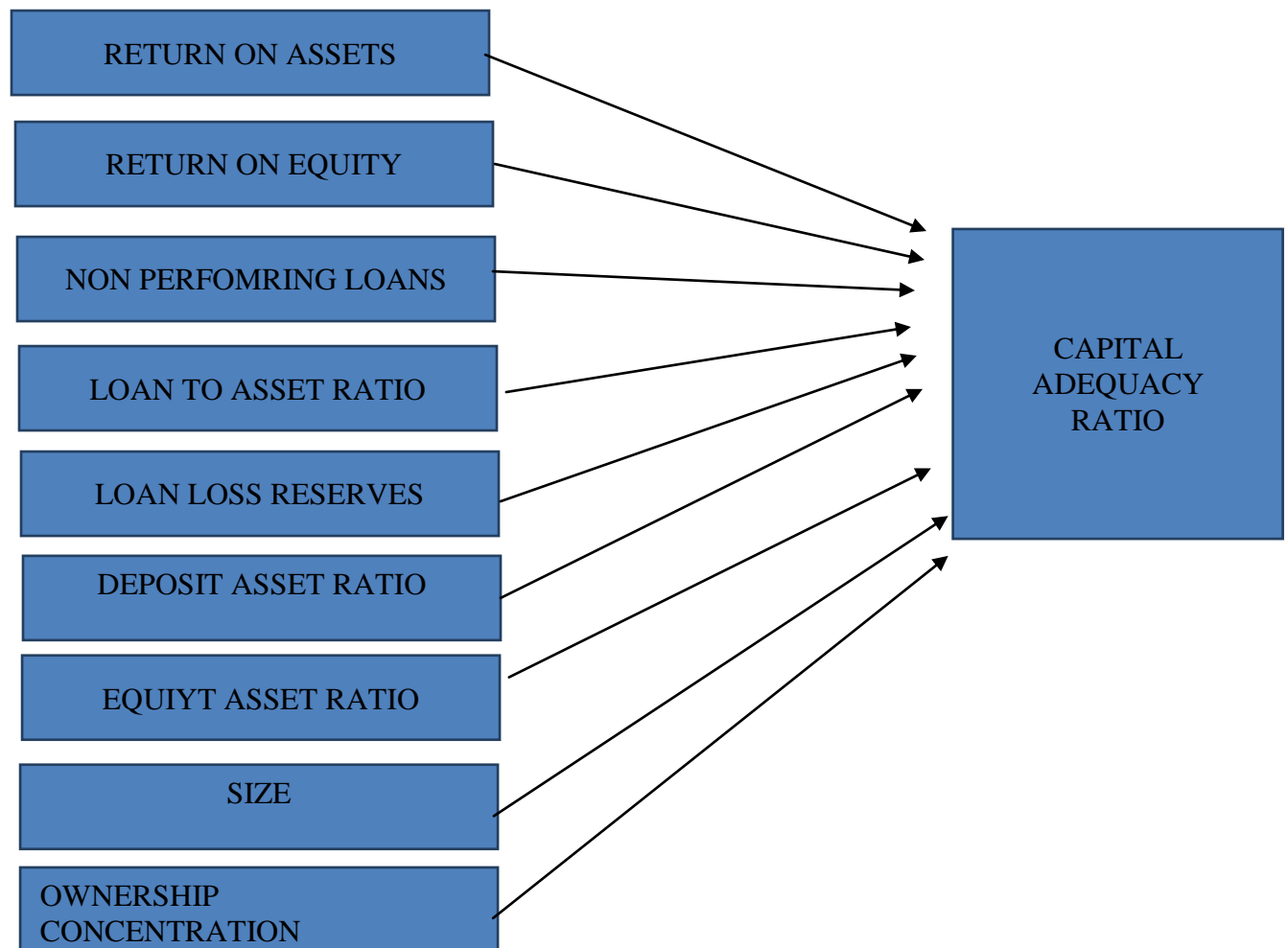
The economic growth variable was also tested as a determinant of CAR. The findings revealed that the size has a negative impact on the adequacy of capital as the larger banks have capital access at easy terms from the monetary markets at attractive rates. The deposit also negatively influences the CAR but have the significant explanatory power likewise the risk weighed assets also had a significant and negative impact.

A recent study conducted by Aktas et al. (2015) focused on the cross country determinants of capital adequacy ratio in the geographical location of South Eastern Europe. The internal key indicators of the bank and the key performance indicators of the economy were tested as explanatory variables. The data for the period of 6 years and 71 financial institutions was gathered and ranged from 2007-2012. The economies of the selected countries are in emerging state and are facing impediments in the achievement of economic efficiency. The results revealed that the pace of economic growth, the European capital market volatility have significant impact on the adequacy ratio of the sampled banks. Moreover the Bank's Size, ROA and the risk have a significant impact on the CAR.

Shingjergji and Hyseni (2015) recently attempted to unfold the influencing power of the institution wide variables on the capital adequacy ratio in the Albanian banking setup. The study was motivated due to over dominant role of Albanian's financial sector in the economy due to embryonic capital markets. The data comprised of quarterly observations spanned from 2007 to 2014. The key performance indicators like ROA, ROE, and Non-Performing loans the magnitude of bank in terms of its assets, the lending and deposit composition and share of equity in the assets were analysed. The findings implied that the share of advances in deposits of Albanian banks is very competitive with the other European and United States Banks and it can sufficiently lend in order to be at par with the world lending to deposit average.

The loan to deposit composition was negatively significant with the CAR. It was concluded that aggressive lending also lead to reduction in capital. The profitability benchmarks of return on equity and asset showed a negative but insignificant impact on CAR. The relationship of the non-performing loans was proved as negative and significant in compliance with the earlier literature and proved that the delinquent advances eat up the Bank's capital. The Equity Multiplier also proved to have a significant but negative influence on the CAR. It was noteworthy that the size of the bank had a positive significant impact on the adequacy of capital. It signifies that when the banks expand their asset base the capital sufficiency also increases or the large banks have a strong capital base.

Figure 1. Theoretical Framework



Equation

$$CAR_{it} = \beta_0 + \beta_1 ROA_{it} + \beta_2 ROE_{it} + \beta_3 NPL_{it} + \beta_4 LAT_{it} + \beta_5 OWC * D_1 + \beta_6 OWC * D_2 + \beta_7 LLR_{it} + \beta_8 DAR_{it} + \beta_9 EAR_{it} + \beta_{10} SIZE_{it} \epsilon_{it}$$

Where

CAR	= represents Adequacy of Capital and is derived as Eligible Capital of the Bank as per the requirements regulatory authority / Risk Weighted Assets
ROA	= denotes the earning on assets and is derived by After Tax Profit / Total Assets
ROE	=denotes the earning on equity and is derived by After Tax Profit / Equity of Shareholders
LLR	= denotes loan loss reserves and it represent reserves to gross loans
NPL	=denotes Non-Performing loans and it ratio of classified loans to gross loans
OWC	= denotes the Concentration of Ownership for which three dummy variables i.e. D1,D2 & D3 are introduced to capture the share of ownership at more than 10%,25 % and 50%
LAT	= indicates the contribution of loans in the total assets and is derived as Gross Loans / Gross Assets
DAR	= denotes the deposit asset ratio
EAR	= denotes Equity to Asset ratio
SIZE	= denotes log of Total Assets

Statement of Hypotheses

- H1: The ROE affects the Capital Adequacy ratio
- H2: The ROA affects the Capital Adequacy ratio
- H3: The NPL affects the Capital Adequacy ratio
- H4: LAT affects the Capital Adequacy ratio
- H5: The LLR affects the Capital Adequacy ratio
- H6: The OWC affects the Capital Adequacy ratio
- H7: The DAR affects the Capital Adequacy ratio
- H8: The EAR affects the Capital Adequacy ratio
- H9: The SIZE affects the Capital Adequacy ratio

RESEARCH METHODOLOGY

There are numerous methods which have been applied in previous research works where in the constituents of capital adequacy ratio were analysed. The data which we have gathered comprised of both time series and cross sectional therefore the selection of methodology was

adopted while taking into account this important factor. The data consisted of balanced panel data and we have employed Fixed Effects / LSDV (least square dummy variable). The same method was recently employed by previous work done by (Bateni et al., 2014; Büyükşalvarcı & Abdioğlu, 2011).

Study Type

This is a quantitative study and a deductive approach was used. The data under investigation comprised of both time series and cross section. The variables used in the study were adopted after a rigorous review of theoretical and empirical literature.

Population Frame

From the Commercial Banking horizon of Pakistan the institutions which are actively trading in Karachi Stock Exchange and are included in the KSE 100 index were made the part of the sample. Unit of analysis is bank as we are going to investigate the determinants of Capital Adequacy ratio pertaining to Bank and to the economy for Pakistani Banking Sector.

Sampling

The Banking Canvas of Pakistan is dominated by 5 public sector banks, 2 specialized banks, 17 private sector banks, 7 foreign banks, and 5 Islamic banks. The Banks which are in loss and the ones which are not included in the KSE 100 index are dropped from the sample. There are 14 banks which were included in the KSE 100 index have been selected. We have chosen the convenient sampling technique.

Time Frame

The research was contained for the period of seven years ranging from 2008-2014 and restricted to the commercial banks only. The frequency of data is annual in nature.

Data Analysis Techniques

The study had balanced panel data for investigation where in the data of 14 banks for a time period of 7 years was gathered. In order to capture the Key performance indicators for determining delinquent advances of the Banks the necessary econometric tests were undertaken. The exercise started with the incorporation of data into Eviews. As evidenced by the previous research and the nature of data the Fixed Effect Model was used to examine the effect of each explanatory variable on non-performing loans of the selected banks. The data was an amalgamation of both time series and cross section and comprised of a balanced panel.

The number of cross section were 14. Furthermore the model appropriateness was judged by the application of Hausman Test which was used to validate the hypothesis that the Fixed Effect Method estimators and Random Effects Estimators are substantially alike (Damodar N Gujrati, 2012).

Variable Measurements

Explained Variable

Capital Adequacy Ratio (CAR)

The regressand is Capital Adequacy Ratio and it represents the eligible capital as prescribed by the regulatory authority to the risk weighted assets. The present study derived the response variable as laid down by regulatory authorities. The researches which embraced the same were done by (Bateni et al., 2014; Büyükşalvarcı & Abdioğlu, 2011).

$$\text{CAR} = \frac{\text{Total Eligible Capital}}{\text{Credit RWA} + \text{Market RWA} + \text{Operational RWA}}$$

Regressor(s)

Various Institutional related factors have been tested in earlier work done in various countries to unveil the factors determining the delinquent loans. We have selected the factors which are the mandatory and have been tested repeatedly. In addition we have included regressors which were previously not part of research conducted in Pakistan which derive the capital adequacy ratio.

Return on Asset (ROA)

ROA is the widely used measure to test how the profitability can contribute in strengthening the capital base of the banks. The previous work showed mixed results wherein the ROA was influencing the capital sufficiency either positively or having no effect the sufficiency of capital. The basis for selection were the studies which investigated the said variable as an independent variable and included the work of (Bateni et al., 2014; Shingjergji & Hyseni, 2015).

Return on Equity (ROE)

The proficient management tends to reap higher returns from their investments. The Return on Equity is used as proxy for profitability and the more profit is earned the retained earnings tend to strengthen the capital base so there is a positive relationship of ROE and the capital sufficiency. This has been confirmed by the work of Bateni et al. (2014).

Loan to Asset Ratio (LAT)

This variables detects the risk craving of the Banks. The higher ratio signifies the bank's willingness to comprise on the award of loans which are other than on merit just to foster the earnings in the period of recession (Khemraj & Pasha, 2009). The pervious literature has confirmed its negative association with the dependent variable by the work of Büyükşalvarcı and Abdioğlu (2011).

Ownership Concentration (OWC)

The research included a dummy variable OWC for representation of the concentration of ownership in the financial institutions. The three dummy variables are represented by D1, D2 and D3. The three dummy variables represent three levels of ownership concentration. The concentration means the shares held by one share holder more than 10%, 25% and 50% respectively. We proceed with the selective descriptive statistics.

Non-Performing Loan (NPL)

It represents the loan extended to borrowers where in the mark-up / interest or actual loan amount is not deposited within 90 days. Such loans are termed as non-performing loans and are narrated under different classes on the basis of the criterion set by the Central Bank of Pakistan. The researches which embraced the same were done by (Abusharba et al., 2013; Shingjergji & Hyseni, 2015).

$$\text{NPL} = \text{Classified loans} / \text{Gross loans}$$

Loan Loss Reserves (LLR)

It is the reserve held by the banks in anticipation of the future losses. The reserves acts as a buffer and provides a strong financial footing to the financial institutions. The variable is measured by Loan Loss Reserves to Gross loans. The pervious literature which considered the testing of LLR was done by Büyükşalvarcı and Abdioğlu (2011) and a positive and significant result was found.

Deposit Asset Ratio (DAR)

It basically implies that the well-capitalized bank will attract the depositor and they may be willing to deposit the money at lower rates. The customer deposits are cheap sources as other than borrowing so their impact is also very important. The deposit asset ratio has shown negative relationship with the CAR was also proven in the work of (Bokhari et al., 2012)

Equity Asset Ratio (EAR)

The EAR (Equity to Asset ratio) variable has also proven its significance and affirmative relation with the capital sufficiency. This shows that how much of the assets are financed by the owners capital. If the reliance on owners capital will be more than the focus from the depositors will be deviated as the Banks will tend to hold lower capital. The Equity to asset ratio has been tested by (Bateni et al., 2014).

ANALYSIS AND RESULTS

Quantitative Analysis

This Research has endeavored to unveil the drivers of capital adequacy ratio which are internally generated by the institution. To test the hypothesis the Fixed Effects Model was used and various tests were run to measure the effects of the explanatory variable on the dependent variable. Due to the reliability of the method and its wide usage in previous research the same also been adopted.

The research included a dummy variable OWC for representation of the concentration of ownership in the financial institutions. The three dummy variables are represented by D1, D2 and D3. The three dummy variables represent three levels of ownership concentration. The concentration means the shares held by one share holder more than 10%, 25% and 50% respectively.

Descriptive Statistics

Table 1: Descriptive statistics (N=98)

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
CAR	13.32194	12.835	22.25	1.05	3.712668
NPL	0.122347	0.105	0.52	0.01	0.093696
LAT	0.476735	0.47	0.81	0.31	0.103044
ROA	0.011327	0.01	0.04	-0.05	0.01257
ROE	0.105918	0.17	0.31	-1.99	0.342402
SIZE	6.044082	5.61	9.27	4.91	1.172173
LLR	0.049082	0.04	0.17	0	0.036442
EAR	0.077347	0.07	0.16	0.02	0.030681
DAR	0.781429	0.78	0.91	0.6	0.061577

The main descriptive statistics of the variables were calculated to understand the features of the tested variables. It can be observed that the variation between the maximum and minimum NPL

is 10% to 52% this means that there is a financial institution half of which has stuck up advances portfolio. Similarly we have witnessed financial institutions which had ROA and ROE in negative. The mean of CAR is 13.32 which shows that the financial institutions have capital adequacy ratio above the 10% regulatory requirement. The loan loss reserve statistics revealed that there is a need to build up reserves for contingency.

Correlation Analysis

Table 2. Correlation Matrix

Variables	CAR	NPL	LAT	ROA	ROE	SIZE	LLR	EAR	DAR
CAR	1								
NPL	-0.4923	1							
LAT	-0.6628	0.339823	1						
ROA	0.78338	-0.48321	-0.4503	1					
ROE	0.62603	-0.62256	-0.4705	0.81348	1				
SIZE	0.24834	-0.30516	-0.3325	0.18042	0.18922	1			
LLR	0.678	-0.24	-0.2924	0.52255	0.21674	0.12856	1		
EAR	0.57746	-0.17246	-0.3628	0.59729	0.34743	-0.0637	0.456978	1	
DAR	-0.3088	0.179348	0.15103	-0.3847	-0.2991	0.09784	-0.3022	-0.6331	1

The correlation matrix was used to investigate the strength of relationship between the variables. The range between negative 1 to positive 1 shows the relationship strength and the 0 shows no relationship. The excessive lending represented by LAT was negatively related the capital adequacy ratio and same was confirmed by the findings of (Büyükşalvarcı & Abdioğlu, 2011). Whereas the other strongly related variables were ROA, ROE. The NPLs also had a negative relationship with the CAR. The variable of Capital Adequacy ratio has been the concern of various studies and has proved its significance in the findings.

However the results have shown diversity of being showing a positive relation with the non-performing loans and also constraining the same with the sufficiency of capital. We postulated that the abundance of Capital controls the stuck up loans. The Banks are under regulator pressure to attain a certain level of capital adequacy ratio and it is mandatory for the Banks to disclose the same in the audited financials. The earlier work which formed the basis of our hypothesis was done by (Jameel, 2014) . The same relationship was also found by (Makri, Tsagkanos, & Bellas, 2014) The Equity to asset ratio was showing positive relationship and the same has been tested by (Bateni et al., 2014).

The deposit asset ratio has shown negative relationship with the CAR was also proven in the work of (Bokhari et al., 2012). The loan loss reserves was also positively related with the Capital adequacy ratio and this relationship was earlier explored by (Mili et al., 2014). The correlation relationship was in concurrence with the earlier work done. We have also observed the inverse relationship of the variable DAR (Deposit to Asset Ratio) with the capital sufficiency and the similar findings were obtained by Bokhari et al. (2012) where it was noted that there exists a negative relationship of the CAR with the deposit to the percentage of assets. The amount of reserves held against the delinquent advances is also of prime importance because the classified loans eat up the bank's capital. Previous studies which also tested the variable LLR and found a positive relationship with the CAR. The sufficiency of capital is augmented by holding the reserves against the bad loans. The world has already learnt this hard lesson after the financial plunge of 2008. The data gathered was for the period which commences from after the financial crunch up to 2014. The Global regulators of the world have not increased the requirements for capital sufficiency in order to absorb any future financial havoc. The studies which also established the same findings were done by (Boudriga, Taktak, & Jellouli, 2009; Mili et al., 2014).

The DAR (Deposit Asset Ratio) was also significant. It basically implies that the well-capitalized bank will attract the depositor and they may be willing to deposit the money at lower rates. The customer deposits are cheap sources as other than borrowing so their impact is also very important. The variable has a positive association with CAR and has also shown significance. Since the deposits represent the liabilities and the banks have to be vigilant and must have enough capital to sustain any run on bank. The relationship established by our research has been already confirmed by a study held in Turkey by Büyükşalvarcı and Abdioğlu (2011) but in that country the significance of the variable could not be proved.

It is evident from the correlation matrix that the multicollinearity problem is non-existent as the maximum correlational values are less than 0.8. The problem of multicollinearity can be present if the values are above the threshold of 0.8 or larger (Damodar N Gujrati, 2012). In this case the correlation of ROA and ROE is slightly above 0.8 and is far less than 0.9 so it can be ignored. However the ROA and ROE both have proven to be insignificant.

Fixed Effect Model Testing

The data gathered in the sample is a balanced panel data which means that each bank has the same number of observations for the number of years reported. Of the various methods used for the analysis of panel data the FEM has been selected as we have used a dummy variable.

The fixed model is the relationship of characteristics within each entity with the independent variables.

Table 3. Fixed Effect Model

<i>Variable</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Prob.</i>
C	-0.79333	-0.07979	0.9366
D2	0.0337	0.042127	0.9665
D3	-1.55513	-1.77935	0.0793
ROA	34.0671	1.181027	0.2414
ROE	1.190726	1.284394	0.203
NPL	1.695924	0.455408	0.6501
SIZE	1.369168	0.930888	0.3549
LLR	50.45355	4.197234	0.0001
DAR	7.446234	1.945815	0.0555
EAR	47.34496	2.690392	0.0088
LAT	-12.8628	-4.80215	0.000

a. Dependent Variable: CAR

b. Note: $R^2 = 0.93$; Durbin Watson = 1.816; F stat 46.55974*

*significant at level 1 %

Hausman Test

After the results have been obtained by the application of FEM it is needed to ensure that it is the appropriate model used for testing. Then, Hausman (1978) test controls whether the unobservable heterogeneity is linked with the explanatory variables by testing for systematic differences in the random effects and fixed effect coefficient vectors.

The null hypothesis is that the estimators used in the test are not different noticeably. In the event of non-acceptance of H_0 the Random Effect model is not used which means that the random effects are correlated with one or more independent variables (Gujarati, 1970). But in this case the sig value is insignificant and the null hypothesis is accepted and therefor the Random Effect Model will be used due to greater effectiveness.

Table 4. Hausman Test

<i>Test Summary</i>	<i>Chi-Sq. Statistic</i>	<i>Chi-Sq. d.f.</i>	<i>Prob.</i>
Cross-section random	6.432386	10	0.7777

Random Effect Model Testing

Random Result reports for connection that exists amid characteristics across entities alongside the consequence variable. Disparate characteristics amid entities could have substantial impact on reliant variable. Random Result ideal can additionally incorporate time-invariant variables in the ideal whereas such variables are embodied at interrupt in the fixed result models.

Table 5. Random Effect Model

Variable	Coefficient	t-Statistic	Prob.
C	7.399458	1.923452	0.0577
D2	-0.33624	-0.51126	0.6105
D3	-1.61641	-2.42093	0.0176
ROA	38.09303	1.375828	0.1724
ROE	1.215882	1.375969	0.1724
NPL	0.671602	0.217387	0.8284
SIZE	0.231196	0.636091	0.5264
LLR	43.84425	4.868567	0.0000
DAR	8.445608	2.566214	0.012
EAR	34.94095	2.991997	0.0036
LAT	-14.1235	-7.99973	0.0000

a. Dependent Variable: CAR

b. Note: $R^2 = 0.783$; Durbin Watson = 1.6680; F stat 31.39607*

*significant at level 1 %

The results from the Random effect model revealed that the variables of LLR which were the provisions held for gross loans. It has proven to be highly significant with the CAR. The reserves held by the bank act as a buffer against the delinquent advances. The positive relationship implies that the capital base of the financial institutions is strengthened with the amount of provisions bank hold. The results were in conformity with earlier work of done in Turkey by (Büyükşalvarcı & Abdioğlu, 2011). Similarly another study of foreign subsidiaries also authenticated the same result which was done by (Mili et al., 2014).

The deposit asset ratio has also been observed as having a positive and significant relationship with the CAR. The depositors are attracted to the banks which have sound financial healthy and a capital base. For that reason they are willing sacrifice the profit rate on their investment just because of the assurance of their deposit (Büyükşalvarcı & Abdioğlu, 2011). Our results showed conformity of the relationship with the earlier work done. The earlier studies have shown that the variable was insignificant in a research done in Turkey by Büyükşalvarcı

and Abdioğlu (2011) but our results revealed that in Pakistani Banking context the same is significant.

The EAR (Equity to Asset ratio) variable has also proven its significance and affirmative relation with the capital sufficiency. This shows that how much of the assets are financed by the owners capital. If the reliance on owners capital will be more than the focus from the depositors will be deviated as the Banks will tend to hold lower capital. The positive relationship has been established and it is also significant. This implies that the more reliance on capital instead of financing on the basis of deposits provides a sound financial base for the bank. The results are in conformity with the earlier work done by (Bateni et al., 2014).

The LAT (Loan to Total Asset) variable has proven its inverse relationship with the capital sufficiency. This signifies the extent of lending share is in the total assets. The aggressive lending tends to increase the non-performing loans and it badly hurts the capital of the bank. When a loan is defaulted by a borrower not only the capital is impaired, profitability is also hurt and in addition the extension of credit to the deserving borrowers is also restricted due on concentration of bad loans in a particular segment. The relationship and significance is established by the earlier work of (Bateni et al., 2014).

Another very important variable was tested which has not been a subject of any study before in Pakistan. We have introduced three dummy variable with three level of ownership where it is vested with on shareholder either individual or an entity. Since the delinquent advances also have a strong negative relation with the CAR as they eat up the bank capital.

A study was done in Greece by Louzis, Vouldis, and Metaxas (2012) to find the ownership concentrations impact and it was found significant. The Pakistani Banking sector has the examples of Banks being owned by families to name a few MCB Bank, Bank Al Habib, and Habib Metropolitan Bank. There are Banks which are also owned by Government entities at Provincial and Federal levels. It is alarming for the highly concentrated banks that the research findings proved that the banks with concentrated authority have lower level of CAR. In this research the concentration of ownership where it exceeds 10% is represented by 1 and beyond 25% it is assigned number 2 and over 50% it is characterized by as number 3. The Banks are bound to disclose their share holder pattern in their audited financials. The Dummy variables are represented by D1, D2 and D3 with the ownership of more than 10%, 25% and 50% respectively. The outcome of the test identified that the higher the concentration of ownership has a significant impact on the capital adequacy ratio. The lowest level of ownership concentration is significant at 10% level and tends to strengthen the capital base. The highest level of ownership concentration i.e. more than 50% is also significant and is negatively

associated with the capital adequacy ratio. This means that the owners want to invest aggressively instead of building up a parallel capital base to fall back upon.

The significance of ownership concentration is in compliance with the result of the research done by Shehzad et al. (2010) wherein the data of 800 banks from 50 different countries of the world was gathered to come up with the aggregate findings. Whereas the variables of ROA, ROE, NPL and Size have no explanatory power towards derivation of Capital adequacy ratio. The insignificance of ROA and ROE is confirmed by the research done by (Shingjergji & Hyseni, 2015). The non-explanatory power of Size and NPL was also confirmed by (Büyükşalvarcı & Abdioğlu, 2011).

CONCLUSION AND RECOMMENDATIONS

To ensure the survival of the Banking Sector of any Country is the prime responsibility of the Central Bank of a Country. We have witnessed many cases globally where the Central Banks have to bail out not only the financial institutions but also to the whole country. One such example is Greece where in the European Central Bank has taken corrective measures to assure that the country default must be avoided. Our study therefore focused on the factors liable for the sufficiency of Bank's Capital with emphasis on the elements which are in the ambit of the Banks. Since the individual institutions do not have control on the externalities of the economy. We regressed various variables on the dependent variable of Capital Adequacy Ratio and found that the LLR, LAT, DAR, EAR and ownership concentration have a significant impact, whereas as the measures of profitability ROA and ROE failed to have any explanatory power toward the adequacy of capital. Moreover the magnitude of the Bank also failed to have any significant impact on the bank's capital base. As the minimum requirement of capital maintenance has to be observed by all the financial institutions regardless of their size therefore the importance of size in the determination of capital base was not visualised. The importance of a sound banking reserve in order to have a buffer against the delinquent advances also proved a very important determinant and for a sound financial base a good loan loss reserve must be retained.

The analysis was in compliance with the earlier research done at in various Countries. We have discovered that in Pakistani Banking Sector the Equity Asset ratio and ownership concentration has a considerable impact. As with the advent of technology the online banking is a commonplace and Banks are focusing more to motivate account holders to operate their accounts electronically and this will reduce the operational cost of the banks manifold. The concept of smart branches with two person will likely to place the thickly staffed bank branches in future. This will prove to be very cost effective for the Banks and will help them in reducing

their general and administrative costs. Moreover with the introduction of innovative products the banks are also focusing more on the income of other than interest.

The Pakistani Banking sector has the examples of Banks being owned by families to name a few MCB Bank, Bank Al Habib, and Habib Metropolitan Bank. There are Banks which are also owned by Government entities at Provincial and Federal levels. It is alarming for the highly concentrated banks that the research findings proved that the banks with concentrated authority have lowest levels of capital adequacy ratio. It is therefore need of the hour that such Banks must revisit their balance sheets in order to align their assets in order to arrive at a better composition of assets. With the redesigning of the asset mix the capital base can be strengthened.

Furthermore Corrective measure should be taken in order to control the loan to asset ratio as the excessive lending can give rise to non-performing loans. The menace of delinquent advances perishes the capital of the Bank. It is noteworthy that the highest concentration of ownership exceeding 50% has a negative and significant impact on the capital abundance. The study thus concludes that efficient management which builds up a realistic and futuristic level of loan loss reserves, focuses on the optimal composition of the asset mix in order to minimize the risk associated with them and prudent lending practices by maintaining a healthy credit portfolio. It will lead the Banks to have a healthier and resilient capital base along with a smooth income stream.

LIMITATIONS AND FURTHER RESEARCH

An important limitation of our study was that we have not taken into account the economic variables. Therefore a more robust and comprehensive model could not be made the future research can also induct macro-economic variables to also gauge their explanatory power towards the capital adequacy ratio.

There is always scope for future research to fill the research gap owing to time and data constraints at a given point of time. The future research with enlarged sample size and the extended time frame can come up with more reliable results. This study focused on the institutional related factors of Capital Adequacy ratio and for that purpose 9 bank specific variables were used. The diversity of variables allowed to obtain different dimension of the dependent variable. In Pakistan a very nominal research has been done to discover the elements which determine the capital adequacy ratio. No study has been conducted in Pakistan where in the determinants capital adequacy of Islamic Banks have been explored. It is needed that in future research the determinants of capital adequacy of Islamic Banks should be explored because various conventional banks are also extending the Islamic Banking Services.

The Islamic Banks are judged on two parameters one is Basel Accord and the other is Islamic Financial Board. Therefore the Islamic Banks have to go an extra mile for retention of regulatory capital in order for smooth functioning of banks.

There is sufficient room for future research to focus on the macroeconomic factors which affect the overall banking system especially in the management of a good capital base. As the financial institutions have no control on the external environment and the key performance indicators of the economy can be tested for their role in the maintenance of capital adequacy ratio by the banks. As it has been observed in the past that the subprime loan defaults of the US banks had a spill over effect on the whole world and it turned to a global financial recession.

The present literature has focused on the non-performing loans as determinant of capital adequacy ratio but no research has highlighted the impact of public debt as the determinant of capital adequacy ratio. The future research must also focus on inclusion of the public debt as percentage to GDP as a regressor. The growing public debt of Pakistan is very alarming and the public debt also restricts the extension of credit to the private sector. The findings of the future research can direct the attention of the national policy makers to address this issue and recognize its impact on the adequacy of capital.

In addition the research on the determinants of Capital Adequacy ratio before and after the crisis period of 2008 can also be considered in order to gauge the intensity of each determinant in the pre and post crisis period of 2008. The results can be utilized to identify then variables which are volatile and positively impact the capital sufficiency ratio.

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