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Impact of Core Capital Ratio on Banks Profitability: Evidence from SAARC Countries

by

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Dedicated to my lovely parents and my siblings who always encourage and support me. My relatives, friends and my special friend Amna Naseem, she always encourage me for my academic goal

CERTIFICATE OF APPROVAL

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Acknowledgements

Then which of the Blessings of your Lord will you deny.

Abstract

The objective of this study is to examine the impact of core capital ratio on the banks profitability of SAARC countries. Using annual data from 2000 to 2014 and balanced panel analysis. The results show that there is significant and positive impact of core capital ratio on return on assets. Further the impact of core capital ratio on return on equity is also positive but insignificant. Lastly, the impact of core capital ratio on net interest earnings is significant and negative. Interestingly the results show that there is significant and negative impact of size on return on assets, return on equity, and net interest earnings. The impact of liquidity is positive and significant on return on equity. The results also show the significant effect of inflation, and interest rate on banks profitability.

Keywords: Core Capital Ratio, Banks size, Liquidity, Inflation, Interest Rate, Bank Profitability, balanced panel analysis, SAARC Banking Sector

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Abbreviations

BSA	Balance Sheet Analysis
BS	Bank Size
CCR	Core Capital Ratio
CEEC	Central and Eastern European Countries
CPI	Consumer Price Index
FSA	Financial Statement Analysis
H	Hypothesis
INF	Inflation
IR	Interest Rate
LIQ	Liquidity Ratio
M1	Model One
M2	Model Two
M3	Model Three
NIE	Net Interest Earnings
ROA	Return on Assets
ROE	Returnn on Equity
SAARC	South Asian Association for Regional Cooperation

Chapter 1

Introduction

Financial sectors assume an indispensable job in the financial development of a country. A number of studies showed a strong relationship between financial development and country growth (Rajaraman and Vasishtha, 2002; Ali, 2018). Financial institutions are building blocks in any economy and its role cannot be ignored because financial institution can streamline productive investments, provide timely funds to businesses, encourage investments and enhance efficiency (DFID, 2004). In most of the countries, the banks have a high proportion of the financial sectors, especially commercial banks (Arestis and Demetriades, 1997). As the banks are the main source of credit and funds for businesses. The active existence of these commercial banks and financial institutions is much important since a fall of this intermediation can collapse the development and survival of any economy (Rajaraman and Vasishtha, 2002).

At the point when banks of any country are in a good position they quicken the monetary development. On the other hand, the no growth in banks lead to stagnant development of the economy (Barth et al., 2001). Similarly the study of Khan and Ssnhadji (2001) proves that the best position of banks can increase the economic growth of the country, but low development in banks can cause less development in economy. Money related improvements like banks are considered as blood flow to the economy growth. Banks have extraordinary significance in the financial advancement of any economy, in spite of the fact that they furnished the economy with deficit credit. Therefore this segment is significantly not quite

the same as different business. As per financial experts the financial advancement of any nation relies on the proficient financial activities. These banks are more important for the developing economies, like SAARC countries. As SAARC countries have their emerging financial sectors especially banks. For every bank survival and growth profitability is a main element. A number of studies were conducted in past that check the determinants of banks profitability. This study is designed to examine the impact of macroeconomic and micro economic factors, especially core capital ratio, on banks profitability.

This study is primarily focused to investigate the effect of core capital ratio on SAARC countries banks profitability. The core capital is called to be the minimum amount required by the country central bank to the banking sector to meet the financial obligation and protect against financial distress including default. "The Capital Adequacy Ratio (CAR) assesses the capital requirement based on the risks faced by the banks. The banks are required to comply with the minimum requirements as specified by State Bank of Pakistan on standalone as well as consolidated basis" as described by the central bank of Pakistan. For example in 2013 SBP require all the scheduled banks in the country to maintain minimum of 10% core capital with state bank on ongoing basis for both consolidated and individual or standalone basis. Core capital is primarily consist of equity plus retained earnings. Core capital is also known as Tier 1 capital and is received by the bank when the share is purchased in the market, and profit left from the total earnings in the year as well as include other Tier 01 securities. It is that part of equity that would be difficult to distribute to the shareholders and serves as permanent capital in the bank. Core capital provides a cushion for a bank against business shocks such as loan defaults, foreign exchange losses and interest rate shocks. The capital also provides a signal that the bank is well prepared to undertake more business (Chantapong, 2005).

In a number of ways, a bank with higher core capital is in a position to lend more loans and collect more deposits from the public because the law pegs lending to any one borrower, a group of borrowers and connected lending to the amount of core capital (Gudmundsson et al., 2013). Likewise, the amount of deposits to

be collected from the public by the bank is also pegged to the amount of core capital that the bank holds. Core capital may be seen from an absolute amount perspective (e.g. Kshs. 250m) or from a ratio perspective (e.g. 8%).

The study of Onuonga (2014) found that, core capital ratio did not express the banks represented by return on assets, percentage of profit before tax, and the total amount of capital invested in the business. Similarly, Santos (2001) asserts that bank regulation through higher capital requirements negatively affect bank development and credit expansion by increasing fixed and operating costs.

A recent study of Ikpefan (2013) determined the impact of bank core capital ratio (risk of default), calculated by divided the shareholders equity on the total assets, has a significant and negative impact on return on assets. Further, Jha and Hui (2012) study found that there is strong association between capital adequacy and return on assets, between net interest earnings and return on assets. Moreover, there is significant and effect of core capital on return on equity. Similarly the study of Almazari (2013) found significant impact of core capital on the profitability of Saudi Arabian banks. They used two measures of bank profitability first is return on equity and the second is return on assets. The results express that increasing core capital discourage the Saudi banks profitability. The capital adequacy for banks reduce the potential of banks financial distress as well as including bank default. On the other hand, a study from Kenya by Mathuva (2009) investigated the impact of core capital on profitability of banks, by using two proxies of bank profitability. The results express significant and positive impact of the core capital ratio on both measures of banks profitability.

The stockholders equity divided by bank total assets, gauging the sufficiency or adequacy of capital with the aim to capture the soundness and safety of the banks. According to Javaid et al. (2011) core capital ratio demonstrate the capability of the banks to absorb unexpected loss. The equity proportion in the total capital of the bank reduce cost of capital (Molyneux and Thornton, 1992), which resultantly has positive impact on the banks profitability. Furthermore, the rise in capital may increase banks profitability by falling possibility of financial distress in addition a

bankruptcy (Berger and Ofek, 1995). Therefore, this study is aim to investigate the core capital ratio impact on SAARC countries banks profitability.

The liquidity can be defined as the degree of ease to convert bank assets to cash or any other liquid exchangeable form. The higher ratio of liquidity, short-term assets divided by total assets, the banks has the hihger the bank is liquid. The low level of liquidity the bank has, can be triggered to the failure of the bank. But to hold idol illiquid assets the bank would not be able to earn on the assets. Some of the previous studies reported positive association between bank liquidity and bank profitability while others show negative effect of liquidity on bank profitability. Like the study of Bourke (1989) states that there is a significant and positive association between the bank profitability and liquidity. On the contrary the study of Molyneux and Thornton (1992) concluded that the effect of liquidity is negative on bank profitability. Thus, this study is examining the impact of liquidity on SAARC countries banks profitability.

The third microeconomic variable is bank size, measured by taking natural log of total assets. The previous studies reported positive effect of bank size on its profitability (Smirlock, 1985; Anbar and Alper, 2011). Thus, this study hypothesis that size of the bank has a positive impact on SAARC banks profitability.

The interest rate is the cost of fund charged by the bank on behalf of the fund lend to the borrower. The previous studies reported mixed results where the study of Samuelson (1945) reported that any increase or decrease in interest rate affect only borrower but do not affect the bank performance, like bank profitability. The study of Molyneux and Thornton (1992) suggest significant and positive impact of interest rate on banks profitability. A similar study of Kaya (2002) also found positive impact of interest on banks profitability. Therefore, this study is designed to investigate the impact of nominal interest rate on profitability of SAARC banks.

The other macroeconomic variable, inflation is the change in general price level over time and affects both expenses and revenue. The inflation effect on profitability can be either positive or negative depending upon the banks anticipation that whether the rate of inflation will increase or decrease (Perry, 1992). If the banks anticipated a rise in inflation rate then the bank will same like increase interest

rate. On the other hand, if the banks do not anticipated an increase in rate of inflation the required adjustment could not be made to the interest rate while the expenses increases and revenue decreases. A study of Sayilgan and Yildirim (2009) reported that a increasing inflation has a significant and negative impact on banks profitability. In literature most of the previous studies observed significant and positive impact of inflation on the profitability of banks (Molyneux and Thornton, 1992; Kosmidou et al., 2005; Hassan and Bashir, 2003). Therefore, this study assumes that inflation affect SAARC banks profitability.

Most of the previous studies used two measures of profitability which are rate of return on equity and rate of return on assets. But as the primary function of the bank is to earn interest which is sourced from earnings interest on loans. The study of Raharjo et al. (2014) reported that total equity divided by total assets, reserves divided by total assets, and most importantly net interest earnings of the bank has a negative and insignificant impact on the banks profitability. Therefore, in this study net interest earnings is also used as a measure of SAARC countries banks profitability.

Actually an extensive number of non-residential credits and progress have been identified as one of the principle issues of financial organizations, and for all intents and purposes all arguments battle against the productivity of banks (Foster and Fozzard, 2000). Fundamentally, these initiatives can be anticipated to the information about an irregular rise and fall in the banking industry. The bank development is very important to access stable banking sector. Its very clear that worse economic condition can affect the loan portfolio, to create credit loss which will affect that specific banks profit. Depending on their capitalization, the ability of banks to support the performance of that sector will seem like as putting into that situation where there is a big danger of loss, and then the irregular rise and fall in banking sector profitability will worsen. It is, however, to understand the question and access those problems that affect the profitability, then decade it before crisis situation. These are the basic strategies that will pursue in this study by using a SAARC country bank as an example.

The bank profitability is determined by the internal and external factors. The external determinants also called macroeconomic or exterior determinants while the internal determinants also named as interior or microeconomic determinants. The interior determinants are those which are in control in the management of the banks and are initiated from the banks financial statements like income statements and statement of financial positions. While on the contrary exterior factors are linked to the economy as a whole and cannot be controlled by the management of the bank.

The study of Molyneux and Thornton (1992) was the first that investigate the multi-country bank profitability determinants by taking the sample of 18 European countries. Followed by of other studies that used the data from group of countries to examine various factors that can potentially affect bank profitability (Demerguç-Kunt and Huizinga, 2001; Athanasoglou et al., 2008; Bashir, 2001).

Elements that impact business bank's benefit are partitioned into inner and outside. Inner variables are those elements which bank's administrators can control, though outer components are that outside or past banks administration control. Outer elements that impact profitability of business banks is identified with the lawful and monetary condition and involve factors like loan fees, swelling, retreat, blast, controls, advertise development and market structure (Chen and Liao, 2011). The inside elements mirror the administration strategies of the banks and choices made about the wellsprings of assets, costs and liquidity the executives (Onuonga, 2014). Information on bank unequivocal factors that sway business banks advantage can be gained from spending reports therefore study will complement on bank's size, capital ratio, liquidity, credit risk and adequacy in bank's undertakings.

1.1 Theoretical Background

Such capital prerequisites could anyway make exchange offs for the economy. Banks frequently contend that higher capital necessities will imperil their execution. This could happen, for instance, if the banks expense of financing were

to increment altogether because of increased holdings of capital. These higher subsidization expenses could lead to the reduction fo return on equity for banks and disruptively affect loans. The financial hypothesis does not comprehend this discussion in light of the fact that no agreement rises on the impact of capital on bank execution. Likewise, as confirm by the ongoing budgetary emergency, higher hazard might be related to higher use is normally connected with higher expected return Admati (2014), so the examination of the ROE should control for hazard taking.

1.2 Supporting Theories

1.2.1 Buffer Theory of Capital Adequacy

This theory was for the first time proposed by Calem et al. (1996). This theory predicts that "a bank approaching the required minimum capital ratio may have an incentive to boost capital and reduce risk in order to avoid the regulatory costs triggered by a breach of the capital requirements". Further Ikpefan (2013) suggest that banks are required to hold buffer capital to obey the legal minimum capital requirements and most importantly in times when the core capital ratio is highly fluctuating. The banks with short of buffer capital might be looking for investing in the hope to earn abnormal returns and enhance the capital.

The main purpose of this theory is to predict required capital ratio and minimize the percentage of risk that arises due to economic variations. The minimum percentage of core capital ratio that is required for developing economies is 11.22% and for developed economies the required percentage is 9.20%. It varies from one bank to another.

Capital buffers may also affected by business cycles. Meanwhile in the situation of economic booms, when banks found unable to meet the cost of average equity capital during economic crisis may force them to liquidified their assets and meet capital requirements. To avoid these booms of economy banks have to increase their buffer capital through mandatory capital conservation buffer. Valencia and

Bolanos (2018) conducted a research on dataset of 3461 banks of developed and under developed countries to measure the effect of bank capital buffer around the world from 2001 to 2013. They found that higher competition of capital buffer effects the banks of developing countries rather than developed countries.

1.2.2   Portfolio Regulation Theory

Another theory used by this research is portfolio regulation theory. Portfolio regulation theory was proposed by Peltzman (1970). The portfolio regulation theory provoides the gauge the performance of banks, like profitability, and here SAARC countries banks. The theory further states that the regulation of banking sector plays a key role in the soundness and safety of the banking system, which by law put banks in the state that they can fulfil their financial obligations and maintain their liquidity position.

1.2.3   Trade Off Theory

One other theory which is trade-off theory is relevant in the current study, which is linked to the capital structure. It is an opportunity for organizations that how much they pick obligation funds and how much to use by maintaining expenses and profitability. This theory indicates that organizations make a balance between debt financing and equity financing which refers to the balance between costs and benefits. The purpose behind this theory is that to described the fact behind organizations, mostly financed moderately with debt and moderately with equity. Myers was an especially uncultivated authority in his Presidential American Finance Association that delivers to which he projected that what he called the pecking request theory. Fama and French reprimand both the exchange of hypothesis and the pecking request hypothesis through various paths.

1.2.4 The Capital Structure Theory

Another suggestion that supports this study that is Capital Structure Theory. Company's financing for long term operations by referring the combination mix of debt and equity is called capital structure theory. The structure of an organization is the manner in which an organization funds its advantages. It can back its tasks by either value or various mixes of commitments and qualities. An organization capital structure can have a lion's share of the obligation segment or a dominant part of the value or a blend of both obligation and value.

1.3 Problem Statement

It has been noticed that there is a need to conduct a research on the effect of core capital ratio on SAARC countries bank profitability because the economic condition of SAARC was quite disturbed from the past few years. As it is clear that bad economic condition of any country cause growth of banking industry. Core capital ratio is the basic element of bank profitability. Banks development refers to the growth of economy. Currently the condition of banks is not in a position to manage high profits and structured cost. They fail to perform well due to some sort of external and internal factors of economy. Variations in economy caused bank profitability and bank profitability depands upon the core capital ratio. So the fact is that micro-economic and macro-economic factors affect bank profitability.

1.4 Research Questions

Research questions on bank profitability are as follows:

Research Question 1

What is the impact of core capital ratio on bank profitability?

Research Question 2

What are the impacts of macroeconomic variables on bank profitability?

Research Question 3

What are the impacts of microeconomic variables on bank profitability?

1.5   Research Objectives

Research Objective 1

To find the impacts of core capital ratio on bank profitability.

Research Objective 2

To examine the effects of macroeconomic variables that affect bank profitability.

Research Objective 3

To examine the bank specific variables that affect bank profitability.

1.6   Significance of the Study

A lot of researches have been made on The impact of core capital ratio on bank profitability but none of study considered on SAARC countries banks profitability. This study aims to fill the gap of literature and studies the impact of core capital ratio on bank profitability of SAARC countries. The study about SAARC countries is quite interesting because of same financial environment. This study is also helpful for managers of financial institutions because they can take help while predicting expected loss or profit through this study. This study is helpful for better understanding the impacts of micro and macro economic factors on banking profitability.

This study also provides a great opportunity for investors to better understand and forecast the potential impact of external factors on the profitability of banking industry. Main focus of this study is to measure the impact of core capital ratio on SAARC countries banks profitability, but also contributes to measure the impact of liquidity ratio, size of the bank, interest rate, inflation on SAARC banks profitability. This study made an open platform that is helpful for new researchers to

conduct more studies regarding impact of core capital ratio on bank profitability. Academicians can set a debate on this study among them. It is also helpful for bankers to predict the upcoming variations in external factors that effect bank profitability.

1.7 Plan of the Study

The study contains a total of five chapters. Where first chapter covers introduction; background of the study, relevant theories, problem statement, research question and objectives and lastly significance of the study. The second chapter discusses the extensive review of the previous studies and re-balancing strategies applied in this study in detail. After a description of the data, results are presented. The subsequent sections provide discussions of findings respectively.The final section summarizes conclusions and recommendations.

Chapter 2

Literature Review

This chapter covered complete literature review of micro and macroeconomic variables that affect banking profitability. It also covers the background and hypothesis of this study.

2.1 Background of the Study

This study measured the impact of CCR, LIQ, BS, INF and IR on bank profitability of SAARC countries. Due to the variations in dis intermediation, banks have introduced an investment banking style. For example, buying and selling in capital market, which affects bank size and their composition of gains. Bonfim and Kim (2012) concentrating before while considering bank explicit and macroeconomic factors.

A general method to testing this inquiry by surveying whether a budgetary based framework is more bank based or showcase based and afterwards researching the impact of these basic highlights on bank benefit. By using data from the banking sector of SAARC countries this study examines that how the banking sector is working properly. This study examines that external factors have greater impact on banking profitability. Typically, it will focus on bank returns, assets and equity. These effects are expected in our study. Berger and Ofek (1995), indicates that

the cost of banks is slightly reduced when the size of the bank is increased, and very large banks often come across scale inability.

Cornett et al. (2010) in his paper described that largest banks face the largest losses. In 1990s, the banking sector of Italy has moved towards non-interest banking income from interest based banking income. It is acknowledged that this change signifies that it is an appropriate step to higher profits; there are some suspicions about the effects of such a process of overall bank performance. Private Banks have high profitability in contrast of Government owned banks however the cost of government owned banks are less then private owned. Secondly the public banks have poor quality of loan while other types of banks have a lot of insolvency risk. On the other hand mutual banks have better loan quality and both private and public sector banks have lower asset risk. Ownership separation and control causes a conflict of interests between owners and managers. It has been studied by Berle and Gardiner (1968).

Maigua et al. (2016) explored the impact of loan cost factors on banks gainfulness. 26 sizes of banks have been utilized in that study and abundant decline examination to dissect data. This study investigated that the growth, discount and trade rates definitely influenced the profitability of banks; though hold prerequisite proportion adversely impacted the banks' execution. It indicates that trade; expansion and high rebate rates lead to higher banks' execution, though elevated amounts of hold prerequisite brought down the banks' execution.

Another study by Voghouei et al. (2011) on determinants of business bank gainfulness of 8 banks in Ethiopia having the sample size of 14 years investigated that the impact of microeconomic variables on bank profitability. This examination utilized numerous direct relapses and the settled impact relapse model to investigate information. Furthermore the examination set up that size of banks; capital ampleness and total national output have a positive and measurable noteworthy association with gainfulness of banks. The discoveries of the examination likewise uncovered that liquidity chance, operational effectiveness, financing cost and saving money area improvement have a negative and factually huge connection with

the productivity of banks. At long last, the investigation found that the connection between productivity of the executives, proficiency of worker, swelling and remote conversion scale was measurably unimportant.

Miskulin (2014) surveyed the inside and outside determinants of monetary execution Ethiopia's banks utilizing board information of banks for a period between the year 2002 and the year 2013. The examination utilized the settled impact relapse display. The relapse results set up that capital structure, salary expansion, working expense had a noteworthy negative association with execution while bank estimate had a positive huge association with gainfulness estimated utilizing ROA. The investigation, likewise settled that different macroeconomic factors had an inconsequential impact on the monetary execution of Ethiopians business banks put something aside for duty rate, which had a negative and noteworthy association with gainfulness.

Another study has assessed the components that enhance the gainfulness of Islamic saves money with a sharp spotlight on the Gulf African bank in Kenya. The investigation utilized a review explore and utilized surveys to gather information for the examination and afterwards utilized the Chi-square test to build up the connection in examination factors. The discoveries of the exploration built up a positive connection between Islamic keeping money items, Shariah Compliance, consumer loyalty and productivity of Islamic banks in Kenya. It was presumed that Islam is managing an account items, Shariah consistence and consumer loyalty were the central point which influenced Islamic banks benefit Anwar (2014).

Bank size is internal factor that effect bank profitability. Chinoda (2014) investigated the impact of bank size on bank gainfulness in Zimbabwe. The examination was consisting of 5 commercial banks, which were arbitrarily chosen and utilized auxiliary information from monetary reports of banks. Utilizing normal straight relapse shows that bank liquidity, size, and total national output have a significant positive impact on profitability while working costs have a negative relationship with gainfulness of business banks in Zimbabwe. The examination suggested that expansion control arrangements ought to be offered need to encourage money related intercession.

On the other hand, fewer examinations have taken a gander at bank execution in creating economies. Further Berger and Ofek (1995) studied the profitability of Malaysian banking sector. They utilized 17 scheduled banks from the year of 1986 to 1995 period. Those profitability factors were split into two basic classifications, which are internal factors (liquidity, capital sufficiency, what's more, costs the board) and the external factors (proprietorship, firm size, and financial conditions).In large scale markers, the high premium proportion was related to lower profitability of banks. Furthermore the effect of inflation on banks profitability was found positive.

Lipunga (2014) conducted a research on banks of Malawi with the sample size of 5 years 2009 and 2012 utilizing external (advertise) and internal magnitudes of gainfulness. The research utilized that procedure which is involved in two or more variables have declined and relationship investigation where Earning Yield and profit from the resources (ROA) has been utilized to decide the internal and external factors of benefit. Relapse investigation results set up that bank size; the board proficiency and liquidity have a factually noteworthy impact on profit though capital ampleness had an inconsequential effect.

Kenya (2015) conducted a study on the effect of academic capital on the profitability of commercial banks referred to at the NSE with focus on social capital, improvement capital, human capital and assistant capital, and. The examination used an entrancing examination structure and discretionary data for quite a while from 2009-2013. The examination found that essential capital and headway capital impacts recorded business banks of Kenya advantage. The examination recommended that recorded, banks in bank ought to enhance strong control over helper and headway capital more assignments for insightful capital theory should be made to the two segments of academic capital for greater advancement in efficiency.

The study of Wynn (2013) examined the Kenya bank profitability using data ranging from 2010 to 2012. Optional information gathered from the 44 banks in Kenya was utilized in the examination The investigation suggested that business banks in Kenya should put more centre both the bank explicit components and the

outer condition together to concoct powerful techniques to improve their budgetary execution.

Saigon (2009) investigated the relationship of the assets arrival and the arrival on value proportion. For the sake of an example, they used Turkish banks by utilizing the month to month information from 2002 to 2007. The advantage of this management of an account area appears to have extended close by declining swelling rate, dependably growing current age list and advance spending balance. It has proposed that gainfulness decidedly prejudiced by capital abundance and adversely by developing wobbly sheet resources.

The delayed consequences of the examinations change basically on account of the assortment of the earth and data consolidated into the examination. Be that as it may, there are normal components impacting productivity distinguished by a few specialists. Abridging the outcomes from various examinations, different proportions of expenses are commonly adversely associated with benefit. Higher liquidity and large noteworthy arrangements for advance misfortunes and more dependence on obligation have been bringing down characteristic of lower bank benefits Olson and Zoubi (2011).

Angbazo (1997) investigated the different factors that affect US banks profitability by taking the data from 1989-2003 and find that administration productivity, default hazard, the opportunity cost of non-eagerness, bearing stores and use are unequivocally linked with bank premium edge.Early investigations on bank gainfulness were given by Bourke (1989). At that point, so as to recognize the determinants of bank executives, various observational investigations were held. In later writing, the determinant of bank gainfulness is characterized as a component of inward and outer determinants. Inside determinants are identified with the bank executives and named small scale or bank explicit determinants of productivity Gungor (2007). Among the inward determinants, there are bank express budgetary extents addressing capital plentifulness, cost adequacy, liquidity, asset quality, and size. Monetary improvement, swelling, promotes advance charges and ownership is outside determinants that impact bank advantage.

Hosseinipour (2011) surveyed outside and inside determinants of business bank benefit in Kenya. The examination utilized a board information approach. The examination uncovered that the bank estimate, liquidity, cost the executives, swelling, a piece of the pie, and advance misfortune arrangements were the noteworthy elements that affected banks productivity. In Colombian case Barajas (1999) indicates the impacts of monetary advancement on banks advantage edge. After progression, is discovering that credit quality expanded and by and large spread cant declined, the significance of the diverse factors after the bank spreads can be influenced by such types of measures.

Past works additionally incorporate the other factors, for example, GDP development rate and loan cost, which are regularly used to test whether ecological elements affect bank's benefit. Regular examination by Arpa et al. (2001) identified the effect of macroeconomic improvements on both hazard and procuring of Austrian banks of 1990s. As indicated by their examination, macroeconomics assumes a critical job in saving money and supervision. The factors, for example, loan fees, can clarify the productivity of Austrian banks. Moreover, the net intrigue salary has all the earmarks of being uncorrelated with GDP development and loan fee advancement, then again, actually pay shrivels at low financing cost level.

Porta et al. (1998) and Levine (1998) conducted a study of development as well as developing countries. They found that the rights of creditors have great impact on the development of the banking industry. According to their results legal rules protect creditors. Cuadro et al. (2003) examined two factors in their study. One is the role of central bank and the second one is banking regulation and their supervision. They indicated that central bank plays a very important role in the development of financial systems in the developed as well as developing countries.

Roe and Siegel (2011) found that political instability is a factor that creates loss in financial growth of economy. Voghouei et al. (2011) made extension to that study by measuring political power in establishing economic development.

By measuring of panel data from developed and under developed economies results showed the influence of political power in development of financial system of economies.

Borja (2010) found the influence of GDP development for bank's benefit has clashed over the possession types; however the confirmations demonstrate that the developing GDP development rate will diminish bank's productivity since the opposition is prompted. Borja (2010) recommends that the nation ends up more extravagant, benefit decays, which is perhaps caused by expanding rivalry. Albertazzi and Gambacorta (2009) found that keeps money with smaller length resources are less influenced by the vacillations of long haul financing cost and are progressively influenced by those of short-term loan fee.

Mamatzakis and Remoundos (2003) proposed that those factors that are exactly identified the vital arrangements of the banks, i.e. staff costs, advances to resources proportion, price to resources proportion are ones that mostly clarify productivity. Further the study argued that economies of scale have significant impact on gainfulness. In this study, Mamatzakis and Remoundos (2003) additionally found that the measurement of the market, an external factor, categorized by the supply of cash, fundamentally impacts benefit.

Kosmidou (2008) measured different macroeconomic factors effect on bank profitability in UK from the sample period of eight years from 1995 to 2002. This examination discovered that banks capital quality had a positive effect on their gainfulness. The examination set up that effectiveness in costs the board and bank estimate altogether influenced the gainfulness of business banks.

There is another study by Kosmidou (2008) utilizing lopsided pooled time arrangement information examined the components that impact the execution of banks in Greece for the year 1990 to 2002. The examination set up that more profit for normal resources was associated with profoundly promoted business banks and minimal effort to salary proportions. The examination discovered that bank size had a positive, however measurably huge in blend with budgetary structure and

macroeconomic factors. The exploration sets up that development of total national output altogether and decidedly affected gainfulness though an expansion had a negative and factually noteworthy negative effect on banks.

The examination in Switzerland, Dietrich and Wanzenried (2009) locates that noteworthy contrasts in profitability in between the business banks and these refinements can be an extensive grade be clarified by the variables incorporated into the investigation. It is discovered that, the better promoted bank appears to be increasingly beneficial. In like manner, if a bank development volume is winding up faster than the market, the impact on bank advantage is sure. They find that sets aside some cash with a higher premium pay share are less advantageous.

Ablaze (2011) has taken a shot at the elements influencing the productivity of 35 recorded lives what's more, non-disaster protection organizations from 2005 to 2009 in Pakistan. The outcomes demonstrated that size of organization and capital volume is emphasized and essentially related to benefit. Use proportion has a negative and noteworthy association to benefit. Akhtar et al. (2011) had chipped away at small scale and macroeconomic markers of large banks benefit. They investigated 22 large bank data by using the SPSS software. The time period was 4 years from 2006 to 2009. It has been proved that add up to resources, value and resources the board has a positive association with productivity, though; credit hazard insignificantly affects banks execution. Additionally, the outcomes likewise demonstrated that bank's size is decidedly related to benefit. It demonstrates economies of scale, implying that as size of bank builds, gainfulness will likewise increment.

Literature provide some another study by Akhtar et al. (2011) led an examination on inside factor investigation of 10 banks profitability in 2004-2008 in Pakistan. To discover the effect of adding up to resources, obligations, add up to, value, and aggregate stores on profit for resource (ROA), they utilized pooled OLS technique. Their outcomes demonstrated that these factors have a solid effect on the gainfulness. It isn't fundamental that higher aggregate resources would result in higher benefits. The impact of advance on benefit isn't noteworthy. In any case, stores and value have a noteworthy effect on benefit.

What's more, distinctive examinations by a couple of makers around the globe and in Kenya on factors of profitability have been explored. For instance, overall examinations by Hossain and Ahamed (2015) researched the diverse determinants of advantage in their individual countries anyway most of the examinations joined both little scale and full scale factors that sway efficiency. Similarly researched the diverse segments that sway benefit anyway the examinations also joined within and external factors. Locally, Anwar (2014) inspected the variables which influence Islamic banks' benefit. Moreover, ponders by Kyalo (2013) and Sawe (2011) investigated both the bank explicit and small scale explicit elements which impact the banks gainfulness. Subsequently, the greater part of worldwide, territorial and nearby examinations has consolidated both the bank explicit and other full scale financial factors that impact their gainfulness.

Another researcher named Andries, et al. (2012) conduct a study on pre- crisis and crisis situation of CEEC countries and found that all those banks who was performing very well have more capital ratio and at the same time they are focusing on traditional banking activities. Athanasoglou et al. (2008) investigated a study on banks from SEE region and declared that inflation is negatively related to bank profitability. The sample size of was 5 years from 1998 to 2002.

According to a research by Kiganada (2014) showed that macro-economic variables are insignificantly related to commercial banks profitability. These results were supported by Ongore and Kusa (2013). They declared that the commercial bank actions are determined by broad management decisions. Evidence of Kenya. The banking industry's problems arise from both internal and external sources in general terms. The problems of internal banks can remain as banks in the entire banking industry are being observed. External sources, however, are macroeconomic, development banks and creditors ' fund that affect the economy as a whole.

2.2   Bank Profitability

Financial ratios are of many types but to measure bank profitability by following the literature three proxies for bank profitability are used which are return on equity, return on assets, and net interest earnings. These three are used as dependent variables in this study. In the context of banking sector return on assets identifies the amount of capital that bank earn in against of its resources that have been used in its process of earning. An Increasing ROA is useful for the management. However, this measurable shows the best connection with complementary organizations and have a similar level of capitalization. An extraordinary gear, for instance, it will need huge resources that most importantly to do what it does.

In contrast to other benefit proportions, for example, the rate of return on assets and equity incorporate the the significant portion of the bank performance, while those that are emerging from liabilities to loan losses as well as the amount of capital which is paid by the financial specialists. Add up to resources are utilized instead of net resources. Therefore the money property of the firm is obtained and hence the associated risk has been adjusted. Organizations receivables are surely benefited that are adjusted by its payables, and adjusted by its risk. Thus, return on assets is generally less of interest for a firm investors than some other money related proportions; the investors class is basically more interested in the profits from their investment and the amount of risk they are assuming for the return. In any case, the incorporation of all things are measured, the obligation or value is more interest of administration require to assess the cash consumption set for the work.

Return on assets is generally inside utilized by a bank or any other organization to keep record of the resources used in a given time, to evaluate the bank or an organization execution in industry settings, and to obtain the record of different tasks and by comparing one with the other. Therefore, expert adequately, be that as it may, book keeping frameworks must be set up to apportion the organization resources to different tasks appropriately. Return on equity can combinable both successful utilization of resources and on the other hand the under capitalization

too. In times when return on assets of a business is increasing and administration unable to locate the main element of efficiency that creates the profit, the good indicator can be negative: interest in new increasing indicator be past due.

One other inside used for return on assets includes to assess the benefit of placing the organization resources in some other framework in contrast to extend the current activity. The right decision fo a business is to enhance profitability from a right and long term activity, which costing lessor resources.

2.3   Core Capital Ratio and Bank Profitability

CCR is the basic measurement of capital in bank, for example, a reserve funds, or investment funds and credit organization, should have closed by with the end goal to be conventional to Federal Home Loan Bank controls. The Federal Home Loan Bank controls expect banks to have core capital in a sum that is somewhere around 2% of the bank's benefits. Core capital comprises of value capital and announced stores. The base prerequisite was set up to guarantee that customers are secured while making budgetary records.

Furlong and Keeley (1989-1990); Berger (1994-1995); Naceur (2003); Kwan and Eisenbeis (2005) decleared that capital and profit have significant relationship by using determinants from determinants of Tunisian banks, in the midst from 1980 to 1995. Moreover, the study of Naceur and Goaied (2001) showed individuals banks performance is best who are attempting to expanded work and efficiency of capital of business that have obsessed the capacity to make stronger their position. According to Bourke (1989) and Naceur (2003) correspond that all promoting banks around tackle to bring down which needs for outer subsidize and financing expenses; that is preferable to converts standpoint for better gainfulness.

H1: There is a significant and positive impact of the core capital ratio on SAARC countries banks profitability.

2.4 Inflation Rate and Bank Profitability

When the costs of products and ventures increase over time. Four principle types of inflation that are classified by their type of velocity. The four types include first Creeping inflation, second is Walking inflation, third type is Galloping and last one is Hyperinflation.

De Vos (2015) experimentally proved that profitability and contemplate that Tunisia banks effected of changes in expansion rates and liquidity of this bank was negative. Comparative examination has finished by Cusin (2015). It has been discovered that banks of India impacts negatively on banks profitability. Likewise different investigations on bank profitability and inflation have investigated by Tseganesh (2012); and Horvath (2014).

A bank's loan fee agreement could be looked from two different ways, that the bank's strategy in regard to the cost it pays on deposits it taken and on the other hand the bank approach with respect to the amount get from the borrowers. The premium paid on on the deposits bank taken is the cost source and is its liabilities. That is the reason Faria and Carneiro (2001) contended that the benefits of a bank incorporates the premium when it pays on stores. Thus, Aburime (2008) contended that the benefit of bank has affected by its financing cost strategy. This arrangement could be acclimated to improve profitability. Here the definitive factor of the ability of the bank is to set, such a loan fee that for resource bargain to meet the cost occurring on the bank assets, operation expenses, as well as the bank required rate of return.

2.5 Inflation Types

Creeping-Inflation: Individuals realize that one year since now auto model wills most likely cost more. Creping or gentle growth is when costs is rise for three percent on a year or when the price less then three percent. With respect to Federal Reserve when costs increased by two percent or less then two percent then in response of this shows monetary development. Shoppers purchase presently
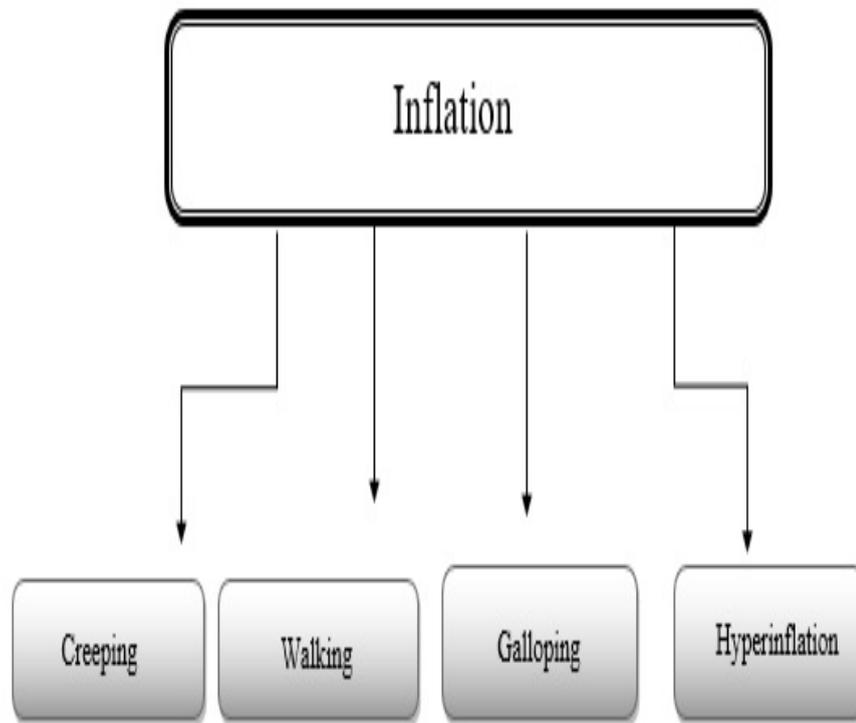
FIGURE 2.1: Types of Inflation developed by Researcher

to be at higher future costs. In this way by which C-inflation drives financial development.

Walking-Inflation: A high increase in the the cost more than three percent per year. It is another reason behind increase in inflation from three to ten percent per year. The creeping inflation is curse to the economy as it required a quick monetary development. When households required higher purchase today, just staying away from tomorrow's that are noticeably having higher prices. This driving forces requested to further consider, that providers can't keep up with obtain the goal. More critical, neither can compensate.

Galloping-Inflation: The main point here is that when the rate of inflation increasing more than ten percent, it leads to the collapse of the economy. The value of cash as quickly losing that the businesses and employees of the business unable to meet the expenses and falling in financial distress. Remote financial experts keep a strategic gap from the nation, denied required capital. As a whole the complete economy ruined in the financial distress and the government could

not be able to recover the economy. And the second phase of inflation, running inflation, should be expected not matter what initiatives are taken.

Hyperinflation: In case of hyperinflation the price level rises as much as 50% in a month. This kind is a very rare and danger one. The most common reason of the resultant hyperinflation when the government increase money in the economy to purchase war weapons. Germany faced hyperinflation during 1920s and Zimbabwe faces during 2000s. The other example of hyperinflation is Venezuela where hyperinflation is experienced in 2010's. The hyperinflation experienced was was amid its common war.

H2: There is a significant and positive impact of inflation on bank profitability of SAARC countries.

2.6 Liquidity and Bank Profitability

Liquidity ratio is the major sign of profitability. High percentage of liquidity showed that bank is highly profitable on the other hand lower percentage of liquidity showed the failure of the bank. Liquidity must be higher in percentage. Low liquidity causes bank failure. Bourke (1989) found significant relationship of liquidity and bank profitability. In some critical conditions banks have to increase their cash holdings to manage risk. By supporting this hypothesis Bourke (1989); Molyneux and Thornton (1992) concluded that liquidity and profitiability are negative in relationship with bank profitability. Molyneux and Thornton (1992) indicated insignificant and critical connection between the dimension of liquidity and productivity. Berufsbildung, (2002) additionally locates a negative connection among liquidity and bank gainfulness.

Be that as it may Pasiouras and Kosmidou (2007) locate a critical positive connection among liquidity and bank benefits. We utilize the proportion fluid resources/stores in addition to the momentary subsidizing as a proportion of liquidity. Pathirawasam (2013) examined positive connection among liquidity and bank profitability. While another study on liquidity and profitability by Jovanovics

(1982) declared insignificant connection between bank profitability and liquidity. It has been observed by Tseganesh (2012) that liquidity had a positive impact on bank profitability while thinking of Horvath (2014) found that liquidity had negative impact on the banking liquidity resources.

It has been exposed that bank of accessibility expand high capital Berger and Bouwman (2009) Vodova (2013); Munteanu (2012); Distinguin; and Tarazi (2013) have ability to create liquidity that are connected between bank capital and liquidity creation. They measured European business and US business banks that engaged with exchanging rehearse from period 2000 to 2006 when experienced with liquidity issues then banks diminish their capital proportion. They additionally exposed that when a small level of bank confront liquidity issues, it equipped its measurable dissolvability. The examination bolstered the usage of least liquidity proportions by the Basel Committee and scrutinized the conduct of vast banks when contrasted with fewer banks amid liquidity emergency. The idea of capital sufficiency with bank liquidity was additionally examined by Choon (2013), Moussa (2015), Bunda and Desquilbet (2008) that banks liquidity has critical and negative effect on capital sufficiency.

H3: There is a significant and negative impact of liquidity on profitability of SAARC banks.

2.7 Bank Size and Bank Profitability

The study of Singh and Sharma (2016) watched the elements that impacted fluid resource property of the banking sector and found that the size of the bank significantly influencing the profitability of the banks. Different studies were conducted in past to examine the various that influenced the profitability of banks among those one is the size of the banks Bonfim and Kim (2012); Bonner (2013); and Tseganesh (2012). Shven (2013) found negative connection among bank size and ROA. In any case, when the capitalization proportion is utilized as a hazard measure, this impact isn't vigorously critical in all particulars.

Bank size is commonly viewed as an applicable part of bank executives. Smirlock (1985) found positive and noteworthy connection between size and bank profitability. A few papers analyse the impact of bank measures on bank gainfulness. Goddard et al. (2005) indicated that size is a basic element which could clearly showed the profitability of bank. As per Goddard et al. (2005) a bank's gainfulness at first increments with size because of the scale economy, however decays, if the size surpasses an edge label, the fatigue of the scale economy and bureaucratic administrative style could prompt execution wastefulness.

In spite of the way that the enthusiasm of breaking down firm size lies in size impact on profitability, a rushed discussion still exists with respect to whether huge organizations have more open doors than little firms to upgrade their benefit by exploiting financial scale. Fiegenbaum and Karnani (1991) proved a fact financial structure of small banks is more flexible than large ones. With this regards size have negative impact on banks profitability.

Berger and Ofek (1995) and Humphrey (1997) find that, by and large, huge banks perform superior to little banks; however, it is less certain whether expansive banks profit by the scale economy. They express that better practice as far as innovation and the executives structure could really compare to the scale effectiveness. With gainfulness at first expanding in size and afterwards declining for the dis economies of scale, we think of two theories to be tried with regards to the bank size consequences for the bank benefit.

H4: There is a significant and positive impact of bank size on SAARC countries banks profitability.

2.8 Interest Rate and Bank Profitability

Literature showed that the relationship of Interest rate and bank profitability is positive. It can be described that the utilization of funds consumed by someone on a given time lapse. Likewise a person allows a creditor to use money for given time lapse with the additional amount it is called interest rate. Creditor charged debtor the financing cost as level of the whole of assets loaned. For the usage

of money Banks pays interest to depositors. In the context of profitability banks earn profit from interest. It is concluded that the amount of income for banks after operating cost is profit of banks Albertazzi and Gambacorta (2009). Interest rate is a major source of bank profitability. Account holder when borrow some amount from bank pays back a certain amount of interest to bank, similarly when creditor lent money to bank gets premium. For making stability in economy the central bank use loan cost as a tool. Interest rate when goes high the debtor have to repay the loan with an extra amount. When interest rate increases the loan cost also increases while the investments and borrowings decreases and this creates a currency revaluation. Samuelson (1945) found that an increase in interest rate only hits debtors while the performance of bank

H5: There exist significant and positive impact of Interest Rate on bank profitability of SAARC countries.

Chapter 3

Data Description and Methodology

This chapter covers the description regarding data, sources of data, and methodology applied to investigate the impact of core capital ratio on SAARC countries banks Profitability.

3.1   Data Description

Research data is any physical just as cutting edge materials that are accumulated, watched, or made in research activity for explanations behind examination to convey novel research results or inventive works. Research data can be delivered for different purposes and through different methodology, and can be apportioned into different orders, for instance, numerical, clarifying or visual. Likewise, data may be rough or dismembered, preliminary or observational, ordered or unreservedly open. Before to apply econometric techniques to draw the statistical results. In the first stage, the data description is given like how much the observations are in the data set. Further how the data is collected and from where the data had collected. How the outliers are removed and the data become viable to test the statistical results. In short, the complete description of the data is given in detail.

3.2 Sample Size

The aim of this study is to examine the impact of bank internal and external factors on profitability of SAARC countries banks. In the exogenous variables, microeconomic variables are core capital ratio, liquidity, and size of the bank whereas inflation and interest rate are the macroeconomic variables. On the other hand, endogenous variable is bank profitability which is measured through three proxies return on assets (ROA), return on equity (ROE), and Net interest earnings (NIE). The population for this study is all banks of SAARC countries. To represent the population, sample consists both private and public banks of SAARC countries. The sample size include 84 banks from SAARC countries, using annual data from 2000 to 2014. The panel data used in this research is secondary in nature. In this study six countries of SAARC which are India, Pakistan, Bangladesh, Nepal, Bhutan and Islamic Republic of Iran are used as sample.

The panel data of Pakistan has been collected from BSA (balance sheet analysis) and FSA (financial statement analysis), while data of other countries have been collected from Bureau Van Dijk database a universal model of the banking data.

3.3 Percentage and Frequency Distribution of Banks

The Figure 3.1 indicates the percentage of banks from SAARC countries. The sample banks include 11.90% from Bangladesh. The banks from Bhutan are just 2.38%, because in Bhutan there are just two banks of which 15 years, sample time span, data was available. The remaining banks were dropped due to large missing values. Similarly, Iran contains 8.33% of total sample banks because of the same reason as with Bhutan. Interestingly, half of the banks are from India making 51.19% of total banks. In the sample the banks from Nepal are 11.90%, which making 10 total banks. Lastly, the banks form Pakistan has 16.66% of total banks in this data set.
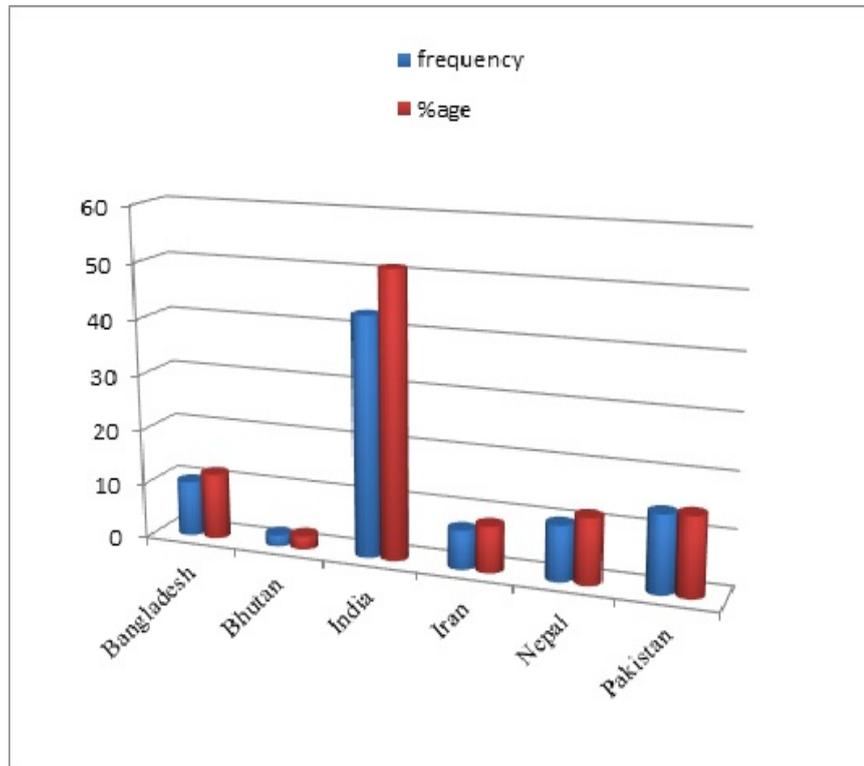
FIGURE 3.1: Percentage and Frequency Distribution of Banks

TABLE 3.1: Percentage and Frequency Distribution of Banks

Country	Frequency of banks	Percentage
Bangladesh	10	11.9
Bhutan	2	2.38
India	43	51.19
Iran	7	8.33
Nepal	10	11.9
Pakistan	12	14.28
Total	84	100

Table 3.1 shows that, 84 banks of SAARC countries were used for checking the changes in bank profitability. Although SAARC contains nine countries, but only five of them were used in this study the remaining three countries Afghanistan, Maldives, and Sri-Lanka. Bangladesh contains 10 banks of total banks. Bhutan contains 02 banks, India contains 43 of total banks, Iran contains 07 of total banks, Nepal contains 10 banks, and Pakistan contains 12 banks of total banks that have been used in this study.

3.4   Estimation Method

This study in the panel framework used fixed, random effect as well as pooled least square model to examine the effect of macro and microeconomic variables on bank profitability. This research will provide the comprehensive analysis and detailed effect of interior and exterior factors on banks profitability of SAARC countries. As bank productivity has developed endogenously with other banks qualities and past benefit that may impact on current estimations of the banks attributes, the standard board estimation system may create extremely one-sided gauges. It is the biggest advantage of panel data analysis that it can increase the number of observations, with the reduction of three dimensional variables (Multicollinearity), and also improve data reliability in the case when short number of years (Jensen, 1993). The second thing is that pooling of data helps in controlling the explanatory variables abnormal shocks (time effect) of estimated banks that are used in this study as well as reduce the omitted variable and its bias (unit effect). Panel data carries two attributed where one is cross-sectional and the other is time series.

It has to be mention that the estimators of panel data are much complicated than cross section or time series analysis. Pools regression helps to observe homogeneous behaviour of the endogenous variable in the sample period. Thus, various estimates tools like random effect and fixed effect improve the reliability and validity of panel data.

Furthermore, OLS pooled estimation cannot be applied directly because it might be biased and inconsistent when there are unobserved factors that are directly associated to explanatory variables. But as for this econometric problem can be best account for by using either fixed effect or random effect models. The decision to whether use fixed or random effect model the Hausman test is applied. According to Gujarati (2009) if it rejects fixed effect, then it means that it is in favour of the random effect test. Therefore, as for Hausman test for the internal and external factors that effect SAARC banks return on assets (bank profitability) fixed effect model is suitable. Similarly, for the effect on return on equity (bank profitability) the fixed effect model is more appropriate. Lastly, by regressing the

macro and microeconomic variables on net interest earnings (bank profitability) here too the fixed effect model is more suitable. Thus, for first two models the fixed effect model is appropriate and for last model (net interest earnings) random effect model is more suitable.

3.5 Model Specification

In this study the effect of different financial variables is measured that effect bank profitability of SAARC countries. The panel regression is used to investigate the effect of core capital ratio on profitability of banks. There is a lot of researches that have been made on this topic by using different variables to measure the effect of financial changes on banking profitability. Different researchers used different variables to examine the effect of financial changes on profitability of banks so it is difficult to select variables that could measure the exact effect of changes on on the profitability of SAARC banking system.

By following the literature, this study has used ROA (Return on Assets), ROE(Return on Equity), NIE(Net Interest Earnings). These three variables have been used as dependent variable while CCR(Core Capital Ratio), INF(Inflation), IR(Interest Rate), LIQ(Liquidity Ratio), and Size (Bank Size) have been used as independent variables. All of them are those variables which are widely used in previous researches.

This study estimates the panel regression model that is for both micro level and macro level.

3.6 Econometric Models

The econometric models are introduced to check the impact of different micro and macroeconomic variables, particularly core capital ratio, on bank profitability of SAARC countries. The basic panel data equation of this study is as follows:

$$y_{i,t} = \partial + \beta'_1 X_{i,t} + y' z_t + \mu_i + \varepsilon_{i,t} \qquad (3.1)$$

Where,

$y_{i,t}$ = An indicator of bank profitability

$X_{i,t}$ = It includes all explanatory variables which are observed at micro level

z_t = Macro level variables

μ_i = Denote panel individual effect

$\varepsilon_{i,t}$ = represent the individual error term

For better understanding of the above equation the short form is given as:

$$\mathbf{DV}_{i,t} = \beta_0 + \beta_1 Microeconomic + \beta_2 Macroeconomic + \varepsilon_{i,t} \qquad (3.2)$$

DV is the profitability of SAARC countries. The subscript i is for first ROA, then ROE, and lastly for NIE while t is for time period. On the other side of the equation, β_0 is the slop intercept, β_1 is capturing the microeconomic effect and β_2 capturing the macroeconomic effect on profitability. Lastly, $\varepsilon_{i,t}$ is for white noise term of the equation.

$$ROA_{i,t} = \beta_0 + \beta_1 CCR_{i,t} + \beta_2 LIQ_{i,t} + \beta_3 BS_{i,t} + \beta_4 INF_t + \beta_5 IR_t + \varepsilon_{i,t} \qquad (3.3)$$

In Equation (3) ROA refers to the return on assets (bank profitability) which is dependent variable. β_0 is equation intercept term. Moreover CCR stands for Core Capital ratio, the LIQ showing liquidity ratio, BS indicating bank size, INF denotes Inflation rate in the SAARC countries that are part in this study, and IR stands for interest rate which is a macroeconomic variable. While lastly, $\varepsilon_{i,t}$ is the white noise term in the equation.

$$ROE_{i,t} = \beta_0 + \beta_1 CCR_{i,t} + \beta_2 LIQ_{i,t} + \beta_3 BS_{i,t} + \beta_4 INF_t + \beta_5 IR_t + \varepsilon_{i,t} \quad (3.4)$$

In Equation (4) ROE refers to Return on equity, estimate of profitability, which is dependent variable. β_0)Indicating slop intercept. Further, CCR is the main variable of interest denoting core capital ratio. Further, the liquidity ratio is denoted by LIQ, and BS shows size of the bank. Moreover the two macroeconomic variables inflation and interest rate are denoted by INF and IR respectively. At the end, the equation error term is indicated by $\varepsilon_{i,t}$.

$$NIE_{i,t} = \beta_0 + \beta_1 CCR_{i,t} + \beta_2 LIQ_{i,t} + \beta_3 BS_{i,t} + \beta_4 INF_t + \beta_5 IR_t + \varepsilon_{i,t} \quad (3.5)$$

In last equation (5), where NIE a dependent variable stands for net interest earnings which is aiming to measure bank profitability. The slop intercept is indicated by β_0. Further CCR is the core capital ratio, LIQ stands for liquidity ratio, and banks size is indicated by BS, these first three are the microeconomic variables. Secondly macroeconomic variables which are inflation and interest rate and denoted by INF and IR respectively. Lastly, $\varepsilon_{i,t}$ is the equation error term.

3.7 Measurement of Variables

3.7.1 Endogenous Variables

There are three main measures in the literature for the measurement of banks profitability. Therefore in this study there are three dependent variables, which are return on assets (ROA), return on equity (ROE), net interest earnings (NIE), all are aiming to measure the profitability of SAARC banks.

3.7.1.1   Return on Assets

The ROA shows on average how much SAARC countries earns from each unit investment in assets. The ROA is measured by dividing the net profit after subtracting interest and tax on the dollar value of banks total assets. The ratio is then multiplied with 100 to calculate the percentage.

3.7.1.2   Return on Equity

The return on equity is the ratio of earning on the basis of dollars invested by shareholders of the bank. The ratio is calculated by divided the net earnings after tax on the total worth of shareholder equity and is then multiplied by 100.

3.7.1.3   Net Interest Earning

As the main source of earning for a bank is the interest earned, therefore, the net interest earning is used as a proxy to measure bank profitability of SAARC countries.

3.7.2   Exogenous Variables

The explanatory variables are of two groups one are the microeconomic including liquidity ratio, bank size, core capital ratio while in macroeconomic the variables are interest rate and inflation.

3.7.2.1   Core Capital Ratio

Core capital ratio is the minimum capital requirements for all banks by the country central banks to comply with to meet financial obligations and protect against the risk. By following the study of Hutchison and Cox (2007), this study measuring core capital by dividing total shareholder equity on total assets. There are various other studies that also measure core capital ratio by dividing shareholder equity on total assets (Ikpefan, 2013; Almazari, 2013).

3.7.2.2 Bank Size

The bank size is calculated by taking log of the banks total assets.

3.7.2.3 Liquidity Ratio

Liquidity ratio indicate the convertibility of the bank assets generally into cash.

3.7.2.4 Inflation

Inflation is the periodic increase in the prices of goods and services and is calculated by the change in consumer price index on annual basis.

3.7.2.5 Interest Rate

Interest rate is cost of the investment and is the interbank offered rate in this study.

TABLE 3.2: Measurement of Variables

S.No.	Variables	Formula	Expected Sign
DV_1	Return on Assets	Net profit after tax/Total Assets *100	
DV_2	Return on Equity	Net profit after tax/Total shareholders equity *100	
DV_3	Net Interest Earning	Total interest income-Total interest expense /Total Assets *100	
IV_1	Core capital ratio	Total shareholders equity/ Total Assets	+
IV_2	Inflation	Change in Consumer Price Index	+
IV_3	Interest rate	Interbank offer rate	+
IV_4	Bank Size	LN(Assets)	+
IV_5	Liquidity	Current Assets / Total Assets	-

Chapter 4

Empirical Results and Discussion

This chapter is about statistical results and its interpretation as for the methodology in previous chapter. In this chapter first the descriptive statistics of the data are reported and interpreted. Second the correlation among the variables is discussed. In third section the effect of internal and external factors effect on SAARC countries return on assets (bank profitability). Thereafter, in the fourth section the effect on return on equity (bank profitability). Fourthly, this chapter covers the impact of macro and microeconomic variables on net interest earnings (bank profitability). Lastly, a summary of all the results are given in brief.

4.1 Descriptive Statistics

To begin with the results the data is first analysed with number of descriptive statistics to ensure that the data do not suffer from outliers or any other issues that can affect further results. The descriptive statistics reported are number of observations, then mean of the data, median value, minimum, maximum, standard deviation, skewness, and kurtosis. The mean and median values tells about the central value while standard deviation show the dispersion from the central value. If the standard deviation and mean has used separately does not provide any significant information. The values of the minimum and maximum shows range of the data. The skewness indicate the location of the data that whether the data is

positively skewed or negatively skewed. The skewness value ranges from -1 to +1 where estimate equal to zero indicate the normal distribution of the data. Lastly, kurtosis tells about shape of the data indicate that whether data is leptokurtic, platykurtic, or mesokurtic. The base value for the kurtosis is 3 indicating the normally distributed data. The value greater than >3 shows the shape of the data is leptokurtic. On the other hand, the estimate of the kurtosis if less than <3 suggest that the data is pletykurtic with thinner tails.

TABLE 4.1: Descriptive Statistics

Variables	Observations	Mean	Median	Minimum	Maximum	Standard Deviation	Skewness	Kurtosis
ROA	1275	1.233	1.063	0.001	21.037	1.106	0.870	6.085
ROE	1275	15.008	14.968	0.016	47.080	7.873	0.483	3.604
NIE	1275	11.300	9.440	0.020	283.400	19.830	0.890	13.500
CCR	1275	1.179	1.118	0.140	4.504	0.256	0.543	5.133
INF	1275	7.980	6.530	2.068	34.720	4.780	2.175	8.520
IR	1275	7.643	7.308	1.085	20.035	3.785	0.689	3.786
LIQ	1275	0.066	0.056	0.000	1.492	0.070	0.859	11.730
Size	1275	14.830	15.020	9.540	19.880	1.951	-0.159	2.468

Table 4.1 shows the statistical behaviour of the data for the period from 2000 to 2014. First in the table 4.1, it is reported that for all the variables 1275 observations are used. In the Table 4.1 mean value of ROA is 1.233 showing the center of the data. The minimum value of the ROA is 0.001 and maximum value is 21.037 showing range of the data. Further the statistic of the standard deviation is 1.106, indicating the dispersion from the average 1.233 value. Further the data of ROA is positively skewed indicated by .870. Lastly, the kurtosis estimate is 6.085 showing that shape of the data is highly peaked.

The mean value of ROE is 15.0083.Where maximum value is 47.0800 while minimum value is 0.0160 at the average risk of 7.8. The data of ROE is positively skewed suggesting by skewness 0.483 estimate. And the data is normally distributed as the value of kurtosis is near to 3. The mean value of NIE is 11.3996 with the minimum value of 0.0200 whereas the maximum value of 283.4800 at the average risk of NIE is 19.8340.

The third dependent variable net interest earnings mean value is 11.30 and dispersion from the mean is 19.83. further the range of the data is from 0.020 to 283. Moreover, the data is positively skewed and its shape is leptokurtic.

The average of CCR is 1.1790 with minimum value 0.140 and maximum 4.504 indicating the range of the data. The dispersion from the mean is 0.256 which is total risk. The skewness estimate is 0.543 showing positively skewed data. Lastly, the kurtosis estimate is 5.133 which is greater than 3 thus the data shape is leptokurtic.

The mean value of INF is 7.9802, indicating central value and the range of the data is indicated by minimum value 2.0680 and maximum 34.7200. The mean dispersion of the Inflation is 4.7800. Further the average value of interest rate is 7.6432 with minimum 1.0853 and its maximum 20.0350. The total risk value of interest rate is 3.7846 in its descriptive. Similarly the mean of LIQ is 0.0664 and range is indicated by minimum 0.0001 value and maximum 1.4920 value with total risk is 0.0696 in its descriptive statistics. The average or mean value of Size is 14.8392. The minimum and maximum value of bank size is 9.540 and 19.8825 respectively. Skewness indicates that mostly all values are positively skewed. Most

of the Kurtosis estimates are greater than 3 suggesting that data shape is leptokurtic.

TABLE 4.2: Descriptive Statistics of Nepal

Variables	Obs	Minimum	Maximum	Standard dev	skewness	kurtosis
ROA	150	0.05	2.80	0.65	-0.03	-0.53
ROE	150	0.35	38.79	9.01	0.08	-0.35
NIE	150	4.94	12.71	1.84	0.48	-0.53
CCR	150	1.04	1.96	0.15	3.78	15.06
INF	150	2.44	12.62	2.96	0.17	-1.04
IR	150	10.75	13.00	0.56	3.16	8.80
SIZE	150	9.54	13.68	0.95	-0.68	-0.26
LIQ	150	0.01	0.18	0.05	1.73	1.62

TABLE 4.3: Descriptive Statistics of Bhutan

Variables	Obs	Minimum	Maximum	Standard dev	skewness	kurtosis
ROA	30	0.79	3.04	0.63	0.43	-0.68
ROE	30	7.67	29.02	5.80	0.06	-0.97
NIE	30	3.63	11.25	1.84	-0.03	-0.08
CCR	30	1.07	1.29	0.06	0.48	0.02
INF	30	2.07	10.12	2.26	0.40	-0.72
IR	30	4.41	13.41	2.42	0.06	-0.42
SIZE	30	11.31	13.42	0.60	-0.80	-0.38
LIQ	30	0.23	0.52	0.09	0.52	-1.16

TABLE 4.4: Descriptive Statistics of Iran

Variables	Obs	Minimum	Maximum	Standard dev	skewness	kurtosis
ROA	105	0.01	11.56	1.68	3.56	16.05
ROE	105	0.16	42.68	9.03	0.86	0.41
NIE	105	0.00	28.78	5.72	1.71	4.74
CCR	105	1.02	2.93	0.47	1.66	1.94
INF	105	10.34	34.72	7.21	1.20	0.32
IR	105	6.87	20.04	4.26	-0.23	-1.39
SIZE	105	13.46	18.96	1.27	-0.42	-0.17
LIQ	105	0.00	1.49	0.15	8.25	78.09

TABLE 4.5: Descriptive Statistics of Bangladesh

Variables	Obs	Minimum	Maximum	Standard dev	skewness	kurtosis
ROA	150	0.03	5.10	0.71	1.46	5.70
ROE	150	0.06	43.93	9.03	0.16	-0.04
NIE	150	5.19	15.40	1.97	-0.03	-0.15
CCR	150	1.05	1.67	0.08	3.53	18.37
INF	150	2.20	10.70	2.18	-0.46	-0.15
IR	150	4.66	9.26	1.43	1.07	-0.16
SIZE	150	10.67	15.91	1.09	-0.25	-0.20
LIQ	150	0.01	0.20	0.03	1.26	3.00

TABLE 4.6: Descriptive Statistics of Pakistan

Variables	Obs	Minimum	Maximum	Standard dev	skewness	kurtosis
ROA	180	0.00	21.04	1.97	5.85	50.82
ROE	180	0.02	47.08	7.74	1.26	3.73
NIE	180	3.98	283.48	50.90	3.91	15.00
CCR	180	0.14	1.99	0.21	-1.66	12.54
INF	180	2.87	20.15	4.59	0.84	0.38
IR	180	6.40	15.00	2.33	0.37	-0.64
SIZE	180	9.84	16.74	1.55	-0.97	0.61
LIQ	180	0.01	0.18	0.03	0.60	1.83

TABLE 4.7: Descriptive Statistics of India

Variables	Obs	Minimum	Maximum	Standard dev	skewness	kurtosis
ROA	660	0.01	9.38	0.68	4.71	46.22
ROE	660	0.13	38.01	6.63	0.24	-0.01
NIE	660	1.26	29.87	1.99	2.89	25.02
CCR	660	0.78	4.50	0.25	8.34	92.03
INF	660	3.20	14.97	3.23	0.96	0.22
IR	660	1.09	8.59	2.32	-0.39	-0.95
SIZE	660	11.44	19.88	1.51	-0.18	0.03
LIQ	660	0.00	0.16	0.02	0.85	3.18

The highest value of NIE (net interest earnings) is in Pakistan which is 283.48.

4.2 Correlation Analysis

Correlations analysis explains the relationship between variables. Pearson correlation is used to measure the magnitude and direction of the relationships between the variables used in this study. Where the correlation coefficient is ranging from positive 1 to negative 1. When the correlation coefficient is equals to 1 then it indicate the perfect relationship between two variables. When the value of correlation coefficient zero it means that there is no relationship. Moreover sign of the coefficient provides the direction of relationship between variables.

When the correlation coefficient is positive, it suggest that a unit increase in the variable will increase the other variable and a unit decrease will lead to decrease in other variable and vice versa. on the contrary a negative correlation coefficient of two variables indicate an increase in one variable decrease other variable and vice versa. Most importantly correlation detect the problem of Multicollinearity between explanatory variables. If strong relationship between independent variables is observed, it will lead to multicolliniearity problem.

TABLE 4.8: Correlation Matrix

	ROA	ROE	NIE	CCR	INF	IR	LIQ	SIZE
ROA	1.0000							
ROE	0.3884	1.0000						
NIE	0.3841	-0.0515	1.0000					
CCR	0.3770	-0.1288	-0.1990	1.0000				
INF	0.0016	-0.1821	0.0003	0.1063	1.0000			
IR	0.1388	0.0618	0.0514	0.1166	0.3133	1.0000		
LIQ	-0.0340	0.0724	-0.0400	-0.0817	0.0247	0.0856	1.0000	
SIZE	-0.2753	-0.0712	-0.2196	-0.0617	0.3275	-0.2564	-0.0219	1.0000

ROA= Return on assets, ROE= Return on equity, NIE= Net interest earnings, CCR= Core capital ratio, INF= inflation, IR= Interest rate, LIQ= Liquidity ratio, Size= size of bank.

Looking at the table 4.8 CCR have positive correlation with INF and IR indicated by 0.1063 and 0.1166 estimates respectively. On the other hand CCR have negative association with LIQ and Size shown by the negative coefficients. The variable inflation is positively associated to CCR, IR, LIQ and size as indicated by the positive correlation coefficients. The interest rate and size have negative association suggesting that a rise in one will reduce the other. While interest rate is positively correlated to all other explanatory variables. Furthermore, the liquidity is negatively correlated with size and CCR. The results show that the size have negative correlation with all variables except inflation. In short, there is no such high correlation between any explanatory variables supporting that the data does not suffer from the problem of Multicollinearity.

4.3 Random Effect Model

The random effect model is a tool that is used to measure heterogeneity in the model when it founds constant heterogeneity over time and is not correlated with independent variables. In measurements, a random effect show, additionally called a difference segments display, is a factual model where the model parameters are arbitrary factors. It is a sort of various levelled straight model, which expect that the information being investigated are drawn from a pecking order of various populaces whose distinctions identify with that chain of importance. In Econometrics, arbitrary impacts models are utilized in the investigation of progressive or board information when one accepts no settled impacts (it takes into consideration singular impacts. The arbitrary impacts demonstrate is an exceptional instance of the settled impacts show.

In a random impact show capture considered as mistake term and it does nothing with the cross segment (organizations). This model clarifies the variety among the distinctive organizations. Random impact show has less parameter to gauge with the correlation with settled impact display. It gives the authorization to extra autonomous factors with the same number of perceptions in arbitrary impact display block considered as mistake term and it does nothing with the cross segments

(organizations). This model clarifies the variety among the diverse organizations. The real advantage of the irregular impact show is that it can assimilate the impact of time invariant. In settling impact model such impact included in the capture Bell, (2015).

4.4 Hausman Test

In Hausman test the instrumental variables could be used alternatively here. However, prior to the decision of appropriate regression method, it is to be confirmed that all the predictors are endogenous. To define the difference between random effect and fixed effect we use hausmen test during co-relation analysis. When the value of F-statistics and chi-square is less than 0.05 in the cross section, then we are supposed to use fixed effect model. The Hausman fixed effect test of ROA and ROE for the time period of 2000 to 2014. The likelihood test is used to select between common effect and fixed effect model. When the likelihood ratio is significant at 1% significance level the fixed effect model is used and when insignificant then the common effect model is applied. Secondly Hausman test is used to decide between fixed and random effect model. if the coefficient of Hausman test is significant then fixed effect model is preferred over random effect model and vice versa.

4.5 Difference Between Fixed Effect and POLS

There are following differences between fixed and POLS test. If there is any hidden heterogeneity found in the data (i.e. some unobserved factor that affects the dependent variable), and this is linked with some experiential repressor, then POLS is unpredictable, whereas FE is predictable. If there is no unobserved heterogeneity (unlikely), or this is unrelated with all repressors, then both POLS and FE are predictable (albeit not efficient).

This model expects that there is one genuine impact measure; which underlies every one of the investigations in the examination, and that all distinctions in

watched impacts are because of testing blunder. While we pursue the act of calling this a settled impact display, a more enlightening term would be a typical impact show. In either case, we utilize the solitary (impact) since there is just a single genuine impact.

So to the extent, the Pooled OLS estimation is just an OLS procedure keep running on Panel information. Thusly, all individually particular impacts are totally overlooked. Because of that a considerable measure of fundamental suppositions like symmetry of the blunder term is damaged.

RE takes care of this issue by executing an individual specify catch in your model, or, in other words be arbitrary. This infers full originality of your model. This can be tried with the Hausman-Test. Since relatively every model has some endogeneity issues, the FE-Estimation is the best decision and gives you the best reliable gauges yet the individual particular parameters will vanish.

4.6 Impact of Core Capital Ratio on Return on Assets (Bank Profitability)

This head cover the impact of SAARC countries banks internal and external factors on its profitability measured by return on equity.

4.6.1 Fixed Effect Model of Return on Assets

In the analysis explanatory variables include CCR, INF, IR, LIQ, and Size and dependent variables ROA, ROE and NIE. F- Statistics calculate the effect of the overall model. R^2 shows that how many changes occur independent variables due to the independent variables. Variations in other determinants are explained by the Adjusted R^2. Correctness of the hypothesis is shown by the statistics.

TABLE 4.9: Impact of CCR on ROA (Fixed Effect Test)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.3934	0.6388	-0.6159	0.5381
CCR	2.1687	0.1220	17.7835	0.0000
INF	0.0066	0.0068	0.9660	0.3343
IR	-0.0151	0.0099	-1.5240	0.1278
LIQ	0.3006	0.4316	0.6965	0.4863
SIZE	-0.0598	0.0395	-1.5131	0.1305
F-statistic	19.1139		R^2	0.5894
Prob(F stat)	0.0000		Adjusted R^2	0.5586

Notes: The table depicts robust standard errors along with. In Table ROA is Return on Assets, and CCR core capital ratio, INF inflation rate, IR interest rate, LIQ liquidity ratio, Size bank size are independent variables. C shows the constant term.

In Table 4.3 indicate the fixed effect model results. The results express that core capital ratio has a positive and significant impact on ROA, suggesting that a higher proportion of equity investment in the bank encourage its ROA. The estimate of CCR is 2.168 which is significant at 1% significance level. In line the study of Căpraru and Ihnatov (2014) found that CCR has positive and significant impact on profitability of banks in five selected CEEC countries. One more study of Kaya (2002) also supporting positive and significant effect of core capital ratio on ROA.

The effect of INF (inflation) is positive and insignificant on ROA having coefficient value 0.0066 with significance level p>0.05. Căpraru and Ihnatov (2014) in his study has been examined that inflation has a positive and measurable impact on ROA. Their results were consistent with the present study on bank profitability. In above table coefficient value of IR (interest rate) is -0.0151 which indicate that IR has negative as well as insignificant impact on ROA with level of p¿0.05. The coefficient value of LIQ (liquidity ratio) is 0.3006 with level of 5% significance level, so these value shows that liquidity ratio has an insignificant/positive impact on ROA. Same findings in the previous study of Saleem and Rehman (2011), in which liquidity ratio has significant impact on ROA. Size has a coefficient value

-0.0598 with 5% significance level and it shows that bank size has an insignificant negative impact on Return on assets. According to Onuonga (2014) results showed that bank size has a positive and significant impact on profitability of 6 commercial banks. The estimate of R^2 is 0.58, indicating that 58% variations in return on assets is explained by the model. Lastly, the estimate of F-statistics is highly significant supporting the appropriateness of the model.

4.6.2 Impact of Core Capital Ratio on Return on Assets (Random Effect Model)

TABLE 4.10: Impact of CCR on ROA (Random Effect Test)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.4431	0.4897	0.9049	0.3657
CCR	2.0448	0.1151	17.7579	0.0000
INF	0.0110	0.0062	1.7620	0.0783
IR	-0.0154	0.0091	-1.6998	0.0894
LIQ	0.3266	0.4103	0.7960	0.4262
SIZE	-0.1087	0.0295	-3.6894	0.0002
R^2	0.2225		F-statistic	72.6157
Adjusted R^2	0.2194		Prob(F-Stat)	0.0000

Notes: The table depicts robust standard errors along with. In this Table ROA is Return on Assets, and CCR core capital ratio, INF inflation rate, IR interest rate, LIQ liquidity ratio, Size bank size are independent variables. C shows the constant term.

The Table 4.4 shows results of random effect model associated with return on assets. The impact of core capital ratio on return on assets is positive and significant at 1% level of significant, expressing that a rise in core capital lead to rise in the return on assets. The results are in line with the study of Căpraru and Ihnatov (2014) and Kaya (2002) reported that there is a significant and positive association between core capital ratio and return on assets.

The effect of inflation is positive but insignificant on ROA. The coefficient of inflation is 0.0110 at 5% level of significance. The same study of Căpraru and Ihnatov (2014) concluded that the effect on inflation on bank profitability is positive and insignificant, the result are in some extent are are in support of this study. The coefficient value of IR (interest rate) is -0.0154 with significance level of 5%. Which shows that IR has effect on ROA is negative but insignificant and similar findings has been approved in literature by previous researchers. The effect of LIQ (liquidity) on ROA is also positive insignificant, shown by the coefficient value of 0.3266. Size has a value of -0.1087, indicating that increasing bank size decreasing bank profitability. The negative effect and significant is in line of the study of Ben Naceur and Goaied (2008). It determines that vast banks in the business have no altogether delighted in economies of scale. The negative coefficients convey to spotlight the likelihood that dis economies exist which antagonistically influences their productivity.

The estimate of R^2 is 0.22, indicating the 22% variations in the model due to endogenous variable. Lastly, the value of F-stat indicate the model appropriateness because the estimate is significant.

4.6.3   Pooled Least Square of Return on Assets

TABLE 4.11: Impact of CCR on ROA (POLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.5500	0.2909	5.3281	0.0000
CCR	1.5261	0.1098	13.9019	0.0000
INF	0.0106	0.0068	1.5498	0.1214
IR	0.0049	0.0084	0.5838	0.5595
LIQ	-0.2145	0.3993	-0.5372	0.5912
SIZE	-0.1499	0.0164	-9.1530	0.0000
R	0.2087		F-statistic	66.9426
Adjusted R	0.2056		Prob(F-Stat)	0.0000

Notes: The table depicts robust standard errors along with coefficients. This table shows Pooled Least Square model where ROA is Return on Assets, and CCR core capital ratio, INF inflation rate, IR interest rate, LIQ liquidity ratio, Size bank size are independent variables. C shows the constant term.

Pooled Least square model intercept considered as the error term and it does nothing with cross section. This model explains the variations among different banks of SAARC countries. In table 4.4 it is obvious that the effect of CCR on ROA is positively significant at 99% confidence level. The estimate of CCR is 1.5261. The INF has a positive effect on ROA but insignificant effect and the estimate of INF is 0.0106. There is a positive, but insignificant impact of IR on ROA with the coefficient value of 0.0049. LIQ shows negative and insignificant impacts on ROA. The theory states that a rise in liquidity fall the bank profitability Saleem and Rehman (2011). The effect of size is positive and significant, suggesting that larger banks earn less return on their assets as compared to smaller banks. The positive effect of size on profitability is supported by the study of Ben Naceur and Goaied (2008).

The coefficient estimate of goodness of fit R^2 is 0.20, demonstrating that 20% variations are occurring due the variation in exogenous variables. Lastly,the F-stat is significant showing model appropriateness.

4.6.4 Likelihood Ratio of Return on Assets

In Table 4.6 the results of are significant at 99% confidence level, suggesting that fixed effect model is appropriate as compare to common effect model.

TABLE 4.12: Likelihood Ratio or Redundant Effect Model

Effects Test	Statistic	d.f.	Prob.
Cross-section F	13.166	-831171	0.000
Cross-section Chi-square	830.57	83.000	0.000

4.6.5 Hausman Test of Return on Assets

Looking at the Table 4.7 the Hausman test the coefficient is 0.0114 significant at 5% significance, supporting the application of fixed effect model.

TABLE 4.13: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. D.f.	Prob.
Cross-section random	14.7588	5	0.0114

4.7 Impact of CCR on Return on Equity (Bank Profitability)

Now the impact of external and internal factors on SAARC banks ROE, a measure of bank profitability.

4.7.1 Fixed Effect Model of Return on Equity

TABLE 4.14: Impact of CCR on ROE (Fixed Effect Test)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	36.320	5.249	6.920	0.000
CCR	0.906	1.002	0.904	0.366
INF	-0.063	0.056	-1.124	0.261
IR	0.059	0.081	0.719	0.472
LIQ	9.780	3.546	2.758	0.006
SIZE	-1.548	0.325	-4.764	0.000
R^2	0.454		F-Statistic	11.047
Adj. R^2	0.412		Prob(F-Stat)	0.000

Notes: The table depicts robust standard errors along with coefficients where. This table shows Pooled Least Square model where ROE is Return on equity, and CCR core capital ratio, INF inflation rate, IR interest rate, LIQ liquidity ratio, Size bank size are independent variables. C shows the constant term.

In Table 4.11 the results of interior and exterior factors effect on return on equity are reported. The results indicate positive but insignificant impact of core capital ratio on ROE, proxy for profitability of SAARC countries. The coefficient estimate of CCR is 0.905 and standard error is 1.002. The macroeconomic variable inflation shows negative and insignificant effect on bank profitability as shown by -0.0629 estimate. The association of ROE and interest rate is positive but insignificant. The coefficient of IR is 0.1521. Furthermore, the liquidity carries positive and significant coefficient indicating that a rise in liquidity of the bank the banks

earn more return on their equity investment. The results are supported by the study of Bourke (1989) showing positive impact. Lastly, the effect of size on ROE is negative and significant, demonstrating as bank size increases the return on equity of bank decreases.

The measure of goodness R^2 carries 0.45 coefficient, demonstrating that the included explanatory variables in the model explaining 45% variation in the return on equity. The F-stat estimate is 11.046 and significant suggesting that the model is fit to be run.

4.7.2 Random Effect Model of Return on Equity

TABLE 4.15: Impact of CCR on ROE (Random Effect Model)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	23.119	3.655	6.325	0.000
CCR	0.353	0.924	0.382	0.703
INF	-0.183	0.050	-3.665	0.000
IR	0.152	0.072	2.108	0.035
LIQ	7.602	3.300	2.304	0.021
SIZE	-0.588	0.219	-2.689	0.007
R^2	0.042		F-statistic	11.084
Adj R^2	0.038		Prob(F-Stat)	0.000

Notes: The table depicts robust standard errors along with coefficients. In the table ROE stands for Return on Equity, and CCR core capital ratio, INF inflation rate, IR interest rate, LIQ liquidity ratio, Size is the bank size. C shows the constant term.

Now coming towards random effect model in Table 4.09 the impact of core capital ratio on return on equity (bank profitability) is still positive but insignificant. There is negative and significant impact of inflation on ROE of SAARC countries banks, demonstrating that a rise in interest rate encourage the profitability of banks. While on contrary, the positive significant estimate of interest rate shows that a rise in inflation discourage the ROE of sample banks. Furthermore, the

impact of liquidity on ROE is negatively significant, supporting that a higher liquidity of banks assets leading to a higher ROE. On the contrary, profitability of large banks are lesser than the profitability of small banks as per the negative significant association between size and ROE.

The model is not good as R^2 shows that just only 4% of the variations in bank profitability is explained by this number of independent variables which is further reduced to 3.8% once adjusted. Lastly, the significant F-statistic shows that the model is appropriate.

4.7.3   Pooled Least Square Model of Return on Equity

TABLE 4.16: Impact of CCR on ROE (POLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	17.065	2.248	7.591	0.000
CCR	-3.522	0.848	-4.152	0.000
INF	-0.383	0.053	-7.251	0.000
IR	0.320	0.065	4.921	0.000
LIQ	6.355	3.086	2.059	0.040
SIZE	0.154	0.127	1.217	0.224
R^2	0.068		F-statistic	18.545
Adj R^2	0.064		Prob(F-Stat)	0.000

Notes: The table depicts robust standard errors along with coefficients. This table shows Pooled Least Square model where ROE is Return on Equity, and CCR core capital ratio, INF inflation rate, IR interest rate, LIQ liquidity ratio, Size bank size are independent variables. C shows the constant term.

In Table 4.10 the results of Pooled least square model with standard error term and level of significance. The CCR effect on bank profitability is negatively significant at 1%. The coefficient of CCR is -3.522 and standard error is -4.152.

The macroeconomic variable inflation has significant and negative effect on SAARC banks ROE having estimate of -0.382. Furthermore, interest rate impact on ROE is also significant and positive suggesting that a rise in interest rate encourage the SAARC countries return on equity. Moreover the liquidity impact on ROE is positive but not significant. Likewise the impact of size on bank profitability is also positive but insignificant.

The model suitability test R^2 value is 0.06, which shows that 6% changes occur in ROE due to changes in the independent variables. The F-stat estimate is 18.54 which is significant at 99% confidence level.

4.7.4 Likelihood Ratio of Return on Equity

As for the likelihood ratio which both estimates are significant at 1% significance level supporting application of Fixed effect model.

TABLE 4.17: Likelihood Ratio or Redundant Effect Model

Effects Test	Statistic	D.f.	Prob.
Cross-section F	10.19	-831171.00	0.00
Cross-section Chi-square	684.99	83.00	0.00

Notes: In the Table D.f. is degree of freedom and Prob.is stands for probability which is significance level.

4.7.5 Hausman Test of Return on Equity

Furthermore, as for Hausman test the cross-sction random value is significant at 99% confidence level supporting to use Fixed effect model. By following literature, it is stated that fixed effect is appropriate for ROE.

TABLE 4.18: Hausman Test of Return on Equity

Test Summary	Chi-Sq. Statistic	Chi-Sq. D.f.	Prob.
Cross-section random	43.558	5	0

In Table D.f. stands for Degree of Freedom and Prob. for probability which is significance level.

4.8 Impact of Core Capital Ratio on Net Interest Earnings

Lastly, this study examined the effect of both micro and macroeconomic factors on SAARC banks net interest earnings, here NIE is a measure of bank profitability.

4.8.1 Fixed Effect Model of Net Interest Earnings

TABLE 4.19: Impact of CCR on Net Interest Earnings (Fixed Effect Test)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	48.320	6.990	6.913	0.000
CCR	-15.743	1.328	-11.851	0.000
INF	0.031	0.074	0.419	0.675
IR	-0.111	0.109	-1.019	0.309
LIQ	3.337	4.704	0.710	0.478
SIZE	-1.212	0.433	-2.801	0.005
R^2	0.849		F-statistic	74.590
Adjusted R^2	0.837		Prob(F-Stat)	0.000

Notes: The table depicts robust standard errors along with coefficients In the Table NIE stands for Net Interest Earning, and CCR core capital ratio, INF inflation rate, IR interest rate, LIQ liquidity ratio, and bank size are independent variables. C shows the constant term.

In Table 4.15 the effect of CCR on ROE, INF, IR, LIQ and SIZE on net interest earnings is reported. Fixed effect model intercepts considered as the error term and it do nothing with cross section. In table 4.13 the results shows that Core capital ratio has significant and negative impact on the SAARC bank net interest earnings, demonstrating that a rise in core capital lead to a fall in interest earnings for SAARC banks. Its coefficient value is -15.743 and significant at 99% confidence level.

Moreover, inflation has a positive insignificant effect on SAARC banks net interest earnings having coefficient value of -0.0311. The effect of IR on NIE is

negative which is further insignificant as shown by the coefficient value of -0.1106. The effect of liquidity is positive but not significant, thus, does not support the rise in liquidity enhance banks net interest earnings. The coefficient of bank size is -1.2120 and significant at 95% confidence level thus supporting that large banks earn lesser interest than small banks.

The estimate of goodness of fit R^2 is 0.84, demonstrating that 84% variation in the SAARC banks interest earnings is due to the model independent variables. Lastly, the estimate of F-stat is significant at 99% confidence level showing that the model is appropriate.

4.8.2 Random Effect Model of Net Interest Earnings

TABLE 4.20: Impact of CCR on NIE (Random Effect Test)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	51.498	6.801	7.572	0.000
CCR	-15.907	1.312	-12.123	0.000
INF	0.060	0.073	0.821	0.412
IR	-0.121	0.106	-1.133	0.257
LIQ	3.117	4.652	0.670	0.503
SIZE	-1.422	0.404	-3.525	0.000
R^2	0.105		F-statistic	29.650
Adj R^2	0.101		Prob(F-Stat)	0.000

Notes: The table depicts robust standard errors along with coefficients. In this Table NIE is Net Interest Earnings, and CCR core capital ratio, INF inflation rate, IR interest rate, LIQ liquidity ratio, Size bank size are independent variables. C shows the constant term.

The result of interior and exterior factors effect on SAARC banks net interest earnings using random effect model are reported in Table 4.14. Firstly, the results show significant and negative impact of core capital ratio on net interest earnings of SAARC banks at 5% level of significance. Further, the results express positive but insignificant effect of inflation on net interest earnings having a coefficient

value of 0.0597. There is the negative insignificant impact of IR on NIE with the coefficient value of -0.1205. LIQ shows positive, but insignificant impacts on NIE with the estimate of 3.1172. The estimate of size is -1.4224 which means that it has negative, and significant impact on NIE.

The value of R^2 is 0.10, indicating that only 10% variation in the net interest earnings is based upon the explanatory variables in this study. Lastly, the F-stat is significant at 99% confidence level showing that the model is appropriate.

4.8.3 Pooled Least Square Model of Net Interest Earnings

TABLE 4.21: Impact of Core capital ratio on Net Interest Earnings (POLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	73.829	5.533	13.343	0.000
CCR	-18.025	2.089	-8.628	0.000
INF	0.537	0.130	4.134	0.000
IR	-0.155	0.160	-0.966	0.334
LIQ	-18.750	7.596	-2.468	0.014
SIZE	-2.900	0.312	-9.304	0.000
R^2	0.110	F-statistic		31.389
Adjusted R^2	0.107	Prob(F-Stat)		0.000

Notes: The table depicts robust standard errors along with. This table shows Pooled Least Square model where NIE is Net Interest Earnings, and CCR core capital ratio, INF inflation rate, IR interest rate, LIQ liquidity ratio, Size bank size are independent variables. C shows the constant term.

Table 4.17 reports the effect of CCR on NIE. In this study NIE is dependent variable. Fixed effect model intercepts considered as the error term and it does nothing with cross section. In table 4.17 shows that CCR has a positive significant effect on NIE having a coefficient value of 0.5365. The effect of IR on Net interest earnings is negative but insignificant with the estimate of of -0.1547. LIQ shows

negative insignificant impacts on NIE and coefficient value is -18.7496. The estimate of size is -2.900 and significant at 5% level, which means that a large banks have less profitability than small banks.

R^2 estimate is 0.11 which shows that 11% changes occur in NIE due to changes in independent variables. The F-Stat is highly significant thus the model is appropriate.

4.8.4 Likelihood Ratio or Redundant Test of Net Interest Earnings

The likelihood ratio or redundancy test of net interest earnings model estimates are significant at 1% significance level. Thus, the fixed model is to be used rather than to use common effect model.

TABLE 4.22: Likelihood Ratio or Redundant Effect Test of NIE

Effects Test	Statistic	d.f.	Prob.
Cross-section F	68.469	-831171.0	0.000
Cross-section Chi-square	2226.366	83.000	0.000

In the Table 4.16 the d.f. stands for degree of freedom and Prob. for probability which is significance level

4.8.5 Hausman Test of Net Interest Earnings

The results of Hausman test of net interest earnings indicate that random effect model is more appropriate. As the cross-section random is insignificant thus suggesting to apply random effect model rather than fixed effect model.

TABLE 4.23: Hausman Test of NIE

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.5577	5	0.1824

In the above Table 4.17 Chi-sq is stands for chi-square, d.f. is degree of freedom and prob. is the probability.

TABLE 4.24: Hypothesis summary of three used models with DV (ROA)

Hypothesis	Model 1 (FEM)	Model 2 (REM)	Model 3 (PLSM)
H1: There is a significant and positive impact of the core capital ratio on bank profitability	Positive and significant	Positive and significant	Positive and Significant
H2: There is a positive and significant impact of inflation on bank profitability	Positive and Insignificant	Positive and Insignificant	Positive and Insignificant
H3: There is a positive and significant impact of Interest Rate on bank profitability	Negative and Insignificant	Negative and Insignificant	Negative and insignificant
H4: There is a negative impact of liquidity on bank profitability	Positive and insignificant	Positive and insignificant	Negative and insignificant
H5: There is a positive impact of bank size on bank profitability	Negative and Insignificant	Negative and Significant	Negative and Significant

TABLE 4.25: Hypothesis summary of three used models with DV (ROE)

Hypothesis	Model 1	Model 2	Model 3
	(FEM)	(REM)	(PLSM)
H1: There is a significant and positive impact of the core capital ratio on bank profitability	Positive and Insignificant	Positive and Insignificant	Negative and Significant
H2: There is a positive and significant impact of inflation on bank profitability	Negative and Insignificant	Negative and Insignificant	Negative and Insignificant
H3: There is a positive and significant impact of Interest Rate on bank profitability	Positive and Insignificant	Positive and Significant	Positive and Significant
H4: There is a negative impact of liquidity on bank profitability	Positive and Significant	Positive and Significant	Positive and Significant
H5: There is a positive impact of bank size on bank profitability	Negative and significant	Negative and Significant	Negative and Insignificant

TABLE 4.26: Hypothesis summary of three used models with DV (NIE)

Hypothesis	Model 1	Model 2	Model 3
	(FEM)	(REM)	(PLSM)
H1: There is a significant and positive impact of the core capital ratio on bank profitability	Negative and Significant	Negative and Significant	Negative and Significant
H2: There is a positive and significant impact of inflation on bank profitability	Positive and Insignificant	Positive and Insignificant	Positive and significant
H3: There is a positive and significant impact of Interest Rate on bank profitability	Negative and Insignificant	Negative and Insignificant	Negative and Insignificant
H4: There is a negative impact of liquidity on bank profitability	Negative and Insignificant	Negative and Insignificant	Negative and Significant
H5: There is a positive impact of bank size on bank profitability	Negative and significant	Negative and Significant	Negative and Significant

4.8.6   Summary of Results

1. The core capital has a significant and positive impact on return on assets and negative significant effect on return on equity and net interest earnings.

2. The rate of inflation has a positive and insignificant impact on return on assets and net interest earnings and insignificant negative impact on return on equity.

3. Similarly interest rate has a significant and positive impact on return on equity while negative and insignificant effect on return on assets and net interest earnings.

4. The impact of liquidity on return on assets is positive and insignificant. While Liquidity has a significant and positive impact on return on equity. Conversely, liquidity has a negative and insignificant impact on net interest earnings.

5. The results show that bank size has a significant and negative impact on return on assets, return on equity and net interest earnings. In short, large bank have shorter profitability than smaller banks.

Chapter 5

Conclusion and Policy Implications

This chapter summarizes all the empirical results in the previous chapter.

5.1 Concluding Remarks

The results express the significant impact of core capital ratio on SAARC banks profitability. Current study examined the impact of core capital ratio on bank profitability of SAARC countries over past 15 years from 2000 to 2014. The concluded results show that there is a positive significant relationship between ROA and CCR, demonstrating a rising CCR encourage the profitability of banks. It indicates that with the increase of CCR banks retain more earnings to raise level of capital. It is concluded that positive change in CCR helps banks to prevent them from the failure to meet capital requirements. As it is cleared that bank profitability has three proxies (ROA, ROE, and NIE) in this study. While on the other hand results with the proxy ROE show that the association of CCR and ROE is is positive. Lastly with respect of dependent variable NIE there exist negative association of CCR with NIE but do not significant.

Secondly, the rate of inflation express positive effect on profitability, meaning that increasing inflation increase bank profitability. The rate of inflation results

show that there is a positive insignificant relationship between INF and bank profitability along with dependent variable of ROA but negative insignificant with dependent variable ROE. The impact of INF rate with the measurement of NIE is positive and significant. Literature found both evidence for these two aspects of results. The study of Guru et al. (2002) also show positve impact on profitability. Higher the inflation rates higher the bank profitability. Similarly Demerguç-Kunt and Huizinga (2001) concluded that in developing countries inflation showed negatively effect on bank profitability. Banks shows less profitability in inflationary environment. In other words positive inflation helps banks to increase its income and negative inflation shows less income of banks in less developing countries.

Furthermore, with the measurement of ROA the results of IR showed that the positive impact on bank profitability which the literature support. As most of the prior studies indicating that change in interest rate lead to positive change in bank profitability. It means that high IR raise lending rate and it results in increment in bank profitability. On the other hand low IR results in high deposit rate then lending rate. Similarly with the measurement of ROE the results of interest rate shows the positive impact on bank profitability as literature showed that it has positive impact on bank profitability so this study proved literature.

The effect of LIQ is also positive but is not significant on bank profitability by using fixed and random effect with dependent variable ROA but with pooled least square model it shows conversely negative effect but here too that is insignificant. Secondly with the measurement of ROE the LIQ results showed that there is a positive and significant impact of LIQ on bank profitability. Lastly with respect of NIE the LIQ results showed that it has negative and insignificant impact on bank profitability by using fixed and random effect model but with pooled least square model the impact of LIQ is negative and significant on bank profitability. As literature indicated that low level of LIQ ratio may result in the failure of banks. According to Bourke (1989) results proved that negative LIQ is harmful for banks profitability. They require more LIQ ratio in the time of instability in economy. Likewise, the findings of Molyneux and Thornton (1992) supporting negative effect of LIQ on profitability.

Lastly the finding of this study revealed that the effect of size of the bank has a negative and a significant influence on SAARC banks profitability with respect to the measurements of ROA by using but negative and insignificantly influences on bank profitability by using fixed effect model. In ROE and NIE the effect of size is negative and significant with the profitability of SAARC banks. The study also concludes that failed operational efficiency through poor management of expenses reduces the profitability of banks. Some evidences in literature showed that large size banks can earn more then smaller ones Baumol (1959) while on contrary Athanasoglou et al. (2008) argued that large banks could also face the impact of external factors of economy.

5.2 Future Research Directions

This study explains the impact of core capital ratio on banks profitability of SAARC countries. The study is providing some directions for future researchers in this area. First, in future the study can be conducted to check the impact of core capital ratio on profitability of commercial and public banks separately in SAARC. Second, a study can be done to examine other potential determinants of SAARC countries banks profitability. Thirdly, a comparative study could be conducted among SAARC countries banks to investigate the core capital and bank profitability relationship. Fourthly, researchers could conduct a study on the affect of changes in financial structure on commercial banks profitability of SAARC countries. Lastly, other potential determinants of SAARC countries bank profitability could be investigated with different profitability measures.

5.3 Limitations

This study used only fifteen years banks data of SAARC countries from the year 2000 to 2014. Second, this study used the data of six countries from SAARC because the data of other two SAARC countries were missing those are Maldives and Sri-Lanka.

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