Lending and Deposit Behaviours of Conventional and Islamic Banks in Pakistan: Explaining the Role of Capital Adequacy

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Banks and banking - Pakistan
Bank loans
Bank competition.
Credit crunch
Bank deposits

APPROVAL SHEET

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Dedication

To

My parents

Who taught me to trust in Allah, believe in hard work, encouraged me to believe in myself and that so much could be done with little

My husband

Who has been a continuous source of support and inspiration and without whom it was almost impossible for me to complete my thesis work

Declaration

I sincerely declare, based on my study and research, the literature written in developing this thesis includes my views and understanding of the matter. I have been very cautious and careful in correctly citing and properly including references of other studies and literature being used to make a certain point or conclusion in my thesis. I also solemnly confirm and certify that the work I am presenting in form of thesis is not published or has been submitted for publication anywhere or will ever be used for publication anywhere in the future. If, at some later stage, a case of plagiarism is found in the submitted research -- I shall alone be responsible for all the penalties as per prevailing and established rules and laws of approval committee.

Sidra Abbasi

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Abstract

This study examines and simultaneously compares lending and deposits behaviour of Islamic and conventional banks (operating in Pakistan) in relation to capital adequacy requirement in different competitive conditions from the period of 2005 to 2014. We follow the methodology of Peek and Rosengren (1995a) with some modification of the variables. We divided banks into two sub-categories i.e. lower and higher capitalized banks on the basis of mean value of capital adequacy ratio of each bank. In this study we also used two diverse measurement of capital adequacy ratio i.e. CR (leveraged ratio) and CAR (risk weighted assets) in order to find whether banks source of fund (i.e. Capital) and risk component shows a vital role in determining the influence of capital adequacy on banks performance. We conducted a Hausman test for each regression separately to determine whether the fixed effect is appropriate or the random effect is suitable. The empirical evidence recommends that capital requirements have a significant impact on the lending and deposit behaviours of Islamic banks and Conventional banks in Pakistan. There is a strong positive relationship between capital requirements and loan and deposit growth for both Islamic banks and conventional banks.

JEL classification: G21; G28; G32

Keywords: Islamic banks; Conventional banks; Bank competition; Capital adequacy ratio; Credit Crunch; Loans; Deposits

Chapter 1

Introduction

1.1 Background

It has become a well-known fact that banking sector is the back-bone for growing economy. The stability of banking sector is the pre-requisite and backbone for any country's consistent economic development. Banks also play an imperative role in the global economy as well. Because of this, banks are the first institutions that have been made subjected to the globally coordinated capital guideline. Being spine of economy growth, banks also face risks arising particularly after deregulation and globalization of financial systems. In purview of this, the 1988 Basel accord was designed to encourage the trustworthiness and steadiness of the worldwide banking system came into being. The possible macroeconomic effects of such regulations received renewed interest after the decision of introducing an enhanced regulatory framework, laid down in Basel II, which was signed in June 2004.

Minimum capital requirement can be defined as that amount of capital which the financial regulators require from banks to keep with themselves. Banks faces several kinds of risks while granting advances to numerous verticals and segments. In order to refrain from any kind of losses which banks may face because of their nature of business, it is important that banks should have sufficient capital for long-term sustainability. With enough capital, banks can protect depositors from known and unknown contingencies and help enhance adeptness and dexterity of financial systems.

Capital adequacy is the essential capital needed for a bank, determined by the supervisory and regulatory authorities, to ascertain bank's financial well-being and reliability. Capital adequacy is the credit worthiness of a bank and identifies whether it has appropriate capital to

support and sustain the risks available in its balance sheet. Adequate capitalization is a significant variable in any business and is more so important in the business which heavily relies on using other's money such as banking business. Onoh (2002) states that banks capital is satisfactory and is enough if the bank is able to manage:

- Its operational expenditures;
- Satisfy its customers with several needs;
- Safeguard its creditors and shareholders against partial losses of credits and deposits due to liquidation or loss sustained by the bank.

The vital characteristics of capital are that it should:

1. Epitomise a lasting and unhindered commitment of funds;
2. Be easily accessible to absorb losses and enable the institution to continue working while the problems are being fixed;
3. Not levy any inevitable charge on the earnings of the financial institutions;
4. Quieten the concerns of depositors and other creditors in the event the financial institute goes out of business.

The minimum capital adequacy requirement is applicable in order to safeguard depositors and enhance the continuity of the financial system. In order to make excess risky loans and investments – regulators make it a requirement for the banks to ensure enough capital to present correct incentives (Posner, 2014). The regulators did not consider formalizing a formula for capital adequacy and handled capital requirement as just one factor in evaluating overall health of banks, before the crisis of 1970s – after the crisis of 1970s, regulars started to consider capital adequacy more thoroughly (Posner, 2014).

In 1988, the first Basel Accord (Basel-I) was issued to form equal playing ground for globally energetic and active banks. This Basel became effective at the end of 1992 and set minimum capital standards for banks. The main purpose of Basel-I was to stop international banks from mustering business volumes without the backing of adequate capital. With slight alterations, Basel-I was changed in 2006 – which led to Basel-II Accord. It was decided to implement the Basel-II Accord by the year 2015. The Accord emphasizes on greater focus on requirements related to international banking with supervision and strong enforcement.

Regulatory authorities in the banking sector have placed capital adequacy ratio as a benchmark to evaluate the general healthiness and fitness of banking systems. Capital adequacy requirement is a compulsory condition set by International Superism and in Pakistan it is implemented by State Bank of Pakistan (SBP). Being a regulator, SBP sets and monitors capital adequacy ratio in Pakistan to safeguard and shield the interest of investors in order to keep up the confidence in the banking sector. Capital adequacy ratio makes sure that banks hold the capability to meet the liabilities related to credit, market and operational risks.

As defined by Ebhodaghe (1991) capital adequacy is a condition in which adjusted capital is enough to cover all of bank's fixed assets and is able to absorb any unexpected losses – leaving sufficient capital for current and future activities and operations of the bank. As per Umoh (1991), in business, capital adequacy is one of the most significant variables and has even more significance in banking sector, where other's money is being used, as it provides cushion for absorbing potential losses and ensures security for funds of the depositors. Whereas, Morrison and White (2001), indicated that capital adequacy is useful in restricting the size of banks in becoming small while helping tremendously in controlling moral hazards.

During the 1980s and 1990s, many countries faced austere banking crisis. In 2007/2008, the world faced global financial crisis. The economic crisis in the USA has put focus back on matters of subprime loaning and need of guaranteeing appropriate capital level to sustain strict and serious market conditions (Cannata & Quagliariello, 2009). During the crisis, a lot of institutions did not have enough capital to endure losses from hefty loan defaults. Vastly leveraged and concerned financial institutions liquidate their assets at prices that are far below their just market value to attain a fast sale in order to placate their debt holders (Brunnermeier, 2009). Hence, a quick sale leads to funding problems and causes a collective deficit of capital.

For any financial institute, capital is a cushion against insolvency. It helps in ingesting unanticipated and unexpected damages. A suitable level of capital adequacy assures that any financial institute has enough capital to sustain the activities it performs with adequate net worth to keep up with unfavourable changes in the value of available assets without becoming insolvent (Smolo & Hassan, 2010). Maintaining minimum capital requirement is essential to ensuring banks remains at bay from unforeseen and unanticipated losses and failures. A bank with the strong capital position is capable to engage in and carry on its banking activities more efficiently and has more adaptability to deal with surprising losses (Athanasoglou et al., 2008).

The requirements related to capital adequacy raise the general question whether banks rise or boost its capital i.e. its numerator or lessen its risk weighted assets i.e. its denominator. It is pertinent to note here that the former course is weakened by shallow local capital marketplaces essentially in developing economies. Another question that relates and is more specific to whether high capital conditions push the banks to diminish their loans supply in

order to cut-down risk weighted assets. This again affects emerging economies wherein corporate sector's external finance, bank loans signify a bigger share.

Based on the study of Bernanke and Lown (1991), the impact on growth of loaning of banks was inter-related with initial set capital ratio. The same holds true based on the study of Berger and Udell (1994), the loan expansion was on a lower side in 1990 - 1992 for banks with less capital but no direct relationship was observed between expansion of loan and high capital ratios, during the period of recession of early 1980s. So, to identify the effects of supply induction, Peek and Rosengren (1995) established a very authoritative method in which they discuss that to counter any negative shocks of capital, banks enhance and intensify depositing behaviour without any application constraints of the capital.

It is well-established that capital adequacy requirement is beneficial in curbing needless risk exposure of bank owners with very limited and restricted liability. Consequently, this allows and bolsters very good and meritorious risk sharing between depositors and bank owners. However, based on the study of (Barrell et al., 2009) and (Caggiano & Calice, 2011), the regulation focusing capital adequacy is spasmodically seen as a safeguard and cushion against insolvency crises by confining and restricting costs associated with financial distress. Whatever the debate is about, it is generally agreed upon that banks with higher and better capital and liquidity cushion are more appropriately placed to withstand poignant times.

It is argued by few authors like (Agoraki et al., 2011) and (Bolt & Tieman, 2004) that by enforcing and implementing high capital requirements, banks will limit themselves owing to vying pressures resulting due to stout competition on deposits and loans in addition to sources of investments related to equity and debt. As the pressure mounts and in pursuance of adequate return on capital, banks tend to lend less, charge high on loans and pay very little on

deposits. As the banks start to become more and more compelled to remain constrained, their capability to boost credit and offer support or input in economic progress is crippled all the while in ordinary times.

The introduction and initiation of interest free banking from 1981 in Pakistan resulted in quite sizable increase in Pakistan's banking system. With slight revisions, modifications and improvements being incorporated in the regulation, this new interest free banking system was made Shariah compliant. The Shariah focused banking system is consistently being improved upon with global best practices for more result oriented outcomes and deliverables while keeping aligned with Islamic principles. The innovative products being introduced by Pakistan's banking system and their efficient adoption and consumption are comparable to that of the developed world.

The advent of Islamic banking is a significant advancement in financial world as this banking system is established on Shariah principles. Because of prohibition of Riba (usury) in Islam, lending and deposit behaviours are different between Islamic and conventional banks. In spite of many hurdles and loss of confidence in global financial systems, Islamic finance has shown fast growth during previous years. The basic feature that differs Islamic banking from its counterparts i.e. conventional banks is profit and loss sharing (PLS) mode.

There are several studies in this perspective, which validate the influence of the Basel agreements on the lending and deposit behaviours of conventional banks; however, the literature in the Islamic banking sector is still very rare. The study of minimum capital requirements in Islamic banking is very relevant due to the principle of risk and profit sharing that could, in turn, shrinks general risks for the bank (Pellegrina, 2007).

Islamic banks are less exposed to economic distress than conventional banks, because the assets of Islamic banks are supported by profit-loss sharing deposits (PLS). Pellegrina (2007) argues that the requirement of minimum level of capital is irrelevant for Islamic banks, because profit-loss sharing contract is designed actually to lessen the general risk of the investment that is confronted by banks. Adebayo and Hassan (2013) Claims that Islamic banking system is mainly grounded on profit and loss sharing modes (PLS) and strictly prohibits Riba in its transactions. According to (Muljawan et al., 2004),ideally and conceptually the Islamic bank's risk sharing nature must make them lesser chancy and risky but in real world because of the data asymmetries and the market restrictions such theoretical and the conceptual models differs from each other.

Due to Such information complications and troubles, bank directors could respond heterogeneously which in turn affects banks credibility and its production. Additionally, Hassan and Dicle (2005), Grais and Kulathunga (2007) and Smolo and Hassan (2010), claims that for Islamic banks' Capital adequacy requirements is a major security net because of the specific risks and threats associated to their products. The capital requirements for Islamic banking system are as essential as it is for conventional banking system and it needs further exploration and research. Besides, because of the unique and distinctive ideologies supported by Islamic banks, it becomes very important to contrast the impact of capital adequacy requirements on lending and deposits behaviours between Islamic banks and conventional banks and with respect of the capital crunch hypothesis.

Conventional banking is predominantly interest focused. Conventional banks create a bridge between borrowers and depositors and act as intermediaries. The major revenue for the bank is the difference of the interest gains between borrowers and depositors. In case of Islamic banks, the ex-ante fixed rate of return is not permitted and is substituted with such a return

rates which is not assured and determined ex-post. Conversely, just the profit allocation ratio among the debtors and creditors are determined ex-ante. Because of this, the differences between Islamic and conventional are very significant. Also, the deposits in Islamic banking are exposed to risks that differ in nature from that of conventional banks. Also, assets of the Islamic banks are employed in different ways. In order to take these differences into account the risk weights set by Basel-II need some amendments.

In Pakistan, State Bank of Pakistan takes prodigious steps for implementing Basel-II regulatory system. Basel-II Capital adequacy structure provides and allows judicious capital regulation, market discipline, administration, and enriched management of risk and the financial permanency. As far as Islamic banking is concerned, IFSB (Islamic Financial Services Board) which is global standard setting institute for Islamic finance and IRTI (Islamic Research and Training Institute) address the theories and the models for Islamic financial industry.

Esteemed philosophies of Islamic finance prohibit Islamic banking from engaging in impermissible businesses and dealings, and therefore, are not allowed by the Shariah to pay or charge interest on its deposits or loans.

For Islamic banks, in December 2005 and in January 2009, Islamic financial services board (IFSB) allotted capital adequacy standards as IFSB-2 and IFSB-7. These standards are based on the Basel's accords with some important and necessary modification to satisfy the particular nature and features of the Shariah compliant dealings. This standard offers a pattern for dealing with the Islamic business under the Basel accord II. It addresses the areas that are not covered by the Basel II accord such as those of Murabaha contracts, Musharakah contracts, Mudarabah contracts etc.

Additionally, the unique characteristic of IFSB's Capital Adequacy Standard for conclusion of Capital Adequacy Ratio is that it determines the risk allaying aspect of Shariah compliant PLS restricted and unrestricted deposits by barring assets being financed by very these deposits, either fully or partially, from Total Risk Weighted Assets (TRWA).

1.1 Literature Gap

We studied and reviewed existing research literature before starting our research in order to pin-point the real value addition of this paper. There are numerous studies which exhibit the capital requirement effects on the deposits and advancing behaviours of the conventional banking, whereas the literature on this topic in the Islamic banking sector is still limited. With the unique philosophy supported by Islamic banks, it becomes imperative to compare the impact of the capital adequacy ratio on deposits and loaning behaviours of conventional banks and Islamic banks in Pakistan by taking into account capital crunch theory as the capital requirements applicability is theoretically differs between the Conventional banks and Islamic banks.

The gap identified after reviewing the existing literature is that previous researches on the empirical analysis of financial bodies functioning on interest free ideologies are inadequate and limited. Some of the available literature is based on financial ratios of basic nature only. However, comparative analysis is performed by a few of empirical studies available for the Islamic banks and conventional banks in Pakistan but the existing literature does not contain any comparison between lending and deposits behaviours (with respect to Capital Adequacy Requirements) of conventional and Islamic banks.

Many of the previous studies examined the effect of information asymmetry on the banking risk and operations in general. Since the competitiveness conditions exert great pressure on

the choice of the banking portfolio, we contributed to the literature by highlighting the role of competitiveness in the banking behaviour. The innovation and uniqueness of our study is to apply the theory of the market power and its influence on the relationship between the capital regulation and the deposit and lending banking behaviour of conventional and Islamic banks in Pakistan.

1.2 Research Objectives

This study compares lending and deposit behaviours of both types of banking systems i.e. the conventional banking and Islamic banking functioning in Pakistan; the objectives of study are threefold:

1. To investigate how deposit growth and the loan growth react differently in response to a change in capital adequacy ratio in conventional banks and Islamic banks.
2. To inspect whether the capital crunch phenomenon is equally applicable to conventional banks and Islamic banks
3. To examine whether the implementation of minimum capital requirement affects the supply of bank loans.

1.3 Research Questions

Following are the key research questions:

1. Do loan and deposit growth react differently in response to a change in capital adequacy ratio in conventional banks and Islamic banks?
2. Is capital crunch phenomenon equally applicable to conventional banks and Islamic banks?

3. Does the implementation of minimum capital requirement affect the supply of bank loans?

1.4 Research Significance

It is a well-known fact that banking sector is pivotal and holds the key for economic growth and development of any country. In order for banking sector to succeed, the capital requirement does two different things:

1. Acts as a buffer to absorb potential losses
2. Regulates the amount of lending that a bank can do

As a result of regulating and limiting the lending power of the bank, capital requirement also influences, to greater extent, money supply expansion for the entire economy.

This study would be very helpful in examining the lending and deposit behaviours of both Islamic and conventional banks working in Pakistan by closely taking into account the role of capital adequacy and would capture any loopholes within the two banking systems. This study aims to assess the extent to which higher capital requirements may affect financing and credit growth in Conventional and Islamic bank in Pakistan. The originality of our research is to apply the concept of the market power and its impact on the relationship between the capital regulation and the lending and deposit banking behaviour. Most of the previous studies examined the effect of information asymmetry on the banking risk and operations in general.

In order to make this research more elaborate for future, addition of remedial measures would assist both conventional and Islamic banks in Pakistan. With the generalization of this study, it can be relied as a study for both of banking systems working in Pakistan. This research

paves way in helping audience to understand the situation of Islamic financial systems in Pakistan and provides a performance comparison of both financial systems to designate the one as having better stability compared to the other.

1.5 Study Scheme

Our study is organized as follows:

Chapter 1; this chapter includes introduction, the gap we identified in the existing literature, our research objectives and questions, and significance of our research.

Chapter 2; discusses the History and Development of Islamic Banking System.

Chapter 3; presents review of the existing literature.

Chapter 4; describes the data sources and the research methodology that are used for estimating our empirical models.

Chapter 5; covers our estimation results and their interpretations.

Chapter 6; presents major findings and policy implications.

Chapter 2

History and Development of Islamic Banking System

2.1 Overview of Islamic Banking

Islamic financial system is built on the belief and notion of collective well-being which is determined by the goodness of both worlds. The concept of Islamic financial system is significantly different from the modern system because of the reason that Islamic financial system is based on risk sharing and provides financial products like Mudarabah, Murabha, Ijarah, Musharakah, Salam and Istisna based on Islamic principles laid down in Quran and Sunnah to facilitate trade and businesses to bring prosperity and well-being to society. On the other hand, the modern system is based on materialism, capitalism and unbridled resource consumption.

Islamic spiritual texts offer complete guidance and supervision on complex financial matters from the era when paper money was not even designed. Islamic principles provide assistance on the construction of a structure which is economically fair and are deeply centred on socio-economic safety of everyone in society and not on certain well-off individuals or groups of society (Zaman, 2013). Conversely, the conventional system puts firm emphasis on the assumptions of time value and money.

It is acquiescently declared in the Holy Quran that dealing in interest is identical to waging war against God and His Messenger PBUH. Islamic modes of financing are clearly established on the tenant that usage of interest is prohibited in all dealings and transactions (Gerrard and Cunningham, 1997). According to Islam, Muslims should not deal with conventional financial institutions as the conventional financial system is purely interest based (Jaffe, 2002). For the Muslim customers and traders – who want to evade Riba, Islamic

banking and non-banking institutions have established varied collection of Shariah compliant financing products that fulfil the related Shariah decisions, and therefore, are appropriate to Muslim consumers (Rammal, 2004).

2.2 Roots of Islamic Banking in the World

Islamic financial system constitutes wide ideologies and clearly defined rulings. The Holy Prophet Muhammad (PBUH) himself was a trader by occupation and knew the very importance of supply and demand with other major economic issues.

As time passed, industrial development and traditional commercial banking extended to the Muslim inhabitants. At that very time, it was not feasible for Muslim community to refuse the interest-based banking system because no other actual substitute was available to Muslims. In the 19th century, it was for the first time when Muslims started to think that the prevailing banking system is interest (Riba) based which is prohibited in Islam in all shapes and forms, therefore, there must be an alternative available – which conforms the Islamic Shariah principles.

The Islamic financial system in Malaysia has witnessed a tremendous growth in demand, acceptance and development since its introduction in 1963. It began with the establishment of the Malaysian Pilgrims Fund Board (Tabung Haji) and the country's first Islamic bank, Bank Islam Malaysia Berhad (BIMB), which began operations on 1 July 1983. Since then, BIMB has become the core component of Malaysia's Islamic financial system. With its initial objective confined to the development of a viable and modern alternative to meet financial needs, the Malaysian model is now one of the most advanced Islamic banking systems in the world. The ultimate goal of the Malaysian Islamic financial model is to operate in parallel with Malaysia's conventional financial system. To achieve this, the Islamic financial system

presents itself as a viable alternative to the more established, conventional system. Because of the pressing need to kick start the expansion of the Islamic Banking system, the Central Bank (Bank Negara Malaysia - BNM) later allowed the conventional banking institutions to offer Islamic banking services using their infrastructure. The option was seen as the most effective and efficient mode of increasing the number of institutions offering Islamic banking services quickly and inexpensively. Following this, on 4 March 1993, BNM introduced "Skim Perbankan Tanpa Faedah" (Interest-free Banking Scheme), or SPTF, which became the "Skim Perbankan Islam - SPI" (Islamic Banking Scheme) in 1998.

The Egyptian project named Mit Ghamr alongside actions taken by Tabung Haji in Malaysia (Akram Laldin, 2008) are considered as the major contributor in encouraging institutes to opt for Islamic banking. Developing collection of Shariah compliant products and services was the foremost challenge in the formation of Islamic banking structure – so, to meet such challenges, Religious Boards and Shariah Advisory Committees were established for the verification of the products and services offered by Islamic financial institutions and to check whether such products are in compliance with Shariah rules or not. The boards and committees included Islamic scholars who belonged to different school of thoughts but the mutual consultation was key to finalize the results and conclusions.

First global Islamic financial organization was established in 1975 names as Islamic Development Bank (IDB). During 1980's, some countries including Iran, Pakistan, Malaysia, Bahrain and Sudan started employing the Islamic banking at greater scales. In the next era, several conventional banks also introduced their separate Islamic units and started offering Islamic financial products and services. Quickly after the inauguration of Islamic services by conventional banks, Islamic banking started flourishing on international level (Khan and

Bhatti, 2008). During this time, several Islamic investment institutions also came into being and many international and large scale institutions introduced Islamic products.

Islamic banking started flourishing with the passage of time and offered more and more innovative and diverse products and services at international level. Which helped the Islamic financial institutes to compete with the interest based conventional banking set-ups at global level. Numerous international and large scale bodies which includes International Islamic Rating Agency (IIRA), Islamic Finance Services Board (IFSB), Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI), and Islamic Development Bank (IDB) are showing their due involvement and contribution for improving and for extending the Islamic finance based system world-wide.

Islamic Development Bank (IDB), being the leading worldwide Islamic financial body, played an energetic role in making Islamic banking and finance a global phenomenon and greatly assisted in economic development of supporter republics by thinning the gap between poor and rich countries. From other similar bodies, IDB is considered exceptional, because it is absolutely dedicated in following the Shariah tenets and evades interest in all contracts and transactions. IDB has amplified the number of entities and has shown remarkable increase in its capital over time while its credit ratings and financial position has also improved manifold even during the recent financial crisis.

In the past thirty years, Islamic industry has expanded rapidly in terms of its operations and terrain. Currently, more than five hundred Islamic banking and financial units have started their processes and operations in more than ninety countries (Dar, 2013). Most of the big Islamic financial bodies have beaten and overtook their conventional counterparts by showing greater assets growth rate (Kapur, 2008). Most of the conventional banks have either

already settled their standalone Islamic branches or are in commencement process of their Islamic banking entities to counter the new rising and emerging market.

Islamic industry's inspiring progress around the globe provides opportunities to those who want to be the part of modern banking systems and to contribute in the economic developments to earn the benefits and profits in the form of Shariah compliant profits and earnings. This tremendous growth of Islamic banking and financial sector proved innovative for all those who wish to be a part of contemporary banking system in conformity with Islamic principles by not trading in interest based businesses either openly or incidentally (Usmani, 1999).

2.3 Origin of Islamic Banking in Pakistan

Banking in Pakistan initiated in 1947 with its partition. At that time, there were 45 listed banks which were in operation with the total of 631 subdivisions out of which 487 offices were positioned in West Pakistan and the remaining 114 branches were positioned in the East Pakistan. With restricted role, number of other foreign banks was also effective in Pakistan. The condition and circumstances grew ever more serious when bankers from India moved their businesses to India. Number of Offices in East and West Pakistan showed a drastic decrease in their total number. For West Pakistan it fell down to 81 and to 69 for East Pakistan by June 30th, 1951 (Ahmad, 2010).

The Central Bank – State Bank of Pakistan (SBP) was inaugurated in 1948, subsequently, State Bank set-forth rules and strategies and paid attention on new networks of commercial banking. As a result, Allied Bank, Habib Bank and National Bank initiated their processes under the supervision of central SBP. Until 1974, the evolution and development of commercial banking system in Pakistan was noticeable. The then Prime Minister of Pakistan

Zulfiqar Ali Bhutto employed nationalization policy and thirty banks came under the government's control. This step was taken to enhance the performance of banking sector. In early 1990s two major banks of Pakistan i.e. Muslim Commercial Bank and Allied Bank were privatized.

In the second part of 1970s, Pakistan was set on the path of financial sector Islamization. Pakistan was one of three significant countries striving to accomplish Islamic banking. Council of Islamic Ideology in Pakistan was directed by the government on September 29, 1977 to start working on framework for adoption of Islamic system of economy. A report, In February 1980, was presented by the CII that highlighted numerous methods and details for removing interest from Pakistan's financial segment. That CII report was the foundation for Islamization of Pakistan's banking sector.

2.4 Initiatives Taken in Pakistan

Islamic banking movements in Pakistan were carried-out comprehensively in every nook and corner of Pakistan. It was an enormous task to implement Islamic banking by substituting conventional banking. The switch-over plan from conventional banking to Islamic banking was implemented in step-by-step stages. From July 01, 1979 -- House Building Finance Corporation (HBFC), Investment Corporation of Pakistan (ICP) and National Investment Trust (NIT) adopted Islamic principles in their day-to-day business dealings. While, from January 01, 1981 -- one foreign bank and almost every national commercial bank started interest-free counters to make-way to implementation of Islamic way of PLS sharing. July 01, 1985 onwards, moving forward towards Islamic principles, interest-free banking actions were initiated and banks were not allowed to receive or process any type of interest focused deposits. In adherence to Islamic principles, deposits which were existing at that time get

treated on the PLS basis. Although, deposits and loans in foreign exchange were only treated on the basis of interest. Government of Pakistan also approved Mudarabah Companies Act in 1984 to enable business groups and financial institutions to setup and operate special Mudarabah companies in Pakistan.

2.5 Development of Islamic Banking in Pakistan

Long term prearrangement, commitments and obligations are always required for introducing and executing a new organisation. This is important for current financial system where the benefits of the shareholders and participants are considered a vital component. A well-organized plan with dedicated efforts can always lead to an achievement.

The Pakistan government provoked all the conventional banking institutes in Pakistan to make all the depository accounts accessible on PLS basis and these were termed as profit and loss sharing (PLS) accounts. Since June 1985, all the conventional banking institutions in Pakistan were restricted from proposing Riba based services and products. On the other hand, all inter-bank dealings[1], government related financial dealings[2] and the foreign currency accounts were allowed to carry on their processes and actions on current interest basis. (Kaleem & Abdul Wajid, 2009).

In the 1980s, after the process of Islamization of financial sectors in Zia regime, solid foundations were put down for the representation of Islamic finance bodies in the Pakistan. Islamic finance industry bloomed and flourished as time passed and the deliberate and firm development of Islamic banking system continued. Subsequently, the Islamic Ideological

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[1] Cash at demand, buying of bills of trade

[2] Investing in central and local government securities, government borrows from financial bodies and the Central Bank and the government advancing to community enterprises

Council of Pakistan and also the Supreme Court of Pakistan announced rulings in contradiction of interest (Riba) based dealings and transactions which gestured a fresh era of Islamic financial system in the country.

Islamic banking is considered the fastest developing component of global economy. The Islamic banking and financial industry of Pakistan has shown a marvellous assets development from 2% in 1970s to an astonishing 15% up-to middle of 1990s. Additionally, Bose and McGee (2008) claim that in the last decade, the Islamic banking and financial sectors have attained a remarkable growth rate of 15- 20% yearly.

The Islamic banking units are working not merely in the Muslim majority regions or countries but are also carrying out their essential role in the countries such as UK, USA, France, Australia, and China where the Muslims are in minority. In addition to this, the products and services offered and presented by these entities are not only accessible and accepted by the Muslims but are also available and accepted by individuals from other religions and backgrounds. The reason of this acceptability and attraction by the non-Muslims as well is that the services and products offered are Shariah complaint which prohibit uncertainty, confusion, corruption, dishonesty and fraud (Venardos, 2006).

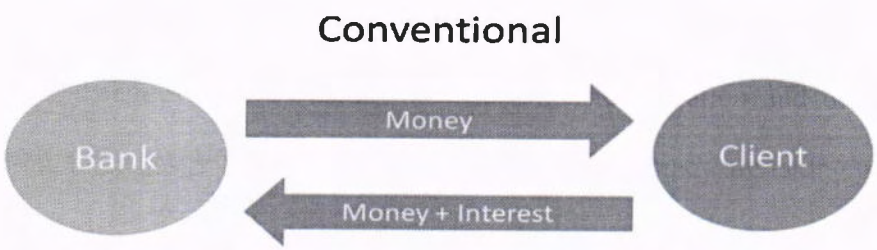
With all the political and regional obstacles and difficulties, in Pakistan, Islamic banking developed gradually with keen focus on the Shariah compliance aims and motives, higher yields and service excellence. The role of State Bank of Pakistan for accelerating Islamic financial system has been very encouraging and positive. Pakistan has developed exceptional and very admirable Islamic banking's statutory and legal framework, has Shariah governance experts and full backing of government as well. This is the reason behind Pakistan's rapid and quick development in Islamic finance industries around the world.

Pakistan has an adequate and impressive structure for the implementation of healthier Islamic banking guideline and instruction. There are five full-sized Islamic banks that are currently operative in Pakistan. Meezan bank, in 2002, acquired the very first license of Islamic banking and formally turned out to be the first Islamic bank of Pakistan with now a total of 313 branches nationwide. The same licenses are given to, Al-Baraka Islamic Bank, Bank Islami Pakistan, Dubai Islamic Bank Pakistan and Burj Bank by State Bank of Pakistan. Presently, there are 14 conventional banks that also received license from SBP for operating their standalone Islamic branches across the country. The evolution and development of Islamic banking branches of conventional banks is also fast and they are taking great steps to compete with the pure Islamic banking industry to gain maximum businesses and clients.

2.6 Conventional Banking System

The basis of conventional banking system is laid upon the debtor and creditor relationship considering interest as the credit price and reflecting opportunity cost of money. Hence, money is a commodity to some extent.

Figure 2.1 - Conventional Banking System



Commercial banks are such type of financial institution that supply services such as proposing basic investment products, taking deposits and giving business loans. The commercial banks primary task is accepting different kinds of credits and deposits from its clients/customers, including fixed, recurring, and saving account deposits. These deposits are

returned back on customer's demand or after a certain period of time. Commercial banks give different forms of loans and advances, such as cash credit, overdraft facility, discounted bill, money at call etc. to its clients and they also give demand and term loans to customers against some proper security.

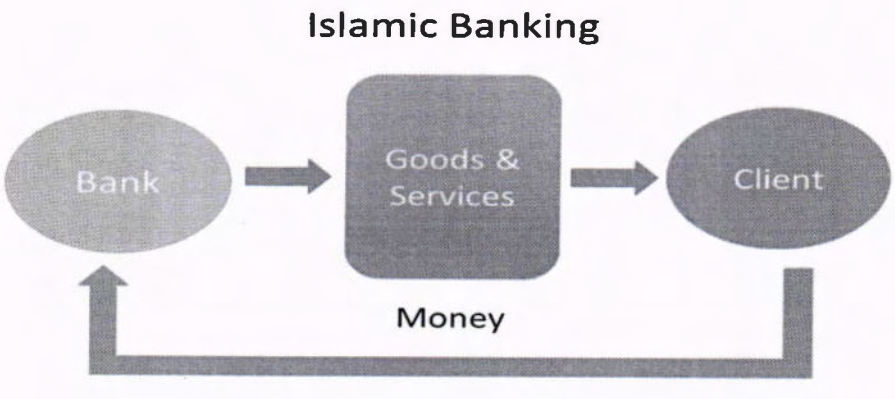
Commercial banks that are operating inside Pakistan are divided into following four categories:

a) Private banks
b) Foreign banks
c) Privatized banks
d) Nationalized commercial banks

2.7 Islamic Banking System

Shariah rules and principles are the tenants of Islamic banking system. Financial relationship in Islamic system is generally participatory in nature.

Figure 2.2 - Islamic Banking System



Islamic banking is that type of banking activity which is designed in compliance with Shariah. Profit and loss sharing and forbidding the payment and collection of interest from

the moneylenders and investor are the crucial functions of Islamic banking this Riba (interest) is prohibited in Islam. The existence or prominence of Islamic banking can be seen to as far as the inception of Islam dating back to 7th century. Hazrat Khadija (RA), the first wife of Prophet (PBUH) was known as a trader. Prophet (PBUH) used to look after the trading affairs of Hazrat Khadija's business and applied the same principles and rules as seen in Islamic banking today. Because of the strong underlying principles of Islamic banking, in the middle ages, it spread across different parts of the world including Baltic States, Mediterranean and Spain. Islamic banks which are at present operational in Pakistan are:

a) Meezan bank
b) Dubai Islamic Bank
c) Bank Islami
d) Albarakah Bank
e) Burj Bank

2.8 Major differences between Islamic and Conventional Banks

Islamic banking system is founded on Islamic regulations and principles which make it features distinctive from conventional banking system. The major differences between the two systems are discussed below:

Table 2.1 - Major Differences

#	Islamic Banking	Conventional Banking
1	Though, money is not a pivotal commodity -- it is still utilized as the mean to transfer and accumulate valuables.	Money is the underlying commodity besides store of worth and exchange medium.
2	They key concept of Islamic banking,	Conventional system is interest based,

	based on the Shariah laws and principles, is the sharing of profit and loss.	even in case of loss borne by borrowers it will charge pre-set interest amount. Functions and actions of conventional banking system are built on man-made principles.
3	It encourages risk sharing between fund users i.e. entrepreneur and capital providers i.e. investors.	In contrast it guarantees the Capital providers or investors a predetermined returns or rate of interest.
4	Aims at maximising profit but subject to Shariah rules.	Unrestricted profit maximisation illustrated by derivatives trading.
5	Modern banks also perform functions of zakat collection centres and also pay out their zakat.	Conventional banking systems do not deal in Zakat.
6	The underlying business of Islamic banks is to participate in partnership businesses. However understanding the nature of business is necessary.	The underlying business of conventional banks is giving loans and getting it back with compounded interest. However understanding the nature of business is necessary.
7	The ambition is to assure growth with equity because for Islamic banks public interest is forefront.	However, conventional systems make no attempt to provide growth with equity because for them lenders interest is important.
8	Islamic banks do not have any provision to charge any additional money (penalty)	Conventional banks charge additional money (penalty) on loans in case of

	from defaulters except for compensation and such proceeds will not be considered as banks earning rather that amount will be given directly to charity.	defaults.
9	Islamic banks invest their money in halal transactions which must be Shariah compliant.	Conventional banks deal in interest based transactions.
10	The relations between Islamic banks and its client is that of buyer seller, partners, traders and investors.	However the relationship between conventional bank and clients is that of debtors and creditors.
11	It cannot give any guarantee for any of its deposits except for deposit accounts which is based on Al-Wadiah.	It gives guarantee for all its deposits.

3.1 Portfolio Approach

One particular way to evaluate the outcome of applicable capital requirements is to distinguish banks as the main controller and supervisor of asset portfolios. In contemplation of this viewpoint and to motivate banks to choose the coveted portfolio approach, the major outcome of any system and scheme of capital is to adapt capital level to the pertaining and potential risk.

The critical and influential study and work for examining and determining the outcome of capital requirements on the selection of the portfolio has been conducted by Kahane (1977), Koehn and Santomero (1980) and (Kim & Santomero, 1988). The work of Kahane (1977) and Koehn and Santomero (1980) scrutinize portfolio selection model on the basis of mean-variance analysis application supporting which the bank accepts and returns asset prices as data and reviews and modifies its most optimum portfolio to yield the best benefit surfacing from the period-end capitalization, and that consequently relies on bank's risk cushion and aversion extent.

In order to evaluate, consider and study impact and impression of capital regulation on sturdiness and equanimity, Kahane, Koehn and Santomero assessed and calculated the impact of equity requirements on the probability of default. A bank's major roadblock towards attaining position of full efficiency and resourcefulness is the restriction laid down by the capital requirement ratio because of which the natural reaction of banks is to modify their portfolio assets per unit of capital. Nevertheless, how the optimal portfolio is conformed and modified relies majorly on the risk aversion coefficient. In their study, it is highlighted by the authors that a non-risk resistant bank reacts to raise in equity requirements by selecting more risky assets -- which enhances the probability of bank collapsing financially. Therefore, it is

determined and pointed out by Kahane, Koehn and Santomero that the fortitude and stability of bank is based on how risk-averse it is.

It is argued by Kahane (1977) that regulatory based capital can help in decreasing the overall portfolio risk only if banking portfolio asset structure and arrangement is under the umbrella of regulations. As a matter of fact, concerning the banking portfolio -- the regulator can assist in lowering the exorbitant risk-taking by weighting carefully the assets with risks as described in Basel-I. The portfolio approach was protracted by Kim and Santomero (1988) by examining and determining the weighting system of risky assets.

Following the same pathway of Koehn and Santomero (1980) and Kim and Santomero (1988), Rochet (1992) studied the consequences of capital regulation on commercial banks portfolio choices. He determined that the capital regulation could not stop the banks from selecting the risky portfolios if the objectives of the banks are the expansion and maximization of the market value of their future earnings. However, capital regulation can be operative and effective if the banks perform as portfolio managers (but only in case if weights used for ratio calculation are proportional to the assets systematic risks).

3.2 Incentives Approach

The incentives approach models clears the association between the banks risk-taking and capital ratios by taking into account the information asymmetry at numerous levels of the banking industry. As per (Besanko & Kanatas, 1996), there may occur two agency problems in the behaviour of banks towards the risk. First problem occurs between the former shareholders and the new shareholders of the banks. Former shareholders are actually the insiders who maximize their security however the new shareholders are outsiders who purchases new shares to increase the percentage of balance sheet equity. Secondly, the

problem between the supervisors and the insiders occurs in banking action by making investments in very risky loans through the insiders whose capital derives from deposits and equity.

In case of bankruptcy, insiders suffer all the costs whose surplus arises from loans and deposit insurance. Thus, deposit insurance secondarily delivers capital at zero rate of interest. Basel I requires the banks to increase the amount of their capitals meaning that bank requires additional capital for same volume of loans which in turn shrinks insider surplus. Loss will be reimbursed by outsider by paying the market price of such shares which are issued by the banks. In effect, if the quantity of the insiders' assets decreases, in turn, less incentives will available for them to make better efforts, which lessens the prices of stock equilibrium on the market (Besanko & Kanatas, 1996).

If the value and worth of banks' market increases in spite of lessening of stock prices, the regulators and insurers' divulgence to risk can decrease. On the other hand, if the endeavours of insiders' discernibly tumbled, the regulators would find themselves facing a feeble bank when the equity market price lowers. At this point, the second agency problem comes forth as well. The rise and intensification in equity ratio can result in declination of regulators and insurers' welfare. It can be thought up that the rules of agreement may not be enforced and practiced afterwards. Foreseeing such behaviour from the regulator, the banks might not decrease their risk taking demeanour. For that reason, it can be said that the very behaviour of authorities can make banks decrease or increase the risk to their portfolio and market price. The intensification of the capital can help in decreasing the risk related to agency problem. As per (Besanko & Kanatas, 1996), holding equity based on the typical traits of each bank can be a superior way to go about it.

The literature also suggests other models that argue the research and study of (Kim & Santomero, 1988) and (Koehn & Santomero, 1980), which majorly reconnoitre and explain vigorous impact of prudential, efficient and practical regulation. Based on this, it is indicated that solidifying of prudential, efficient and practical regulation efficaciously decreases bank's profit variance and overall risk to insolvency. However, this can result in minimum two negative effects. Firstly and straightforwardly, the increase in the equity to asset ratio can result in lowering of bank's expediency. Aforementioned decrease in banks' expediency can permeate development and advancement of bank's balance sheets and can impact medium and long-term growth. Secondly and not so straightforwardly, the lowering of bank's expediency can cause alteration in bank's optimal investment policy. For that reason, the banks are allured to allot major fraction of their profits to their shareholder to atone the lowering of their asset returns.

Aforementioned profit reapportion will be at the cost and liability of the capital accretion and will aggravate the results of the first and primary direct impact. By considering these two effects in the overall risk assessment of bank's downfall points us to balance the promising results. According to (Rochet, 1992) it is likely to construe a prudential and practical regulation as absolutely productive.

3.3 Impact of Prudential Regulations on the Banking Behaviour

Traditional banking system is used by many present-day theorists to describe the design and arrangement of Islamic banking. R. K. Aggarwal and Yousef (2000) enlighten the Islamic financial model as the viewpoint of profit and loss sharing and determine that this model is not extensively is in use because of moral hazard and agency problems.

Islamic and conventional banks differ from each other in theoretical models. Specially, the interest-based contracts of conventional banks are replaced, in their conventional counterparts, with earnings-based agreements where profits and losses are mutually shared between the banks and its borrower. Furthermore, in Islamic bank's deposits are received in the form of current accounts (without any interest charged on such deposits) and where the bank is held responsible to pay the amount of capital back to depositors on demand. Islamic banks investment accounts also known as savings accounts can be defined as 'such accounts that produces a return which is based on profit rate so that these rates could be adjusted depending on the apprehended profit (on the losses as well) that would be consequently shared between Islamic bank and its investment (or saving) account holders (Iqbal, Aḥmad, & Khan, 1998).

However, it is confirmed by several previous researches that Islamic banks have adopted strategies of conventional banks' and have shown deviation from their theoretical models. Siddiqi (2006)in this perspective, claims that, activities of Islamic banks' are sales based instead of partnership. Bourkhis and Nabi (2013)argues that behaviour of Islamic and conventional banks do not differs from each other this is because Islamic banks are about to emulate conventional banks. As per Khediri, Charfeddine, and Youssef (2015), since Islamic and conventional banks are operating in the similar economic environment and both the banking systems are controlled with the same techniques in many countries, hence, they probably have similar behaviours and strategies. Čihák and Hesse (2010) discourse that the challenging method to liquidity necessitate Islamic banks to be astute, prudent and selective so that they may not experience negatively the risk of moral hazard problems.

The comprehensive and ample examination and exploration of the available literature is divided in two parts.

The focus of first part is on fulfilment of capital requirements by banks either via varying the risk weighted assets or by shifting-up the capital. In their model,[3] Shrieves and Dahl (1992) have concurrently associated and interlinked capital level and risk exposures by focusing and using numerous periods of cross sectional data on commercial banks in US. The model helps in identifying that the real effectiveness and efficiency of risk-based capital standard is very much dependent on how the standard mirrors the real risk coverage of the banks.

Additionally, Jacques and Nigro (1997) concluded that capital regulation partakes substantial influence on risk and vice-versa by Three-Stage Least Squares (3SLS) estimation approach for US banks for the period of 1990-1991. By repeating the examination of (Shrieves & Dahl, 1992) by taking on a chunk of US bank data for the period 1991-1993, R. Aggarwal and Jacques (1998) found that lower capitalised banks raise their capital target ratio far quickly than the banks with greater initial capital. Their study particularly focused and inspected the effect and influence of 1991 FDICIA legislation and the Prompt Corrective Action (PCA) provisions on bank behaviour – which indulged administrators in taking specific actions when banks' capital ratios are below assured trigger levels.

Calem and Rob (1996) evaluated quantitatively the effect of the risk-based capital standard by attuning the model with empirical data from the US banking industry in 1984-1993. Their study came to conclusion that higher capital requirements may perhaps result in greater portfolio risk with larger effect on lower capitalised banks rather than well capitalised banks. While analysing the influence of capital regulation in somewhat different way, Wall and

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[3] Shrieves and Dahl (1992) adopt 1981 Standards for risk-based capital. The Federal Reserve and Office of the Controller of the Currency (OCC) agreed on applying a same standard on regulated banks in December 1981. As per the standard, it was devided to apply 7% and 6.5% capital ratio on community banks and regional bank respectively.

Peterson (1995) accept that the bank capital regulation requirement generates restriction on the intricacies of bank capital. Their observation asserts that empirical studies abandon the interconnection of bank model and regulatory model.

There are studies that have inspected and analysed the effect of capital requirements by utilizing a specimen of banks in different industrial nations. Ediz et. (1998) pragmatically applied Random Effects model involving panel regression focusing econometric approach at confidential and supervisory data consisting thorough and comprehensive data associated with balance sheets, profits, losses etc. of entire British banking institutes during the period 1989-1995. The major claim of their study was that the UK banks endeavoured to enhance their capital to meet the capital requirements. This claim was further dyed-in-the-wool by Rime (2001), the study used data from Swiss banks by working on Shrieves and Dahl's methodology. The results of the study emphasize that banks in Switzerland are desirous of increasing and expanding their capital, however, it does not disturb the risk-prone behaviours of banks. Based on these studies, it can be positively concluded that imposing capital requirements does not significantly alter risk taking behaviour of the banks.

A theoretical and speculative case connected to greater capital standards causing and resulting in higher risk and greater probability of failure has been put forward and documented by some authors. Espousing and implementing framework of mean-variance, Koehn and Santomero (1980) and Kim and Santomero (1988), compared bank's portfolio – with and without solvency regulation – demonstrating imposing of capital requirements' can present different variations in arrangement of risk of bank's portfolio such that with increase in the risk the likelihood of failure is higher. Such alteration can be subdued, according to Kim and Santomero, with regulators using the right measures of risk in the calculation of solvency ratio.

Extending further the study of Koehn and Santomero, Rochet (1992) discovered the following:

1. If the very objectives of commercial banks are intensification of future profit's market value (banks that focus on maximising value), capital regulations just cannot prevent them from picking very specific risky portfolios
2. However, if the very objectives of commercial banks are to act as part of portfolio managers (banks that focus on maximising utility), capital regulations are only useful – if weight calculation of the ratio are relative to complete risks of the assets.

There is another argument on theoretical grounds that claim that the banks are prone to choosing portfolio with maximal risk but minimum diversification. Therefore, based on the study by Blum (1999), putting just capital regulation on banks is not adequate for taking care of moral hazard. As deposit insurance tempts banks to keep less capital and select higher risk capital, Marshall and Prescott (2001) highlight that capital requirements are directly responsible for reducing the default of probability and portfolio risk. Further, it is proposed that the perfect capital regulation for the bank is possible when complimented with state-contingent penalties closely based on the performance of banks. Based on Vlaar (2000) study of assuming asset side as fixed, for banks that are inefficient – capital requirements are a burden. While, for efficient banks, their profitability and productivity increases and advances when the capital is binding.

The second part of this literature concentrates on how the very implementation of capital requirements lead to reduction in the loan supply of the bank or best termed as credit crunch. Credit crunch is extensively cited in credit channel literature under the notion channel bank

lending. As per study of Bernanke and Gertler (1995), bank lending channel emphasizes on how results of financial shocks on bank's balance sheet affect the overall cost of finance for particular borrowers over and above the standard impact finance costs of greater interest rates. Whenever there is looming national or international scale financial crisis or economic instability, capital crunch always comes under the radar and is investigated by researchers. As a likely elucidation for renunciations and negations in lending (Ferri & Kang, 1999) capital crunch is also commonly mentioned together with the increasing encumbrance of non-performing loans (NPLs)[4].

As per (Bernanke & Gertler, 1995), the repercussions of higher capital requirement are that banks are enforced to decrease loan supply – which results in credit crunch. With strong tightening of regulations, banks' ability to obtain external funds is constrained. Based on (Myers & Majluf, 1984) study, once the banks are not able to keep up with higher capital requirements – they decide to contract credit supply as an alternative. As per (Diamond & Rajan, 2000), there is very sturdy and solid relationship between assets and liabilities of the bank. Deposits surge throughout the development and growth along with banks' credit, bringing about some increase in the capital adequacy ratio.

By early 1990s, the drop in bank lending might be due to the effect of vicissitudes in regulatory capital requirements. As per few observers, the switch being observed from industrial and commercial loans to Treasury securities and other assets is due to the employment of requirements related to risk-based capital (RBC). Commercial loans in RBC are given full 100% risk weight that require the highest capital, while Treasuries are given a

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[4] Another type of channel is called balance sheet channel which describes how the borrowers' financial health can affect finance supply.

straight 0% risk weight which requires no capital. Because of which, an inducement appears for the financial institutes to switch and transition from loans to treasuries. On top, because of the rapid rectification action feature of Federal Deposit Insurance Corporation Improvement Act (FDICIA) – which decrees more and more strict regulatory fines and punishments on banks as the RBC ratios globule – improves the inducements and encourages to switch and move on from commercial lending into Treasuries and other assets in lower risk-weight categories. Conspicuously, more or less decrease in commercial loans extended by friable capitalized banks must be observed as an estimated consequence of RBC and FDICIA. But the phenomenal lessening in loans – substantially capacious enough to be called 'credit crunch' by few observers – might be an unintended consequence of these policies.[5]

Apart from the employing of RBC and FDICIA, introduction of leverage ratios in regulatory capital might also have paved way to significant decrease in commercial credit supply by banks. In the leverage requirement of 1990, it was required from banks to be always in a position to keep capital of minimum 3% against unweighted assets. This was taken by some banks as an impetus to lower portfolios of assets. The quantity by which the essential leverage capital ratio exceeded 3% was dependent on bank's inspection rating and at the preference of the regulator, banks also have been keen to swap assets with greater credit risks, like commercial loans to less riskier assets, such as that of Treasuries. Frequently, it is claimed that regulators and administrators developed stricter approach for banks in early

[5] For assessing whether RBC begun credit crunch see study of Haubrich and Wachtel (1993), and Berger and Udell (1994), and Hancock and Wilcox (1994)

1990s and instructed superior capital-to-asset ratios even before when the official leverage requirements were in place.[6]

There are plenty of further hypotheses distinctive to augmentations in regulatory capital requirements that can benefit in discerning weakening in commercial lending in the early 1990s. Following are some of the examples for this:

- Bank's capital dwindling after the loan loss practices of late 1980s (e.g., Peek and Rosengren, 1994, 1995a)
- Severe standards of examination and regulator policies on loan loss reserve (e.g., (Bizer, 1993))
- Deliberate and planned reduction in risk by bank managers (e.g., (Hancock and Wilcox, 1994))
- Weakening in loan demand because of macro-economic and regional recessions (e.g., Bemanke and Lown, 1991; Hancock and Wilcox, 1993)
- Demand waning for bank loans because of surge in new credit sources (e.g., Berger and Udell, 1994)

Focusing credit crunch, there are two empirical papers that observe and pore over the effects and impacts of the regulatory leverage requirements in innovative ways. Hancock, Laing, and Wilcox (1995) evaluated the continuous varying pattern of how bank portfolios retorted to capital shocks in the late 1980s and early 1990s and established some significant deviations. For the most part, the response of banks to surprizing drops in capital was very rapid in the early 1990s than in late 1980s, exclusively for banks with capital-to-asset ratios less than 5%.

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[6] for investigationg whether supervisory laverage necessities initiated the credit crunch see the work of Berger and Udell (1994), Peek and Rosengren (1995), and Hancock and Wilcox (1994)

This connotes that banks take out lending very quickly in reply to loss of capital in the early 1990s, particularly those banks that were at or under regulatory capital-to-asset ratios. These results are pretty reliable with a regulator driven credit crunch in which engagement and implementation of stronger and sturdier leverage standards lowered the lending in the early 1990s. Nevertheless, without assured information relating to regulatory sanctions, it is essentially difficult to distinguish between such a regulatory effect and the probability that market capital requirements might also have been a bit tautened in the early 1990s.

The proof provided by (Peek and Rosengren, 1995b) contributes in providing answers to any confusions and vagueness related to banks' reactions whether if they were chiefly compelled by regulatory forces as opposed to market forces. Their study included collecting data in New England from 1989 to early 1990s on regulatory administrative activities. This period alongside the location is typically acknowledged for credit crunch. A mandate concerned with improving bank's capital-to-asset ratio, generally to a level of up-to 6%, has always been part of regulatory enforcement actions. Therefore, if banks during the enforcement activities reduce their lending significantly more than the banks which are in similar region and situation but not under any such decree – this would indicate regulation based credit crunch versus a normal market reaction to economic influences. During their study, Peek and Rosengren came to the conclusion that banks which were working under enforcement actions reduced lending significantly and conspicuously than other banks in the similar and identical region with the same capital-to-asset ratios, henceforth supporting the proposition that regulatory actions ensued in credit crunch. Therefore, it is important to note here that, Peek and Rosengren's analysis is restricted and limited by the complexity of controlling and taking

account of the factors that can upset market capital requirements. Nevertheless, the analysis, delivers a hopeful approach to unravelling and extricating regulatory and market influences.[7]

It is well-recognized that capital adequacy rule can have impact on bank behaviour. The literature particularly highlights two facets. Primarily, it is assumed that the initiation of capital adequacy rules typically boosts bank capital and in the long run increases the pliancy of banks to critical shocks. Second aspect focuses on banks' behaviour concerning taking risks. Provided that, as it gives the impression, capital adequacy rules, for private sector than for credits vis-a-vis the public sector (e.g. treasury securities), put forward higher capital standards for loans that can effect a shift in banks' balance sheets from the former to the latter assets. However, it just cannot be overlooked, one way or the other, an obstinate risk exchanging form, via which banks finance novel and advanced capital inevitabilities, can move along the efficiency frontier towards more profitable and riskier loans.

In order to have a thorough and firm opinion on how capital requirements impact behaviour of lending, a comprehensive inspection on how supply and demand for loans interconnect needs to be conducted. In their study, Thakor and Wilson (1995) term the weakening in loan supply elicited by risk-based capital as the early point for examination to review the supply-demand relations. Their study illustrates that amplification in capital requirements will make banks less eager and keen to renegotiate and discuss loans in the future. This anticipated lessening in future supply of loans can have considerable and prolong impact on the quantity and amount of loans dispensed and allotted at present. Particularly, the borrowers that almost certainly are going to require renegotiation services in coming future might like to move from

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[7] This outcome that those banks that are subject to Supervisory instructions upraised more capital than all other banks is consistent with the findings of Wall and Peterson (1995)

bank loans to apply debt openly and amenably in the capital markets. Granting, it is believed that such borrowers can face obstacles while trying to acquire admission and entry to capital markets (Carey et al., 1993). Such examination and inspection provides additional facets of how regulatory modifications and changes result in minimized lending from banks.

The major and chief reason for decrease in bank credit has been because of lessened and reduced capital ratios. Nevertheless, this does not signify that banks that are exceedingly capitalized cannot become bankrupt or are prone to insolvency. For example in 2006, Bank Islam Malaysia Berhad (BIMB) despite having an enormous CAR of 31% in 2004 became bankrupt (Chong & Liu, 2009). It is relevant and pertinent to note here that high CAR majorly signifies that banks have extra capital for further investment. On the other hand, if the banks are not understanding and thoughtful in their expenditures or investments and are not gauging the risk as precisely and accurately as they should – they become vulnerable to more risk than they can handle and cope.

On the other hand, reduction in lending actions has been attributed to minimum capital requirements by regulatory authorities. The consequences of which are less lending by the banks, reduced loan supply and severe downfall in the daily activities of banking institutions. Banks have the following options to meet capital requirements:

- Raise and increase capital
- Reduce and lower asset portfolio
- Invest and capitalize on fewer or close to zero risk assets

It is at discretion of the banks to lower and contract either assets and/or liabilities owing to capital regulation, which can tremendously impact and slowdown the constant supply of credit in the economy. With obligatory and mandatory capital requirements in place, extra

capital is genuinely required to deliver smooth lending. Yet, banks can prefer to contract rather than to distribute new equities due to asymmetric information (Myers & Majluf, 1984). By proposing strong association between bank's asset side and liabilities side, Diamond and Rajan (2000) endorse that capital requirements have palpable and intense effects in the short run resulting in credit crunch – whereas, in the long run creates and results in an environment for the banks to be more exposed and perilous in their performance.

The study of bank loan supply has revealed an intense effect and influence on genuine and open banking actions. In their study, Gambacorta and Mistrulli (2004) propose that any discrepancy and deficit in the preferred and wanted level of capital ratios can make loan supply to move downward. One more study by Adrian and Shin (2008) remarks that an opposing shock to capital results in a descending and lowering of loan supply, that naturally obligates banks to modify their balance sheet. In their study, Peek and Rosengren (1995) argue that if somehow the capital is decreasing – banks are highly likely to face lending problems, which results in complications in encountering and complying with capital requirements. Such type of situation is usually described as and called capital crunch, in which decrease in liabilities make banks to shrink and lower their assets. In the same study by analysing behaviour of New England banks, Peek and Rosengren describe and determine that in the early 1990s recession, these banks faced capital crunch. It was also noted that the banks that were badly capitalized were comparatively more afflicted and hurt by capital crunch than the banks that were healthily capitalized.

During the crisis that hit Asian financial organizations, Korean banks reduced and tightened their loan investments and fixated their investments more towards government securities to encounter the capital requirements. This scenario is termed as supply side credit crunch by (Berger & Udell, 1994) – where banks are not interested and motivated enough to lend, based

on contractions in loan supply due to diminishing and dwindling of banking capital. In contemplation and analysis of meeting the capital requirements as decided and formalized by regulators, banks have the choice to either strengthen equity capital or decrease assets and liabilities. Nonetheless, in their study, Bernanke and Lown (1991) claimed that establishing and promoting new and fresh equity capital is expensive and in future can drive the banks to contract assets and liabilities by any means, since banks believe that the applicable capital adequacy ratio will help in governing of future bank lending.

With emphasis on US data, the study of Bernanke and Lown (1991) demonstrates that during the economy slump of 1991-1992, growth of loans at individual banks was unequivocally related to early capital ratios. In their analysis, a not-so-complex cross-sectional regression of loan growth on bank capital considerably verified the capital crunch hypothesis. In another empirical study by Peek and Rosengren (1995), focusing entirely on New England Banks to subdue numerous changes in loan demand, the same indication and proof of capital crunch was identified in the similar period but concentrating more on bank deposits.

In the economy, the role played by Islamic banks is precisely similar to that of conventional banks. Through credit distribution and capital management Islamic banks allow their investors and stockholders to create profits on their capitals. There are some risk which are common to conventional and Islamic banks, on the other hand, Islamic banks are confronted with some other type of risks as well which are specific to Islamic financial organizations. In this background, capital regulatory requirements emphasis on the administrative practices and risk controlling and provide an improved risk coverage.

A number of studies inspected the connection between risk and capital and different outcomes were drawn on this issue. some studies, like that of R. Aggarwal and Jacques

(1998); (Jacques & Nigro, 1997), while studying the case of USA, claims that banks responded to the implementation of fresh regulatory capital by taking excessive risks. However same conclusion were drawn by Rime (2001) for Swiss banks. While exploring the relationship between risk and capital Ghosh (2014) selected a set of 46 Islamic and 57 conventional banks throughout the period 1996 - 2011. Their findings stipulate that the banks in reply of high risk rise their capitalization level. As per (Karim, Hassan, Hassan, & Mohamad, 2014) there exist a significant and positive relationship between banking activities and capital adequacy ratio. They conducted their study on the sample set of 52 Islamic while 186 conventional banks in 14 countries throughout the period of 1999 - 2009.

As per Cebenoyan and Strahan (2004), those banks that uses loan markets for the purpose of risk management grip a smaller amount capital and therefore consider as more profitable, but, at the same time, more riskier as well.

In the existing literature we found that most of the studies support positive and significant relationship between banks behaviour and bank capital, however some other studies that showed the opposite. For instance, a study conducted on UK banks (Alfon, Argimon, & Bascuñana-Ambrós, 2004) asserts an adverse relationship between risk and capital during the 1998-2003 period. The same results were found for Indian banks by Ghosh (2014) and for German banks by Stolz (2007). However it is suggested by Ghosh (2014) that the use of different proxy for calculating risk measurement as dependent variables could be the reason of lack of consensus and disagreement between these studies. Recent financial crises encouraged and convinced Francis and Osborne (2012) for developing a better understanding that how the capital adequacy requirements could influence the banks behaviour. It is claimed that the banks low level of capitalisation was the chief cause for decline in credits.

It is thought that the key issue that appears since dealing with capital requirements impact on banks loan growth is the separation of demand and supply (Carlson, Shan, & Warusawitharana, 2013). For instance, bank capital that might be affected by the changes in financial and monetary environment might possibly affect loans demand. The damage to the financial and monetary environment may result a decrease in the capital of the capital, and this decline in capital of banks may possibly lead to progressively robust regulatory requirements and may eventually encourages the bank to lessen its lending. And also the change of the financial and monetary environment may decrease the number of borrowers who are seeking for loans.

The impact of the capital adequacy requirements on the banking behaviours was discussed by numerous studies. The recent financial crisis has recognised the relationship of capital adequacy requirements and the banking behaviours by displaying that large losses on non-performing loans might lead to the loss in banks capital which leads to a limit in the supply of banks credit and, in return, an increase of the equity ratio may require. (Greenlaw, Hatzius, Kashyap, & Shin, 2008); (Mora & Logan, 2012); (Rice & Rose, 2016).

None of the prior studies confirm or reveal completely that the decrease and lowering of lending is because of decrease in loan supply during the times of economic crisis. In their study, (Bernanke and Gentler, 1987, 1989) established that in the economic meltdown of US (1990-1991) – the extent of credit slow-down was not because of the demand factor only but it may well have been due to supply issues such as tremendous loss of bank capital. Moreover, based on the study, Sharpe (1995) argues that the strictness of bank regulatory standards and on the rise market monitoring, analysis and inspection of bank capital as the foremost factors behind credit slowdowns.

The literature review conducted above reveals that there is a pivotal and crucial need to examine, verify and associate capital adequacy to lending and deposit actions of conventional and Islamic banks in Pakistan. No study in this regard relevant to Pakistan has been carried-out before. This gives us an opportunity to explore this facet with my research and while doing so remain innovative through-out.

Following research hypothesis has been proposed based on the research objectives and research questions stated earlier:

H1: Both deposit growth and loan growth reacts inversely in response to a change in capital adequacy requirements in Islamic and conventional banks.

H2: Capital crunch phenomenon is equally relevant to both Islamic and conventional banks.

H3: Implementation of minimum capital requirement affects supply of bank loans.

Capital crunch phenomenon would be established and examined by separating banks into two sub-categories i.e. lower and higher capitalized banks. In order to differentiate between higher and lower capitalized banks, mean value of capital adequacy ratio set by State bank of Pakistan (SBP) is used as baseline. Hence, any bank that records capital ratio below mean value would be considered as less capitalized banks although those that set capital above mean value would be well-thought-out as higher capitalized banks.

3.4 Capital Adequacy Requirement in Pakistan

Capital adequacy is the top level of capital vital for a bank as determined by the supervisory and regulatory authorities based on which the banks financial health and soundness is assumed and gauged. Capital adequacy is also regarded as the measure of solvency of a bank – which simply signifies if the bank has enough capital to deal with the risk in its balance

sheet. The variable termed as adequate capitalization is a vital variable in business. In banking, adequate capitalization becomes even more critical as the nature of banking business involves and revolves around using other peoples' money. Based on the study of Onoh (2002), a bank's capital fund is regarded as adequate and satisfactory in following cases:

1. If it is enough to cover banks operational expenses
2. If it is enough to satisfy customers with multiple needs
3. If it is enough to safeguard depositors from total or partial loss of deposits in case of liquidation of the bank or loss incurred by the bank

In Pakistan, State Bank of Pakistan (SBP) set the capital adequacy ratio which is the governing, supervisory and regulatory authority, to evaluate and examine the health of banking systems. Maintaining and complying with CAR is mandatory for all banks operating in Pakistan as this ratio warrants that the banks can sustain and tolerate reasonable amount of losses. SBP monitors, observes and keeps a close eye on capital adequacy ratio to safeguard interests and concerns of depositors – which helps in assuring and building confidence in banking sector. With properly maintained capital adequacy ratio, banks remain rightly positioned to cater against liabilities and risk such as operation, credit, market or any other type of risk.

It has become a universal truth that banking sector is the backbone for all economies. As, State Bank of Pakistan is the foremost supervisory authority for financial institutes in Pakistan, all banking institutes look up to it and work under SBP's direct counselling and guidance. SBP acts as a doctor to ensure the pulse is loud, clear and not below normal range in order to make sure that financial system is working in top condition and remains healthy.

Banks constitute the major part of the world economy in the financial sector. Pakistan's banking sector, in spite of multitude of problems and financial crisis – is improving, spreading and growing not only in Pakistan but all around the world. Conservatively, Conservatively, SBP tries to implement the lowest regulatory compulsion of capital on financial institutions. The same has been the case with the popularity of internationalization and world becoming a global village – irrespective of the fact that goals of banks have started to change. In the recent studies based on banking sector of Pakistan, it has been made clear with proof that there are other aspects which are responsible for governing and defining capital adequacy ratio. These aspects vary from bank to bank and are established majorly on:

- Objectives of the bank
- Objective of shareholders
- Micro environment
- Competition in the market etc.

In order to improve Basel-I further, another Basel Accord was drafted by the international regulatory authority which was termed Basel-II. Basel-II was compulsory and enforced from January 01, 2008 and needed very arduous techniques, procedures and methods for measurement and evaluation of capital adequacy ratio in association and relation to Basel-I. In financial particularly banking institutions, Basel-II provides better response to risk when compared to earlier standards for calculation of CAR. With focus on Basel-II, many banks in Pakistan retain capital ratio above than the regulatory authorities' obligatory and compulsory requirement.

It is fully acknowledged that the capital has become a shock absorber for the banks for any potential unforeseen, unexpected and sudden losses. Capital decreases the possibility and

likelihood of bank becoming insolvent or bankrupt. The capital ratio imposed by SBP does not entirely mirror the risks encountered by banks but heavily stimuluses the capital ratio choices of the banks in Pakistan in conjunction with the risk of financial desolation brought about by the loss of franchise value. The risks associated with and their level in a banking sector can be deliberated via RWA (risk weighted assets / total assets). A rather deleterious association exists between the CAR and risk confronted by portfolio, the CAR of the banks can be different from the one imposed by the regulatory authority because of the amount of risk and size of the banks – same is the case with Basel-II and SBP regulations.

Chapter 4

Data and Methodology

4.1 Introduction

This chapter presents the framework to examine how banks macroeconomics variables as well as its specific variables affects bank loan and deposit growth in both type of banking systems (i.e. Islamic and conventional banking) in Pakistan. Data sources and the Econometric techniques which we are going to use for estimating our empirical models are also presented in this chapter.

4.2 Empirical Framework

Following the existing literature, panel data methodology is employed in this study. Panel data methodology is more suitable for this research as it contains some basic properties which are important when dealing with individual bank behaviour's. Unluckily, various data for the Islamic banks operating in Pakistan are either missing or incomplete. Incomplete or omitted data is common for panel data that is why it is extensively used in the Islamic banking literature. This study uses panel data for individual banks rather than using data for the cross-section banks. (Baltagi, 1995) explains several benefits of the panel data .First, our panel data methodology controls for the individual banks heterogeneity within certain dynamic duration which cannot be found in time series or cross section studies. Secondly, panel data methodology is usually used to gather panel data on micro units (e.g. banks in our study), so most of the variables can then be much more exactly and precisely measured at micro banks level.

For assessing the effect of the changes in the loans growth and deposits growth to a change of capital requirements, we based our empirical investigation on the extension of the framework by the Peek and Rosengern (1995) with some modification of the variables and run parallel regressions for banks deposits and loans. Their framework has also been used by Chiuri et al. (2002) to analyze the macroeconomic impact of bank capital requirements in emerging economies. Peek and Rosengren (1995a) derive their estimation strategy from a simple bank balance sheet model in which banks operate on less than perfectly competitive markets for loans and deposits. Banks take in deposits and extend loans to maximize their profits, taking into account a required capital-to-assets ratio set by capital regulation. The model shows that the effects of changes in capital on deposits and loans differ between constrained and unconstrained banks. Furthermore it allows to separate loan demand from loan supply effects. The model also illustrates that the effects of a loan demand shock differ across constrained versus unconstrained banks.

While the model provides predictions for the effects of a change in capital on both sides of the balance sheet, Peek and Rosengren (1995a) argue that a focus on estimating equations for the change in deposits rather than the change in loans reduces the data problems associated with the change in loans. These are difficult to control for, since the change in a bank's outstanding loans reflects more than just the bank's lending activity. Particularly the treatment of loan write-offs can reduce the growth in the quantity of loans outstanding without a corresponding reduction in new lending.

Two regressions i.e. ΔLOANS and ΔDEPOSITS are separately run for both Islamic and conventional banks. Therefore, we start our estimation by constructing the following two baseline model.

Moreover, this study also included control variables for macroeconomic effects during time period of the study. Peek and Rosengren do not include any macroeconomic variables as their selected sample covers only New England banks which according to them are the region where proper supervisory activities and actions have been delivered under the capital guidelines.

Our two baseline models are:

EQ-1:

$$\Delta LOANS_{i,t} = \alpha_0 + \alpha_1 CR(-1)_{i,t} + \alpha_2 (CMCR)_{i,t} + \alpha_3 CAR(-1)_{i,t} + \alpha_4 (CMCAR)_{i,t} + \alpha_5 (\Delta EQT)_{i,t} + \alpha_6 SIZE(-1)_{i,t} + \alpha_7 LQDT(-1)_{i,t} + \alpha_8 (INFL)_t + \alpha_9 (GDP)_t + \varepsilon_{i,t}$$

EQ-2:

$$\Delta DEPOSITS_{i,t} = \beta_0 + \beta_1 CR(-1)_{i,t} + \beta_2 (CMCR)_{i,t} + \beta_3 CAR(-1)_{i,t} + \beta_4 (CMCAR)_{i,t} + \beta_5 (\Delta EQT)_{i,t} + \beta_6 SIZE(-1)_{i,t} + \beta_7 LQDT(-1)_{i,t} + + \beta_8 (INFL)_t + \beta_9 (GDP)_t + \varepsilon_{i,t}$$

In above equation "i" denotes banks and "t" refers to the time period. The left hand variables of EQ-1 ΔLOANS (change in loans) and EQ-2 ΔDEPOSITS (change in deposits) represents dependent variable of both models. CR and CAR on the right hand side of both equations represents independent variables whereas ΔEQT, SIZE, LQDT, FEE, INFL, and GDP are all control variables while (-1) indicates one period lagged value.

Both the dependent variables (ΔLOANS and ΔDEPOSITS) and change in capital (ΔEQT) are normalised using the start of period total assets in order to decrease the potential heteroscedasticity complications with error term.

4.2.1 Using Lagged Variables

Capitalization ratio used in this research is taken from previous year (t-1). This is due to the fact that the banking behaviours in terms of credits and deposits in present year (t) depends on the capitalization level of previous year (t-1). The reason of such deferment is the substantial (significant) time gap or delay in the growth of loans and deposits. Therefore, in the hope of future borrowing and loaning banks increase their funds and capital. Internal specific variables of the banks that we used in our research are also lagging one period so that endogeneity problems could be avoided.

4.3 Estimation Methods: Fixed Effects versus Random Effects Model

In order to estimate econometric model, generally random effects and fixed effects techniques are used in the panel data.

4.3.1 Fixed Effects Models

As all time-invariant differences concerning and between the individuals are precisely controlled in fixed effects model, owing to which, estimated coefficients involved in fixed effects model can never be swayed and influenced with the omission and inadvertence of time-invariant characteristics. For dependent variables, fixed effects model cannot be utilized to analyse and examine time-invariant causes. In very principle and to be exactly precise, time-invariant physiognomies of the individuals are downright and totally aligned with the person or entity dummies. Fixed effects models are intended and prepared to distinguish the

particulars and specifics of changes within a person or entity. As the time-invariant feature is fixed and static for each person, it can never amount to such a change.

4.3.2 Random Effects Models

In a random effects model, variables that are not inspected are thought to be dissimilar and disparate from all the examined variables. As opposed to fixed effects model, the rationality and philosophy behind random effects model is that the deviation across entities is thought to be random and disparate with the predictors involved in the model. In the model of random effects, time invariant variables can be convoluted and scrutinized, while, such variables are riveted by the intercept in fixed effects model. The main and vital difference between fixed and random effects is if the not inspected individual effect signifies elements that are connected with the regressors in the model, not whether these effects are stochastic or not.

4.3.3 Hausman's Specification Test

Hausman specification test analyses the estimator's reliability and consistency associated to substitutive (less efficient) estimator that is recognised to be consistent. Hausman's specification test is frequently applied in the writings to select between fixed effects and random effects. Since its publication in 1978, Hausman's paper remains prominent in econometrics and applied economics. Taking into account its simplicity and expediency; it has become most important presenter in scheming different actions and behaviours. The null hypothesis of Hausman test states that Random effect model is appropriate however alternative hypothesis states that Fixed effects model is appropriate. It basically examines that whether the errors terms ($\varepsilon_{i,t}$) are interrelated with regressors in model whereas the null hypothesis is that they are not interrelated.

Exploring more about Hausman's test Henderson and Parmeter (2012) argues that Hausman's specification test is selected as exogeneity test. It gives legal statistical decision if the un-observed or un-noticed individual effect in the model is interacted with conditioning regressors in model. The refusal of exogeneity supports fixed effect model whereas the presence of exogeneity leads to selection of random effects model. Run fixed effects model and save its outcomes after that run a random effect model and save its outcomes as well, then perform the Hausman test to choice between random and random effect model.

Decision Rule: We conducted a Hausman test for each regression separately for determining the most significant model. Hausman test suggests whether the random effect is appropriate or the fixed effect is suitable. If values of probability are less than 0.05 (5%) i.e. significant, then it will mean that use of fixed effect model is preferred. Conversely, if the probability values are greater than 0.05 (5%) then random effect model will be more suitable. However in our estimation we used both the fixed and the random effect model.

4.4 Data Description

The main sources of figures and data that we used in this study are extracted from the audited annual financial statements of all banks. The fiscal disclosures (statements) organised by all these banks are standardized as per the requirements of the State Bank of Pakistan (the central bank). Both banking systems follow the accounting principles based on the requirement of SBP which makes the comparison possible over time and between banks. Financial accounting directions for Islamic banks are established and designed by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). However, (Hussain et al., 2002) argues that such financial accounting directions for conventional banks are designed and established by the board of international accounting

standards.The data of inflation and GDP are taken from the World Development Index (WDI).

4.4.1 Sample Size

For our study we selected banks operating in Pakistan covering the period from 2005 to 2014.We used secondary data for our empirical analysis. The population of this study covers all conventional banks and Islamic banks which are functional inside Pakistan. However, the sample size for this study is consist of of 5 full-grown Islamic banks and 5 standalone Islamic branches of Conventional Banks and 10 full-fledged Conventional Banks. The details of banks operating in Pakistan with different models are given below.

List of full-grown Islamic banks operating in Pakistan are given below:

Table 4.1: Islamic Banks

No.	Islamic Bank
1	Albarakah Bank
2	Bank Islami
3	Meezan Bank
4	Dubai Islamic Bank
5	Burj Bank

List of Islamic branches of Conventional Banks in Pakistan are given below:

In this study, we used monetary policy as a macroeconomic variable and is proxied by the inflation rate (INFL). Changes in real GDP are also including in this study for controlling the probable effects of business cycles on loans and deposits.

Overall descriptions of the variables which are used in this research are presented in following table:

Table 4.4 - Description of Variables

Variables	Definition
Dependent variables	
ΔLOANS (Change in loans)	ΔLOANS = (current year loans-Previous year loans)/ Total assets (t-1)
ΔDEPOSITS (Change in deposits)	ΔDEPOSITS = (current year deposits-Previous year deposits)/ Total assets (t-1)
Independent variable	
CR (Capital adequacy ratio With Leveraged ratio)	CR= total equity capital /total assets
CAR (Capital adequacy ratio with risk weighted ratio)	CAR= Basel capital (Tier 1 capital and Tier 2)/Risk weighted assets
Control variables:	
ΔEQUITY (Change in equity)	ΔEQT = (current year equity-previous year equity)/Total assets (t-1)
SIZE (Bank size)	Size=log (total assets) Size variable is proxied by the log of total assets
LQDT (Liquidity ratio)	LQDT= other earning assets/total assets Other earning assets includes Bonds and Securities
INF (Inflation rate)	Inflation rate is a Macroeconomic variable. In this study, we used rate of inflation is as a proxy for monetary policy.
GDP (Change in real GDP)	Change in real GDP (Change in log GDP to control the probable effects of business series on deposits and loans).

This study used two diverse measurement of capital adequacy ratio i.e. CR and CAR in order to find whether banks source of fund (capital) and risk component shows a vital role in defining the effect of capital adequacy requirements on banks performance.in this study rate of inflation is used as a proxy for monetary policy.

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List of full-grown Islamic banks operating in Pakistan are given below:

Table 4.1: Islamic Banks

No.	Islamic Bank
1	Albarakah Bank
2	Bank Islami
3	Meezan Bank
4	Dubai Islamic Bank
5	Burj Bank

List of Islamic branches of Conventional Banks in Pakistan are given below:

Table 4.2: Islamic branches of Conventional Banks

No.	Standalone Islamic branches
1	Soneri Bank Limited
2	National Bank of Pakistan
3	Bank AL Habib Limited
4	Bank of Khyber
5	Habib Metropolitan Bank

List of Conventional Banks in functional in Pakistan are listed below:

Table 4.3: Conventional Banks

No.	Conventional Banks
1	Allied Bank
2	Askari Bank
3	Bank Al Habib
4	Bank Alfalah
5	Bank of Khyber
6	Bank of Punjab
7	Soneri Bank
8	Habib Metropolitan Bank
9	Muslim Commercial Bank
10	Standard Chartered Bank

Furthermore, considering all different definitions of assets may complicate testing the capital crunch hypothesis. Therefore, we focused only on total assets rather than test all different definitions of assets. This approach works effectively because the proxy used for CR in this study is total equity/total assets whereas, proxy used for CAR is Basel capital/total risk weighted assets.

4.5 Overall Description of Variables

The two dependent variables i.e. change in deposits and loans are normalized by the total assets of start of the period.

Change in Equity capitals (ΔEQT) can occur because of losses and by the issuance of new equity funds. Changes in equity is also standardised by the start of the period total assets i.e. ΔEQT / TAt-1. It is expected that deposits and loans will show an increase due to increase in equity capital.

Some additional variables are included in the model to control the differences in demand and macroeconomic factors. Bank size is included to access its impact on the extension of loans and collection of deposits by banks. The proxy used for the size variable is the log of total assets i.e. log (TA).

As per Gambacorta and Mistrulli (2004) and Ehrmann et al. (2003) the lending behaviour of the banks could be influenced by the structure of balance sheet (with regard to security holdings of banks) so, we added another variable which is the liquidity ratio of the bank,. So, in this perspective, Liquidity ratio can be defined as ratio of other earning assets (i.e. securities and bonds)/ total assets.

In this study, we used monetary policy as a macroeconomic variable and is proxied by the inflation rate (INFL). Changes in real GDP are also including in this study for controlling the probable effects of business cycles on loans and deposits.

Overall descriptions of the variables which are used in this research are presented in following table:

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Control variables:	
ΔEQUITY (Change in equity)	ΔEQT = (current year equity-previous year equity)/Total assets (t-1)
SIZE (Bank size)	Size=log (total assets) Size variable is proxied by the log of total assets
LQDT (Liquidity ratio)	LQDT= other earning assets/total assets Other earning assets includes Bonds and Securities
INF (Inflation rate)	Inflation rate is a Macroeconomic variable. In this study, we used rate of inflation is as a proxy for monetary policy.
GDP (Change in real GDP)	Change in real GDP (Change in log GDP to control the probable effects of business series on deposits and loans).

This study used two diverse measurement of capital adequacy ratio i.e. CR and CAR in order to find whether banks source of fund (capital) and risk component shows a vital role in defining the effect of capital adequacy requirements on banks performance.in this study rate of inflation is used as a proxy for monetary policy.

Chapter 5

Empirical Framework

5.1 Introduction

This chapter provides the results for Islamic and conventional banks by using Estimated Generalized Least Square (EGLS) model. The relative analysis of the market influence between conventional banks and Islamic banks is the focus of several studies, such as Weill (2011), Petersen and Rajan (1995), and Ariss (2010). The importance of this contrast can be attributed to the significant impact of bank competitiveness on economic progress and growth. In this chapter we will present our empirical outcomes, their interpretation and discussion. We start our analysis by estimation our both empirical equations separately to test the capital adequacy requirements impact on the lending and deposit behaviours of both type of banking system in Pakistan. Summery statistics for all independent variables, all dependent variables and for control variables are also presented in this chapter.

5.2 Mean Value Analysis

Analyses for the mean values of capital adequacy ratio which are needed to contrast the discrepancies and variances of CAR among the conventional and Islamic banks are presented in this chapter. In this research we used two dissimilar dimensions of CAR, and the differences takes into account in their numerator and denominator. So, the two different measurements of CAR used for this study are:

1. Leverage ratio (CR) which is calculated as:

   CR= Total equity capital / total asset

2. Risk-based capital fraction (CAR) is calculated as:

CAR= Basel capital (Tier 1 and Tier 2) / risk weighted assets

Three further tests are conducted in this unit.

The first test conducted consists of all the 10 Islamic banks and all 10 conventional banks of the sample. However, on the basis of capitalization level; we separated our banks into 2 sub-categories i.e. the higher capitalized banks and the lower capitalized banks. We divided our sample into lower and high sub-categories for detecting whether the presence of capital crises (crunch) has any effect on the banking behavior. By dividing into lower and higher, we were able to examine that the effect of bank's capital fluctuations has a greater influence on banks with low capitalization level than higher capitalized banks. Second and the third tests are are conducted for lower and higher capitalised banks. So, In order to distinguish the lower and higher capitalized banks, this research used the mean values of CR and CAR as a baseline for each bank. Hence, all those that shows the capital ratio below the baseline (i.e. mean value) are considered as lower capitalised and the other banks that shows their capital ratio above the baseline (i.e. mean value ratio) are categorized as higher capitalized banks. The calculated mean values of the capital ratios (that are used as benchmark ratios) for both type of banks are presented in following table:

Table 5.1 - Mean Values of the Risk Weighted (CAR) and the Leverage Ratio (CR)

banks	Conventional banks		Islamic banks	
	CR (with Leverage ratio)	CAR (with Risk weighted ratio)	CR (with Leverage ratio)	CAR (with Risk weighted ratio)
Mean	0.0892	0.1383	0.1655	0.2328
Max	0.2000	0.3600	1.0000	0.6200
Min	0.0200	0.0100	0.0000	0.1000

5.3 Statistics Summary

The overall descriptions of variables used in this study are presented in the tables below: Table 5.2 presents the statistical summary for the risk weighted (CAR) and leverage ratios(CR) of all Islamic banks and Conventional banks. Table 5.3 and 5.4 shows statistical summary of variable that are used in lower capitalized Islamic and conventional with leverage(CR) and risk-weighted ratio(CAR) respectively. Whereas, table 5.5 and 5.6 shows statistical summary for variables which are used in higher capitalized Islamic and conventional banks with leveraged (CR) and risk-weighted ratio (CAR) respectively.

Table 5.2 - Statistical summary of variable used in conventional and Islamic banks

Variables	conventional banks				Islamic banks			
	Mean	Max	Min	Std Dev.	Mean	Max	Min	Std Dev.
Dependent variables:								
ΔDeposits	0.1323	0.6558	-0.1187	0.1037	0.4508	7.9392	-0.4071	0.9211
ΔLoans	0.0691	0.7842	-0.0458	0.1089	0.2558	5.4184	-0.6098	0.6494
Independent variables:								
CR	0.0892	0.2000	0.0200	0.0414	0.1655	1.0000	0.0000	0.1820
CMCR	0.0021	0.0455	-0.0060	0.0055	0.0070	0.2564	-0.4975	0.0682
CAR	0.1383	0.3600	0.0100	0.0516	0.2328	0.6200	0.1000	0.1340
CMCAR	0.0028	0.0376	-0.0068	0.0053	0.0059	0.2981	-0.6170	0.1148
ΔEQUITY	0.0178	0.2849	-0.0649	0.0345	0.0423	0.8478	-0.9951	0.1778
SIZE	8.4061	8.9700	7.4300	0.3334	7.1388	8.6400	5.0200	0.6915
LQDT	0.3683	0.6000	0.1200	0.1223	0.3544	0.9500	0.0200	0.1969
INFL	11.0922	20.290	7.1900	4.1139	11.0922	20.290	7.1900	4.1130

Note: ΔDeposits and ΔLoans refer to the change in deposits and change in loans. CR and CAR denotes capital adequacy ratio (with leverage ratio) and capital adequacy ratio (with risk-weighted ratio) respectively. CMCR is the interactive terms of CR calculated as (CR * ΔEQT/ TA_{t-1}) and CMCAR is the interactive term of CAR calculated as (CAR * ΔEQT/TA_{t-1}), SIZE, ΔEQUITY, LQDT, ΔLnGDP, and INFL refers to bank size (log total assets), change in equity, liquidity ratio (other earning assets/total assets), changes in real GDP and the inflation rate.

Table 5.3 - Statistical summary of variable used in low capitalized banks with leveraged ratios

Variables	conventional banks				Islamic banks			
	Mean	Max	Min	Std Dev.	Mean	Max	Min	Std Dev.
Dependent variables:								
ΔDeposits	0.1345	0.5746	-0.1187	0.0910	0.4265	7.9392	-0.3163	0.9758
ΔLoans	0.0726	0.5040	-0.0301	0.0807	0.2075	5.4184	-0.6098	0.6841
Independent variables:								
CR	0.0607	0.0800	0.0200	0.0160	0.0943	1.1600	0.0000	0.0310
CMCR	0.0007	0.0045	-0.0012	0.0007	0.0039	0.0763	-0.0033	0.0101
ΔEQUITY	0.0112	0.0653	-0.0649	0.0148	0.0354	0.8478	-0.2192	0.1113
SIZE	8.4390	8.8700	7.8500	0.2254	7.2533	8.6400	5.9600	0.6659
LQDT	0.3225	0.6000	0.1300	0.1001	0.3469	0.7700	0.0200	0.1783
INFL	11.326	20.290	7.1900	4.0939	10.897	20.290	7.1900	3.8426

Note: ΔDeposits and ΔLoans refer to the change in deposits and change in loans. CR and CAR denotes capital adequacy ratio (with leverage ratio) and capital adequacy ratio (with risk-weighted ratio) respectively. CMCR is the interactive terms of CR calculated as (CR * ΔEQT/ TA t − 1) and CMCAR is the interactive term of CAR calculated as (CAR * ΔEQT/TA t − 1), SIZE, ΔEQUITY, LQDT, ΔLnGDP, and INFL refers to bank size (log total assets), change in equity, liquidity ratio (other earning assets/total assets), changes in real GDP and the inflation rate.

Table 5.4 - Statistical summary of variable used in low capitalized banks with risk weighted ratios

Variables	conventional banks				Islamic banks			
	Mean	Max	Min	Std Dev.	Mean	Max	Min	Std Dev.
Dependent variables:								
ΔDeposits	0.1373	0.6558	-0.1187	0.1230	0.3265	1.7327	-0.3163	0.3814
ΔLoans	0.0894	0.7842	-0.0297	0.1293	0.1811	0.9692	-0.1661	0.2399
Independent variables:								
CAR	0.1075	0.1300	0.0100	0.0253	0.1625	0.2300	0.1000	0.0385
CMCAR	0.0018	0.0284	-0.0012	0.0038	0.0026	0.0224	-0.0047	0.0057
ΔEQUITY	0.0160	0.2849	-0.0649	0.0394	0.0160	0.1328	-0.0236	0.0309
SIZE	8.3928	8.8700	7.8500	0.2269	7.8748	8.6400	7.3300	0.3037
LQDT	0.3107	0.5000	0.1200	0.0908	0.3190	0.5700	0.1500	0.1152
INFL	11.5891	20.290	7.1900	4.3909	10.6677	20.290	7.1900	3.6302

Note: ΔDeposits and ΔLoans refer to the change in deposits and change in loans. CR and CAR denotes capital adequacy ratio (with leverage ratio) and capital adequacy ratio (with risk-weighted ratio) respectively. CMCR is the interactive terms of CR calculated as (CR * ΔEQT/ TA t − 1) and CMCAR is the interactive term of CAR calculated as (CAR * ΔEQT/TA t − 1), SIZE, ΔEQUITY, LQDT, ΔLnGDP, and INFL refers to bank size (log total assets), change in equity, liquidity ratio (other earning assets/total assets), changes in real GDP and the inflation rate.

Table 5.5 - Statistical summary of variable used in high capitalized banks with leverage ratios

Variables	conventional banks				Islamic banks			
	Mean	Max	Min	Std Dev.	Mean	Max	Min	Std Dev.
Dependent variables								
ΔDeposits	0.1290	0.6558	-0.0102	0.1215	0.5494	2.0265	-0.4071	0.6686
ΔLoans	0.0640	0.7842	-0.0458	0.1423	0.4518	1.3779	-0.0673	0.4480
Independent variables								
CR	0.1319	0.2000	0.0900	0.0290	0.3995	1.0000	0.1700	0.2632
CMCR	0.0041	0.0455	-0.0060	0.0083	0.0194	0.2564	-0.4975	0.1551
ΔEQUITY	0.0160	0.2849	-0.0649	0.0394	0.0704	0.5962	-0.9951	0.3380
SIZE	8.3566	8.9700	7.4300	0.4488	6.7628	7.5500	5.0200	0.6532
LQDT	0.3969	0.5900	0.1200	0.1425	0.3790	0.9500	0.0200	0.2523
INFL	10.740	20.290	7.1900	4.1766	11.7309	20.290	7.1900	4.9546

Note: ΔDeposits and ΔLoans refer to the change in deposits and change in loans. CR and CAR denotes capital adequacy ratio (with leverage ratio) and capital adequacy ratio (with risk-weighted ratio) respectively. CMCR is the interactive terms of CR calculated as (CR * ΔEQT/ TA t − 1) and CMCAR is the interactive term of CAR calculated as (CAR * ΔEQT/TA t − 1), SIZE, ΔEQUITY, LQDT, ΔLnGDP, and INFL refers to bank size (log total assets), change in equity, liquidity ratio (other earning assets/total assets), changes in real GDP and the inflation rate.

Table 5.6 - Statistical summary of variable used in high capitalized banks with risk weighted ratio

Variables	conventional banks				Islamic banks			
	Mean	Max	Min	Std Dev.	Mean	Max	Min	Std Dev.
Dependent variables								
ΔDeposits	0.1241	0.2755	0.0201	0.0604	0.5208	7.9392	-0.4071	1.1139
ΔLoans	0.0358	0.1661	-0.0458	0.0478	0.2978	5.4184	-0.6098	0.7918
Independent variables								
CAR	0.1891	0.3600	0.1400	0.0431	0.4309	0.6200	0.2600	0.1037
CMCAR	0.0044	0.0376	-0.0068	0.0069	0.0153	0.2981	-0.6160	0.2320
ΔEQUITY	0.0571	0.8478	-0.9951	0.2205	0.0571	0.8478	-0.9951	0.2205
SIZE	8.4279	8.9700	7.4300	0.4617	6.7522	7.5300	5.0200	0.4945
LQDT	0.4632	0.6000	0.0200	0.1081	0.3730	0.9500	0.0200	0.2272
INFL	10.273	20.290	7.1900	3.5215	11.3152	20.290	7.1900	4.3596

Note: ΔDeposits and ΔLoans refer to the change in deposits and change in loans. CR and CAR denotes capital adequacy ratio (with leverage ratio) and capital adequacy ratio (with risk-weighted ratio) respectively. CMCR is the interactive terms of CR calculated as (CR * ΔEQT/ TA t − 1) and CMCAR is the interactive term of CAR calculated as (CAR * ΔEQT/TA t − 1), SIZE, ΔEQUITY, LQDT, ΔLnGDP, and INFL refers to bank size (log total assets), change in equity, liquidity ratio (other earning assets/total assets), changes in real GDP and the inflation rate.

- For both type of banking sectors, it may be noted that the credit variation is lower than that of deposits or we can say that the deposits are showing a higher growth rate than that of loan in both types of banking.

- Comparing conventional and Islamic banking, we noticed that loan variation of Islamic banks is higher. This is explained by the average capitalization level which is higher for the Islamic banking sector.
- Above table also indicate one interesting point that the growth of the equity in Islamic banks is greater than that of its counterparts. This could be described by the principle of profit and risk sharing which is used in Islamic banking through the equity securities.
- In both cases (i.e. leveraged and risk weighted ratio) highly capitalized Islamic banks shows a higher loans growth than the low capitalized banks. This result can be interpreted as highly capitalised Islamic banks are giving more loans than the low capitalized Islamic banks. On the other hand, in case of conventional banks, lower capitalised conventional banks shows higher loan growth than high capitalised conventional banks which means that lower capitalized conventional banks are giving more credits than that of the higher capitalized conventional banks.

5.4 Empirical Results

Table 5.7 shows the regression results for all Islamic and Conventional banks after taking into account all of the control variables. Change in deposits and change in loans are taken as dependent variables. The two dissimilar ways of computing capital ratio i.e. leveraged ratio and risk weighted ratio are also employed. By using the capitalisation mean value analysis we divided our sample in 2 sub divisions (i.e. higher and lower) for understanding in a better way that how capitalisation requirements effects lower and high capitalized banks. Outcomes for lower capitalized banks for both conventional and Islamic and banks are shown in Table 5.8

However, Table 5.9 provides the outcomes for the higher capitalized Islamic and Conventional banks.[8]

[8] However, for high capitalised Islamic Banks, the data of capital adequacy ratio (CAR) with risk weighted assets (CAR) of standalone Islamic branches of conventional banks is not available this is because currently only five fully developed Islamic banks were operational in Pakistan. However numerous other conventional banks have also begun to operate their standalone Islamic banking branches in Pakistan but the relevant data of Islamic banking branches of conventional banks for CAR calculation is not yet published, therefore, the data of capital adequacy ratio with risk weighted assets and also of some other variables is not available.

Table 5.7 - Results of EGLS estimation model using leveraged and risk based capital ratio

Indp variable	Dependent variables							
	Conventional banks				Islamic banks			
	Leverage ratio		Risk-based Capital ratio		Leverage ratio		Risk-based capital ratio	
	ΔDeposits	ΔLoans	ΔDeposits	ΔLoans	ΔDeposits	ΔLoans	ΔDeposits	ΔLoans
C	0.97	1.12	1.51**	1.72**	1.09***	3.53***	1.06	0.28
	(1.33)	(1.50)	(1.94)	(2.74)	(1.62)	(3.74)	(0.61)	(0.25)
CR(− 1)	2.21***	1.71***			1.08***	0.40**		
	(5.30)	(4.03)			(5.24)	(2.13)		
CMCR	-22.29***	-6.52			0.61	-1.61		
	(-4.19)	(-1.20)			(0.32)	(-1.26)		
CAR(−1)			0.83 ***	0.89***			1.23**	0.86**
			(2.89)	(3.44)			(2.13)	(2.25)
CMCAR			-10.19***	-7.79***			-36.54***	-27.87***
			(-3.58)	(-3.05)			(-6.13)	(-7.08)
ΔEQUITY	5.90***	3.46***	3.11***	2.97***	0.56	0.79	16.27***	10.90***
	(6.82)	(3.92)	(7.41)	(7.88)	(0.68)	(1.44)	(7.72)	(7.83)
SIZE(t-1)	-0.12*	-0.20**	-0.15*	-0.25***	-0.004	-0.44***	-0.09	-0.10
	(-1.50)	(-2.32)	(-1.76)	(-3.10)	(-0.07)	(-3.78)	(-0.48)	(-0.79)
LQDT(t−1)	0 .11	0.40***	-0.07	0 .29**	-0.67***	0.45**	0.46	0.69***
	(0.92)	(3.05)	(-0.50)	(2.28)	(-3.34)	(2.49)	(1.18)	(2.67)
INFL	-0.003	0.01***	-0.009**	0.01**	-0.03*	-0.02*	-0.02*	0.01
	(-0.96)	(3.52)	(-2.12)	(2.58)	(-1.60)	(-1.74)	(-1.60)	(1.03)
GDP	-0.007	0.03***	-0.01	0.02**	-0.09	-0.05	-0.07	0.03
	(-0.66)	(2.99)	(-1.38)	(2.09)	(-1.49)	(-1.19)	(-1.51)	(0.91)
Hausman (P-values)	0.00	0.00	0.00	0.00	0.18	0.03	0.06	0.86
R^2	0.70	0.72	0.65	0.74		0.63		
Adj R^2	0.61	0.65	0.55	0.68		0.47		
F Stat	5.57	4.75	3.19	3.93		2.27		
Wald					49.17		156.70	103.78

The Hausman test has the following hypothesis:
H_0: P>0.05 Random effect model is appropriate.
H_1: P<0.05 Fixed effects model is appropriate.
ΔDeposits and ΔLoans refer to the change in deposits and change in loans. CR and CAR denotes capital adequacy ratio (with leverage ratio) and capital adequacy ratio (with risk-weighted ratio) respectively. CMCR is the interactive terms of CR calculated as (CR * ΔEQT/ TA t − 1) and CMCAR is the interactive term of CAR calculated as (CAR * ΔEQT/TA t − 1), SIZE (t−1), ΔEQUITY, LQDT(t−1) , ΔLnGDP, and INFL refers to one period lagged of the bank size, changes in equity, one period lagged of liquidity ratio, changes in real GDP and the inflation rate.
*** Significance at 1% level.
** Significance at 5% level.
* Significance at 10% level.

Table 5.8 - Results of EGLS estimation model for low capitalized banks using leveraged and risk based capital ratio

Indp variable	Dependent variables							
	Conventional banks				Islamic banks			
	Leverage ratio		Risk-based Capital ratio		Leverage ratio		Risk-based capital ratio	
	ΔDeposits	ΔLoans	ΔDeposits	ΔLoans	ΔDeposits	ΔLoans	ΔDeposits	ΔLoans
C	2.31**	2.69	1.61	2.11**	1.42	3.59***	1.89**	0.66
	(2.38)	(1.73)	(1.37)	(2.22)	(0.88)	(2.80)	(2.16)	(1.54)
CR(-1)	2.05**	1.63**			4.22***	1.34		
	(2.54)	(3.10)			(3.96)	(1.59)		
CMCR	34.60	45.13			30.01*	21.27		
	(1.04)	(1.02)			(1.70)	(1.52)		
CAR(-1)			1.52***	1.30***			1.28**	0.98***
			(2.61)	(2.77)			(1.98)	(5.53)
CMCAR			-11.55	11.81			-189.5***	-49.44***
			(-0.77)	(0.97)			(-5.05)	(-2.87)
ΔEQUITY	3.37**	0.63	3.09**	0.93	-2.27	-0.34	39.86***	13.58***
	(2.02)	(0.56)	(2.15)	(0.80)	(-1.41)	(-0.27)	(6.19)	(4.36)
SIZE(−1)	-0.27**	-0.37*	-0.17	-0.29***	-0.18	-0.47***	-0.29**	-0.14**
	(-2.37)	(-1.92)	(-1.31)	(-2.72)	(-0.95)	(-2.98)	(-2.32)	(-2.15)
LQDT(t−1)	0.27	0.61*	-0.18	0.32*	-0.24	0.47*	1.30***	0.74***
	(1.53)	(2.07)	(-0.79)	(1.77)	(-0.75)	(1.83)	(2.95)	(2.80)
INFL	-0.008*	0.007**	-0.007	0.009**	-0.009	-0.02	0.009	0.009**
	(-1.70)	(2.23)	(-1.35)	(2.00)	(-0.44)	(-1.48)	(0.93)	(2.53)
GDP	-0.02*	0.01*	-0.01	0.02	-0.01	-0.04	-0.05**	0.01
	(-1.87)	(2.14)	(-0.68)	(1.61)	(-0.26)	(-0.94)	(-2.31)	(1.12)
Hausman (P-values)	0.00	0.01	0.00	0.00	0.00	0.050	0.90	0.99
R^2	0.68	0.63	0.74	0.84	0.54	0.45		
Adj R^2	0.52	0.52	0.62	0.78	.32	.21		
F Stat	3.54	2.48	3.08	2.88	2.26	1.93		
Wald							176.91	104.14

The Hausman test has the following hypothesis:
H_O: P>0.05 Random effect model is appropriate.
H_1: P<0.05 Fixed effects model is appropriate.
ΔDeposits and ΔLoans refer to the change in deposits and change in loans. CR and CAR denotes capital adequacy ratio (with leverage ratio) and capital adequacy ratio (with risk-weighted ratio) respectively. CMCR is the interactive terms of CR calculated as (CR * ΔEQT/ TA t − 1) and CMCAR is the interactive term of CAR calculated as (CAR * ΔEQT/TA t − 1), SIZE (t−1), ΔEQUITY, LQDT(t−1) , ΔLnGDP, and INFL refers to one period lagged of the bank size, changes in equity, one period lagged of liquidity ratio, changes in real GDP and the inflation rate.

*** Significance at 1% level.

** Significance at 5% level.

* Significance at 10% level.

Table 5.9 - Results of EGLS estimation model for high capitalized banks using leveraged and risk based capital ratio

Indp variable	Dependent variables					
	Conventional banks				Islamic banks	
	Leverage ratio		Risk-based Capital ratio		Leverage ratio	
	ΔDeposits	ΔLoans	ΔDeposits	ΔLoans	ΔDeposits	ΔLoans
C	-0.88	-1.21	0.56	-0.41**	0.41	-0.31
	(-0.71)	(-1.00)	(1.35)	(-1.98)	(0.19)	(-0.47)
CR(− 1)	1.76**	1.88**			0.87*	0.65**
	(2.22)	(2.42)			(1.63)	(2.06)
CMCR	-30.79**	-25.68*			-4.61	1.70**
	(-2.26)	(-1.92)			(-0.92)	(2.36)
CAR(−1)			0.02	0.52**		
			(0.05)	(2.11)		
CMCAR			-6.73***	-5.07***		
			(-3.15)	(-2.75)		
ΔEQUITY	7.52***	7.14***	1.97**	2.20***	3.09	-0.005
	(3.37)	(3.25)	(2.16)	(2.99)	(1.38)	(-0.01)
SIZE(t-1)	0.07	0.04	-0.03	0.02	0.01	-0.06
	(0.54)	(0.35)	(-0.83)	(1.24)	(0.06)	(-0.51)
LQDT(t-1)	0.12	0.40**	0.09	0.11***	-1.03*	0.07
	(0.66)	(2.11)	(1.21)	(3.23)	(-1.75)	(0.13)
INFL	0.0009	0.02***	-0.007	0.005	-0.02	0.02
	(0.14)	(3.05)	(-1.33)	(0.80)	(-0.30)	(0.77)
GDP	0.001	0.04**	-0.03**	0.004	0.06	0.14
	(0.08)	(2.02)	(-2.37)	(0.17)	(0.21)	(0.92)
Hausman (P-values)	0.00	0.00	0.81	1.00	0.98	0.86
R^2	0.85	0.89				
Adj R^2	0.69	0.80				
F Stat	5.93	5.89				
Wald			9.95	13.28	26.08	22.56

The Hausman test has the following hypothesis:

H_0: P>0.05 Random effect model is appropriate.

H_1: P<0.05 Fixed effects model is appropriate.

ΔDeposits and ΔLoans refer to the change in deposits and change in loans. CR and CAR denotes capital adequacy ratio (with leverage ratio) and capital adequacy ratio (with risk-weighted ratio) respectively. CMCR is the interactive terms of CR calculated as (CR * ΔEQT/ TA t − 1) and CMCAR is the interactive term of CAR calculated as (CAR * ΔEQT/TA t − 1), SIZE (t−1), ΔEQUITY, LQDT(t−1) , ΔLnGDP, and INFL refers to one period lagged of the bank size, changes in equity, one period lagged of liquidity ratio, changes in real GDP and the inflation rate.

*** Significance at 1% level.

** Significance at 5% level.

* Significance at 10% level.

There is still very limited data available on Islamic banks. By the end of year 2016, only five fully developed Islamic banks were working in Pakistan. Although, Meezan bank was the first to receive license in 2002 -- all other banks started their operations as late as 2007. Because of this, particularly the data for years 2005 and 2006 is very small. With this restricted sample size and data, the results being concluded will be impacted.

5.5 Interpretation

In above tables we have presented the empirical outcomes of our baseline models to examine conventional and Islamic banking's market power impact on the association between the behaviours of both the types of banking system and capital regulations in terms of advances and deposits.

5.5.1 Capital Requirements and Bank Behaviour Relationship

A supply side problem is associated with shrinking of banks' lending as per Berger and Udell (1994). Based on supply side problem, the acute reductions in bank's capital is the reason it is not able to lend aggressively. Therefore, it is interpreted that bank behaviour regarding both deposits and loans is directly related to increase and decrease in bank capital.

Kim, Lee, and Park (2002) studied the capitalization effect on the behaviour of the banking loans through the assumption of capital rationing, which they defined as the deficiency of the liquidity in market because of the restrictions of the banking credits to meet their capital requirements. By looking at Tables 5.7, 5.8 and 5.9 we can say that the deposits and loans of Islamic and conventional banks positively react to the evolution of the funding ratio.

The given results indicate that in both types of banking systems deposit growth and loan growth reacts positively to the capital variations. Most of coefficients for β_1 and α_1 for ΔDeposits and ΔLoans are significantly important and clearly linked with capital changes.

The positive and significant coefficients of change in loans and change in deposits is the concrete proof that banks borrowings and lending's respond and changes in exactly the same way as that of its capital. According to the supply side theory banks credit behaviours are mainly influenced by banks capitalization level and this supply side theory is exclusively backed and supported by the positive coefficients of Δ loans. Likewise, positive coefficients of Δ Deposits supports that increase in deposits of the banks are also greatly influenced by the fluctuations in the level of banks capital. This result also recommends that, for the banks, deposits are actually the main source of capitals (funding's). This significant and positive impact of capital on banking behaviours (lending and borrowing) approves the already accepted and recognised evidence of Peek and Rosengren (1995), Chiuri, Ferri, and Majnoni (2002), Yudistira (2003), and Schmitz (2005).

In case of all conventional banks, From Table 5.7, the coefficient of leveraged capital is 2.21% and 1.71% significant at 1% level. This means the 1% increase in leveraged capital ratio leads to an increase of 2.21% and 1.71% in overall bank deposits and loans respectively. However, In case of all Islamic banks, from Table 5.7, the coefficient of leveraged capital is 1.08% significant at 1% and 0.40% which is significant at 5%. This says that 1% increase in leveraged capital ratio leads to an increase of 1.08% and 0.40%in overall bank deposits and loans respectively. Although deposit and loan growth in both Islamic banks and Conventional banks respond positively to variations in capital but conventional banks shows greater response to variations than its counterparts.

Similarly, from Table 5.7, the coefficient of Risk-based Capital ratio in case of conventional and Islamic banks, for change of deposits, are 0.83% (significant at 1%level) and 1.23% (significant at 5% level) respectively shows that 1% increase in risk-based capital ratio leads to an increase of 0.83% and 1.23% respectively in deposits of banks but Islamic banks show bigger reaction to the variation in risk-based capital than conventional banks. However, in case of lending behaviours of banks, the coefficient of Risk-based capital ratio for conventional banks is 0.89% (significant at 1%level) and 0.86% (significant at 5% level) for Islamic banks shows that 1% increase in risk based capital ratio will bring 0.89% and 0.86% increase respectively in lending behaviours of banks.

From table 5.8, In case of low capitalised banks, the coefficient of leveraged capital for change in deposits of Conventional banks and Islamic banks are 2.05% (significant at 5% level) and 4.22%(significant at 1%level) means that 1% increase in leveraged capital will lead to 2.05% and 4.22% increase in deposits of Conventional banks and Islamic banks respectively. Islamic banks show a greater response to change in variations than Conventional banks. For lending behaviours, the coefficient of leveraged capital for change in loans of Conventional banks and Islamic banks are 1.63% (significant at 5% level) and 1.34% respectively. This shows that if leveraged capital is increased by 1% than Conventional banks and Islamic banks' lending attitude shows an increase of 1.63% and 1.34% correspondingly.

Similarly, from Table 5.8, the coefficient of Risk-based capital for change in deposits, in case of low capitalised conventional and Islamic banks are 1.52% (significant at 1%level) and 1.28%(significant at 5% level) respectively indicates that if Risk-based capital is increased by 1% than deposits of Conventional banks and Islamic banks will show an increase of 1.52% and 1.28% respectively. Considering loans pattern of both banking systems, if Risk-

based capital increases by 1 unit than lending will show an increase of 1.30% (significant at 1%level) for Conventional banks and 0.98% Islamic banks (significant at 1%level).

In case of high capitalised bank, from Table 5.9, the coefficient of leveraged capital for change in deposits of Conventional banks and Islamic banks are 1.76% (significant at 5% level) and 0.87% (significant at 10% level) respectively. This indicates that if leveraged capital increases by 1 unit the deposits of Conventional banks and Islamic banks shows an increase of 1.76% and 0.87% respectively. Similarly, comparison of lending behaviour shows that if leveraged capital increase by 1 unit the lending behaviour of Conventional banks and Islamic banks shows an increase of 1.88% (significant at 5% level) and 0.65% (significant at 5% level) respectively. And, the coefficients of Risk-based capital are 0.02% and 0.52% (significant at 5% level) for changes in deposits and loans, respectively, meaning that 1% increase in Risk-based capital leads to an increase of 0.02% and 0.52% in deposits and lending activities of conventional banks.[9]

Lower-capitalized Conventional banks and Islamic banks respond strongly to a capital change as compared to their their higher-capitalized rivals. This means that the execution of minimum capital requirements puts a negative and adverse effect on the supply of bank loans.

5.5.2 Capital Crunch Hypothesis

Kim et al. (2002) argues that the capital crunch means the severe lack of the liquidity in markets owing to the banks' aversion and resistance towards credit extension to satisfy and cater for capital requirements. The shortage in bank capital negatively affects bank credit

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[9] Relevant data for CAR (Risk-based capital ratio) calculation of Islamic Banking Branches of conventional banks is not yet published separately; hence, for high capitalised Islamic banks because of insufficient data for calculation of CAR we are unable to find the behaviour of deposits and advances to a change in capital.

supply which also results in reduction in bank lending. It is reported by Peek and Rosengren (1995), in the U.S., capital requirement constraints paved way to financial crisis of 1990 and 1991. Chiuri et al. (2002) also accused higher minimum capital requirements which are applied by regulations in reduction of bank credit.

For detecting whether the presence of capital crises (crunch) describes the banking behaviour's, we examine whether the effect of bank capital fluctuations has a greater influence on the banks with low capitalization level than higher capitalized banks.

The results or the outcomes are inconclusive and indecisive for both the Islamic banks and conventional banks, as verified by interaction terms in rows 4 and 6 of Tables 5.7, 5.8 and 5.9. For conventional banks, almost all the interactive terms show negative coefficient on all banks, for high capitalised and lower capitalised banks which specifies that these banks are capital constrained because overall capital ratio for most of the banks falls below than the required level.

The results are inconclusive for Islamic banks as well. Islamic banks mostly shows negative coefficient for Islamic banks for all banks (except some). This backs capital crunch hypothesis which means that the capitalization level affects the banks' loanss supply. These findings indicate that Islamic banks are capital constrained as well; and the banks are required to control their portfolios riskiness.

The results show that the borrowing and lending of both conventional banks and IB's could be defined by capital crunch hypothesis. These findings show that strict implementation of capital is very imperative for both kinds of banking system, because both of the banking systems are sensitive to quality changes of their portfolio. So generally, it can be said that

capital crunch theory supported for both IBs and CBs for the reason that mostly the banks records the capital below the minimum capital requirements.

5.5.3 Impact of Control Variables

We have also introduced, in our estimation, other control variables that can affect the behaviour of the Islamic and conventional bank.

Not only the credit supply affects the banks' loaning and borrowings, but such behaviours of the banks are also affected by the demand for loans. Hence in this study we included specific variables of all the banks that directly affect banks supply of loans. Monetary policy is also incorporated in estimation for controlling demand shocks.

The results from columns 6–9 of Tables 5.7, 5.8 and 5.9 show negative effect of size (as measured by natural logarithm) on the Islamic banks' ΔDeposits and ΔLoans. The negative coefficient of size for change in Deposits can be explained as the bigger banks (in the form of loans) hold a quite small portion of their assets. As their central source of short-term financing, they might attract a comparatively larger part of wholesale non-deposit financing (funding).

This indicates that Islamic banks in our sample are very well diversified and spread in its assets and do not rely only on their credits and deposits. This is because of the fact that Islamic banks offer different products of Islamic financing. So, The significant and negative coefficients for the variable size (log of total assets) is also proven by Peek and Rosengren (1995), Schmitz (2007) and Kunt and Huizinga (2011).

On the other hand, for conventional banks, results show mixed response between change in deposits and change in Loans. Most of fallouts show a negative relationship between bank

size and deposit and loan growth. However, we also find some positive association b/w bank size and Δdeposits and Δloans. Positive relationship could be described by 'too big to fail' theory, whereby conventional banks with higher capitalisation will deliver more advances as they grow bigger.

For all Islamic banks and for all three cases of conventional banks, the significant positive coefficient of change in equity shows that credit activities are exactly in route with increases in equity however in case of lower capitalised Islamic banks change in equity shows negative relation for leverage ratio.

It is verified, through variable liquidity as calculated by the ratio of the liquid assets to total assets, that behaviour of banks are determined by capitalization level and not via liquidity position of banks. The results of both the groups mostly showed a positive coefficients for Δ Loan however a negative coefficients for Δ Deposits (except some) which confirms that their behaviours is determined by the capitalization level. The negative impression explained that with the purpose of meeting the required capital level, banks will prefer to use their liquid assets instead of their deposits.

Taking into explanation, the special effects of macro-economic situations on banking behaviours, we incorporated two major control variables i.e. the monetary policy and the changes in real GDP. We used inflation rate (INFL) as a proxy for monetary policy. High inflation results from low rate of interests and excess money supply in market. The consequence of INFL on loan and deposits changes is contingent upon its probable and fast banks response to the inflation rate (Revell, 1979). In possible conditions, banks will transform its prices and the rate of interest to provide compensation to the moneylenders for the decline (weakening) in their purchasing power over the loans life. At the same phase,

depositors and investors will shrink their savings. Consequently, a positive association of inflation is anticipated with loan growth, and a negative association of inflation is anticipated with that of deposit growth.

On the other hand, under unexpected conditions, negative impact of INFL is anticipated on loan supply, because the ambiguity and doubtfulness makes banks extra vigilant and attentive in providing advances and loans. However, INFL is anticipated to have a positive association with deposit changes.

For Islamic banks as well as for conventional banks the impact of inflation rate appears mixed and inconclusive in our study. There is a mostly significant and negative impact of INFL on Δ Deposits and Δ Loan for Islamic banks in all three tests. So, we can say that, behaviours of Islamic banks are not affected by inflation rate changes, which recommends that Islamic banks are less exposed to the macro-economic changes.

However, in conventional banks, INFL has a significant, negative influence change in Deposits and positive influence on Loan changes. Negative impact on Deposits changes could be taken as conventional banks shrinking their funds supply (deposits), for the reason of the ambiguity of the adverse movements in the price. The positive influence on Loan changes advocates that if a rise in inflation is expected, banks must modify their interest rates for backing a decrease in the rate of growth.

Chapter 6

Conclusion and Implication of Policies

6.1 Introduction

Banking is the most regulated sector by supervisory authorities and governments. This is because banks mostly deal and do business based on public money. The supervisors and international standard setting organizations from time to time fixed different capital ratios to safeguard and guarantee the reliability, solidity and stability of banking industry. In this esteem, Basel accords issuance through Bank for International Settlements (BIS) is thought to be a chief stepping-stone. Till now three Basel accords are being issued by the Bank for International Settlements (Basel-I was issued in 1988, Basel-II was in 2006, and the third Basel in 2010) which emphases on increasing and improving capital requirements for banks Now, Islamic banking is also the part of world-wide financial system so they also derive under Basel Accords and universal best practices. For Islamic financial organisations, Islamic Financial Services Board (IFSB) is the general principles and standards setting organisation. Islamic Financial Services Board has strongly implemented and executed Basel-II Accord with various amendments that cover distinctive risks which are involved in Islamic banking (i.e. IFSB-2 and IFSB-7) for Islamic banks.

Recent global financial crisis has increased the interest of banking managers and regulators to classify the relationship and the connection between leverage effect, market structure and the banks size.

Islamic financial system is Shariah based system which focuses on equal division of profit and loss. Preferably, this profit and loss sharing principle should decrease the risk of loss experienced by Islamic banks; however, because of some real hurdles like those of market

imperfections including information irregularity such ideal and superlative conditions are seldom available. With such problems being confronted and challenged, the leaders also respond in inadequately which affects power, solidity and productivity of the banks.

This research can be serves as a guide in a number of ways. Examining and simultaneously comparing lending and deposits behaviours of both type of banking systems prevailing in Pakistan in different competitive conditions is a new area for the academics, as they discover many topics linked to it. Our study explores and examines the deposit and lending behaviours of both type of banking systems in Pakistan. To meet this goal, we have chosen a sample of 10 conventional banks, 5 full-sized Islamic banks and 5 conventional bank's impartial and standalone Islamic branches during the period 2005–2014. We divided banks into two sub-categories i.e. lower and higher capitalized banks. In this study we also used two diverse measurement of capital adequacy ratio i.e. leveraged ratio (CR) and risk weighted assets (CAR). We used both the fixed and the random effects panel regression techniques. The aim behind this research is also to enrich the existing literature empirically by testing three hypotheses: First, investigating the reaction of deposits and loans growth to a change in capital adequacy ratio in conventional banks and Islamic banks. Secondly testing the applicability of capital crunch phenomenon to both conventional and Islamic banks. Lastly, whether the banks loan supply is affected by the implementation of minimum capital requirement.

6.2 Major Findings

This research documents many remarkable facts and conclusions. We find that capital requirements have a significant impact on the lending and deposit actions of conventional and Islamic banks of the sample. There exists a strong and positive connection and relationship

between banks capitaal and the deposit and the loan growth for both conventional and Islamic banks.

However, while testing the impact of capital requirements by using interaction terms we find mixed outcomes. Our results show that the capital crunch hypothesis seems applicable and relevant to both conventional banks and Islamic banks. We also find that the growth of deposit growth in all Islamic plus in all conventional banks is higher as compared to loan growth. While the comparison of lending and deposits behaviours of Islamic and conventional banks demonstrates that credit variations in Islamic banks is higher than that of its counterparts. Another interesting point is that the growth of equity in Islamic banks is greater than that of conventional banks.

6.3 Policy Implications

Based on the intensive research conducted during the study, the corresponding findings can enormously contribute in effectively creating, implementing and managing capital adequacy requirements in order to improve lending and deposit behaviours for both conventional banks and the Islamic banks in the in Pakistan. This study can assist regulators and governing bodies in transforming their policies according to the findings of the research to ensure better attitude of banks towards lending and deposit with regards to applicable capital adequacy requirements. The incorporation of changes based on this study can have both short-term and long-term advantages.

The shift in lending and deposit behaviours of banks has policy implications for the regulators and governing authorities to keep a tab on whether enforcing a resilient and high CAR can effect on the earnings, equity and assets of conventional and Islamic banks in the way they carry-out their business initiatives and goals. Furthermore, for the development of

financial sector and progress of economy, it is most vital to take such initiatives and decisions which lead to the growth of banking sector on national and global level. For Islamic banks, the authorities and governing bodies need to pay more attention on the business efficiency and profitability based on the principles of Shariah for long-term beneficial results. Like conventional banks, government of Pakistan needs to introduce such policies that persuade Islamic banks to embrace and implement advanced technologies for development, improvement and progress to gain more profit while reducing inefficiencies.

6.4 Limitations of the Study

We are living in an environment which can hardly be called Islamic. In such a situation the full Islamic financial system cannot be assessed or compared.

Islamic banks operating in Pakistan have inadequate and limited data sets. At present, there are merely five full-sized Islamic banks that are functioning in Pakistan. Many of the conventional banks have opened their standalone Islamic divisions which work according to principles and rules prescribed by Shariah. But a lot of data is missing, for instance, the data of capital adequacy ratio using risk weighted assets for standalone Islamic branches of conventional banks is not yet available separately in detail because such conventional banks do not publish any separate annual financial statements of their standalone Islamic branches in detail, therefore, we were not able to get the data of these variable which effects our results. So, insufficient data and small sample size of Islamic banks will have a consequence on the overall results.

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