

Monetary Policy Transmission Mechanism: Exploring the Role of Islamic *versus* Conventional Banks



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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the Name of Allāh, the Most Gracious, the Most Merciful

اللَّهُمَّ صَلِّ عَلَى مُحَمَّدٍ وَّعَلَى آلِ مُحَمَّدٍ كَمَا
صَلَّيْتَ عَلَى ابْرَاهِيمَ وَّعَلَى آلِ ابْرَاهِيمَ أَئْلَكَ
حَمِيدَةً مَّجِيدَةً

اللَّهُمَّ بَارِكْ عَلَى مُحَمَّدٍ وَّعَلَى آلِ مُحَمَّدٍ كَمَا
بَارَكْتَ عَلَى ابْرَاهِيمَ وَّعَلَى آلِ ابْرَاهِيمَ أَئْلَكَ
حَمِيدَةً مَّجِيدَةً

وَأَحَلَّ اللَّهُ الْبَيْعَ وَحَرَمَ الرِّبَا

Allah has permitted trade and prohibited usury.
Al-Quran: 2:275

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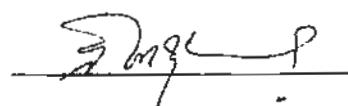
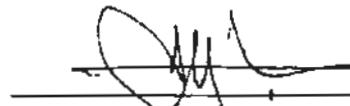
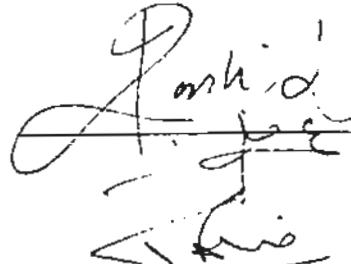
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Dedication

This dissertation is dedicated to Prophet of Mercy Muhammad (ﷺ) who enlightened humanity with divine verses of true knowledge. Then to my spiritual mentor, Khawaja Qamar ud Din Sialvi whose support is felt in every single moment to proceed further confidently. Then, my parents, Syed Abdul Ghafoor Shah and Rehmat Bi who have always loved me, trusted in my capabilities, felt proud in introducing me and prayed for my success. Also, to Shaherbano to whom I am truly grateful for understanding my professional life as a wife and facilitating me to work with full concentration.

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“Remember Me. I will remember you and be grateful to Me and never be thankless to Me” [2:152].

O Allah send blessings upon Prophet (ﷺ), his family, and companions. As You said:

“Indeed, Allah confers blessings upon Prophet (ﷺ) and His angels too. O believers! You too praise him, and you should greet him in the best way of greeting” [33:56].

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Monetary Policy Transmission Mechanism: Exploring the Role of Islamic *versus* Conventional Banks

Abstract

The transmission of monetary policy has recently received increased attention, especially with respect to the efficiency of banks' credit channel. Yet, we know less about the relative role of Islamic banking in monetary policy transmission mechanism. This study therefore empirically examines the impact of monetary policy on the credit supply of Islamic *versus* conventional banks using an unbalanced panel dataset over the period 2005-2016 for Pakistan and Malaysia. To mitigate the problem of endogeneity, the robust two-step system-Generalized Method of Moments (GMM) estimator is applied. While estimating the effects of three alternative measures of monetary policy on banks' credit supply, several bank-specific variables are included in the specification as control variables.

By estimating the baseline models for each country, we provide strong evidence on the existence of credit channel of monetary policy in Pakistan and Malaysia. The results from the extended model indicate that Islamic banks respond less to monetary policy as compared to their conventional counterparts. Further, the baseline models are extended on basis of size and liquidity to investigate the credit channel of monetary policy transmission mechanism. We have examined that the monetary policy indicators affected the small-sized banks more as compared to the large-sized banks in Pakistan and Malaysia. The same empirical evidence is found consistent in examining the interacted dummies of the small-sized Islamic banks versus the large-sized Islamic banks and the small-sized conventional banks versus the large-sized conventional banks. Furthermore, we have examined that the credit supply of the less-liquid banks is more respondent to monetary policy measure as compared to the more-liquid banks in Pakistan and Malaysia. The same empirical evidence is found consistent in examining the interacted dummies of the less-liquid Islamic banks versus the more-liquid Islamic banks and the less-liquid conventional banks versus the more-liquid conventional banks. At last, we have compared the effectiveness of credit channel between Pakistan and Malaysia. We analysed the coefficient values of interacted terms with monetary policy measure of all estimated models and found that credit channel through all types of banks is more respondent in Malaysian market as compared to that of Pakistan.

The relatively less response of Islamic banks to monetary policy may make it difficult for the central bank to achieve the desired objectives of the monetary policy. Our findings suggest that for an effective monetary policy, there is a vital need to consider the nature of Islamic banking while devising the monetary policy instruments to manage credit supply in the economy. Further, the results imply that the central banks; SBP and BNM need to revisit the monetary policy transmission through credit channel for Islamic banks, especially in economies with a dual (Islamic and conventional) banking system. Otherwise, there will appear monetary policy puzzles nullifying the objectives of policy. Similarly, the unique contractual and motivational features of Islamic financial institutions (IFIs) provide a justification to devise a set of Islamic financial instruments to absorb and inject the money through open market operations and other instruments in same industry. We are afraid that lack of adequate monetary instruments will lead to high intermediation cost and persistent inflationary pressures. Similarly, this study has drawn the intention of future researchers to know about theoretical background of Islamic versus conventional banking models and contractual obligations in legal matrix. Overall, Pakistan needs to get benefit from successful experience of Malaysia, especially in developing Islamic financial market and improving institutions quality that will make it able to transmit the monetary policy through credit channel efficiently.

Keywords: Bank lending channel, Loan supply, Monetary policy, Credit channel, Islamic versus conventional banks, Transmission mechanism, Dual banking system,

JEL Classifications: G15, E52, E42, G21,

List of Acronyms

AAOIFI	Accounting and Auditing Organization of Islamic Financial Institutions
AIBIM	Association of Islamic Banking Institutions Malaysia
BCO	Banking Companies Ordinance
BNM	Bank Negara Malaysia
BNM M-Cert	Bank Negara Malaysia-Mudarb'ah Certificate
BNMN-Murabahah	Bank Negara Monetary Notes Murabahah
BNNN	Bank Negara Negotiable Notes
BPRD	Banking Policy and Regulation Department
BSC	Banking Services Corporation
CBMA	Central Bank of Malaysia Act
CII	Council of Islamic Ideology
CMMA	Corporate Murabh'ah Master Agreement
CMP	Commodity Murabahah Programme
CRR	Cash reserve requirement
DSGE Model	Dynamic Stochastic General Equilibrium-Model
FMC	Financial Markets Committee
Forex Swaps	Foreign Exchange Swaps
FSA-2013	The Financial Services Act 2013
FSC	Federal Shari'at Court
GIC	Government Investment Certificates
GMM-estimator	Generalize Method of Moments-estimator
ICDC	Investment Certificate Dividend Committee
IFIs	Islamic financial Institutes
IFSA-2013	The Islamic Financial Services Act 2013
IIFIs	international Islamic financial institutions
IIIE	International Institute of Islamic Economics
IIMM	Islamic Inter-bank Money Market
IPDS	Islamic Private Debt Securities
IRC	Interest Rate Corridor
IRMA	Islamic Range Maturity Auction

IRR- HMT	Interest Rate Rule proposed by Henderson, McKibbin, and Taylor (1993)
KIBOR	Karachi Interbank Offered Rates
LICs	Low Income Countries
MDIC	Malaysian Deposit Insurance Corporation
MGS	Malaysian Government Securities
MITB	Malaysian Islamic Treasury Bills
MTB	Malaysian Treasury Bills
NIBAF	National Institute of Banking and Finance
OMOs	Open Market Operations
OPR	Overnight Policy Rate
PLS	Profit- Loss Sharing
ROA	Return on Assets
ROE	Return on Equity
SBNMI	Sukuk Bank Negara Malaysia Ijarah
SBP	State Bank of Pakistan
SECP	Security and Exchange Commission of Pakistan
SLR	Statutory liquidity requirement
SPTF	Skim Perbankan Tanpa Faedah
TDLs	Time and demand liabilities
WPA	Wakalah Placement Agreement

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1. Introduction

1.1 Background

In contemporary world, there are two basic economic policies, fiscal policy and monetary policy, to achieve the macroeconomic objectives of an economy. These policies work along with each other by maintaining a stable macroeconomic environment to economic growth and welfare of society. In this chapter, the study focuses on basic concepts of monetary policy, bank centric view of monetary policy, the role of banks in transmitting monetary policy, relative importance of emerging Islamic financial market, potential gap, research questions, objectives and significance of study.

Monetary policy is a process by which monetary authorities control the money supply, often targeting an interest rate or an inflation rate to confirm price stability and general confidence in the currency (Federal Reserve Board, 2006). Dwyer (1993) has explored that policy is a plan of action. Similarly, a policy may either be the result of some focused process or it may be a specific plan which is designed to achieve the policy goals. In either case, dynamic features of the economy are very important that no functional strategy can deal the policy for each day, month or year independently. For example, suppose that monetary policy target is to have zero inflation in the economy for a specific period. The current inflation rate depends on the expectations of future inflation, that in turn is dependent on the current expectations and future policy actions of the concerned authorities. It is well-known in circles of policy makers that any policy should concentrate on the implications of both current and future policy actions to achieve the goals of the economy. Further, every policy needs a suitable number of policy instruments to implement it efficiently. Basically, policy instruments are a set of the tools operated to yield the desired objectives of policy. The main instruments of monetary policy are the open-market purchases and the sales of government securities in framework of open market operations (OMOs), different for different countries depending on structure and desired

objectives of economy. Some additional monetary policy instruments comprise changes in required reserve ratios with central banks and changes in the discount rate according to market environment to achieve the desired objectives of policy.

Monetary policy discussions are often framed within legislated rules versus discretion context of public policy. Should policymakers be mandated to follow explicit rules in forming policy or should they have complete discretion? (Hetzl, 1985). In context of monetary policy, a rule is a defined pattern of policy in which a monetary authority has no discretion, there are found restriction on monetary authorities to take any policy action that is against to predefined objectives of monetary policy. On other hand, a monetary authority of any country is free to take a policy action according to its own judgment about economic scenario. For example, if legislation directed the Federal Reserve to conduct monetary policy for the improvement of the performance of USA's economy and recommend the monetary instruments that it has, the Federal Reserve would have a complete discretion in monetary policy. Modigliani (1977) documented the two leading arguments about the desirability of rules or discretion in monetary policy. The former is the desired rules of the elected representatives to set the preferences of monetary policy. Many economists favor rules to limit or end the discretion, developing a body of theories to support the implementation of a rules-based monetary policy. Similarly, Simons (1936) choice was also for in the favour of elected representatives to determine monetary policy, rather than to be conducted by a monetary authority. Other counter this theory with their own arguments and empirical work concluding that expert's economic judgment can decide a better policy.

Monetary authorities influence the overall performance of an economy to achieve the higher objectives of monetary policy. The sustainable economic growth, stability of prices, stable exchange rate, full employment are the common objectives of monetary policy. The central banks fix an intermediate target, like monetary aggregate or interest rate to meet objectives of

monetary policy. These monetary aggregates and interest rates are strongly associated to economic markets. Broadly, two behaviors of monetary policy: expansionary and contractionary are prevailing over the globe in domain of monetary policy to achieve its objectives. In expansionary monetary, monetary authorities supply more money intending to achieve full-employment level, to boost the borrowing of private-sector and consumer spending, and ultimately to stimulate economic growth of a country. Often expansionary policy is referred as "easy monetary policy" because this situation is found in many central banks and interest rates are found very low and, in many cases, dropped about to zero. On other hand in contractionary monetary policy, the monetary authorities control the supply of money to control inflation as objective of monetary policy. This contractionary monetary policy can affect economic growth adversely, increase unemployment, decrease credit supply in market, and reduce borrowing and spending through households and businessmen in money and capital markets. In nutshell, Boyes and Melvin (2012) have concluded that the prime objective of an efficient monetary policy is economic growth along with stable prices.

Monetary policy transmission is link between changes in supply of money and the real variables like output, prices of goods and services, currency exchange and employment level. These relationships among policy and targeted variables are discussed through diversified theoretical perspectives and through different channels of monetary policy transmission. For example, any change in domestic demand affects the level of production, employment, and wages. During these procedures, there occurs a change in domestic prices as well. Thus, the central banks must assess the reasonable time to conduct a monetary action to affect the prices and output of the economy. So, it is vital for a central bank to consider the practical understanding of how a monetary policy transmits to the real economy of a country.

There are two fundamental questions to be answered by monetary and macroeconomists.

- Does monetary policy affect real sector of the economy?
- What are the channels of these effects?

These are important questions which should be addressed explicitly. The transmission mechanism of monetary policy explained through the relationships between a change in money supply and the level of real income. There are several empirical and theoretical studies that have examined how monetary policy works in the economy. Based on these complex facts, the transmission mechanism of monetary policy is also known as “black box” (Bernanke and Blinder, 1995); because there is not one channel, but many transmission channels through which monetary policy operates simultaneously in same economy. For example, Peter and Boston (2005) state that monetary policy transmits to the real sector through several different channels. These channels include the interest rate channel, the exchange rate channel, the asset-pricing channel, the credit channel, and the bank balance sheet channel. Further, it is also argued that the monetary policy affects the economy by affecting the equity prices, real estate prices, and inflation expectations. Mishra and Montiel (2012) have explored that the monetary transmission channels depend on international capital movements, its exchange rate regime, and financial structure of a specific country's economy.

The literature on transmission mechanism of monetary policy has also pointed out some other channels, such as monetarist channel (Meltzer, 1995), but it is evident that the former four channels are capable to explain the major impact of a monetary policy shock on output and prices. Indeed, several studies like Lucas (1990), Christiano and Eichenbaum (1992, 1995), Fuerst (1992), Bernanke and Blinder (1995), Taylor (1995), Obstfeld and Rogoff (1995), Mishkin (1995), Mishkin (1996), Dhar and Millard (2000), Dhar, Pain and Thomas (2000), Bayoumi and Morsink (2001), Corvoisier and Groppe (2002), Mishkin and Schmidt-Hebbel (2006), Mohanty and Turner (2008), Mishkin (2011), Mishra and Montiel (2012), Carvalho and Nechio (2014), Janjua, Rashid and Ain (2014), Jermann, and Schmid (2016), Ekimova,

Kolmakov and Polyakova (2017) have explored the transmission mechanism of monetary policy. Moreover, Rashid and Jehan (2014), Khan and Qayyum (2004), Mayes (2004), Wong (2000) and Bernanke and Mahiv (1995) have measured empirically the macroeconomic impact of monetary policy.

The various transmission mechanisms appear with distinguish characteristics and their relevance is found differently for different economies, not all of them are active in all countries of the world. If a transmission channel is not able to transmit the policy actions in one country, it does not imply that the same channel is not capable work in another country. The financial environment, structure of economy, global financial interaction determines the workability of a transmission channel in any economy. Mishkin and Schmidt-Hebbel (2006) have explored the importance of an effective transmission channels of monetary policy to lubricate the flow of resources from the all segments of economy to different part of a country for holistic development. Further, they have explored that the priority of any monetary policy authority should be price stability and economic growth, while the preferences of any monetary policy depends on political factors, on economic environment and on the quality of economic institutions.

In the bank-centric view, it is assumed that there are three types of important assets. These include money, bonds, and the bank loans. In this context, due to monetary policy actions banks' response in issuance of credit is very important, rather than their role of deposit creation. This dissertation mainly concentrates on the credit channel of the transmission mechanism of monetary policy because it highlights the role of banking sector in monetary policy transmission process. In line with same agenda, Bernanke and Gertler (1995) have investigated the credit channel by exploring the bank lending channel and the balance sheet channel. Conceptually, the tight monetary policy drains cash from banks because these monetary actions reduce the excess reserves from the banks. These contractions of monetary policy ultimately

affect banks' deposit base negatively on their balance sheets and make the banks incapable to continue with financing projects through internal funds. They must avail the external sources of funds like issuance of bonds and commercial papers, debt, mutual funds, and equity (Gertler and Gilchrist, 1993; Kashyab and Stein, 1994; Cecchetti, 1995). Similarly, the credit channel climaxes the specific nature of banks' credit and the vital role of banks in the financial structure of a developing economy.

In the bank-lending view, banks play a pivotal role in transmitting the policy actions to the real economy. Similarly, monetary policy actions affect the reserve positions of banks to control their ability to supply credit to economy. Further, these policy actions affect the interest rates and the balance sheets of banks. Banks' lending effects aggregate spending independently in absence of funding substitute to banks' borrowers and usually this happens for medium and small banks' dependent firms. Overall, the key for the existence of banks' lending channel is absence of close substitutes on both sides of balance sheets of banks. There is not found close substitute for deposit liabilities on the liability side of the banks' balance sheets, whereas, the absence of close substitutes for bank credit issued to industry is also a factor to justify the existence of lending channel from the asset side of the banks' balance sheets. On empirical grounds, Bernanke and Blinder (1988), Gertler and Gilchrist (1993), Bernanke and Mark (1995), Domac and Giovanni (1998), Garretsen and Swank (1998), Guender (1998), Suzuki (2001), Evans, Fisher, Gourio, and Kran (2015), Jermann, and Schmid (2016), Ekimova, Kolmakov and Polyakova (2017), and Olmo, Azofra and Sáiz (2018) have explored the banks' centric view of monetary policy and they have analysed the importance of the banking sector in the monetary policy transmission mechanism and impact of disturbances in the banking sector on the aggregate economic activity.

Islamic banking is an emerging market over the globe. In global context, the size of Islamic financial industry has been reached \$2.1 Trillion and expected to achieve the target of \$3.4

Trillion by end of 2018. Hence, Islamic Finance assets are 1% of the global financial market of \$127 Trillion in assets (IFSB, Islamic Financial Services Industry Stability Report, 2017). The same industry holds a substantial share of credit supply in Pakistan and Malaysia with dual banking system; the Islamic and conventional banking system. In Pakistan and Malaysia, Islamic banking is recorded at 11.6 percent and 35.4 percent, respectively, as the market share of total banking assets and Islamic deposits are recorded at 13.7 percent and 38.7 percent, respectively, of banking industry by the end of June 2017.

Fundamentally, Islamic banks are different in nature and composition of assets and liabilities as compared to their conventional counterparts. The Islamic law of business transactions, while nullifying the concept of a stipulated interest rate on lending, allow variable returns in business transactions based on equity participation, trade dealings and other economic activities in accordance with the variety of contracts presented by Islamic law of business contracts. Similarly, Alaro and Hakcem (2011) have noted that all financial agreements in an Islamic financial system are based on risk and profit-loss sharing (PLS) arrangements. In Islamic financial arrangements, all financial assets are contingent claims with asset-backed arrangements because there are no debt instruments as investment avenue bearing floating interest rates. They have modeled the non-speculative equity shares in Islamic financial system. Further, they have explored that PLS participation of contractual parties plays key role in determining the rate of return to financial contracts. The governance of Shari'ah does not allow Islamic banks to deal in the interest-bearing products, loan contracts, and speculative investments in an Islamic financial system. Islamic banks are strongly recommended to participate in productive activities and to conduct trade operations based on PLS in compliance with Islamic law. Likewise, Sanrego and Rusydiana (2013) have explored that the existence of PLS system would bring an environment in which debtor would migrate from interest system to profit-loss sharing one in an Islamic economic framework. In fact, this substitution

mechanism would make the monetary policy ineffective and would decrease the negative impact interest-based system. This phenomenon of ineffective monetary policy and the removal of negative impact of interest incurring debt emerged due to Shari'ah financing mechanism that brings balance between monetary and real sectors of economy. Hence, the Shari'ah financing and substitution lead the market to sustained development, then reduce inflation rate in economy.

Hasan and Majid (2012) differentiate both conventional and Islamic banks that these both systems provide same products and services responding to meet the demand of market, but with different underlying contracts. In conventional banks, depository accounts and financing are based on loan contracts in relationship of lending and borrowing on both sides of balance sheet. In contrast, Islamic banks' products are offered based upon a variety of Islamic contracts such as Qar'd, Mudarabah, Musharakah, Ijarah, Salam, Istisn'ah and Murabahah. Such practices of Islamic banks, as alternates, help to avoid from the elements of interest prevailing in conventional business lines. Thus, these distinguish features of Islamic banks have brought a new avenue to banking industry and market regulators, effecting the depositors, investors, borrowers, regulators and other fund mobilizers.

The ultimate objective of monetary policy is to achieve consistent economic growth, to optimize inflation in economy, to control poverty and to create employment opportunities. In Islamic economic theories, there is an additional screening criterion as compared to conventional economic system. Accordingly, these objectives can only be targeted through Shari'ah compliant monetary instruments. Different contractual and motivational features of Islamic financial institutions (IFIs) provide a justification to devise a set of Islamic financial instruments to absorb and inject the money through open market operations and other instruments in same industry. Otherwise, lack of adequate monetary instruments will lead to

high intermediation cost and persistent inflationary pressures (Farahani and Dastan, 2013; Majid and Hasin, 2014).

The rapid growth of Islamic banking is possible only with the full conducive environment developed by monetary authorities of a country. It requires a strong foundation in terms of the establishment of the financial and legal infrastructures and the formation of human capital for the industry to complement the rapidly growing market of Islamic finance. Now, there is crucial need to devise Islamic monetary instruments for a newly emerging Islamic financial market to transmit the monetary policy positively. In implementing monetary policy through Islamic banks, monetary authorities have mandate to only use the policy instruments that are in compliance with Islamic law. Especially interest-bearing instruments, as these are fundamental part of conventional policies, can never be a part of policy to control the credit supply of Islamic banks. Therefore, instruments of monetary control that are designed on interest in any capacity would have to be replaced with innovative Islamic monetary instruments.

Sukmana and Kasim (2010) have explored that Islamic banks financing on asset side and the deposits from liability side play an important role in the transmission process of monetary policy in Malaysia. Especially, Islamic deposit and financing are noted significantly in relating the monetary policy indicator to the real output. Hardianto (2004) has explored the Shari'ah monetary transmission mechanism and noted that there was not found the substitution mechanism between loan products of conventional system and Islamic products. Further, Shari'ah based financing has a positive relationship with Customer Price Index (CPI). Sanrego and Nikmawati (2010) have noted that substitution mechanism between Shari'ah based financing and conventional credit was not happened in the case of interest rate increases.

Akhatova, Zainal, and Ibrahim (2016) have evaluated the credit channel of Islamic banks versus conventional banks in Malaysia. They have focused on the lending (conventional banks) and financing (Islamic banks) behaviour to monetary policy actions as well as other economic

shocks through availing the structural vector autoregression (SVAR) specification. Overall, they have noted that credit supply of conventional banks and financing behavior of Islamic banks are responding to monetary policy shocks. Therefore, there is found bank-centric view of monetary policy in both sectors. However, the dynamic behaviour of Islamic bank financing appeared different to the monetary policy measures. According to them, these findings are robust to alternative specifications of the SVAR throughout the analysis. Similarly, Caporale, Çatik, Helmi, Ali, and Tajik (2016) have examined the credit channel of banks in Malaysia over the period 1994 - 2015 using consolidated data through a two-regime TVAR model and allowed nonlinearities. They have found that Islamic banks are less responsive as compared to their conventional peers after initiating interest rate shocks in the regimes of high and low growth of dual banking economy. Interestingly, they have noted that Islamic financing has affected output growth relatively much greater in the low growth regime. Overall impact is found positive.

Zulkhibri and Sukmana (2017) have investigated the responses of Islamic banking financing to monetary policy actions and financing rates through a panel regression methodology from 2003 to 2014 in Indonesia. On empirical grounds, the financing rate is found to have a negative impact on Islamic banks' financing, while the bank-specific characteristics are found with a positive influence on Islamic banks' financing decisions that differ depending on their characteristics. The impact of size and capital is higher than the effect of liquidity on credit supply decisions of Islamic banking industry. However, the monetary policy actions are found ineffective on credit channel of Islamic banks, reflecting that the transmission process through Islamic banks is relatively weak. Interestingly, Islamic banks have expanded in terms of deposit growth and liquidity during the sample period. Therefore, there is a crucial need to consider an emerging share of Islamic banks in formulating monetary policy. Otherwise, it may create hurdles in achieving the objectives of policy.

Further, on the empirical basis, Zulkhibri and Sukmana (2017) in Indonesia, Rafay and Farid (2019), Shah and Rashid (2019), Shah, Rashid and Mansoori (2018) and Zaheer, Ongena and Wijnbergen (2013) in Pakistan, Cevik and Charap (2011) and Cevik and Teksoz (2012) in GCC and Akhatova, Zainal and Ibrahim (2016), Majid and Hasin (2014), Sukmana and Kasim (2010), Sanrego and Nikmawati (2010), and Hardianto (2004) in Malaysia have investigated the existence of credit channel of monetary policy from perspective of Islamic banks. Overall, they have explored potential gaps to be explored and recommended to monetary authorities to devise the policy instrument through incorporating the fundamental differences of the operations of Islamic banks versus conventional banks. On the other hand, monetary authorities may select an averse monetary policy action. Likewise, it is expected that Islamic financial institutions have a different role to play in the monetary policy transmission mechanism. Furthermore, the policy makers should consider fundamental differences of dual banking system; Islamic and conventional banks in same economy, otherwise there may appear puzzles to monetary policy (Chapra, 1985; Chaudary and Mirakhor, 1997; Farahani and Masood, 2013).

1.2 Research Gaps

The existing studies have identified the potential gaps that require to be explored for complete and better understanding of the credit channels through Shari'ah based financing instruments to achieve the macroeconomic objectives of monetary policy. However, the focus of these studies; like Zulkhibri and Sukmana (2017) in Indonesia, Zaheer, Ongena and Wijnbergen (2013) in Pakistan, Cevik and Charap (2011) and Cevik and Teksoz (2012) in GCC and Akhatova, Zainal and Ibrahim (2016), Majid and Hasin (2014), Sukmana and Kasim (2010), Sanrego and Nikmawati (2010), and Hardianto (2004) was on consolidated macroeconomic data of Islamic banks, rather than the bank-level data. Overall, these studies have documented that there is a potential gap to explore the responses of microeconomic data of Islamic banks

to monetary policy of a central bank. Indeed, if both Islamic and conventional banks are the part of financial system, then any instrument of monetary policy should have to affect the economy by affecting both types of banking. Thus, it is worth exploring whether Islamic banks hinder or intensify the monetary policy mechanism. Yet, until now, we know less about the relative role of Islamic banking in the monetary policy transmission process. Therefore, this dissertation aims to find out the existence of credit channel of monetary policy transmission.

Further, the study also intends to explore the role of the credit channel of monetary policy through Islamic versus conventional banks of Pakistan and Malaysia. Our analytical framework enables us to examine bank centric view of monetary policy by comparing the role of Islamic and conventional banks of Pakistan and Malaysia. Overall, we take a different route by using microeconomic data of the financial statements of individual banks from Malaysia and Pakistan. We observe the responses of Islamic versus conventional banks in Pakistan and Malaysia to a monetary tightening. Evidence on such tightening is provided through interbank offered interest rate as the measures of monetary policy for the banks, which affected credit of all banks in our sample. The study observes the response of banks' credit supply to the monetary tightening with a large set of bank-specific and macroeconomic variables. By extending the baseline model, these effects are also observed after categorizing banks as Islamic and conventional banks through empirical models. Further, the impacts of monetary policy indicators on banks' credit supply is also examined on basis of size and liquidity for both countries. Moreover, we have observed the impact of monetary policy on conventional and Islamic Banks on basis of size and liquidity. The robust two-step system-the Generalized Method of Moments (GMM) estimator is selected to examine the impacts of monetary policy indicators on banks' credit supply in the economy in 36 regressions to evaluate the models empirically. In sum, this research design facilitates us about how to measure the credit channel

of monetary policy the monetary policy indicators, the bank specific variables and the macroeconomic conditions through an unbalanced annual panel dataset of Pakistan and Malaysia.

The selection of Pakistan and Malaysia to investigate the monetary policy transmission through credit channel is because of the following solid characteristics of these economies; First, the industry of Pakistan and Malaysia is bank dependent that increases importance of banks' credit channel of monetary policy transmission to be investigated by researchers. Secondly, unlike other countries, Pakistan and Malaysia are representing the economies that comprise dual banking system; Islamic and conventional banks in same financial market. Thirdly, these both countries are growing economies in the Asia and their banking sector has also grown up in recent years with dual banking system from all essential aspects. Especially, Malaysia is playing leading role in Islamic financial market throughout the world and Pakistan is getting benefits from experience of Malaysia and some other countries running dual-banking system. Relatively, these both countries have developed their Islamic banking system in term of a wide range of Islamic instruments, quality services, strong legal and regulatory infrastructure, sound Shari'ah governance framework, asset growth and the talent supply to Islamic financial Institutes (IFIs). Fourthly, these both economies are not only developing Islamic banking sector, rather they are providing Shari'ah compliance investment venues through Islamic money and capital market. In both economies, a good number of sukuk (Islamic bonds) are issued with diversified structure of Islamic modes of finance over different time lags. Therefore, Pakistan and Malaysia are selected for empirical investigation of credit channel of monetary policy. Like conventional banks, Islamic banks are also supervised and regulated by central banks in Pakistan, State Bank of Pakistan (SBP) and Malaysia, Bank Negara Malaysia (BNM) with some additional compliance with Shari'ah to be regulated by Shari'ah governance framework. Therefore, the central banks have the power to control and regulate the Islamic and

conventional banks. For example, deposit of banks is managed subject to specific reserve requirements. Technically, an increase (decrease) of these accounts affects banks' reserve to increase (decrease). Because of these policy actions, banks will reduce (increase) their financing to economy. In context of this theoretical background, the banks' credit channel is investigated through the impact of monetary policy on credit supply decisions of Islamic *versus* conventional Banks.

1.3 Research Questions

The various channels transmission mechanism are important in monetary policy at different perspectives of economy. This study mainly highlights the role of banks in monetary policy by focusing on the credit channel of monetary policy transmission mechanism. However, a rapid growth of Islamic banks, alongside the existing conventional banks, has created complications in transmission mechanism of monetary policy for the economies with dual banking system. Islamic banking is forwarding the challenges to assess an effective framework of monetary policy. Especially, in regions where Islamic finance is growing with a substantial rate, these monetary transmission channels can be explored through following questions in dual banking system.

- I. Does the credit channel exist in Pakistan and Malaysia?
- II. Do Islamic banks transmit monetary policy differently than their conventional counterparts in Pakistan and Malaysia?
- III. Does monetary policy affect differently small and large banks in Pakistan and Malaysia?
- IV. Does impact of monetary policy on Islamic *versus* conventional banks differ across bank size in Pakistan and Malaysia?

- V. Does monetary policy affect differently banks having different level of liquidity in Pakistan and Malaysia?
- VI. Does impact of monetary policy on Islamic *versus* conventional banks differ across different level of liquidity in Pakistan and Malaysia?

1.4 Objectives of the Study

The main objectives of the study are as follows:

- To investigate the existence of credit channel of monetary transmission mechanism in Pakistan and Malaysia.
- To explore the comparative difference of monetary transmission mechanism between Islamic and conventional banks in Pakistan and Malaysia having dual monetary system.
- To explore whether monetary policy affects small banks more than large banks in Pakistan and Malaysia.
- To investigate the differential impact of monetary policy on Islamic *versus* conventional banks on the basis of bank size in Pakistan and Malaysia.
- To explore the different impacts of monetary policy on banks having different level of liquidity in Pakistan and Malaysia.
- To discover the differential impact of monetary policy on Islamic versus conventional banks across different levels of liquidity in Pakistan and Malaysia.

1.5 Significance of the Study

The study has unique characteristics that distinguish it from the existing literature on the credit channel of monetary policy transmission mechanism. First, this study is a pioneer contribution for researchers and policy makers to understand the role of banks in the transmission mechanism of monetary policy through using microeconomic data of banks for Pakistan and Malaysia. Secondly, this study makes the monetary policy makers understand the importance

of the credit channel of Islamic banks, especially in economies with a dual (Islamic and conventional) banking system. Otherwise, the lack of adequate monetary policy may lead to puzzles nullifying the objectives of policy.

Third, we presented the importance of the credit channel of Islamic banks as a complement channel to the monetary policy transmission mechanism because the absence of adequate monetary instruments will lead to high intermediation cost and persistent inflationary pressures. Fourth, this study increases understanding of households, investors and Islamic bankers about monetary policy to take their investment decisions, especially in countries holding major share of Islamic finance or running dual banking system in same economy. Fifth, this study is important as we have dealt with less-explored the microeconomic aspects of banks' credit supply behavior in formulating monetary policy because the small-sized banks and less-liquid banks are affected more as compared to their counterparts empirically. This aspect increases the importance of the study through recommending to the policy makers to keep in preference the microeconomic aspects of banks' credit supply behavior in formulating monetary policy because the small-sized banks and less-liquid banks are affected more as compared to their counterparts. Sixth, this study is a unique contribution for students, teachers, and researchers in domain of monetary policy, although a rich literature is found at fiscal side of Islamic economy.

This study has come up with empirical evidences to make them aware about the salient features of Islamic banking conceptual model versus conventional banking model from the perspective of monetary policy. Similarly, this study gives a courage to researchers to investigate the alternate Shari'ah based channels of monetary policy in modern framework of credit channel of monetary policy transmission mechanism. Seven, this study raises the importance of asset backed Islamic financing in terms of considering as alternate monetary policy transmission channel. Similarly, Mishkin (2011) has suggested to revive the science of monetary policy

strategy what needs to be altered especially after financial crisis of 2007-08. So, this study appears to fill the vacuum because of imperfection of financial market through presenting an alternate banking perspective with the unique contractual and motivational features of Islamic financial institutions (IFIs). Eight, this study appears as a unique piece of work through comparing the impact of monetary policy on credit supply of banks in Pakistan *versus* Malaysia.

1.6 Organization of the Study

Presenting the introduction in Chapter 1, we have developed the core subject matter of dissertation. Then, we have narrowed down the discussion to the research gap and moved to the development of research questions. In next step, we have defined the objectives of study that subsequently make a reader to understand the significance of study. Chapter 2 deals with the monetary policy framework of Pakistan and Malaysia, since the inception of State Bank of Pakistan (SBP) and Bank Negara Malaysia (BNM). In this chapter, we have reviewed the contemporary practices of Pakistan and Malaysia, along with monetary policy instruments and supporting departments to monetary policy operations. Chapter 3 provides an overview of empirical literature of monetary transmission mechanism and then narrow it down to credit channel of monetary policy with potential determinants to credit supply. In addition, the historical development of Islamic monetary management is reviewed till the exitance of credit supply of Islamic banks.

Chapter 4 titled “Islamic and Conventional Banks: Historical Background and Conceptual Framework” describes the philosophy of Islamic and conventional banks. Further, we have explored the governing principles of Islamic law of business contract, focusing on the manifestations of *Riba* (Interest). Furthermore, some of *Shari’ah* maxims are discussed that make the Islamic jurists to meet the contemporary financial practices through a wide range of Islamic modes of finance. In Chapter 5, data and empirical framework are described to achieve

the objectives of study. In start, a baseline model is designed for each country to observe the impact of the monetary policy indicators, the bank specific variables and the macroeconomic conditions on credit supply decisions of the banks. By extending the baseline model, these effects are also observed after categorizing banks as Islamic and conventional banks through empirical models. Further, the impacts of monetary policy indicators on banks' credit supply is also examined on basis of size and liquidity for both countries. Moreover, this chapter explores the model to observe the impact of monetary policy on conventional and Islamic Banks on basis of size and liquidity. Overall, there are presented twelve models for Pakistan and Malaysia in the analytical framework. At the end, this chapter discusses the robust two-step system-the Generalized Method of Moments (GMM) estimator.

Chapter 6 interprets the empirical findings of the regression analysis through the GMM estimator. By estimating the baseline model, we provide strong evidence on the existence of credit channel of monetary policy. The results from the extended model indicate that Islamic banks respond less to monetary policy as compared to their conventional counterparts. The relatively less response of Islamic banks to monetary policy may make it difficult for the central bank to achieve the desired objectives of the monetary policy. Finally, Chapter 7 presents some conclusions, relevant policy implications, and future research agenda for Pakistan and Malaysia. Our findings suggest that for an effective monetary policy, there is a vital need to consider the nature of Islamic banking while devising the monetary policy instruments to manage credit supply in the economy. This study is significant because of strong recommendations to the central banks; SBP and BNM that they need to revisit the monetary policy transmission through credit channel for Islamic banks, especially in economies with a dual (Islamic and conventional) banking system, the small-sized banks and less-liquid banks in growing countries, like Pakistan and Malaysia.

2. Monetary Policy Framework of Pakistan and Malaysia

2.1 Introduction

Financing is a backbone of every business. Indeed, a growing firm needs capital to finance its operational and non-operational activities and to compete the rivals or at least to survive in the market. Basically, a very important economic problem prevails in financial economics about how businesses fund their operations. In practice, there are two fundamental sources to fund a business; internal sources and external sources. In growing economies, most of the firms do not build their capital structure entirely through internal sources of funds, rather they get external financing from banking sector. Hence, banks' credit supply is one of basic source among other major external sources to fuel a business. Especially small firms depend on credit supply of banks because they have limited sources to bridge the gaps of their financial needs from these financial intermediaries (White and Cestne, 2003; Golar and Zeira, 1993).

Therefore, the literature expresses that banks' credit play an important role in boosting up the economic growth of an emerging economy. Likewise, it is also important to explore the impact of monetary policy on macroeconomic indicators through credit channel of transmission mechanism because of the growing trend of banks' financing in the global economies. Therefore, the credit channel is investigated from several perspectives. First, the banks' credit channel of monetary policy is investigated through the responses of all commercial banks to monetary policy tightening. Secondly, the banks' credit channel is investigated through the impact of monetary policy on Islamic versus conventional Banks. Further, regression models are extended on basis of size and liquidity of banks. In this chapter, we have reviewed the contemporary practices of Pakistan and Malaysia, along with monetary policy instruments and supporting departments to monetary policy operations.

Monetary policy is name of strategies conducted through the monetary authorities of a country in terms of regulating supply of money. The ultimate objective of monetary policy is to achieve sustaining economic growth, to stabilize the pricing system, to optimize inflationary trends, and to control unemployment. In context of Islamic monetary system, these objectives can only be targeted through instruments that follow *Shari'ah* (Islamic Law). This chapter explores the monetary policy experience of Pakistan and Malaysia since the inception of State Bank of Pakistan (SBP) and Bank Negara Malaysia (BNM). There is a crucial need to explain the monetary policy framework of Pakistan and Malaysia before shedding light over the transmission mechanism through different channels in literature review.

2.2 The Monetary Policy Framework of Pakistan

There have been different regimes to conduct the monetary policy over the time. The regulator of monetary policy is State Bank of Pakistan (SBP).

2.2.1 The Regulator of Monetary Policy: State Bank of Pakistan (SBP)

The monetary policy is the responsibility of State Bank of Pakistan (SBP). SBP is established under State Bank of Pakistan Act, 1956, following with subsequent amendments, provided the basis of its operations today. This act gives the authority to SBP to regulate the monetary and credit system of Pakistan. Similarly, this act gives a mandate to SBP to foster its growth in the best national interest through utilization of the country's productive resources. From historical perspective, Khalabat (2011) has explored that before partition in August 1947, Reserve Bank of India (RBI) was the central bank of subcontinent and it was divided between Pakistan and India with ratio of 30:70, respectively on the 30th of December 1948 by the British Government's commission. Quaid-e-Azam Muhammad Ali Jinnah established State Bank of Pakistan (SBP) immediately. The ordinance was implemented in June 1948, and SBP started operations on July 1, 1948. The headquarters of SBP are in Karachi with branch offices in 15 places across the financial cities of country, including Islamabad, Kashmir and the four

provincial capitals. As monetary policy regulator, SBP issues monetary policy statements and other measures related to its policy and conduct of monetary management in the economy.

2.2.2 The Economic Philosophy of Monetary Policy

The monetary policy, in coordination with the fiscal and other relevant policies, targets the level of aggregate demand to achieve consistent growth. Depending on the position of aggregate demand, the economy operates at any level of national income and employment within the production frontier. An un-employment follows to inefficient aggregate demand and it was observed in 1990s, high inflation follows to excess aggregate demand as has been observed in middle of 2000s. Moreover, double digit inflation was witnessed in the economy during financial year 2008 to financial year 2012. The overall level of demand consists both investment and consumption expenditure, which depend on the availability and cost of money, and available credit in an economy. SBP sets policy rate and liquidity ratios (cash reserves requirements) to manage the cost and availability of money and credit (the aggregate demand) in the country.

Money is supplied to raise national income and employment in case of low aggregate demand, this monetary stance will make credit for investors relatively cheap and easy to come by. On the contrary, when full employment level has been achieved, monetary economist will recommend stopping further money supply and credit in order to tame inflation as a result of an excess demand situation. External accounts of an economy reflect internal position; similarly, internal actions of monetary policy also play a vital role to settle external imbalance. High policy rates may be recommended at times of worsening of balance of payments to control foreign interest rates and to discourage foreigners to withdraw short term investments that will decrease pressure on foreign exchange reserves of economy. This will not only restrain withdrawal of foreign funds, rather will attract them to compensate a payments deficit. As a result, this process will strengthen foreign exchange reserves.

2.2.3 Monetary Policy Objectives

The preamble of SBP Act, 1956 envisages the objectives of State Bank of Pakistan. The objectives of SBP's monetary policy are to regulate the monetary and credit system of Pakistan. Similarly, it includes to foster the growth of credit system in the best national interest by securing monetary stability in the economy and fuller utilization of the productive resources of the country.

SBP intends to achieve monetary stability by keeping an eye on government's inflation policy targets. SBP also aims to guarantee financial stability with efficient functions of the financial markets and the payments system. Mishkin (2002) has explored that price and financial stability ensure the sustained economic growth.

2.2.4 Monetary Policy and Exchange Rate Regime

The monetary policy regime comprises the set of an appropriate intermediate target or nominal anchor what helps to meet the objectives of monetary policy. As monetary policy instruments start their working, a nominal anchor (may be an economic variable) works in flexible way and adjusts with in no time. It supports the mechanism to achieve the objectives and protects the system from discretion of monetary policy over the long time.

In recent monetary policies, SBP doesn't fix any intermediate goal of a nominal anchor, like M2 growth to reach its target of price stability. Rather, SBP adjusts short aggregate demand vis-à-vis the productive capacity, hence, this process controls inflation in the economy. In this context, policy direction and magnitude depend on overall condition of macroeconomic indicators, especially relative position of spot inflation and inflation target. This monetary policy approach is like inflation targeting lite regime. Currently, this is working in monetary policy framework. SBP manages the overnight money market repo rate near to policy rate (target rate) as its operational target

Since May 1999, SBP has adopted exchange rate regime what determines the value of local Pakistani currency through the forces of demand in foreign exchange market. Basically, the supply and demand mechanism is a reflection of country's Balance of Payments position. The exports, foreign investments, remittances, foreign loans, etc., determine the supply of foreign exchange, the foreign exchange is demanded for imports, debt payments, fee payment for foreign services, etc. If demand of foreign currency exceeds to its supply, the domestic currency depreciates and on other hand if supply is higher than demand, the domestic currency appreciates in foreign exchange market.

Occasionally, SBP intervenes to settle the extreme fluctuations to ensure smooth functioning of the foreign exchange market. However, SBP does not intend to provide a pre-determined level of the exchange rate in foreign exchange market.

2.2.5 Monetary Policy Instruments

SBP is mainly conducting monetary policy through indirect instruments. SBP uses several instruments to ensure the transmission of policy signals to other key interest rates such as banks' lending and deposit rates, and financial markets to work smoothly. In Annexure 1, the monetary policy instruments are taken from official sources of SBP.

2.2.5.1 SBP Policy Rate: Through this policy rate, SBP targets the overnight money market repo rate which signals the monetary policy stance. SBP policy rate is fixed in the Interest Rate Corridor (IRC) set by the SBP's Standing facilities; Reverse Repo and Repo facility (Ceiling and Floor respectively).

2.2.5.2 Standing Facilities: SBP introduced an Interest Rate Corridor (IRC) to reduce volatility of the money market overnight repo rates and to make monetary policy transparent. The IRC operates through standing overnight repo (floor) and reverse-repo (ceiling) facilities, that control movement of overnight repo rates consistent with SBP

monetary policy stance. The IRC comprises two end-of-day standing facilities offered by the SBP:

- I. **SBP Reverse Repo Facility:** The eligible financial institutions (the FIs) can avail SBP reverse repo facility, for sake of PKR funds over one day against their recognized securities. SBP agrees to repurchase back the same securities on the same day and releases funds to FIs. SBP charges an interest amount on this type of lending, called “SBP reverse repo rate” that serves as ceiling for repo rate.
- II. **SBP Repo Facility:** In SBP Repo Facility, the financial institutions (the FIs) purchase treasury bills of SBP for overnight through excess funds. The interest rate paid to the FIs is called SBP repo rate, working as floor for overnight repo rate.

2.2.6 Open Market Operations (OMOs)

The monetary policy instruments in Annexure 1, are the most frequent for implementing monetary policy in the economy of Pakistan. SBP initiates OMOs for liquidity managements in the k money market. SBP intends to ensure availability of sufficient funds to settle the interbank transactions smoothly and to keep the overnight interbank repo rate around the Policy rate.

SBP introduces OMOs as repo transactions to meet banks' temporary liquidity requirements. In a systematic way, SBP sells (purchases) the government securities to absorb (inject) liquidity from (in) the interbank market with an agreement to purchase (sale) the underlying security at a specific price at a specific future date. SBP manages OMOs through “variable rate tenders” ensuring that banks will disclose the intended amount for transaction and expected rate of transaction, at which they will come up. SBP announces the tenor of OMOs at every time, mostly of one week with degree of freedom in between overnight and two weeks.

SBP also operates outright OMOs when market liquidity is expected to remain short or in surplus over a long time. In this process of the outright OMOs, the purchase or the sale of government securities is conducted on permanent basis, i.e. until the maturity of the underlying security. Unlike the repo based OMOs, the ownership of security of outright OMOs transfers among the financial institutions and the SBP. In outright OMOs, SBP transfers government debt to scheduled banks' balance sheets.

2.2.6.1 Reserve Requirements

In reserve requirements of banks, SBP requires from all scheduled banks to hold liquid assets in the form of cash and, approved securities. As per prudential regulations of the SBP, the scheduled banks are required to preserve two types of reserves, i.e. cash reserve requirement and statutory liquidity requirement (See Table 2.1).

i) Cash reserve requirement (CRR): SBP holds the proportion of scheduled banks' applicable time and demand liabilities (TDLs) in the form of cash on fortnightly average basis, although cash in possession of banks is not considered to meet the requirement of CRR. The minimum level of reserve is maintained with the central bank on daily basis in CRR. The required level of CRR for a bank in a reserve maintenance period are worked out on the basis of applicable TDLs of a concerned bank at the end of the first day (i.e. Friday) of maintenance period. It is not allowed to any bank to carry their excess of reserves to the next maintenance period. Similarly, SBP does not remunerate deposits that banks hold with it while calculating CRR.

The SBP, as regulator increases CRR ratio, this policy stance reduces the funds available with the banks for advancing to both the public and the private sector because the scheduled banks have to keep an additional cash in the form of reserves with the central bank for the same amount of their liabilities. Thus, assuming all else equal, as there appear an increase in CRR

results in reduction of the money multiplier and money supply in the economy and tends to increase the interest rates in the economy.

Table 2.1 Summary of Reserve Requirements

Summary of Reserve Requirements			
	Definition	Applicable liabilities	Requirement
Cash Reserve Requirement			
Domestic Currency Deposits	Commercial banks are required to keep a portion of their rupee deposits with SBP as cash	Demand and time liabilities of less than 1-year tenor	Daily and fortnightly average
Foreign Currency Deposits	Commercial banks are required to keep a portion of their foreign currency deposits with SBP as cash reserves (non-remunerated) and special cash reserves (remunerated).	All foreign currency deposits	Daily
Statutory Liquidity Requirement	Commercial banks are required to keep a portion of their liquid assets in the form of cash, gold or approved government securities	Demand and time liabilities of less than 1-year tenor	Daily

* Approved government securities include T-bills, PIBs, Ijara Sukuk, etc.

Source: State Bank of Pakistan

ii) Statutory liquidity requirement (SLR): As per SBP requirements, SLR is the proportion of bank's liabilities which is recommended to invest in approved securities and/or hold in the form of cash. It also comprises the balances with SBP and/or with NBP, balances left in the vault of banks, banks' investment in capital of Micro-Finance Banks and foreign banks' deposits with SBP under section 13(3) of the Banking Companies Ordinance (BCO) 1962. Like CRR, SLR is also maintained fortnightly from Friday to next Thursday. Applicable

Time and Demand Liabilities (TDLs) at the end of the Friday (i.e. the first day of the maintaining period) are taken into account for the calculation of SLR to be maintained during the maintaining period. If Friday is a holiday, then TDLs is taken on next working day to determine SLR.

As regulator when SBP increases SLR ratio, it implies that banks are directed to maintain a larger share of their funds into liquid assets. These liquid assets should be approved/notified by the federal government for some specific objectives. A change in SLR will affect the composition of banks' assets.

Most frequently, SBP conducts monetary policy through other than these both CRR and SLR instruments. Table 2.1 reflects the history of change in CRR and SLR as an instrument to monetary policy.

2.2.6.2 Foreign Exchange (Forex) Swaps:

Forex swap is another instrument that SBP may employ to manage liquidity interbank money market for enhancement of its open market operations. SBP purchases or sells the foreign currency at a specific value date with an immediate agreement to reverse the deal at an agreed rate on a certain future date. In forex market, SBP may conduct both sell-buy and buy-sell swaps with the objective of contractionary or expansionary respectively, monetary policy.

2.2.7 Monetary Policy Implementation in Pakistan

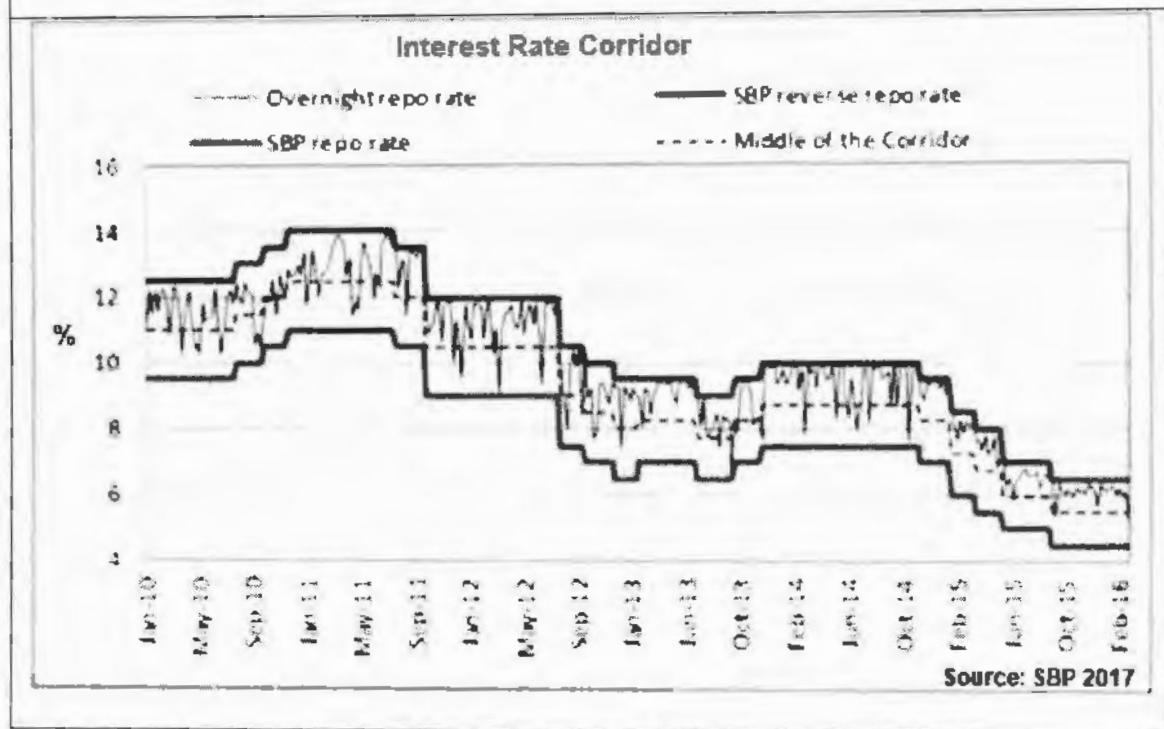
In Pakistan, monetary policy is implemented through fixing a target and Open Market Operations (OMOs) for liquidity management in the money market. Below, we discuss the operational target and liquidity management and the transmission mechanism along with different channels.

2.2.7.1 Operational Target and Liquidity Management

Monetary policy is implemented through the announcement of the Policy (target) Rate in Pakistan. In implementing the policy, liquidity is considered keenly on daily basis to keep the interest rates consistent with the policy rate. As an operational target, SBP maintains the weekly weighted average of overnight repo rate near to the Policy Rate of specified period through Open Market Operations (OMOs) for liquidity management in the money market. During operations, if there appears an upward pressure on the repo rate, it means the system is facing the problem of the shortage of liquidity, SBP's OMO operation starts by injecting the PKR liquidity against the purchasing of government securities from banking sector. On the contrary in case of excess liquidity in market, SBP sells the government securities with the promise to purchase them from banks on a future date. This arrangement of is named OMO mop-up by SBP by purchasing or selling the government securities in shortage or excess of liquidity, respectively. Sometimes if there is required to affect the market liquidity, SBP also operates foreign exchange swaps in the interbank to bring the market into equilibrium. Similarly, SBP also uses the reserve requirement as a tool when liquidity is expected on extremes for a lengthy period.

In Figure 2.1, we can observe that the width of the corridor was set at 300 bps in August 2009 when it was introduced as the explicit interest-rate corridor in money market. The width remained consistent at this level till February 2013, then narrowed down to 250 bps. Further, it reached to 200 bps in May 2015.

Figure 2.1 Interest Rate Corridor



On practical grounds, the lower reliance of banks on central banks and a limited variation in overnight rate are potential elements to bring smooth transmission of monetary policy that signals to other market interest rates prevailing in economy. Extreme instability in the overnight interest rate can affect the term structure of interest rates adversely because of disconnection between short and long-term interest rates. Moreover, this disturbance of term structure disturbs the efficiency of financial market instruments because most of them are designed based upon well-developed yield curve determined in market.

2.2.7.2 Transmission Mechanism of Monetary Policy in Pakistan

Monetary policy transmission is the mechanism through which monetary policy transmits the decisions into changes in the real GDP, the rate of inflation, and other macroeconomic indicators (Taylor, 1995). Mishra, Montiel, and Spilimbergo (2012) have mentioned four main channels of monetary transmission: the interest rate channel, the asset-pricing channel, the

exchange rate channel, and the bank lending channel. Similarly, Peter and Boston (2005) have added the direct monetary channel, namely the inflation expectations channel to monetary policy transmission. The report of SBP (2016-17) has mentioned that the monetary policy transmission in Pakistan is working through five prominent channels, the interest rate channel, the balance sheet channel, the exchange rate channel, the assets price channel and the expectations channel.

The interest rate channel of monetary policy works through influencing the retail interest rates; lending interest rate charged to business enterprises and deposit rate offered to households. Hicks (1937) had kept the interest rate channel at the heart of the traditional Keynesian textbook IS-LM model. First, a change in the policy rate affects different rates of money market, like repo rate and KIBOR (Karachi Interbank Offered Rates), that further affects the long-term interest rate. Specifically, KIBOR is a benchmark rate that determines the borrowing cost for consumers and businesses affecting the decisions of public to consume, save, or invest. Low interest rates lead households to save less and consume more out of their income. Generally, because of low interest rate firms do more investment and hire more workers, which affects income positively through increases in output. In contrast to this, households save more and consume less to get the benefits of high interest rates. Similarly, investors' demand for funds decreases in case of high interest rate, making overall economic activity slowdown. On the empirical grounds, Taylor (1995), Meltzer (1995), Arena, Reinhart and Vázquez (2006), Mohanty and Turner (2008) and Tenreyro and Thwaites (2016) have documented that the interest rate channel has substantial impact on consumption and investment spending through interest rate shocks.

According to the same report of SBP (2016-17), the balance sheet channel of monetary policy transmits the monetary policy actions to affect the credit portfolio of financial intermediaries. Bernanke and Gertler (1995) have described a broader credit channel, the balance sheet channel

from perspective of financial market imperfections that play an important role in monetary policy actions. Further, Bernanke, Gertler, and Gilchrist (1999) have extended the existing New Keynesian model to consider the balance sheet channel of monetary transmission. A contractionary monetary policy action reduces the capacity of banking sector to supply the credit. As a result, a tight monetary policy affects adversely the aggregate demand and thus the prices of goods and services in the market through balance sheet channel of monetary policy. Similarly, Janjua, Rashid, and Qurrat-Ul-Ain (2014) also empirically found the presence of the bank centric view of monetary policy through balance sheet channel in Pakistan using annual data regarding banks over the period 2006-2012.

Further, the report of SBP (2016-17) has revealed the exchange rate channel of monetary policy because this channel links domestic economy with international economies. An expansionary monetary policy depreciates local currencies and appreciates foreign currencies, that reflects in raising the prices of imported goods. The efficiency of the exchange rate channel is dependent on the exchange rate regime. Similarly, the asset price channel and the expectations channel about the future interest rates and inflation are also part of the report of SBP (2016-17). In Chapter 3, we have discussed the transmission channels of monetary policy theoretically and empirically in detail.

2.2.8 Monetary Policy Subsidiaries of SBP

SBP has two following subsidiaries to enhance its functions:

2.2.8.1 SBP-Banking Services Corporation (SBP-BSC)

SBP-BSC was initiated under the SBP-BSC Ordinance 2001. It helps SBP in controlling currency system and credit management. It facilitates inter-bank settlement system of economy and contributes in selling and purchasing of savings instruments on behalf of Central Directorate of National Savings. SBP-BSC manages government's revenue and payments as a representative. It also conducts operational work related to management of public debt, export

refinance, development finance, and foreign exchange operations. The Board of Directors of SBP-BSC, that is chaired by the Governor of SBP, includes all members of the Central Board of central bank and the Managing Director of SBP-BSC. The Governor of SBP chairs the Board of Directors of SBP-BSC that consists of all members of the central board of SBP and the managing director of the SBP-BSC. The head office of the SBP-BSC is established in Karachi with 16 field offices over the country to manage the operations effectively.

2.2.8.2 National Institute of Banking and Finance (NIBAF)

The NIBAF is the training organ of central bank, which provides basic training support to develop inductees and the staff members of SBP at various levels. It also launches international courses on commercial banking as per requirements of economy in dealing with the federal Government. Similarly, the training sessions to SBP-BSC and other financial institutions is also in mandate of NIBAF. The NIBAF is incorporated under Companies Ordinance, 1984 with a separate Board of Directors. The offices of the NIBAF are in Islamabad and Karachi.

2.2.9 Monetary Policy Measures in Pakistan

In empirical analysis, there is used monetary policy rate which replaced repo and reverse repo rates. We have used interbank offered interest rate as the monetary policy instrument to influence bank loans (Gomez-Gonzalez and Grosz, 2007; Mello and Pisu, 2009; Caporale, Çatik, Helmi, Ali, and Tajik, 2016; Ibrahim, 2017; Hanif and Khan, 2012) because it reflects the costs of bank's borrowing which further affects bank's lending decisions. Especially, we selected interbank offered interest rate as the monetary policy instrument to examine the impact of monetary policy action of credit supply of conventional banks *versus* financing of Islamic banks (See Table 2.2).

Table 2.2. Monetary Policy Measure for Pakistan

Years	Interbank Offered Interest Rate
2005	9.58
2006	11
2007	10.43
2008	16.11
2009	12.8
2010	14.12
2011	12.34
2012	9.75
2013	10.48
2014	9.9
2015	6.79
2016	6.76
	Source: State Bank of Pakistan

A balance sheet pertains two important interest rates; the lending and the deposit interest rates. The lending rate is the amount of interest charged by banks on lending to business enterprises of the private sector. The lending rate is normally differentiated in accordance to term and creditworthiness of borrowers. However, the terms and conditions differ from country to country. In Table 2.3, the lending rate is decreased to 7.13 percent in 2016 from 7.28 percent in 2015. On average, it has been 12.12 percent in between 2005-2016 with highest point of 14.33 percent in 2008 and a lowest point of 7.13 percent in 2016.

The deposit rate is the amount of interest paid by commercial banks to depository accounts' holders. Banks increase their inflows through offering incentives in terms of offering a good deposit interest rate to accounts holding larger balances. On the liability side, deposits are the main source to fund the business activities of a financial institute. Therefore, these deposits can be managed for a long term through paying high deposit rates as compensation to fund providers. In Table 2.3, we can observe that the deposit rate has decreased to 3.74 percent in 2016 from 4.58 percent in 2015. On average, it has been 6.65 percent in between 2005-2016.

with the highest point of 8.94 percent in 2008 and the lowest point of 3.74 percent in 2016. The statistics of lending and deposit rate over 2005-1016 can be observed in Table 2.3.

Table 2.3: Balance Sheet Interest Rates

Pakistan			
Years	Lending Rate	Deposit Rate	IR Spread
2005	9.53	4.23	5.3
2006	11.16	5.58	5.58
2007	10.95	5.81	5.14
2008	14.33	8.94	5.39
2009	13.71	7.38	6.33
2010	14.2	7.41	6.79
2011	13.23	7.06	6.17
2012	11.07	6.01	5.06
2013	10.54	6.54	4
2014	10.28	5.97	4.31
2015	7.28	4.58	2.7
2016	7.13	3.74	3.39

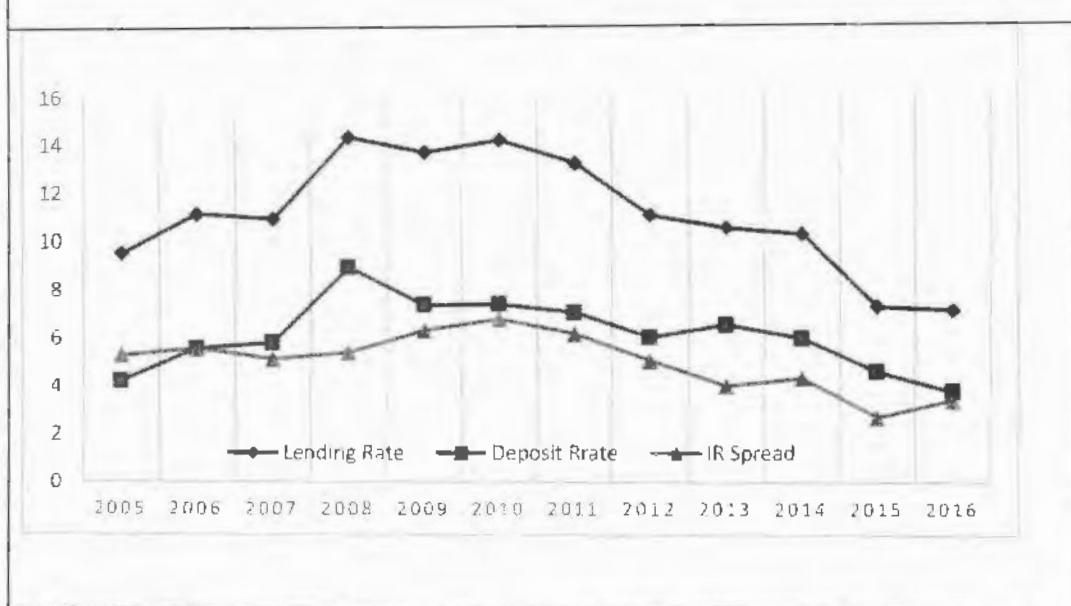
Source: State Bank of Pakistan

Interest rate spread is the difference between the interest rate (the lending rate) received by banks on loans to business enterprises minus the interest rate (the deposit rate) paid by the commercial banks to depositors. The terms and conditions attached to these rates differ by country, however, limiting their comparability. Over the period 2005-2016, the lowest overall average spread was found 2.7 percent, whereas the highest spread was recorded at 6.79 percent. On average, it was 5.46 percent in 2010.

SBP has defined that the banking interests rate spread is the difference between the weighted average of banks' lending rate and the weighted average of banks' deposit rate (SBP Statistical Bulletins, 2013). The statistics of interest rate spread over 2005-1016 can be observed in Table 2.3.

In Figure 2.2, we can see the trends of market interest rates; lending and deposit rates as recorded by State Bank of Pakistan.

Figure 2.2. The Behaviour of Balance Sheet Interest Rates in Pakistan



2.2.10 Historical Review of Riba-Elimination in Pakistan

Pakistan came into existence on the basis of Islamic ideology in 1947. On 1st July 1948, Quaid-e-Azam, Muhammad Ali Jinnah on the occasion of inauguration of State Bank of Pakistan (SBP) declared to establish the financial system of country in accordance with Islamic economic system in the following words:

“I shall watch with keenness the work of your Research Organization in evolving banking practices compatible with Islamic ideas of social and economic life. The adoption of Western economic theory and practice will not help us in achieving our goal of creating a happy and contented people. We must work our destiny in our own way and present to the world an economic system based on true Islamic concept of equality of manhood and social justice. We will thereby be fulfilling our mission as Muslims and giving to humanity the message of peace which alone can save and secure the welfare, happiness and prosperity of mankind.”

Initially, the research on Islamic economic and financial system was conducted by Shari’ah scholars both from Pakistan and abroad. In the Research Department of SBP, an Islamic

Economic Division was established in the 1950s to undertake the research agenda on Islamic economic system. It also worked as a secretariat to Council of Islamic Ideology (CII) for research collaboration. Onwards, there were consumed efforts to eliminate *Riba* from economy in late 1970s on theoretical conceptual models. In era of President General Zia-ul- Haq, an agenda of economic reforms was promoted and several noteworthy and practical steps of Modarib'ah companies, PLS accounts and Zakat-o-Usahr system were taken from 1980 to 1986. Accordingly, numerous laws were changed, and new presidential ordinances were enacted to Islamize the economy in which SBP played an important role. Similarly, Council of Islamic Ideology (CII) contributed the most significant intellectual-cum-operational blueprint to eliminate the *Riba (Interest)* from a modern interest-based economy through Panel of Islamic Scholars, Economists and Bankers in 1980. Furthermore, an International Conference on Islamic Economics was held at Islamabad, Pakistan in 1983. A sizable number of books, monographs, research papers and proposals were produced containing innovative ideas and fruitful discussions as proceedings of these conferences and seminars. Further, International Institute of Islamic Economics (IIIE) of International Islamic University Islamabad, Pakistan contributed in Islamic economic knowledge stream through a tremendous contribution titled "IIIE's Blueprint of Islamic Financial System (1999)" on the issue of monetary policy of an Islamic economy. This blueprint outlines institutional framework, role of central bank, policy instruments and possible choices for monetary management in an Islamic economic framework.

In November 1991, the interest-based practices of banks were declared un-Islamic by the Federal Shari'at Court (FSC) but it was suspended later on appeal to the Supreme Court's Shari'at Appellate Bench till orders of the court. In December 1999, the Shari'at Appellate Bench presented its judgment with the instructions that interest-based laws would cease to have any legal effect by June 30, 2001 and then the deadline was forwarded to June 30, 2002. A

commercial bank came forward with a review petition; the Supreme Court's Shari'at Appellate Bench moved aside its previous verdicts in June 2002 and directed back the case FSC to reconsider its ruling, which had declared interest or 'Riba' unacceptable. The apex court also directed the FSC to ask from contemporary Islamic jurists from the Muslim world. The case had been pending before the FSC for the 16 years. Again in 2013, the FSC initiated preliminary proceedings of the hearing of case through taking the point of view of two jurist consultants, Dr. Muhammad Tahir Mansoori (International Islamic University Islamabad) and Muhammad Ayub (Riphah International University, Islamabad). In addition, the FSC had worked out a questionnaire regarding the issue and sent it to Dr. Sami Ibrahim Suwailem (Saudi Arabia), Dr. Wahba Zuhaili (Syria), Dr. Ajeel Jassem al Nashmi (Kuwait) and Dr. Ali Mohiuddin Al Qaradaghi (Qatar) to know their point of view on the issue. On October 29, 2015, SBP has informed the FSC that there is not an explicit definition of "Interest" or "Riba" in the Constitution. FSC went on the hearing of Riba Case on March 13, 2017 in Islamabad. Mr. Qaisar Imam Advocate defined the Riba confidently to satisfy on different questions posed by honorable judges. Since March 2017, the matter is pending through floating a questionnaire till unspecified date. Yet, the point that Riba and interest in questionnaire is needed to redefine is nothing more but a restart of the fundamental questions that the apex judiciary had already defined at various stages since 1992.

Conceptually, *Riba* has been declared *Haram* in Quran and Sunnah. On the other hand, the constitution of Pakistan has declared that no law contradicting to the Quran and Sunnah can be implemented in the country. Similarly, Islamic principles are for all times and ages till the day of judgment, so there is no room to say that Riba prohibition was related to a specific time and era of Holy Prophet (SAWW). Riba was nullified when individuals were exploiting others and today financial institutions are playing financial intermediation role exploiting the customers at a larger scale than in the past, so there is need of the day to eradicate Riba from society.

2.2.11 An Initiative of Islamic Banking in SBP

Pakistan as an Islamic ideological state has not been an exception to adopt Islamic banking and finance rather it has been playing the role at the top front in the promotion of Islamic economic thoughts and practices. Since inception, Islamic republic of Pakistan has been a founding member of international Islamic financial institutions (IIFIs). On these platforms, Pakistan played a vital role to develop the legal covers, the regulatory bodies, supervisory infrastructure, and Shariah compliance framework for interest-free Islamic financial institutions (IFIs). Similarly, Pakistan has hosted a chain of Islamic economics conferences and other intellectual forums to promote the industry of Islamic banking and finance. This opportunity created a good strength of Islamic scholars who has been explored the diversified perspectives of Islamic economic thoughts and practices. The Government of Pakistan through the Ministry of Finance, State Bank of Pakistan (SBP), the stock exchange markets and Security and Exchange Commission of Pakistan (SECP) are continuously in collaboration with Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI), Islamic Financial Services Board (IFSB), the International Islamic Financial Market (IIFM), and Islamic Research and Training Institute (IRTI) of Islamic Development Bank (IDB) to achieve the higher objectives of Islamic economic system. The cooperation with other central banks and institutions of other Islamic countries have also played a pivotal role in enhancement of innovative Islamic economic thoughts and in development of Islamic banking institutions at both local and at the global level.

In the meantime, the government decided to promote Islamic banking in a gradual manner as a parallel and compatible system. The Commission for Transformation of Financial System was established in SBP in response to the Supreme Court's judgment on Riba on December 23, 1999. They have approved the essentials of Islamic financial modes including *Musharak'ah, Mudarab'ah, Murabha'ah, Musawam'ah, Ijar'ah, Salam* and *Istisn'ah*. Further,

Shari'ah Board of SBP has approved these Islamic modes and recommended the guidelines for Islamic banking business to be circulated to Islamic banks. The initiative to Islamic Banking in country was relaunched in early 2000 to shift the existing interest based conventional system to interest-free economy. This initiative was taken through a market driven and flexible approach, in a phased manner step by step without creating any disruptions in existing system. Moreover, it aims to develop a broad harmonized financial system in Pakistan to enable all people of society to access financial services fulfilling their requirements. In 2002, SBP established Islamic Banking Department (IBP) to supervise the operations of Islamic banking industry in Pakistan.

In this context to achieve the objectives, SBP presented a strategy to promote Islamic banking and finance in country. SBP has launched the strategic plan in 2013 to promote Islamic banking industry of Pakistan with a task to convert the 20% of domestic banking into Islamic banking by 2018. In December 2013, the Government of Pakistan has constituted a steering committee for the promotion of Islamic finance. The steering committee has worked on strategic areas including legal, regulatory and taxation reforms, liquidity management, Islamic capital market and capacity building. Moreover, the Government of Pakistan in collaboration with other corporate institutes, have initiated to target the local and international sukuk markets to meet the credit requirements of the economy. Moreover, the central bank has recently issued a revised Shari'ah Governance Framework in 2015.

The rapid growth of the Islamic banking industry recorded at 11.6 percent as the market share of Islamic banking assets and deposits are recorded at 13.7 percent by the end of June 2017. On balance sheet, the assets are witnessed at PKR 2,035 billion in second quarter of April-June 2017, whereas it was recorded PKR 1,885 billion in the previous quarter of January-March 2017. In second quarter of April-June 2017, the deposits are increased by PKR 1,720 billion from PKR 1,564 billion in the previous quarter (see Table 2.4). In the same industry, profit

after tax is registered at PKR 8.8 billion by the end of 1st half year and it was found PKR 6.1 in second quarter of last year. Similarly, return on assets (ROA) and return on equity (ROE) have also been improved at 0.9 percent and 13.8 percent, respectively.

Table 2.4. Islamic Banking Industry Progress and Market Share

Particulars	Industry Progress			YoY Growth (%) Jun-17	Share in Overall Banking Industry (%)		
	Jun-16	Mar-17	Jun-17		Jun-16	Mar-17	Jun-17
Total Assets (Rupees in billion)	1,745	1,885	2,035	16.6	11.4	11.7	11.6
Deposits (Rupees in billion)	1,461	1,564	1,720	17.8	13.2	13.2	13.7
Number of Islamic banking institutions	22	21	21	(4.5)	—	—	—
Number of Islamic banking branches*	2,146	2,317	2,320	8.1	—	—	—

Source: Data submitted by banks under quarterly Reporting Chart of Account (RCOA)

*including sub-branches

Source: SBP Islamic Banking Bulletin, September 2017

The network of Islamic banks comprises of 21 Islamic banking institutions as per statistics of June 2017. There are five full-fledged Islamic banks, and sixteen conventional banks have standalone branches of Islamic banking. Overall, the branch network of Islamic banks comprises of 2,320 branches in 110 districts on landscape of Pakistan. Encouragingly, the rapid growth of Islamic banking industry during the last decade indicates a bright future perspective for the industry. It includes the development of Islamic capital markets, Islamic money market instruments, Islamic mutual funds and Takaful (Islamic insurance) companies etc. Presently, there are operating 5 Takaful operators in the industry and about 30 Islamic mutual funds in Islamic financial market.

In context of above discussion, we can say that Islamic banking is an industry that is playing an important role through supplying credit to economy. The contractual nature of Islamic banking is fundamentally different, it requires to be dealt separately especially from perspective of monetary policy. The establishment of Islamic monetary framework is not possible except

the conducive environment by the regulatory authorities of government. On the empirical grounds, we have explored the impact of monetary policy on credit supply of Islamic *versus* conventional banks. We have also investigated the same phenomena with respect to size and liquidity of banks. Further, this substantial share of Islamic banking industry requires to ensure firm basis for the development of industry through strengthening the financial and legal infrastructure for the industry. Similarly, there is crucial need to ensure sufficient supply of human capital to complement the growing Islamic financial industry.

2.3 The Monetary Policy Framework of Malaysia

In Malaysia, there have been different regimes to conduct the monetary policy over the time. The regulator of monetary policy is Bank Negara Malaysia (BNM- the Central Bank of Malaysia).

2.3.1 The Regulator of Monetary Policy: Bank Negara Malaysia (BNM)

Bank Negara Malaysia (BNM- the Central Bank of Malaysia), is an independent constitutional body that started its operations on 26 January 1959. As the regulator, BNM is empowered under the Financial Services Act 2013 (FSA-2013), the Islamic Financial Services Act 2013 (IFSA-2013) and the Central Bank of Malaysia Act 2009 (CBA). Since its establishment, BNM has been the most important monetary policy-making institution in Malaysia. It is assigned with multiple tasks of the price and financial stability, sustainable economic growth, full employment, and stable exchange rate. Zeti (2009) has noted that BNM has focused on balancing risks related to economic growth and inflation that in recent years. Similarly, BNM also monitors other financial authorities in Malaysia, such as Labuan Financial Services Authority (LFSA), the Securities Commission of Malaysia (SCM), and the Malaysian Deposit Insurance Corporation (MDIC) (BNM, 2013).

2.3.2 The Role and Functions of the Bank Negara Malaysia (BNM)

BNM is the regulator of monetary policy to promote monetary and financial stability in Malaysia. It intends to provide a conducive environment for the sound growth of the Malaysian economy. The BNM's monetary policy actions are conducted to stable the prices through keeping an eye on economic growth of country. In addition, BNM plays a vital role in development of a progressive, sound and diversified financial sector which leads to the financial system stability. It also takes initiatives to deepen the financial markets role in development of real economy, including the foreign exchange market. Similarly, BNM also supervises the framework of nation's payment systems that ensures the efficiency of financial markets and security of the financial systems. Moreover, it has played an important role in developing the infrastructure for financial inclusion through easing the public to access to financial services. The BNM advices the government, as a banker and an adviser, on the macroeconomic public policies and the management of public debt. It is also an independent authority with a sole right to issue the national currency and to manage the international reserves of Malaysia. The roles of BNM are maintained through the operations of 39 departments that cover the following functional areas.

2.3.3 Economic and Monetary Policy

BNM provides research and technical support to formulate an efficient monetary policy with the availability of suitable credit to finance the economic growth of country. In Malaysia, monetary policy framework has been grown gradually alongside the development of economic and financial system of the country. BNM has been in continuous pursuit of an effective monetary policy framework to achieve the macroeconomic objectives of the economy. McCauley (2006) documented that BNM is committed to price stability rather than an explicit inflation-targeting framework. Similarly, exchange rate stability is also another core objective of a monetary policy. Ooi (2009) has noted that volatile capital flows are appearing as main

problem for BNM in maintenance of a flexible exchange rate and in keeping monetary independent.

However, a rapid growth of Islamic banks, alongside the existing conventional banks, have created complications in transmission mechanism of monetary policy and forwarded challenges to assess an effective framework of monetary policy.

2.3.4 Investment, Operations and Policy Instruments

The BNM Manages domestic liquidity and adjusts exchange rates to achieve monetary policy targets. It also manages the external reserves to provide a protection to its value and to optimize the returns. It also mandates to advise the Government for management of debt and institutional funds. Furthermore, BNM also contribute in development of domestic financial markets. The framework of monetary policy operations and liquidity management contains the complete set of instruments for dual; conventional and Islamic interbank money market. It also deals the monetary operations on the foreign exchange market. BNM has widened the range of existing monetary instruments prevailing in local money market. At present, there are uncollateralized money market borrowings, repo borrowings, BNM monetary notes and several others monetary instruments for the conventional market, whereas the introduction of Islamic monetary instruments at limited level will enhance the effectiveness of monetary transmission mechanisms in dual banking economy (BNM, 2012; BNM, 2016).

The Overnight Policy Rate (OPR) has appeared as a prime indicator of monetary policy actions after the implementation of a new interest framework in 2004. This framework signals to monetary policy directions with an adjustment between 25 to 50 base points in moderate way. In start, it was set at 2.70 in 2004, then the OPR was increased to 3.50 in 2008 to control the high inflation, later it was reduced gradually to avoid shortening of growth; now, it is consistent at 3.00 in 2016 since May 2011, although it increased to 3.25 in 2014 and 2015 (BNM 2013, BNM 2016).

2.3.5 Regulations and Supervision

BNM has wide powers to supervise and control the banking institutions under the acts of FSA and the IFSA. In practice, banking regulation guide supports to have a very high-level evaluation of the governance and supervision of banks. It includes legislation, regulatory bodies, the rules on liquidity, licensing, the role of international standards, foreign investment requirements, and the latest practices of regulations and supervision. In playing supervisory functions, BNM utilizes a risk-based approach of supervision in which financial institutions are evaluated based on risk profiles. Further, adequacy of risk management systems is also monitored for the financial institutions.

The Financial Services Act 2013 (FSA) is the main statute of governance for the conventional financial industry. It replaced the Insurance Act 1996, the Banking and Financial Services Act 1989, the Payment Systems Act 2003 and the Exchange Control Act 1953. Similarly, the Islamic Financial Services Act 2013 (IFSA) is implemented for the regulation and supervision of Islamic financial industry. The IFSA, 2013 is the FSA's counterpart for the Islamic financial sector and it replaced the existing Islamic Banking Act 1983 and the Takaful Act 1984. In addition, BNM also supervises Labuan Financial Services Authority (LFSA), the Securities Commission of Malaysia (SCM), and the Malaysian Deposit Insurance Corporation (MDIC).

2.3.6 Payment Systems

BNM develops the policies and suggests the strategies to promote reliable, protected and accurate clearing process and strengthen settlement and payment mechanism among financial institutions. This settlement system enables the banks to allocate the resources efficiently in short, medium and long-term investment avenues. In Malaysia, there is a variety of investment opportunities and credit arrangement for different terms due to efficient payment systems. In modern era, online banking and centralized software's also appeared with a revival of payments system among market players in Malaysian economy.

2.3.7 Organizational Development

BNM has focused keenly on the bank's strategic management, program management functions and organizational-performance management to organize the performance-improvement processes and to enhance the capacity building of the banking sector. This organizational development behavior leads to human resources initiatives through the implementation of Human Capital Management framework in organizations effectively. Overall, the performance of banking sector has been improved because of this organizational behavior in Malaysia.

Over the past few decades, Malaysia's economic policies have strengthened the economy to face the external shocks. Similarly, the strategic investments in infrastructure of country have also raised the country's growth potential. As an important part of economy, BNM's policy adjustment in 2016 appeared as a realistic decision. BNM took the benefits of the window of opportunity to restore the degree of monetary arrangements and leveraged inflationary environment of the economy. The policy also helped to manage the given the submissive risks of destabilizing financial imbalances. Further, macro and micro prudential management, fiscal policies to smooth financial imbalances also played a central role in supplementing monetary policy.

2.3.8 Communications

The communications function is appeared with an increasing importance in response to high demands of the stakeholders who are concerned to seek accurate transparency and disclosure of business. BNM has always kept at the top priority to provide efficient work culture, to offer effective services to stakeholders, and maintain effective communications to market players and public. Communication is an essential ingredient of an efficient financial environment to promote the better understanding of rights and responsibilities among people. Similarly, it makes aware the investors about investment opportunities and risk profiles for participants in the financial system. Cheong (2005) has explored that policy communication has strengthened

the market in present years. Now a day, BNM announces policy rates and objectives of monetary operations on regular basis. Previously, monetary policy actions were often kept as informal targets, and these were not publicly announced in formal way. Since 2004, there is established monetary policy committee that conducts meetings about monetary management at least six times in a year. This committee is assigned a task to issue monetary policy statements on the same day. Further, BNM has taken communication measures to develop the level of financial literacy among investors, consumers and students. Currently, the central bank has initiated a Consumer Education Program throughout the country for financial inclusion through communication. This Consumer Education Program targets the neglected areas of country and brings them in financial environment. As the global financial system has become more developed, BNM is introducing sophisticated products and targeting potential perspectives through communicating the opportunities and risk profiles of financial participation.

2.3.9 Monetary Policy Measures in Malaysia

We have selected the interbank offered interest rate as measure of monetary policy to examine the impact of monetary policy action of credit channel of conventional banks *versus* financing of Islamic banks for Malaysia as well. Interbank offered interest rate as the monetary policy instrument (See Table 2.5) is used especially to influence bank loans (Gomez-Gonzalez and Grosz, 2007; Mello and Pisu, 2009; Caporale, Çatik, Helmi, Ali, and Tajik, 2016; Ibrahim, 2017; Hanif and Khan, 2012) because it reflects the costs of bank's borrowing or financing which further affects bank's lending or financing decisions.

Table 2.5. Monetary Policy Measure for Malaysia

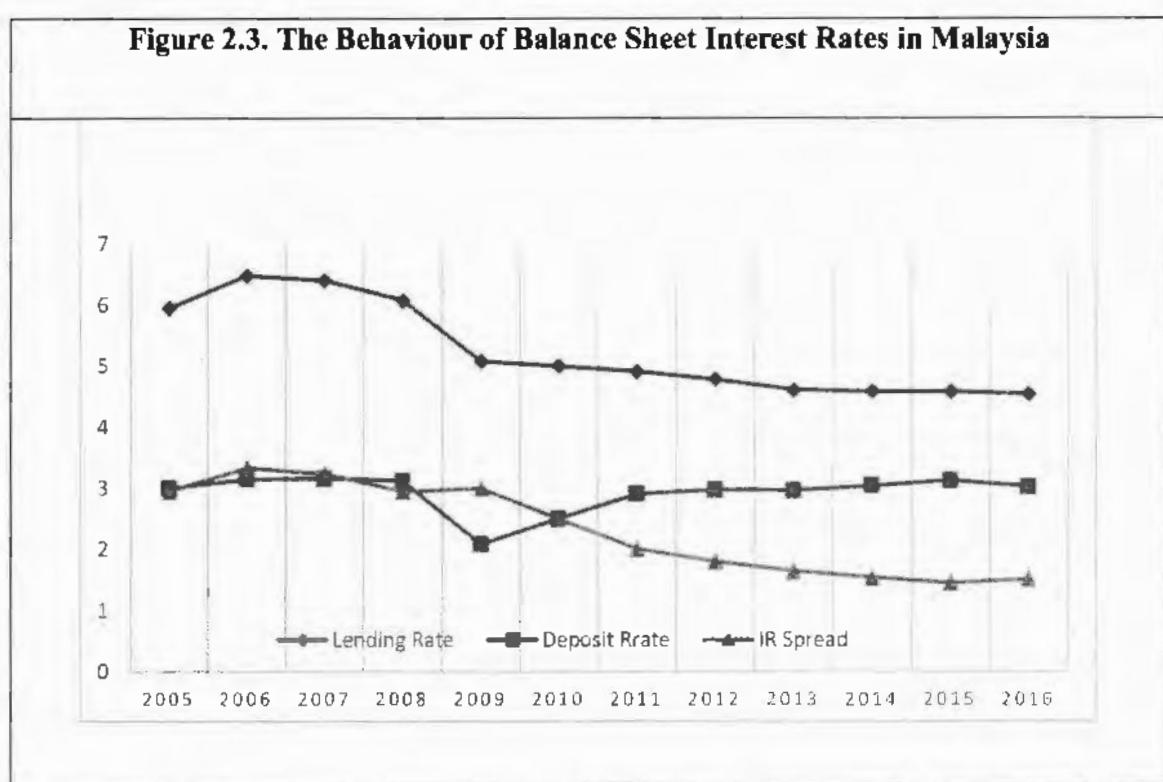
Years	Interbank Offered Interest Rate
2005	3.378
2006	3.499
2007	3.537
2008	3.492
2009	2.126
2010	2.48
2011	2.909
2012	3.003
2013	3.005
2014	3.127
2015	3.251
2016	3.11
Source: Bank Negara Malaysia	

Two important interest rates; the lending and the deposit interest rates are the integral component of the both sides of balance sheet. The lending rate is the amount of interest charged by banks on lending to business enterprises of the private sector. The lending rate is normally differentiated in accordance to term and creditworthiness of borrowers. However, the terms and conditions differ from country to country. The balance sheet interest rates for Malaysia are summarized in Table 2.6.

Table 2.6: Balance Sheet Interest Rates for Malaysia

Years	Lending Rate	Deposit Rate	IR Spread
2005	5.95	3.00	2.95
2006	6.49	3.15	3.34
2007	6.41	3.17	3.24
2008	6.08	3.13	2.95
2009	5.08	2.08	3.00
2010	5.00	2.50	2.50
2011	4.92	2.91	2.00
2012	4.79	2.98	1.81
2013	4.61	2.97	1.64
2014	4.59	3.05	1.54
2015	4.59	3.13	1.45
2016	4.54	3.03	1.52
Source: Bank Negara Malaysia			

The deposit rate is the amount of interest paid by commercial banks to depository accounts' holders. Banks increase their inflows through offering incentives in terms of offering a good deposit interest rate to accounts holding larger balances. On the liability side, deposits are the main source to fund the business activities of a financial institute. Therefore, these deposits can be managed for a long term through paying high deposit rates as compensation to fund providers. The behaviour of balance sheet of market interest rates in Malaysia is reflected in Figure 2.3.



In 2016, BNM established the Financial Markets Committee (FMC). It comprises the participant with diversified experience of different industries. It is entrusted with the mandate of making policies to enhance the local financial markets and of discussing the potential issues and risk profiles emerging in domestic financial markets. In addition, the FMC also plays an important role in developing the onshore foreign exchange market. In sum, Malaysia's sustained economic growth and financial market efficiency is the result of their historical

fundamental reforms and outreaching institutional improvements. Thus, these reforms have provided the economy the dexterity to navigate successfully in financial disasters.

2.3.10 Islamic Banking System in Malaysia

In 1983, Islamic Banking Act and Government Investment Act were initiated to launch Islamic banks and to issue interest-free certificates in Malaysia. In line with these steps, an Investment Certificate Dividend Committee (ICDC) was also founded to determine the rate of returns on non-interest-bearing certificates. The first Islamic bank “Bank Islam Malaysia Berhad (BIMB)” was also established in July 1983 to meet the financial requirements of the country. The BIMB captured the taste of public and performed efficiently over a decade, inspiring the monetary authorities to enter second phase of reforms. On 4th of March 1993, the Bank Negara Malaysia (BNM) introduced an interest free banking scheme Skim Perbankan Tanpa Faedah (SPTF), directing all conventional banks to open the separate Islamic banking counters in their branches. Moreover, an Islamic Clearing House and an Islamic Inter-Bank Market were also introduced in the same year to boost up the Islamic banking and capital market. These initiatives enhanced the proficiency and prosperity of Islamic financial markets in Malaysia.

In Malaysia, 16 fully-fledged Islamic financial institutions (IFIs) are working including several foreign business entities, while there is a well-developed Islamic money and capital market with a long list of products and opportunities. The share of Islamic banks in Malaysian market multiplied from 7.1% to 28% in 2010 and 2016 respectively. However, the industry's annual growth rate slowed from 24.2% to 8.2% in 2010 and 2016 respectively. In statistics of RAM Rating Services Bhd, the international sukuk market has been reached to the worth of US\$22.2 billion in March 2017. The Malaysian's sukuk market signifies over 60% of the global sukuk market. In addition, IMF report has reflected that there is a positive indication that Islamic banking sector had appeared with lower levels of credit risk in Malaysia, on average 6% over the period 2010–2013.

Hasin and Majid (2012) documented that Islamic banks are also in supervision and control of BNM in Malaysia. Therefore, BNM has the power to regulate the Islamic banks through different supervisory powers of a central bank. From regulatory perspective, the deposits of a bank, whether it is conventional or Islamic are maintained subjected to SRR and LRR. Any change in SRR will affect the banking sector's reserve and then lending or financing power. This theoretical background depicts about how a central bank effects the bank lending capacity to achieve the objectives of the policy.

In Malaysia, a relatively rapid development of Islamic financial market is remarkable. There is found a very impressive growth of Islamic banking industry by approximately 30% per annum since the inception of Islamic banking industry in 1983. This increasing pace of Islamic banking industry in the financial landscape of Malaysia invites the economists to investigate the relevance of the credit supply of Islamic banks in the transmission mechanism of monetary policy. In our opinion, this topic has yet to be explored from Islamic banking perspective especially, and in this regard, the dissertation will enrich the literature on the subject, not only in the domain of Islamic financial industry, but also to offer some new perspectives in the monetary economics (Sukmana and Qasim, 2010).

2.3.11 The Islamic Money Market and Monetary Instruments in Malaysia

The Islamic money market provides the Islamic financial institutions (IFIs) especially Islamic banking sector with the funding facility to adjust their portfolios for the short-term. Similarly, Islamic money market works as a potential channel for the transmission of monetary policy in Malaysian market. Financial instruments of Islamic money market maintain the shortage and surplus of interbank to function the liquidity mechanism for sake of stability in the financial system. In 1994, the Islamic Inter-bank Money Market (IIMM) was founded to arrange short-term source of Shari'ah based funds. The Islamic banks were facilitated to manage the asset-liability efficiently. On December 18, 1993, BNM has issued the guidelines to regulate the

IIMM for Islamic banking industry. In IIMM, the following instruments are available to facilitate the players of Islamic financial industry

2.3.11.1 Mudarab'ah Interbank Investment (MII)

MII is a Modarab'ah arrangement in which a surplus bank invests the in a deficit Islamic bank from the period of overnight to twelve months. Further, the rate of return is determined through the one-year historical rate of gross profit before distribution among investors. As per Modarab'ah rule in product, the profit ratios are negotiable between participating parties. The investor is not able to know about profit while negotiating on profit ratio because the actual return crystallizes at the execution of the contract. Similarly, the principal amount with profit ratio is paid by investee banks at the end of the period.

2.3.11.2 Wadi'ah Acceptance (WA)

Wadi'ah Acceptance (WA) is a monetary instrument for liquidity management and open market operations (OMOs) between BNM and Islamic banking industry holding surplus funds. Islamic banks keep their surplus liquidity in the central bank as custodian based upon the concept of Al-Wadi'ah. In this arrangement, BNM is not responsible to pay any amount as custodian of funds. However, any dividend paid by BNM is considered "Gift (Hibb'ah)". Wadi'ah Acceptance certificates provide two benefits to monetary authorities because of distinguish features. First, there is flexibility for the regulator (BNM) to assign flexible number of dividends without any compulsion of investing the amount. Secondly, Wadi'ah Acceptance is an accurate tool to absorb the excess liquidity from IIMM from overnight arrangement to a fixed intended period of time.

2.3.11.3 Government Investment Issue (GII)

In Islamic banking history of Malaysia, the first Islamic bank started its operations in 1983 and it was not allowed by Shari'ah to deal in interest-bearing arrangement of existing market like

Malaysian Government Securities (MGS) and Malaysian Treasury Bills (MTB). As a financial institute, there was dire need of commercial liquid papers to meet the SLR of regulator and to park the surplus liquidity. Realizing the matter in 1983, the Malaysian legislative assembly the Government Investment Act making the government enable to issue Shari'ah compliance Government Investment Certificates (GIC). The same GIC are replaced with the Government Investment Issues (GII) in July 1983 based the concept of Qard al- Hasan.

The underlying contract vehicle of Qard al-Hasan does not allow the Government Investment Issue (GII) to be sold or purchased in secondary market. BNM raised this constraint through opening a window with a mandate to deal (Sale and Purchase) the GII as tradeable instrument with the central bank. BNM sets the price to sell and purchase to maintain the mechanism of the GII. Later, BNM advised the respective government to issue a new three-years GII of RM 2.0 billion based on the concept of Bai-e-Inah on 15 June 2001. The GII becomes as tradeable instrument based on Bai ud-Dyn (Trading of Debt) in secondary market. Again, the government of Malaysia issued a first five-years profit based GII of RM2 billion on 16 March 2005. This specific profit based GII is a coupon bearing paper in which the government pays to investors a half yearly profit. On 17 June 2005, the Government Investment Act 1983 was amended to raise the issuance size limit of GII from RM 15 billion to RM 30 billion. On 22 July 2013, the GII is issued based on Murabah'ah concept with issuance size ranging from RM 2 billion to RM 5 billion and original maturities of 3, 5, 7, 10, 15 or 20 years.

2.3.11.4 Bank Negara Monetary Notes-i (BNMN-i)

Bank Negara Monetary Notes-i (BNMN-i) are Islamic financial securities issued by the BNM. These certificates are introduced to replace the Bank Negara Negotiable Notes (BNNN) for liquidity management among Islamic financial institutions (IFIs). The maturity of these securities spreads from 1 year to 3 years. The BNMN-i are issued on the base of discounted or

on a coupon-bearing basis as per investors' demand. The former is traded through similar market convention as that of the Bank Negara Negotiable Notes (BNNN) and Malaysian Islamic Treasury Bills (MITB), whereas the later works according to the market convention of Government Investment Issues (GII).

2.3.11.5 Sell and Buy Back Agreement (SBBA)

SBBA is an arrangement of two consecutive transactions to meet the liquidity requirements of an initiating party in Islamic money market. It is based upon "Bai Al-Ina" because the same commodity is used in two different transactions. In practice, two parties enter into SBBA transaction in which a seller (Islamic bank) sells an asset to a buyer (customer) at an agreed deferred high price, and subsequently, the seller (customer) sells back the same asset to buyer (Islamic bank) at an agreed spot low price. At the end customer goes back with a lower amount that is supposed to return to Islamic bank with a higher amount.

2.3.11.6 Cagamas Mudharb'ah Bonds (SMC)

Cagamas Mudharb'ah Bond is based upon the concept to purchase the Islamic housing debts from financial institutions. Cagamas Berhad introduced Cagamas Mudharb'ah Bond on 1 March 1994 for the Islamic financial institutions (IFIs) which are offering house-finance facility to customers. The SMC is structured in line with the concept of Mudharb'ah in which the bondholders and Cagamas negotiate on the profit-sharing ratios with mutual consent among parties.

2.3.11.7 When Issue (WI)

WI is a product that is based in dealing with debt securities conditionally because the debt securities have been authorized but not yet issued. There is found selling and buying of debt securities through WI arrangements. The National Shariah Advisory Council has allowed WI

transaction because it is based on the legitimacy of the promise to sell or purchase of different assets in transactions.

2.3.11.8 Islamic Accepted Bills (IAB)

IAB was introduced in 1991 to facilitate the local and foreign trade through providing an alternate Shari'ah based source of financing to traders. The IAB is also familiar in market as Interest-Free Accepted Bills (IAB). The IAB is designed on vehicle contract of Al-Murabh'ah (Cost-Plus) and Bai ad-Dayn (trading of debt). Al-Murabh'ah (Cost-Plus) refers to sell the merchandise at a price with profit margin disclosed to interacting parties, while the Bai Al-Dayn refers to the sale of the amount payable in form of debt which incur from a trade transaction. Under the IAB facility, there are prevailing two types of products to facilitate domestic and foreign trade.

2.3.11.9 Imports and local purchases

The financing is designed through Murabh'ah working capital financing mechanism for import and local purchases. In process, the customer is appointed as purchasing agent of Islamic bank. On the behalf of banks, the agent purchases the commodities from a vendor and the concerned bank pays the price. In next step of process flow, the concerned bank resells the same commodity to the customer at higher price, incorporating the profit margin of seller. A customer can pay the price on deferred basis up to 200 days.

The sale of commodities on basis of Bai-Moajj'ah (deferred payment) leads to the creation of debt which is securitized as a bill of exchange drawn by the bank. In next step, the customer accepts it against the sale price of bank that is payable at maturity. A bank is authorized to sell the IAB to a third party because of the acceptance of the concept of Bai al-dayn in Islamic law of business transactions.

2.3.11.10 Exports and local sales

The bill of exchange designed through the concept of Bai al-Dayn, is working to meet the financial needs of export financing and domestic needs. In process flow, an eligible exporter for IAB facility completes the export documentation in accordance to the requirements of a sale contract or a letter of credit. In next step, the export documents are transferred to the bank of importer to ensure the requirements of contract. The exporter draws on the bank a newly issued bill of exchange as a substitution bill and this is the IAB. Then, the bank purchases the IAB against a specified price with mutual consent after fulfilling the requirements of Bai al-Dayn and the proceedings are credited into the account of exporter. The same process is applicable for domestic sales.

2.3.11.11 Islamic Negotiable Instruments (INI)

There are two instruments in the framework of INI. First, the Islamic Negotiable Instruments of Deposit (INID) that is based upon the concept of Mudharb'ah. In the INID mechanism, the sum of money deposited with the Islamic banks is taken along with the amount repayable to the bearer of deposit accounts on a future date. This future payment is given at the nominal value of INID and declared dividend for bearer of deposit accounts. Second, the Negotiable Islamic Debt Certificate (NIDC) that is based on the concept of sale and purchase back the same commodity (Bai Ina) in which a certificate bearer purchases the assets of Islamic banks on spot cash basis. Subsequently, the Islamic banks purchase back the same asset with profit margin to be paid on a deferred date.

2.3.11.12 Islamic Private Debt Securities (IPDS)

Since 1990, the Islamic Private Debt Securities (IPDS) has been initiated in Malaysia. The IPDS that were found outstanding, all of them were issued on the basis of Murabahah, Bai Bithaman Ajil and al Mudharb'ah.

2.3.11.13 Ar-Rahnu Agreement-I (RA-i)

BNM has introduced Ar-Rahnu Agreement-I (RA-i) for liquidity management among Islamic banks. The returns to the customers are sent in the form of gift and the rate of return is determined through inter-bank money market rate. In product structure, a lender lends a specific amount to a borrower through pledging a security provided by borrower as collateral on basis of Qard al-hasan. If a borrower fails to meet his/her commitment, the lender has right to liquidate the pledged security and adjust the proceeds with issued debt. If surplus money is found after adjustment of issued debt, the remaining balance would be sent to the borrower.

2.3.11.14 Sukuk Bank Negara Malaysia Ijarah (SBNMI)

The SBNMI is based the concept of the sale and lease back: two independent contracts. This sukuk structure is widely found in Islamic financial markets especially in the Middle East. To manage the operation and cash flows, a special purpose vehicle (SPV) is founded. The SPV: BNM Sukuk Berhad is initiated to issue the Ijar'ah based sukuk in Malaysia. In structure, the assets of BNM are considered the underlying asset to design the sukuk. The sukuk bearers purchase the assets of BNM after an open auction in the market with the guarantee of the Malaysian government. Then, the sukuk bearers lease back to BNM against the rental payments. The SPV collects and manages the cash flows through distributing the rental amount to investors on half-yearly basis. On the maturity date, the SPV sells the assets on behalf of Sukuk holders to BNM at a predetermined price. BNM issues these instruments on regular basis to manage the operation of Islamic financial market in Malaysia.

2.3.12 Historical Development of Monetary Instruments

In Malaysia, there are introduced several Islamic monetary instruments initiated by the Association of Islamic Banking Institutions Malaysia (AIBIM) and the Bank Negara Malaysia (BNM) to meet the requirements of the participants of Islamic money market compatible to the contemporary practices of global financial markets. BNM introduced Commodity Murabahah Programme (CMP) on 08 Feb 2007, Bank Negara Monetary Notes Murabahah (BNMN-Murabahah) on 02 Jul 2009. The Association of Islamic Banking Institutions Malaysia (AIBIM) also plays a significant role at various times. They have adopted two standardized interbank master agreements for Islamic deposit-taking and placement transactions on 21 April 2009. Similarly, the Bursa Malaysia established the world's first plate form "Bursa Suq Al Sila" 17 August 2009 in which commodities are traded in compliance with Shari'ah. This platform entertains commodity-based Islamic investment opportunities within framework of Murabah'ah, Tawarruq and Musawam'ah through crude palm oil (CPO) of Malaysian commodities. Again, the AIBIM appeared with the Corporate Murabah'ah Master Agreement (CMMA) on 21 August 2009. This CMMA is designed as a standard document that facilitates the deposit taking among Islamic financial institutions (IFIs) and participants from corporate sector. On 17 September 2009, the AIBIM has launched two more documents to facilitate the IFIs in taking deposits and placement of transactions enhancing the Islamic interbank activities through reducing the cost of the transactions among Islamic banking industry. Further, the AIBIM has initiated Wakalah Placement Agreement (WPA) on 24 November 2009. The WPA facilitates the deposit management among Islamic financial institutions (IFIs) and participants from corporate sector in the Wakal'ah concept. However, Islamic monetary policy instruments are being developed in Islamic financial markets of countries with dual banking system, but Malaysia is still market leader in product structure (For details, See Table 2.7)

Table 2.7 Islamic Monetary Policy Instruments in Islamic Financial Markets

Market	Instrument	Shari'ah Contract	Country
Market for Government and/or central bank securities	Islamic Treasury Bills	Baq' al Inah	Malaysia
	Government Investment Issues	Initial Qard Hassan. Now BBA. Bay' al Inah	Malaysia
	Government Islamic Investment Bond	Mudarabah	Banladesh
	Government Investment Certificates	Ijarah. Irsanah. Salam. Mudarabah	Sudan
	Central Bank Wadiyah Certificates	Wadiyah	Bahrain
Market for Government and/or central bank securities	Bank Negara Monetary Notes	Bay' al Inah	Malaysia
	Sukuk Al Salam (Central Bank)		Bahrain
	Shariah Compliant Certificate of Deposits (CDs)	Commodity Murabahah	UAE
	Sukuk Musharakah (Central Bank & Government Musharakah Certificates)	Musharakah	Iran. Sudan
	Sukuk Ijarah (short-term & long-term)	Ijarah	Malaysia. Bahrain. Brunei. Sudan
Market for short-term financial instruments issued by financial institutions and other corporates (non-financial) entities	Bank Indonesia Shariah Certificate	Jualah	Indonesia
	Negotiable Islamic Debt Certificate	BBA Bay' al Inah	Malaysia
	Islamic Accepted Bills	Murabahah. Bay' al Dayn	Malaysia
	Islamic Commercial Papers	Bay' al Dayn	Malaysia
	Sell & Buyback Agreement (Islamic Repos)	Bay' & Wad (Inah). commodity Murabahah. Wad	Malaysia. Bahrain. Saudi Arabia
	Sukuk	Ijarah. Irsanah. Salam. Murabahah. Musharakah. Mudarabah. Wakalah. Istithmar	

Source: Sarker (2016)

BNM launched two new Islamic monetary instruments; the Bank Negara Monetary Notes-Istithmar (BNMN-Istithmar) and Bank Negara Monetary Notes-BBA (BNMN-BBA) on 21 Jun 2011. Conceptually, the BNMN-Istithmar is on the Istithmar (investment) concept to manage the portfolio. It is a structure that combines sale, lease-back of assets (Ijar'ah), and commodity mark-up sale transaction (Murabahah). The BNMN-BBA is an instrument based on the underlying concept of Bai' Bithaman Ajil in which a commodity is sold at an agreed

price to be recovered on a deferred date. Likewise, BNM introduced the Collateralized Murabh'ah in line with same monetary instruments on 30 May 2012. The Collateralized Murabh'ah is secured by the asset and the Islamic bank (financier) has right to liquidate the asset if the client fails to pay back. In other words, the Collateralized Murabh'ah combines the traditional Murabh'ah transaction with Sukuk that works as the pledged asset to give a back support to the transaction.

The BNM has forwarded the Islamic Range Maturity Auction (IRMA) under Wadi'ah Acceptance and Murabh'ah Acceptance via FAST on 25 February 2013. Similarly, BNM came to replace Wadi'ah principle by Qard principle in Islamic money market tenders on 15 Jun 2015 to meet the recommendations of 6th meeting on 8 May 2008 about custody of money. Further, on 30 Jul 2015 BNM introduced the BNM-Mudarb'ah Certificate (BNM M-Cert) structured on profit-sharing principle among BNM and sukuk holders. In process flow of BNM M-Cert, BNM invest the amount in potential investment avenue and conducts the business operations and finally distributes the incurred profit according to pre-agreed profit ratio with mutual consent. More recently, the Government of Malaysia has introduced the Malaysian Islamic Treasury Bill (MITB) based on Murabh'ah contract on 5 Feb 2016. The MITB is a certificate assigning a deferred payment in Murabh'ah sale transaction through a commodity like crude palm oil (CPO) in accordance with Shari'ah principles.

2.4 Conclusion

Monetary policy framework regulates the supply of money to soothe the growth of a country. The ultimate objective of monetary policy is to achieve sustained economic growth, stabilize prices, optimize inflation, control unemployment, and maintain foreign exchange. In an Islamic monetary management, these objectives can also be achieved through Shari'ah compliant monetary instruments. This chapter explores the monetary policy experience of State Bank of

Pakistan (SBP) and Bank Negara Malaysia (BNM). Similarly, we have observed the monetary policy mechanism, objectives, instruments, distinguish characteristics of dual banking market and emerging trends of Islamic financial market in both economies of Pakistan and Malaysia. Further, Islamic banking is an emerging market over the globe and this industry holds a substantial share of credit supply in Pakistan and Malaysia with dual banking system; the Islamic and conventional banking system. In Pakistan and Malaysia, Islamic banking is recorded at 11.6 percent and 35.4 percent, respectively, as the market share of total banking assets and Islamic deposits are recorded at 13.7 percent and 38.7 percent, respectively, of banking industry by the end of June 2017.

Overall, Chapter 2 is on right place to explain the monetary policy framework and the progress of Islamic banking industry of Pakistan and Malaysia before shedding light over the transmission mechanism through different channels and over the development of Islamic monetary economics in the literature review.

3. Review of Empirical Literature

3.1 Introduction

The great economic recession of the 1930s affected the economic and political approaches of policymakers and legislators. It turned out to a broad consensus among governments' stakeholders to bring the best economic and political policies to avoid such crisis appearing again in economies. Even beyond this extreme deflationary gap, it a reality that an efficient political and economic system may endorse a sound society and a smooth economy. The household prefer to consume consistently after a reliable income in the short run. In the long run, growth may get affected because of discouraging economic fluctuations by huge investment in risky avenues of economy. In short, a stable political system, efficient macroeconomic policies and peaceful environment can help in consistent economic growth and general welfare of societies.

Indeed, sound economic policies lay down the sound basis to stabilize an economy. However, what is vigorous to be stabilized and how to achieve this "desirable" degree of stabilization in terms of economic indicators? Moreover, economic cycles can be absorbed up to what extent in an economy? Further, what are "effective transmission channels" through which the policy actions affect macroeconomic indicators to stabilize the economy?

Over the time, these questions and their answers have highly been debated. Politicians and economists have tried their best to meet these questions and they incorporated these aspects in their system as precautionary measure. Back in the 1960s' the Keynesian economists appeared so optimist declaring that there is an end to the business cycles. By endorsing the same agenda, Bronfenbrenner (1969) has written a book titled 'Is the Business Cycle Obsolete?' with a reference of a quote from Hyman P. Minsky who had been a well-known legend of monetary economics and financial institutional matters at the time in the following words:

“It was felt that if the policy prescription of the New Economics were applied, business cycles as they had been known would be a thing of the past. Later in the 1960s, monetarist challenged the Keynesian view of economy. The discussion between Keynesians and monetarists started on the effectiveness of economic policy instruments. Keynesian preferred fiscal stabilization policy, whereas monetarists talked about the ineffectiveness of fiscal tools.”

3.2 Fiscal and Monetary Policies

Friedman (2012) has explained that a government holds two competent authorities: a fiscal authority controlled the elected government and a monetary authority controlled by the central bank. The fiscal authority intends to meet government expenditures, while the monetary authority targets to control the inflation for stabilization of the prices. But interestingly, expansionary monetary policy brings inflation that process provides seigniorage revenue finance government expanses. Now, fiscal and monetary appear with contradictory objectives in same economy at different edges. If we assume a central bank as an independent monetary authority, it simply announces a sequence of inflation rates. In other words, an announcement of inflation rates is that of seigniorage revenues and the fiscal authority will spend accordingly. However, the independence of central bank is extremely rare throughout the world, even in developed economies.

Balaceanu and Dragne (2014) have noted that monetary policy along with fiscal policy is one of the two ways for competent authorities to influence the rhythm and direction of economy, with effects not only on the level and variation of gross domestic product, but on the general level of prices in the economy. The central bank hold monopoly position to offer money that banks require to constitute legal reserves subject to central banks' requirements. Similarly, these banks also required the money to settle with other commercial banks in order currency and credit for daily transactions in the economy. There is consensus among researchers that

monetary policy is found neutral in the long run, although it affects real economic activity in the short run in an economy (Eichenbaum, 1997). Bernanke and Blinder (1992) have documented that these output effects of monetary policy may last for up to two years or more in some cases depending on the objectives of monetary policy and efficiency of the transmission mechanism of economic markets.

Mishra and Montiel (2012) have investigated the monetary policy transmission process in low-income countries (LICs) and found that fiscal policy was not a viable instrument to stabilize these economies and indeed had often found a source of macroeconomic shocks. At the same time in LICs, the independence of central bank has often been a challenging perspective, leaving little room to conduct an independent monetary policy. However, recent economic reforms and structural changes have given an autonomous position to central banks, not just *de jure*, but also *de facto*. The responsibility of newly independent banks is increasing for stabilization policy in LICs along with fiscal reform usually lagging that of monetary ones.

Generally, monetary policy phenomena are not fully understandable for the outsiders of policy-making circle. Accordingly, Clarida, Gali, and Gertler (1999) have outlined two main factors to meet the question about how monetary policy is conducted by central banks. Firstly, on empirical grounds, the impact of monetary policy is explored affecting the basic indicators of an economy. King and Watson (1996), Christiano, Eichenbaum, and Evans (1996), and Leeper, Sims, and Zha (1996) have found a significant effect of monetary policy shocks to the economy. As a result, this empirical evidence attracts the attention of economists to examine the policy stance of policymakers in formulating monetary policy. Secondly, the underlying theoretical framework of monetary policy analysis has been improved in recent years. In monetary analysis, the dynamic general equilibrium theory has been providing very sound basis to develop theoretical framework before empirical investigation of policy model.

Furthermore, this approach has also met the Lucas critique that is Robert Lucas (1976)'s work on macroeconomic policymaking - the flaw of the policy evaluation exercise which is assumed using the traditional macro-econometric structural models that treats parameters to be time invariant to the policy action. These models consistent with theoretical background help better to develop a framework to evaluate the policy exercises. Similarly, it also provides a better foundation for monetary policy researchers to extend their descriptive analysis to normative perspectives. Indeed, it is a complex procedure to formulate the monetary policy and more difficult is to provide the framework for understanding central bank's decisions making process to make understand the outsiders of policy-making process. The answer to this question is very important as it is a first step to understand the behaviour of central bank in formulating monetary policy. In this context. We develop the theoretical framework from monetary policy rules to understand the monetary policy mechanism.

3.3 The Classical Macroeconomic Approach

The classical context is the most stable tradition to discuss the relationships of macroeconomic factors in short run through most of the 19th and early 20th centuries. We observe that there was a somewhat disorganized series of economic theories and misconception about some main economic variables, for which they assume full employment and output as the long-run equilibrium state. In long-run equilibrium of economy, the classical models imply full employment and output, and money neutrality. It means there is no need to conduct a fiscal or a monetary policy to target the already perfect functioning macroeconomic indicators of the economy. Although, the classical explain about short run disturbance in level of full employment occurs due to mistakes in price or inflationary expectations. These deviations in equilibriums and departures from the neutrality of money are self-correcting in short time.

Any change in the money supply according to the classical economists affects employment and output, which leads to business cycle fluctuations. Martin (1969) pointed out that the classical approach revolves around the quantity theory of prices in an economy and the theory of the interest rate prevailing in market. However, there was not an organized theory of employment and output. In addition, the classical assume that the economy gets back to its full-employment level in long run after a monetary disturbance injected in short run. Similarly, the investment multiplier is also missing component to deal with the product market.

The neoclassical model has improved the shortcomings of the traditional classical models, based on the IS-LM framework. They have included the product market analysis explicitly through the IS curve in neoclassical models. Further, the neoclassical economists substituted the quantity theory of money by determination of the price level through a general equilibrium analysis. Similarly, they came up modern analyses of the classical model, emphasizing on both equilibrium of economy i.e. at the full-employment level, and disequilibrium of economy. In particular, they presented the applications to analyse real-world problems and to formulate economic policies accordingly.

The modern classical model has appeared on economic horizon out of the several schools evolved out of the neoclassical school. Two salient assumptions; the rational expectations and the continuous equilibrium of the economy distinguished the modern classical model from neoclassical models. As a result, this modern approach allowed for short-run movement from the equilibrium level of full employment because of errors in expectations. Furthermore, there is added the doctrine of Ricardian equivalence to the framework of modern classical model, which describes the new classical model about neutrality of consumer's behaviour to any change in sources of government expenditures. In other words, this model infers the failure of fiscal policy stance to manage the commodity market equilibrium or to affect aggregate demand in the economy. Therefore, the fiscal variables are not able to be used as a policy tool

for government. However, the money supply is the sole source as a policy tool to change in aggregate demand of the economy.

Notably, the implications extracted from the models of the neoclassical state full-employment equilibrium position and output on same position as well. For such states, they recommend that economy should left independently to restore market equilibrium which is re-established within a reasonable period according to the neoclassical prescription. In their opinion, monetary and fiscal policies can change only nominal values of macroeconomic indicators, therefore, should not be pursued because these policies are not able to change real values of equilibrium. From the perspective of policy implication, the above propositions are accepted to affect the economy for short run through monetary and fiscal policies. Most, if not all, central banks use monetary policy tools to achieve the objectives of monetary policy for short run.

The modern classical assume that short run departure of output from the full-employment level is because of wrong expectation of price inflation in economy. This explanation is totally wrong. Snowdon and Vanc (2005) have also explored that a very minor deviation of full employment from equilibrium, is explained through mistakes in price expectations. In short, the classical economists don't interpret actual deviation of major macroeconomic variables from full employment. Similarly, the expectations-augmented Phillips curve and the Friedman and Lucas supply rules also fail to explain the deviation of actual unemployment rate from the natural rate.

On the basis of the research paper of Lucas (1973), Sargent & Wallace (1975) introduced a surprise supply function. In this specific supply function, there was introduced a white noise error-term which cannot be predicted in any way. Lucas had analysed the impact of nominal and real shocks on macroeconomic indicators through price expectations. Output was considered at natural level when expectations were found true. However, aggregate production function of Sargent and Wallace also provided flexibility to deal with the white-noise shocks.

The production function was found independent of price expectations in the economy. It resulted in the equilibrium of an accidental nature. Similarly, the same production function concluded on the inefficacy of countercyclical actions of monetary policy (Galbács, 2015).

Kydland & Prescott (1982) have explored that Lucas's model dominated new classical economic business cycle theory until 1982. Already, Lucas (1973) himself assessed with empirical evidence that the classical model is not able to answer in a satisfactory way to these three issues; (a) the deviations from full employment equilibrium and output. (b) the path through which monetary policy affects output. (c) the measurement of extent for both mentioned issues. Furthermore, Kydland & Prescott (1982) came up with a strictly supply based model to replace Lucas's theory of a money driven business cycle. The new supply-based model appeared with technology-oriented and other real shocks to describe fluctuations in output of economy.

From perspective of monetary policy, the Friedman–Lucas view of price misperceptions is no longer accepted as possible interpretation of the short-run non-neutrality of monetary policy in an economy. This was the problem of past emerging from imperfect information about prices in product market and wages in labour market. Therefore, the Keynesian appeared on horizon with distinctive explanations for this short-run non-neutrality of economic policies.

3.4 The Keynesian Macroeconomic Approach

The Keynesian model and a neo-Keynesian model are evolutionary nature of economic thoughts which presented that money is not neutral in the short run, whereas it can be in the long run. We can discuss the general Keynesian stance in different segments as follows: Keynesian theory differs from classical model on the rigidity or bargaining of wages in labour market. Keynes (1936) challenged the assumptions of classical labour market model as being the ultimate departures of Keynesians from classical framework in the following words:

“Though the struggle over money-wages between individuals and groups is often believed to determine the general level of real wages, it is, in fact, concerned with a different object. Since there is imperfect mobility of labour, and wages do not tend to an exact equality of net advantage in different occupations, any individual or group of individuals, who consent to a reduction of money-wages relatively to others, will suffer a relative reduction in real wages, which is a sufficient justification for them to resist it. On the other hand, it would be impracticable to resist every reduction of real wages due to a change in the purchasing-power of money which affects all workers alike; and in fact reductions of real wages arising in this way are not, as a rule, resisted unless they proceed to an extreme degree.”

In the early 1940s and 1950s, the Keynesian nominal wage model was popular in capitalistic economies. The Keynesian model assumes that nominal wages are rigid. Likewise, this model assumes that the labour supply not depends on real wages, rather it depends on nominal wages. However, Leijonhufvud (1967) has presented true picture of Keynes theory which was based upon misunderstanding. He has showed that the above-mentioned assumption was not that of Keynes. He did not think that excessive unemployment reduces real wages of labour because of induced inflation, which was preferable for policymakers to nominal wage reductions. This nominal wage reduction appeared as source of hard feelings for workers and caused industrial turbulence. By the end, it was a policy recommendation to avoid from nominal wage decline. All above fact is accepted now generally. Further, Leijonhufvud (1967) explored that Keynes did not assume that nominal wages of workers were rigid because the nature of the nominal wages deny it completely. There is possible wage bargaining between firms and workers in same market. Likewise, he has noted that Keynes did not assume that workers’ labour supply depends on nominal wages rather than real ones, therefore, they suffered money illusion. These distinguish characteristics of labour market are the unique part of Keynes’ theory. One

understanding of Keynes ideas directed to the Phillips curve, as illustrated from James Tobin (1972), as popular economist of the Keynesian theory during the 1960s to the 1980s.

The dynamic analysis of the Keynesians theory led to the rigidity of prices and nominal wages in markets. In this situation, a fall in aggregate demand decreased produced products requirement of an individual firm and firms firing out policy make the worker insecure. This is because macroeconomic equilibrium could not be achieved instantly. Overall, there is a shift in the discussion from comparative static analysis to dynamic analysis. Possibly, there are numerous dynamic paths which can be consistent to any comparative static macroeconomic model. It is not necessarily that these interactions lead to full employment and output equilibrium instantly. The above discussion supports the Keynesian policies to manage the demand side of economy according to meet deficit demand and to provide required speed of adjustment through fiscal and monetary policy channels. Similarly, these Keynesian demand management policies help to solve the problem of involuntary unemployment (Lopez-Salido, Stein, and Zakrajsek, 2017).

NeoKeynesian economists came to rescue the Keynesian framework after the losing confidence in the Keynesian economic policy prescriptions in the 1970s, and the renaissance of classical models in the 1980s and 1990s. NeoKeynesian theories were a collection of ideas, rather an integrated macroeconomic model. Examples of their theories are the efficiency wage hypothesis, the menu cost theory, and the implicit contract theory. On other hand, New Keynesians provided an integrated framework of economy. The major component of New Keynesians was the staggered slow price adjustment, because of menu costs, made by the firms working in monopolistic competitive environment. It didn't give a weightage to the theories of neoKeynesian. It is notable that they had adopted a Taylor rule for the pursuit of monetary policy in economy. Further, their distinct methodology made them different to neoKeynesian economics, which built their equations from microeconomic basis of models in line with

stochastic intertemporal optimization of variables, rational expectations from markets and general equilibrium of variables. Despite of similarity in methodology, the distinctiveness of New Keynesian from the modern classical model is found in monopolistically competitive market structure of firms, sticky prices, and the Taylor rule to conduct monetary policy by central bank.

Mankiw (2002) has summarized the debates on the affiliation between inflation and unemployment. He noted that all economists of the day believe in effectiveness of monetary on unemployment and inflation, at least in short run. The bad news is that the so-called “new Keynesian Phillips curve” is interesting from a theoretical perspective only, but it is eventually a failure of monetary policy because monetary policy shocks got delay and affected inflation gradually during the dynamic effects of monetary policy. We can discuss these relationships in traditional primitive theories and models of inflation–unemployment dynamics. In fact, these models are not backed up by the microeconomics theories of price adjustment in economy.

3.5 Monetary Rules and Discretion in Economic Policies

In an economy, a central bank's behaviour in formulating monetary policy is characterized by some specific of monetary policy rules. These rules meet the complex process of decisions about how a central bank regulates its policy instruments responding to the macroeconomic environment. In this context, a variety of monetary policy rules have been developed by monetary economists. Among others these rules are the Friedman (1969) money rule, the Henderson and McKibbin (1993) /Taylor (1993); (HMT) interest rate rule, the McCallum and Nelson (1999) nominal income rule in which the central bank takes the decisions on an optimal/complex rule extracted from an explicit objective function and the inflation targeting rule.

Economist have explored the attraction of rule-based policy formulation for a few decades. Importantly, Kydland and Prescott (1977) and Barro and Gordon (1983) have donated to the general consensus among economists on the benefits of the policy rule in monetary policy. On the other hand, discretionary policymaking pushes the economy to the famous result of “inflation bias” because the market stake holders lose their confidence on central banks’ policy announcements and they revise their inflation expectation upwards. Further, Ehrmann and Smets (2003), Dennis and Soderstrom (2006) and Lees (2007) have quantified the benefits from optimal monetary policy under discretion to optimal monetary policy with pre-commitment. In comparative analysis, they have shown that overall welfare gain to the society from pre-commitment rule-based policy is quite large. There is general consensus that there are diverse benefits to rule based vis-à-vis pure discretion. There is no straightforward evidence that central bankers have practiced it completely. Dennis and Soderstrom (2006) have noted that no central bank is found officially conducted their monetary policy on any specific monetary rule because specific policy rules are too much mechanical and inflexible as well. A single policy rule, therefore, is not sufficient to fully incorporate all unanticipated events and possible shocks.

On this point, McCallum (2003) has argued that when central bankers talk about to the use of a monetary policy rule, the general conception is found that they have in mind is that this policy rule must be applied in rigid way and mechanical manner; a regime that policymakers do not consider any form of this judgment on the policy making process. The term “rule” is interpreted as donating a constant, non-responsive instrument setting, or that is recognized as the “non-activist” rule. This explanation stems from Milton Friedman's famous money rule (Friedman, 1969) that endorsed a constant growth rate for some defined monetary aggregate. As a contrast view, McCallum has endorsed the “activist” type of a rule - like the HMT interest rate rule – that expresses a contingency plan which forecasts central banks' policy action. So, the activist

rule offers a general, but in addition to that, a systematic policy guideline on how to fix the interest rates responding to their assessment of economic market in terms of present and future conditions.

Woodford (2003) talked about the significance of a central banks' determination to a framework of decision-making and policymakers are not bound to adopt a specific policy rule. Accordingly, it is important for them that to conduct the monetary policy that should be consistent with state-contingent plan. Further, Woodford (2003) has argued that monetary policymakers should work within a time-invariant policy framework, which is "optimal from a timeless perspective". In this context, the rule-based policy protects from the rigidity that is usually found in commitment to work mechanically in accordance to a policy rule.

On one side, this systematic or rule-based approach reduces inflation biasness, Woodford (2003) has also noted two more advantages. Firstly, this systematic approach of monetary policy improves its effectiveness through anchoring the expectations of economic agents in the market. Hence, this systematic approach enables public to understand the pattern of monetary policy that improves the private-sector expectations. Secondly, changing the monetary decision framework over the time i.e. the discretionary optimization acquires in a central bank regulating a suboptimal response to monetary shocks. In discretion, the policy instruments are settled period-by-period to neutralize the shocks. The discretionary policy fails to consider the dynamic behaviour of market stakeholders responding to the initial shocks. Rather, Woodford (2003) has recommended that monetary policy must be conducted "history dependent" means it should depend on past conditions though these are found irrelevant to present policy decisions. Bernanke and Mishkin (1997) and Bernanke (2003) have supported Woodford's view of constrained discretion to conduct the monetary policy. The constrained discretion is one of harmonized approach between the strict policy rules and the discretion policymaking. This approach eliminates the time inconsistency problems to some extent.

In constrained discretion view, the central bank is free to perform with its best capacity to stabilize output and employment in front of short-run disturbances. Although, it is presumed fact that policymakers have not perfect information of the economy. A central bank, therefore, must be committed to control inflation for a stabilized policy. In other words, policymakers have some autonomy in constrained discretion approach of monetary policy because of information imperfection. Hence, policymakers are authorized to avail their personal judgment about policy action to accommodate the expected cyclical swings in the country. However, such autonomy must be given policymakers subject to the limit that they will not forgo their commitment to attain price stability. This commitment of policy anchors also confirms their control on the public's inflation expectations within constrained discretion approach. If price stability is compromised, there would appear badly the same inflation bias problem of a purely discretion approach that will lead to a suboptimal economic outcome (Bernanke and Mishkin, 1997).

Svensson (1999) has observed that the inflation-targeting framework of monetary authorities supports that the constrained discretion approach is formally into practice in most of the countries. On the same point, Bernanke (2003) have noted that the constrained discretion approach is being practiced by many central banks around the world because of their commitment towards price stability, as evident we can observe the lower inflation rate in most of the countries from the 1980 onwards. These targets are attained with no preannounced policy rule by central banks in mechanical way. Further, Auclert (2017) has found that a change in the inflation target may affect consumption behaviour of an economic agent a lot, rather than its impact on real interest rates.

In nutshell, the specific form of monetary rules is utilized to model a central bank's behaviour. Either the central bank sets the interest rate in accordance with some simple interest rate rule proposed by Henderson and McKibbin (1993) and Taylor (1993) (HMT) or the central bank

takes the decisions on an optimal/complex rule extracted from an explicit objective function in the line with Rudebusch and Svensson (1999), Svensson (1999) and Woodford (2003). Further, Bernanke and Mishkin (1997) have supported Woodford's view of constrained discretion to conduct the monetary policy. In context of these two premises of formulating monetary policy, the theoretical and empirical literature provides the evidences on the monetary policy transmission mechanism through traditional view of monetary policy and bank-centric view of monetary policy.

3.6 The Classical Instruments of Monetary Policy

The monetary instruments are the tools in the hands of monetary policy regulators through which they conduct the policy and achieve the objectives of their policy. These instruments help to achieve the objectives of monetary policy through promoting the maximum employment, stabilizing the prices and moderating long-term interest rates. The classical instruments of monetary policy consist discount and rediscount rate, open market operations, variations allowance reserves, credit limits, bank refinancing rate (Balaceanu and Dragne, 2014). These instruments change over the time according to the objectives of regulators in different economies. Furthermore, the central banks must provide effective monetary policy instruments at their disposal to target desired aggregate demand to perform their responsibility.

In contemporary world, there are three main instruments of monetary policy; open market operations, the discount rate and reserve requirements. Open market operations mean the buying and selling of government's securities in open market. The "open market" means that the central banks do not decide themselves on their own discretion to whom they will do business and on what time they will start selling securities. Rather, the choice arises from an "open market" where the primary securities dealers compete each other on offered price. In

this context, open market operations are flexible and accurate and thus, this is the most frequently tool of monetary policy throughout the world.

The discount rate is the interest rate charged by the central banks to depository institutions on short-term loans. The discount rate is the interest rate of central banks that is charged on lending to commercial banks and other depository institutions from the discount window. This rate is charged on the borrowings of commercial banks facing funding shortfalls to prevent liquidity problems or the extreme problem of bank failures. This facility is known as the deposit window of central bank. It different than the arrangements of interbank lending-borrowing that banks or other depository institutions deal among themselves.

The reserve requirements (also known as cash reserve ratio) is a tool of monetary policy central bank. In compliance to that, a specific portion of deposits is maintained by commercial banks either in their own vaults or on deposit at a central bank. This regulation is employed by the most of regulatory authorities, but not all of the world's central banks. The required reserve ratio influences the credit supply through banks and the credit demand by customers through increasing the cost of funds. Usually, European central banks prefer open market operations and rarely use increase the reserve requirements because it would cause immediate liquidity problems as banks can face the problem of low excess reserves. Dong and Wang (2011) have noted that there the reserve requirements are employed as an inflation-fighting tool in the People's Bank of China. Since the beginning of 2010, the reserve requirement as tool of monetary policy is used for ten times and eleven times. Likewise, Anwar and Nguyend (2018) have investigated the channels of monetary policy transmission for Vietnam and found that interest rate channel is not more active in developing countries. Further, they have suggested for central bank to set the reserve requirement ratio as policy tool to control inflation.

Balaceanu and Dragne (2014) have explored that the discount rate depends on many factors, first, the relationship between the demand for discounting and the ability of banks to meet applicants. Further, the size of the discount rate is under the effects of charge rediscount. Rediscount operation is purchase of commercial papers by the central bank from the commercial banks in market, expected effects of already trading latter, different operations commenced in sight and before the maturity. These securities' value is recorded in an account that represents the bank but debited by the corresponding amount of rediscount tax (legal) and duration of commercial bank lending is also considered. Rediscount fee is an interest rate collected by the central bank at the time of rediscounting bills for commercial banks.

3.7 Monetary Policy Transmission Mechanism

Monetary policy transmission is the mechanism through which monetary policy transmits the decisions into changes in the real GDP, the rate of inflation, and other macroeconomic indicators (Taylor, 1995). Similarly, Ireland (2008) defined that transmission mechanism of monetary policy explains how policy-induced variations in the nominal money stock or the short-term nominal interest rate affect the real indicators; aggregate output and employment level. In economic theory, monetary policy transmission mechanism is commonly said as "black box" (Bernanke and Blinder, 1995). Because, there are three main factors what affect monetary transmission considerably discussed as follow: (1) the behaviour adjustment of a central bank, the banking industry and other economic players in economic and financial activities; (2) the time lag of the monetary policy indicators since the implementation of monetary policy, transmission mechanism until the achievement of final target of policy; and (3) changes in the monetary transmission channel along with economic development of nation (Tenreyro and Thwaites, 2016).

These factors are described in terms of diversified theoretical debates as well as from perspective of different transmission channels. For example, a change in overall domestic demand affects production levels, national income, forex rates, wages, and employment-level. At same time this process will lead to affect the domestic prices of an economy as well. Thus, the policymakers must have an accurate assessment of the economy. Especially, monetary authorities should focus the time and the effect of their monetary policy stance that will affect the economy, particularly, prices and output of country. So, it is prerequisite to have the practical comprehension of how monetary policy stance transmit to real economy. There are two fundamental perspectives of any economy to be asked by monetary authorities and macroeconomists in an economy: First, researchers are interested to know how monetary policy affects the real sector of the economy. Second, they search for the effective transmission channels of monetary policy for these effects.

These are basic aspects on subject matter of monetary policy that are addressed explicitly in professional manner. The monetary policy transmission mechanism is about an association among a change in money supply and the level of real in output. There is a series of monetary policy transmission channels through which any change in level of money supply affects output. Hence, this is a very complex assignment to trace the exact channel which transmits properly the monetary policy actions to meet the objectives public policy. Therefore, monetary transmission mechanism is also said a “black box” (Bernanke and Blinder (1995). In fact, there are several channels of monetary policy that work simultaneously in transmission process. A few prominent channels include the interest rate channel, the credit channel, the exchange rate channel, and the asset price channel in exiting empirical literature. Further, the literature has highlighted other channels according to structure of an economy, for instance, monetarist channel (Meltzer, 1995), but the importance of the above four channels is generally accepted in different economic regions because these are primary channels in explanation of the

responsiveness of output and prices after giving a monetary policy shock. Indeed, several studies like Lucas (1990), Christiano and Eichenbaum (1992, 1995), Fuerst (1992), Bernanke and Blinder (1995), Taylor (1995), Obstfeld and Rogoff (1995), Mishkin (1995,1996), Dhar and Millard (2000), Dhar, Pain and Thomas (2000), Bayoumi and Morsink (2001), Corvoisier and Groppe (2002), Mishkin and Schmidt-Hebbel (2006), Mohanty and Turner (2008), Mishkin (2011), Mishra and Montiel (2012), Carvalho and Necho (2014F) and Tenreyro and Thwaites (2016) have explored the transmission mechanism of monetary policy. Moreover, Khan and Qayyum (2004), Mayes (2004), Wong (2000) and Bernanke and Mahiv (1995) have measured empirically the macroeconomic impact of monetary policy.

Bernanke (2010) has explored that an improvement in understanding of the central bank's policy strategy controls economic and financial uncertainty and the households and firms take more-informed about wage-setting and price determination. Similarly, the prescribed goals and announced strategies help the stake holders to keep the longer-term inflation expectations more firmly to respond forcefully to adverse shocks of a public policy. Carvalho and Necho (2014) have noted that the central banks often communicate the strategy of monetary policy to improve the public's understanding of monetary policy. As the argument goes, this well-informed environment helps households and firms to price the products on desired level and to set the wages on optimised point and improves effectiveness of monetary policy. More generally, market agent's understanding of policy appears as a key element in the transmission mechanism. This perception is conceived through the economic theories in which the behaviour of an economy depends on the relationship of the actual conduct of policy and the agents' understanding of policy.

However, for a variety of reasons, the relationship among the tools of monetary policy and aggregate demand of an economy might be weaker in LDCs than in an advanced economy. Particularly, the financial structure of these advanced markets suggests that the bank lending

channel is likely to be the dominant channel of monetary transmission. At the same time, the effectiveness of bank lending channel is problematic, which depends on the intrinsic stability of domestic macroeconomic environment, institutional performance and the structure of the banking system (Mishra and Montiel, 2012). However, there is not found a unique opinion on how monetary policy is transmitted to the real economy. Loayza and Schmidt-Hebbel (2002) have examined that monetary policy transmits, through different channels and affects a series of variables in different markets. In this context, the identification of transmission channels, the speed of adjustment and intensity of the change is very important to set an effective monetary policy. It facilitates a central bank to select an efficient set of policy instruments subject to constraint that central banks face in their decisions. On the other hand, weak monetary transmission will limit the monetary policy and it may misguide the primary responsibility for domestic macroeconomic stabilization on central banks (Mishra, Montiel, and Spilimbergo, 2012). Assessing the empirical effectiveness of monetary policy transmission mechanism is therefore an important topic for research.

As the matter of fact, the transmission mechanisms have their conceptual underpinned relevance differently to the countries subject to the structure of economy. If a measure of monetary policy did not detect the policy patterns in one country, this doesn't imply that this may not found in another economy. Therefore, the economic environment decides about the existence of any transmission channel for a specific country. Mishkin and Schmidt-Hebbel have (2006) explored that the effective monetary policy transmission channels are the integral part of economic growth and development in which monetary policy actions help the flow of resources in the economy to achieve the equilibrium at full employment level. In policy making process, the top priority of monetary policy should be price stability, whereas the choice of monetary policy depends on diversified political and cultural factors, on efficiency of government's institutions, and on the state history. Further, Mishra and Montiel (2012) have

explored that these monetary channels depend on the international capital movements and the exchange rate regime, as well as on the financial structure of an economy. In sum, the transmission mechanism of monetary policy starts to work when policy makers employ monetary instruments to conduct a monetary policy until the mechanism directly or gradually, affects to the major indicators of the economy. The impact of such monetary policy towards economies happens by some monetary policy transmission channels.

Loayza and Schmidt-Hebbel (2002) have examined that monetary policy transmits, through different channels and affects a series of variables in different markets. In this context, the identification of transmission channels, the speed of adjustment and intensity of the change is very important to set an effective monetary policy. It facilitates a central bank to select an efficient set of policy instruments subject to constraint that central banks face in their decisions.

The literature on the traditional channels of monetary policy is extensive. Bernanke and Gertler (1995) have explored that the theoretical underpinnings go back to seminal papers by Brumberg and Modigliani (1954), Friedman (1957), Ando and Modigliani (1963), Jorgenson (1963), and Tobin (1969), who developed the models and identified the monetary policy transmission channels. Although most of macroeconomic models are designed to capture the traditional channels of monetary policy, the empirical evidence on the strength of these channels is mixed at best. In an open economy macroeconomics perspective of transmission process, Fleming (1962) and Mundell (1963) have evaluated in a handful way. Overall, the most macroeconomic models are planned to capture the traditional channels of monetary policy, whereas the empirical evidence on the strength of these channels is mixed (Bernanke and Gertler, 1995). Mishra, Montiel, and Spilimbergo (2012) have mentioned four main channels of monetary transmission: the interest rate channel, the asset-pricing channel, the exchange rate channel, and the bank lending channel. Similarly, Peter and Boston (2005) have added the direct monetary channel, namely the inflation expectations channel to monetary policy transmission.

Below, we discuss these channels of monetary policy. The transmission channels include the interest rate channel, the exchange rate channels, the asset price channel, the inflation expectations channel, the direct monetary channel, and the credit channel.

3.7.1 The Interest Rate Channel

Hicks (1937) had kept the interest rate channel at the heart of the traditional Keynesian textbook IS-LM model. Further, the more recent New Keynesian models are also in line with the same basic theory of interest rate. This mechanism explains the path by which income can be raised through raising investment. Investment depends on price of domestic and foreign funds. Generally, when firms do more investment, they rush to hire people, which affects income positively through increases in output.

In light of the traditional Keynesian interest rate channel, an increase in policy-induced short-term nominal interest rate leads the whole economic system to an increase in longer-term nominal interest rates. Responding to this type of financial environment, investors react to arbitrage away the discrepancies appearing in risk-adjusted expected returns on debt instruments that are found with various maturities. These maturities are found in compliance with the expectation's hypothesis of the term structure. In the real world, the nominal prices adjust slowly, these nominal interest rates' movements translate into an impact on real interest rates as well. This increase in real interest rates means that the real cost of borrowing has been increased over all the horizons of market that will make firms to cut down their investment expenditures on supply side of economy. Likewise, on the demand side of economy, the households facing higher real borrowing costs are not more willing to buy properties, houses, automobiles, and other durable commodities. As a result, aggregate output and employment fall through interest rate channel of monetary policy during tight monetary policy. During expansionary monetary policy, Mishkin (1996) has summarized the transmission pattern of interest rate in following way:

Money Supply $\uparrow \rightarrow$ Real interest rate $\downarrow \rightarrow$ Investment Spending $\uparrow \rightarrow$ Output \uparrow

The traditional treatment of monetary policy emphasizes on the actions of central bank that changes households' portfolios between bonds and money. Bonds cannot be consumed for transaction purpose, whereas money is the asset that is used in transactions. It is notable that money is more than just currency. There are found checking accounts that may appear as the substitute to take the narrow measures of money. It is presumed that quantity of money is controlled by central banks. When the central bank manages one of the two assets from the portfolios of household, it mandates the central bank to manage their relative prices by regulating the relative supply of the two asset types. Kashyap and Stein (1994) have explored that the traditional view rests on two basic assumptions to be effective for monetary operations. First, there is crucial need of a well-known asset named money in an economy, that is essential for transactions. Second, there must be capable and effective monetary authority to control the supply of money. Previously in simple world, there were demand deposits and currency in an economy, which were only two assets for transactions in markets and it was easy to understand how central banks regulate the financial market. The central bank has monopoly to create currency, that can determine only how much currency will be circulated in the economy. Furthermore, banks can create these checking accounts at limited level because of reserve requirement for these accounts acquired by monetary authorities. This reserve requirement is also an indirect tool of monetary policy authorities to control the non-currency component of transaction balances in an economy. Typically, the central bank's monetary authorities decide the nature of asset to be reserved with them and the level of reserves for a specific level of transactions balances.

If the central bank intends an expansionary policy, it provides more currency to commercial banks against trading reserves with other securities of banks. In next step, banks lever up the reserves by issuing debt to debtors and transferring the funds to the checking accounts of the

borrowers. In line with this framework, the willingness of banks to issue the money, matters up to the extent to which it affects the creation of assets which facilitate the transaction, that is deposits. As the central bank injects reserves, the supply of transactions accounts adjusts, and interest rates readjust as well in predictable way. As a result, money appears to be cheaper because of supply of transactions balances to households and nominal interest rates fall. In context of this change in nominal interest rates, prices do not adjust in sharp way because of the change occur in supply of money. As a result, more money leads to an increase in real purchasing power to households and a decline in nominal interest corresponds to a lower real interest rate in market. The traditional monetary transmission mechanism through which monetary policy is transmitted to the real economy is the interest rate channel (Mishkin, 1996).

Kashyap and Stein (1994) have documented that the sharp two-asset dichotomy is a problem with traditional monetary policy theory. Basically, this dichotomy underlies the model. There are different assets that are not controlled by central banks like, mutual funds with check writing privileges, mimic checking accounts etc. These accounts are increasing in market by making central bank less effective over currency and transactions deposit to determine the interest rates in the economy. It does not mean that central bank has lost control over interest rates, however, the basic logic underlying traditional monetary policy model is becoming much less compelling.

On the empirical grounds, Taylor (1995), Meltzer (1995), Arena, Reinhart and Vázquez (2006), Mohanty and Turner (2008) and Tcnreyro and Thwaites (2016) have explored that interest rate affects consumption and investment spending substantially which is a strong evidence for interest rate channel. In less competitive markets, a change in interest rate pushes the banks to reach a new equilibrium in a collusive manner. Further, the degree of the banking system competition also determines the level of competition among banks and the speed of

transmission mechanism of monetary policy (Hannan, 1997; Angbazo, 1997; Corvoisier and Gropp, 2002).

Cotharelli and Kourelis (1994) have documented that monetary policy transmission process changes across the economies. Similarly, the structural parameters of each country also change among the countries. This relative difference appears in competitive structure of the market. Similarly, the policies of individual bank also change in its relation to exiting market share. Further, structure of deposit and business cycles are also affected. Furthermore, this change affects the profile of credit risk and volatility of interest rate as well. All of them affect the transmission process of monetary policy in diverse ways. Further, they have explained that interest rates are documented constant in the short run based upon empirical evidences and possibly remain the same in the long run.

3.7.2 Asset-Price Channel

Asset price channel of monetary policy transmission comprises two different channels: the equity price transmission channel and the housing and land price transmission channel. Further, the former channel is divided into two sub-channels. First, the investment effect that depends on Tobin's quantity theory of money and second, the wealth effect on consumption advanced by Modigliani (1966)'s the life-cycle hypothesis (LCH) of income.

In the first case, the asset price channel works through Tobin's Q theory of investment and the effects of wealth on consumption. Tobin's Q ratio is defined as the total market value of the firm divided by the total asset value of the firm. Monetary policy affects total assets value of a firm, which transmits this effect to the economy. Mishra, Montiel, and Spilimbergo (2012) have documented that if Tobin's Q ratio is high, the market price of firms is high relative to the book value. This means the replacement of capital and new plant is cheap relative to the market value. Hence, investment spending will rise and affect the aggregate output in the economy. In

addition, a rise in asset price will increase the value of financial wealth, which will lead to raise lifetime resources of consumers. As a result, the overall consumption will rise. On the other hand, when there is a lower value of q the firms will appear reluctant to issue new shares of stock to extend their business initiating new investment projects. Hence, there will appear contraction in overall investment, output, and employment of the economy.

The wealth and income also important determinant of consumer spending in accordance to Modigliani (1966)'s the life-cycle hypothesis (LCH) of consumption. This theory also identifies the role of wealth and income in monetary transmission mechanism. When a central bank adopts a restricted monetary policy, stock prices fall and households' financial wealth declines as well. Through this channel, a decline in wealth inversely affects consumption, output, and employment. There is evidence of asset price channel of monetary policy through the life-cycle hypothesis (LCH) of consumption.

Meltzer (1995) has noted that asset price channel itself plays a vital role in monetarist view of the transmission mechanism. Monetarists criticise the traditional Keynesian view of monetary policy that rests in the short-term nominal interest rate completely. Rather, monetarists have argued that monetary policy affects simultaneously on prices across a wide variety of markets for financial assets and durable commodities. Therefore, the investment spending increases because the firm can purchase a good quantity of new investment goods through issuance of only a small share of equity. The asset price channel affects more the prices of equities and real estate. This change in asset prices brings important wealth effects by spending on output and employment. Similarly, the literature has risen in equity and real estate prices over the recent time in the United States, the United Kingdom, and elsewhere. This has sparked the interest in exploring asset price channels of monetary policy transmission.

3.7.3 Exchange Rate Channel

The exchange rate transmits its effects to the aggregate demand through affecting the spending behaviour of households and firms. An expansionary monetary policy depreciates local currencies and appreciates foreign currencies, that reflects in raising the prices of imported goods. The efficiency of the exchange rate channel is dependent on the exchange rate regime. This implies what is the extent to which exchange rates pass-through and the degree of openness to capital flows. Krugman and Obstfeld (2000) have stated that the relative price level of two countries determines the exchange rate of two countries. It means that under purchasing power parity (PPP), if local currency depreciates, it will affect the foreign exchange badly. As a result, the foreign imported products would be found more expensive, worsening the terms of trade between the two nations.

The process of exchange rate channel starts with appreciation of domestic country in both traditional Keynesian models that are built on Fleming (1962), Mundell (1963), and Dornbusch (1976) and in the New Keynesian models. This appreciation makes the domestic products more expensive as compared to foreign-produced goods. As a result, net exports fall worsening the current account of domestic country. Moreover, the exchange rate channel reflects in decline of domestic output and employment as well. Further, Rashid and Jehan (2014) analyse empirically significant, the responses of macroeconomic aggregates, such as real economic activity proxied by industrial production, national price levels and the exchange rate to shocks of monetary policy. They have found that the decisions of central bank about interest rates have an impact on the exchange rate of concerned country.

Pétursson (2001) has explored that the precise effects of exchange rate are uncertain, however, since exchange rate is determined through the expected development in domestic and global markets including domestic and foreign interest rate and inflation changes. In context of expectations, interest rate and inflation change, we can predict the exchange rate to change.

Technically, the developments in exchange rate are generally characterized by substantial short-term fluctuations. Especially, the factors creating this volatility can easily mask the short-run impact of monetary policy actions on exchange rate. The reason is that higher interest rates attract an investor to invest in domestic financial assets as it is more attractive than foreign assets with the assumption of *ceteris paribus*. Therefore, the increasing demand of domestic currency appreciates domestic currency. However, an increase in nominal interest rates that reflect in high inflation expectations generally depreciate the domestic exchange rate. Therefore, the local currency is sold immediately to avoid exchange rate losses later. Hence, the excess supply of local currency causes it to depreciate. Finally, a rise in the policy rate of authorities may produce adverse effects on domestic exchange rate if it is not able to offset higher inflation expectations. In sum, real policy rate of the central bank has fallen, despite the rise of the nominal policy rate.

Astiyah and Husnan (2006) have analysed the exchange rate channel of monetary transmission decomposing it into two blocks in Indonesia. The first block is committed to measure whether monetary policy affects more than a risk factor. They found the dominance of the policy variable shocks reveals that monetary authorities can transmit their policy to inflation through the exchange rate transmission channel. In second block, they have detected the transmission of a change in exchange rate to the inflation directly and indirectly. The direct transmission is found through price that can be said direct passthrough effect and the indirect transmission is found through output that can be said indirect pass-through effect.

Erdogdu (2017) has explored the exchange rate channel for Turkey and found that the exchange rate affects the general level of prices of the economy. However, the exchange rate does not influence production levels of the economy because imported raw materials are utilized production process in Turkey, therefore exchange rate shocks through monetary policy process adversely influence the real economy. In contrast to imports, the conditions are inverted for

exports in Turkish economy. Responding to exchange rate change, the price level of final goods increases badly affecting the balance sheet negatively. There has been hyperinflation in economy for excessive decades. In this context, the financial sector used to enter with short-term contracts in the market. Thus, the monetary policy affects the goods and services sector to develop for a short duration.

3.7.4 Inflation Expectations Channel

Monetary economists emphasize to understand monetary policy among stake holders. Carvalho and Necho (2014) have stated that households and firms decide better-informed price and take employees' wage decisions and improve policy effectiveness in the informed financial environment through incorporating inflation expectations channel. In other words, inflation expectation is determined by monetary policy and economic development as well. These expectations influence the behaviour of economic agents playing in market. This behavioural change reveals in investment and consumption decisions of market players. In next step, this appear in aggregate demand, price of commodities, inflation rate, and wage of labours. Bernanke (2010) has explored that an improvement in the public's thinking about the strategies of central banks is very important. It increases confidence and reduces economic and financial uncertainty to take the more informed decisions by households and firms. Moreover, the objectives and policy strategies of central bank can frame the public's long-term inflation expectations. Likewise, this culture of accurate inflation expectation increases central bank's ability to react firmly to adverse monetary shocks emerging in the economy.

Blanchflower (2008) has observed that inflation expectations were strongly affected because of past experiences. Similarly, current inflation influences the future path of prices and these are found highly correlated with each other. Further, he has found that expected inflation is determined past inflation, exchange rate and interest rate. In addition, Mayes (2004) has stated about the monetary policy transmission in the Baltic states that monetary actions were

transmitted through public's confidence in central bank and expectations about the future perspective of the economy.

Pétursson (2001) has noted that expectations about future growth and inflation play a fundamental role to conceive the ultimate impact of monetary policy. A central bank can affect these expectations through monetary policy action to formulate the behaviour of participant in financial market. An individual may predict about his employment prospects and firms about their expectations of future sales and profits. Further, monetary authorities can affect different financial behaviours based upon their expectations, as a policy tool, without actually being implemented.

3.7.5 Direct Monetary Channel

It is based on classical theory about the role money in an economy. Fisher (1911) has initiated this discussion in his *Quantity Theory of Money*. In his book "The Purchasing Power of Money", Fisher (1911) presented the quantity theory in modern formulation that was inherited from his classical and pre-classical predecessors with two tasks. First, he came up with the theory rigorously in a form leading to empirical measurement and verification. For accuracy, he tested the theory with statistical data series to demonstrate it on real grounds. Second, he brought the ideas explicitly what was implicit in the work of John Locke, Richard Cantillon, David Hume, John Wheatley, David Ricardo, and other early quantity theorists. He has kept these five interrelated propositions in the centre of his theory; (i) equiproportionality of money and prices, (ii) money-to-price causality, (iii) short-run non-neutrality and long-run neutrality of money, (iv) independence of money supply and demand, and (v) relative-price/absolute-price dichotomy attributing relative price.

Basically, this theory elaborates a framework in which there is found a direct association between velocity of money and price, that can be denoted in a well-known following equation:

$$MV = PY$$

According to this equation, the velocity or the circulation of money (MV) is equal to the total of nominal output (PY). Money is found circulating in different economic transactions and nominal output means the amount that is being transacted in country. In the quantity theory of money, it is presumed that money is demanded for transaction purpose. Further, Keynes has extended this approach that money is demanded for transactions, precautionary measures and speculations.

Money influences real activity temporarily. Indeed, the classical proposition of the short-run non-neutrality of money also posits the same point. In his theory of the cycle, Fisher (1911) has attributed that such non-neutrality defers in the revision of lenders' inflation expectations that result into sluggish adjustment of nominal interest rates. As a central bank injects a monetary shock, it raises the prices. These rising prices affects inflation expectations among the borrowers. These borrowers evaluate the perceptions of price changes in current and future perspective and notably their evaluation is more accurate as compared to suppliers of credit in market. These inflationary expectations lead to the corresponding high profit expectations in running business. However, sluggish nominal loan rates don't rise enough to offset these rising expectations in market. As a result, the real interest rates fall leading the borrowers to increase their real expenditure on factor inputs in their business. This business borrowers' decision makes employment and output to rise. Eventually, nominal interest rates catch up with the market trends and exceed the business profit and expectations about inflation. Hence, real rates rise thereby precipitating a downturn in the economy.

Balaceanu and Dragne (2014) have explored that money supply leads to a decrease in interest rates. This decrease in interest rate affects investment spending positively and vice versa. They

have found the direct monetary channel of monetary policy transmission mechanism working for developing countries.

3.7.6 The Credit Channel of Monetary Policy

Money plays a vital role in macroeconomics and monetary theory due a sound link of the nominal stock of money with the aggregate price level of an economy. However, the association of real and nominal sector does not depend on the stock of money which plays a key role to make policymakers understand the general level of prices and average inflation rates. Many economists have explored the direct impact of monetary policy on aggregate spending which do not operate through traditional channels of interest rate or exchange rate only, rather a variety of excellent surveys and overviews has been developed on credit markets that are playing a critical role in the monetary policy transmission to the real economy. There are empirical evidences for the existence of credit channel of monetary policy in different economies (Gertler, 1988; Bernanke, 1993; Gertler and Gilchrist, 1993; Ramey, 1993; Kashyap and Stein, 1994; Bernanke and Gertler, 1995; Cccchetti, 1995; Hubbard, 1995; Bernanke, Gertler, and Gilchrist, 1999; Evans, Fisher, Gourio, and Kran, 2015; Jerman and Schmid , 2016; Ekimova, Kolmakov and Polyakova, 2017; Auclert, 2017; Erdogan, 2017; Ippolito, Ozdagli, and Perez-Orive, 2017; and Anwar and Nguyend, 2018).

The credit view focuses the role of financial assets and liabilities in transmission of monetary policy. The credit view explains that macroeconomic models are required to be distinguished among different nonmonetary assets from perspective of bank versus non-bank sources of funds or internal versus external financing. Further, it also highlights the differential impact of any change in credit conditions on responses of borrowers. Finally, investment may be affected due to variables; net worth or cash flow as agency costs connected with imperfect information or monitoring cost create a wedge between the cost of internal and external funds.

The bank-lending channel of monetary policy works through the response of credit supply to the indicators of monetary policy such as interest rates and other policy instruments. Therefore, the credit channel of monetary policy transmission can also be said an enhancement mechanism to the interest rate channel. Bernanke and Blinder (1988) are the first who laid down the foundation for the roles of banks in monetary policy transmission. Bernanke and Blinder (1992), Kashyap and Stein (2000), and Kishan and Opiela (2000) have confirmed the presence of lending channel in the United States. Most of the studies deal with the responses of credit supplies of the banks from distinct characteristics, like banks' size, the level of liquidity and banks' capital. Bernanke, Gertler, and Gilchrist (1999) extend the New Keynesian model to account for the balance sheet channel of monetary transmission. Kashyap and Stein (1997) have explored that small banks are affected more as compared to large banks in response of tightening monetary policy in the USA.

Ekimova, Kolmakov and Polyakova (2017) have revised existing monetary policy transmission channels because of substantial changes in financial environment and found a strong credit channel of monetary policy transmission in Russia. However, Hernando and Martinez (2001) have not found the existence of a bank lending channel in Spain because of size difference or different levels of capitalisation. For different European countries, there are a sizable number of studies to explore the existence of the credit channel. Examples of these studies include Ehrmann, Gambacorta, Martínez-Pagés, Sevestre and Worms (2001) in Euro area, Dale and Haldane (1995) in the United Kingdom; Escriva and Haldane (1994) in Spain; Buttiglione and Ferri (1994) in Italy; Garretsen and Swank (1998) in The Netherlands; Ogawa and Suzuki (1998) in South Korea; Ferri and Kang (1999) in Germany. In addition, Kashyap and Stein (1997) and Cecchetti (1999) have explored some descriptive evidence for the EU countries. It is worth noting that a credit channel is more applicable in some European countries than in the United States financial system because of the dependency of firms on banks. Further, Aysun

and Hepp (2011, 2013), Wong (2000), Kashyab and Stein (1995), Bernanke and Lown (1991) have documented the credit view of monetary transmission mechanism.

In context of Pakistan, Shabbir (2012) has confirmed the existence of balance sheet channel in non-financial listed firms over the period of 1999-2010. She has documented that the contractionary monetary policy affects adversely the net worth of the (Small and Medium Enterprises) SMEs and large firms. Yet, she has shown that SMEs are affected more in terms of their cash flows, revenues, and borrowing. In Pakistan, Janjua, Rashid, and Qurrat-Ul-Ain (2014) also empirically examined the presence of the credit view of monetary policy through annual data regarding banks over the period 2006-2012. They have found the existence of bank centric view of monetary policy because of negative association between monetary indicators and bank credit supply. They have also found that small-sized banks are more affected than large-sized banks during contractions of monetary policy. However, one should note that they do not explore the relative role of Islamic and conventional banks in the transmission mechanism of monetary in Pakistan: which is the core theme of this study. Agha, Ahmed, Mubarik, and Shah (2005) have also confirmed the credit channel in Pakistan.

There is found a substantial volume of empirical research on the transmission mechanism of monetary policy for different countries (Bernanke, 1993; Bernanke and Gertler, 1995; Cecchetti, 1995; Hubbard, 1995; Kashyap and Stein, 1994). These studies were inspired by the US credit crisis of 1990-1991 as well as by the theoretical developments that incorporate informational imperfections into the standard macroeconomic models. Along with other channels, Disyatat (2011), Cecchetti (1999) and Kashyap and Stein (1997) have explored that credit supply is an important channel of monetary policy. Overall, these evidences are enough to realize us about the importance of banks in the transmission mechanism of monetary policy.

Bernanke and Gertler (1995) have described a broader credit channel, the balance sheet channel from perspective of financial market imperfections that play an important role in monetary policy actions. They have emphasized on the role of financial market imperfections that increases a firm's cost of credit through weakening the balance sheet of firm directly and indirectly. A direct effect of restricted monetary policy reflects on the firm's balance sheet in accounts payable because of an increase in interest rate to be paid with principal amount to lenders. Similarly, an indirect effect arises, the capitalized value of the firm's long-term assets decreases because of an increase in interest rate.

It is also notable that a policy-induced increase in the short-term interest rate not only affects the spending immediately through the traditional interest rate channel, rather, it raises the cost of capital, possibly with a lag, through the balance sheet channel. Eventually, the contractionary policy brings an initial decline in output and employment.

In view of the limitation of the traditional monetary policy theory, the researchers have produced the literature with the assumption that there are three types of asset; money, bonds, and bank loans. In this context, there is observed the response of banks to monetary policy. Now, the banks are not just deposit creators, rather their lending response are evaluated from the perspective of monetary policy transmission mechanism. Thus, the ambiguity over what constitutes money is much less important. For bank-centric view to operate, if the banks cut the credit supply, the concerned spending should decline to ensure that no perfect substitute is available to for banks' credit in market. This sensitivity of a specific portion of spending in response to bank's credit supply and the assumed credit supply responses to monetary policy provide several predictions about dynamics of monetary policy (Kashyap and Stein, 1994).

The credit channel of banks plays a pivotal role in the transmission mechanism of monetary policy, that stems from the view that financial markets are characterized by imperfections

(Bernanke and Gertler, 1995; Cecchetti, 1995; Hubbard, 1995). One basic prediction is that some borrowers, particular small and medium sized firms are not able to issue corporate bonds or other debt instruments at reconcilable terms due to information problems or high costs related to launching debt securities in financial market. In same market, banks as financial intermediaries are specialized in gathering and refining information in terms of comparative advantages. This gap enables banks to issue credit to these borrowers at more favourable terms. In fact, the firms and individuals about whom the necessary information is not perfect to measure their creditworthiness, have to depend on banks' financing. Technically, these borrowers are indifferent in the composition of their liabilities, otherwise they will have to bear the extra cost of arranging funds from third parties. Banks have a particular advantage in gathering sufficient information to lend a credible borrower and usually banks have this type of information about creditworthiness of their customer on regular basis. Therefore, they are in better position to take efficient credit decisions than those market players who don't have access to concrete information for creditworthiness of borrowers.

Imperfect information has a key role in credit markets, and especially banks' credit has no close substitutes, due to information advantages. Banks also provide both transactions services and credit to businesses. Small firms face a severe problem to obtain funding from nonbank sources, so a tightening monetary policy affects the bank lending. As a result, it will force these firms to converge their business activities. In context of commercial banking management, banks are specialized in extending credit to borrowers especially to those who do not have access to other types of credit because of their proficiency in mitigating financial frictions. If banks adjust their credit supply responding to the stance of monetary policy, since some borrowers must revisit their expenditure decisions responding to financial environment.

In sum, unlike the prevailing theory of monetary policy that highlights the preferences of households between money and other less liquid assets, the role of banks in transmission

process is important as bank-centric view of monetary policy. In this context, two key factors determine the path on which monetary policy works. First, what is the extent upon that banks rely on reservable deposit financing and settle their credit supply patterns subject to the changes in the reserves of the banks; and secondly, the extent to which specific group of borrowers is depending on banks with no substitute to banks' credit supply. Ekimova, Kolmakov, and Polyakova (2017) have revised existing monetary policy transmission channels because of substantial changes in the macroeconomic environment and in the conventional channels of monetary policy in Russia based on annual data from 1998 to 2016 and monthly data from 2009 to 2017. According to their application of distributed lag and the vector autoregression models, the interest rate channel of monetary policy is being replaced through the credit channel in Russian economy, which is considered to emerge as an effective channel in facilitating the economy. They have introduced the credit channel breadth; a new term initiated by authors that measures the relative extent of credit availability and affordability to the real sector enterprises in an economy. This methodology provides an evidence about how monetary policy actions affect the quantitative measurement of the credit channel breadth due to which relevant efficient models are derived for analysis. These empirical models have stated that changes in monetary policies affects significantly the money supply (M2) and the credit supply to enterprises. Similarly, monetary policy influences the net change of flows and transfers the impact on debt.

3.7.7 Banks' credit channel in Practice

The banks' credit channel explores the special characteristics of banks' credit and the unique role of banks in supplying credit to an economy. Indeed, banks play a key role transmitting the monetary policy stances to real income. Similarly, monetary policy actions change the reserve positions of banks, that will affect the adjustments of the market interest rates and the basic components of the balance sheets of the banks.

Huelsewig, Mayer, and Timo (2005) have noted that conventional monetary policy models focus on the impact of a change in interest rates on money demand, consumption, and investment by households and firms. The impact of policy actions on banks' deposits and the supply of money is shown in adjustments of the liability side of the balance sheets of banks. The interest rates and reserves requirements also affect the credit supply of banks on the asset side of the banks' balance sheet. If banks are not able to offset a decrease in reserves through adjusting securities holdings or through increasing funds by issuing non-reserveable liabilities [such as certificates of deposit (CDs) in the US], the banks' lending must face contractions. Banks' lending effects aggregate spending independently in absence of funding substitute to banks' borrowers and usually this happens for medium and small banks' dependent firms. Overall, the key for the existence of banks' lending channel is the absence of the close substitutes for deposit liabilities on the liability side of the balance sheets of banks. Similarly, on asset side of banks, there is also lack of close alternate for bank credit for the borrower.

The role of credit for understanding macroeconomic fluctuations has been a source of curiosity among researchers over the time. The banks' credit channel indicates the role of the banking sector in transmission of the effects of monetary policy actions to the real economy. The banks' credit responds in a specific manner when a monetary policy action is exercised on the economy. Banks' credit is found important in the transmission mechanism of monetary authorities. The central bank influences the market through taking a control on credit supply of banks a country. If policymakers conduct open market operations to control the liquidity from the market, the deposits and liquidity of banks are controlled. Similarly, monetary authorities restrict the banking institutions to issue new credit to the economy. Due to these contractions in monetary policy, credit is limited in the market. This financial environment compelled the firms to decrease investment and production, thus aggregate output declines in the economy. On the empirical ground, Bernanke and Blinder (1988), Gertler and Gilchrist (1993), Bernanke

and Mark (1995), Domac and Giovanni (1998), Garretsen and Swank (1998), Guender (1998), Suzuki (2001), Evans, Fisher, Gourio, and Kran (2015), Jermann, and Schmid (2016), Ekimova, Kolmakov and Polyakova (2017), and Olmo, Azofra and Sáiz (2018) have explored the banks' centric view of monetary policy and the importance of the banking sector in the monetary policy. Likewise, they have documented the impact of banks' disturbances on the aggregate economic activity. In general, they have measured the responses of core bank balance sheet variables: deposits as representative of the liability side and loans as representative of the asset side of banking balance sheet. Further, they have considered the selected macroeconomic variables: output, inflation and unemployment rate along with changes in the monetary policy indicators: interest rates.

Similarly, Bernanke and Gertler (1995) and Hubbard (1995) have analyzed that the credit channel is active, that is in addition to the interest rate channel of monetary policy. In this context, monetary shocks affect spending and investment of economy through capital cost and savings' yield. As the matter of fact, the credit and the interest rate are two fundamental channels that deviate in evaluating the financial constraints, but they both transmission channels are deemed complementary. At same time, the monetary policy is implemented effectively by these two transmission channels in same market. In the spirit of Bernanke and Blinder (1992), a series of empirical studies have explored the credit channel alongside the interest rate channel on aggregate data through vector auto regression (VAR) analysis. Many studies have documented that banks' credit supply drop after a monetary policy actions, but these findings are overwhelmed by a purely identification problem; whether this decline in credit supply is supply side shock or demand side shock. In context of transmission theory, if monetary policy is tightened the credit channel stresses a shift loan supply and interest rate channel is followed by a shift in loan demand. Similarly, Cecchetti (1995) has explored about

this identification problem that it is difficult task to distinguish whether banks' balance sheet is facing contractions because of loan supply or loan demand.

In light to investigate this ambiguity, there appeared several studies that have found heterogeneity across the market players through changing data from aggregate to disaggregated. To meet the identification problem, Gertler and Gilchrist (1993), Oliner and Rudebusch (1995) and Gilchrist and Zakrjsek (1995) have used the panel data many business firms and concluded that as monetary policy is tightened, the firms of different size face different financial constraints. Kashyap and Stein (2000) have also investigated the panel data of the individual bank level with a conclusion that small and less liquid banks are more affected due to monetary policy shocks. Similarly, Kishan and Opiela (2000) have reported the same results by adding that the lending of those banks is also affected more which are not capitalized is better way.

Gertler and Hubbard (1988) have noted the differences in the correlation between fixed investment and cash flow for the firms which pay dividends, and which do not pay dividends in recessions and normal periods. If we keep a low dividend payout ratio as a proxy for firm's bank dependence and consider the monetary policy initiated prior to the recessions, these results support the existence of bank lending channel.

Finally, Sharpe (1994) has noted the employment adjustment of firms on basis of size to the change in the real federal funds rate representing monetary policy. He has found that the employment of small-sized firms is more sensitive to tight monetary policy than that of large-sized firm. Furthermore, he has also found that the highly leveraged firms tend to be more sensitive to funds rate shocks through monetary policy. If we assume that firms with high leverage are more bank-dependent, thus this finding supports the bank-centric view of monetary policy. Hoshi, Scharfstein, and Singleton (1993) have found that when monetary

policy is tightened, liquidity is more of independent firms gets more important for investment than in normal times. Olmo, Azofra and Sáiz (2018) have analysed how creditor rights affect the credit supply of banks to monetary policy through a sample of 1096 listed banks from thirty-six countries from 2003 to 2015. They found that creditor rights had not directly affect to loan supply of banks. Further, they have examined the liquidity shocks and the role of monetary policy in provision of the adequate liquidity to financial firms through credit channel. They have measured the liquidity initiated through central banks up to the level to which monetary policy actions influence the credit growth of banks emerged by the interbank money market. They concluded that the bank lending channel is found significant in economies with weak creditors' rights and the same channel is less effective where were sound creditors' rights. Hasin and Majid (2012) and Arena, Reinhart and Vázquez (2006) have explored various channels of monetary transmission for developing countries and found the existence of credit channel. However, these studies have mainly examined the banks' lending channel from perspective of conventional banks only. Taken all together, these findings strongly confirm the key role of credit supply view. The empirical evidence from the different countries, with different econometric methodologies, on the different time periods, and for the different agents concludes that 1) restrictive monetary policy reduces the credit supply of banks and 2) this reduction in banks' lending depresses aggregate spending.

3.8 How Monetary Policy Transmits Through Different Channels?

In context of the theoretical and empirical discussions on the transmission mechanism of monetary policy brings us to understand how the traditional Keynesian interest rate transmission channel is working along with other channels. This interest rate transmission channel operates in the context of dynamic, stochastic, general equilibrium models. This discussion is built on early attempts by Fischer (1977) and Phelps and Taylor (1977). The main assumption of nominal price or wage rigidity is combined with the assumption that all agents

are with rational expectations in market. This integration is built to overturn the policy ineffectiveness result as McCallum (1979) associates with Lucas (1972) and Sargent and Wallace (1975). This discussion is based on recent work of earlier studies in context of monetary policy. There are taken the key behavioural equations of the New Keynesian model considering the objectives and constraints of households and firms in optimizing their decisions.

More specifically, the basic New Keynesian model has the three equations with three variables. These variables are output (y_t), inflation (π_t), and the short-term nominal interest rate (r_t). In line with Kerr and King (1996) and McCallum and Nelson (1999), the first equation of the expectational IS curve, associates the current output to expected future output and to the ex-ante real interest rate as well. We can calculate it in a very way by subtracting the expected rate of inflation from the nominal interest rate:

Where (y_t) is output, (π_t) is inflation, (r_t) the short-term nominal interest rate (σ) is strictly positive as other parameters would also be introduced in same pattern.

The equation (3.1) matches to a log-linearized version of the Euler equation. It associates an optimized household's intertemporal marginal rate of substitution with the inflation-adjusted return on bonds which is the real interest rate.

The second equation (3.2) is the New Keynesian Phillips curve in the following form:

The second equation corresponds to a log-linearized version of the first-order condition. It reflects the optimal behaviour of firms in monopolistic competitive market. In this market,

firms either face explicit costs of nominal price adjustment (Rotemberg, 1982) or the firms make their nominal prices in staggered fashion in random way (Calvo, 1983).

In this regard, the final equation is proposed by Taylor (1993) as an interest rate rule for monetary policy.

The third equation (3.3) explains how the behaviour of central bank alters the short-term nominal interest that responds to the movements in inflation and output. Overall, the discussion of the interest rates of monetary policy reflects that most of the central banks conduct their policies by fixing the targets of the monetary aggregates.

Further, a money demand equation can also be added to this three-equations model, but that additional equation will determine only how much the central bank and other banking system should supply the amount of money to clear markets, whereas there is given the setting for central bank's interest rate target (Ireland, 2004).

In compliance to this benchmark of New Keynesian model, the traditional Keynesian interest rate channel works in monetary policy actions. A restrictive monetary shock to the Taylor rule will increase the short-term nominal interest rate. Then, the nominal prices adjust slowly, these nominal interest rates' movements translate into an impact on real interest rates as well. This increase in the real interest rate appears a cause making households to cut the spending that are expressed in the IS curve. Lastly, a fall in output places downward stress on inflation through the Phillips curve. The inflation adjusts gradually after the monetary policy shocks.

However, the expectations that are adjusted into the IS and Phillips curves predict that monetary policy action will work differently in their quantitative effects. This differential impact depends on nature of policy actions whether these are anticipated or unanticipated. In

such a way, this New Keynesian model also incorporates the characteristics of existing rational expectations models of Lucas and Sargent and Wallace by giving an importance to the role of expectations in the transmission mechanism of monetary policy.

Kimball (1995) has noted that the behaviour of household and firms is optimized incorporating these expectational forms for the IS and Phillips curves. Hence, the New Keynesian model is an innovation with an introduction of powerful microeconomic foundations into macroeconomic applied theories through Kydland and Prescott (1982)'s real business cycle model and further insights from earlier work in New Keynesian economics is incorporated. This unique contribution is collected in Mankiw and Romer's (1991) two-volume set of research articles. Similarly, Woodford (2003) and Clarida, Gali, and Gertler (1999) have documented the details of the policy implications of the New Keynesian Model. More interestingly, Obstfeld and Rogoff (1995) have also extended the model of open economy in which the exchange rate channel is found active along with the channel of interest rate to transmit the monetary policy actions to real economy. Furthermore, Bernanke, Gertler, and Gilchrist (1999) have extended the traditional New Keynesian model to the accounts of financial institutions to show the transmission mechanism of monetary policy through the balance sheet channel.

On front of monetary policy transmission, Krugman (1998) have pointed out very first time the problem of the zero-lower bound on nominal interest rates and the traditional Keynesian liquidity trap. This problem appears most harshly in the traditional New Keynesian model, when monetary policy is conducted exclusively by the Keynesian interest rate channel in the economy. At same time, private agents can use the currency as a store of value. Therefore, the equilibrium in the bond market should be necessarily a non-negative nominal interest rate. If there is a low inflation environment in the economy and nominal interest rates are also found very low in the economy, the monetary authorities may take an action against this zero-lower

bound. In history, the interest in the zero lower bound was grown up during the late 1990s, early 2000s, and 2007 because the nominal interest rates were fallen to zero in the United States, Japan, Europe and some other countries as well.

Finally, on the empirical grounds, researchers have concentrated on relative importance of credit channel of monetary transmission mechanism. Noteworthy contributions along these lines include Kashyap and Stein (1994) and Bernanke, Gertler, and Gilchrist (1996).

The traditional Keynesian transmission mechanism, i.e., the money view, was criticized by the advocates of the credit channel that complements the conventional money channel. Hence, it tends to amplify the impacts of interest rate channel of transmission process to the real activity. Mishkin (1996) seems dissatisfied with conventional interest rate channel and introduced impact of asymmetric information in financial market what led to “Credit Channel” by two ways in credit markets: the balance sheet channel and the bank lending channel. Further, Aysun and Hepp (2011, 2013), Wong (2000), Kashyap and Stein (1995), Bernanke and Lown (1991) have also documented the credit view of monetary transmission mechanism.

There is also impact of credit market imperfections on the channels of monetary policy, especially the credit channel accepts the effects of these type of imperfections. Based on these credit market imperfections, there are emerged information asymmetries between borrowers and lenders. Similarly, there is found an external finance premium: a wedge between the cost of funds collected from external sources and the opportunity cost of internal funds. The advocates of the credit channel of monetary policy argue that the general interest rates level and the extent of the external finance premium both are affected due to monetary policy actions. The credit channel deals two perspectives to evaluate the relationship between the change in monetary policy action and the size of the external finance premium.

The balance sheet channel explains the financial position of borrowers that become a source to examine the impact of monetary policy actions on the real economy. This approach may lead to the problem of adverse selection and moral hazard because the net worth of bank is very low. In sum, the bank lending channel associated with the credit channel, explains that monetary policy shocks affect the loan supply of banks and, therefore, this mechanism affects the bank-dependent industries and private investment as well.

3.9 Monetary Policy Strategy: Lessons from the Financial Crisis (2007-2009)

The financial crisis of 2007-2009 flattened the economic activities, creating the most severe global economic contraction since the Great Depression of 1929-1930. It has also nullified the role of central banks to manage the economy. The starting point of this discussion is to observe thinking of monetary policy before and the aftermath of the 2007-2009 financial crisis. Indeed, these crises have changed the views and strategies of both theorists and practitioners.

The financial crisis has started a rapidly growing literature on the role of financial frictions in effectiveness of monetary policy stances and in integrating the financial market to stimulate the credit to markets. Most of the papers have integrated financial frictions in their models on the basis of Bernanke, Gertler, and Gilchrist (1999) approach. This approach fundamentally deals with nominal rigidities that are built to meet the emerging issues of monetary policy. Demirel (2007) has explained a model without capital and recommended that the growing firms should borrow through available opportunities in credit market to finance their inputs that are essentials to the production process. Similarly, Christiano, Motto, and Rostagno (2007) have added the agency cost model of Bernanke-Gertler-Gilchrist in DSGE (Dynamic Stochastic General Equilibrium) model. In this innovative model, they have worked with sticky wages and prices in U.S. and euro area data. Further, Curdia and Woodford (2008) have focused on credit spread and related issues prevailing in the credit markets during recent crisis. They have

explored the optimal difference between paid interest rates and received interest rates (Credit - spread) by borrowers and savers respectively. They completed this handful practice through the optimal Taylor rule that responds to credit spreads in market. Similarly, Monacelli (2008) has incorporated the existence of collateral constraints of households on borrowing from credit market. In the background of open-economy models, Gertler, Gilchrist, and Natalucci (2007) have explored the impact of exchange rate regimes. They have discussed the financial accelerator into a model of a small open economy and found a significant role of financial frictions in accounting for output declines. This decline was emerged because of an exogenous rise of risk premium in country. In other words, financial frictions contribute substantially in accounting for output declines as there is found an exogenous rise in the country's risk premium. Aikman, Lehnert, Liang and Modugno (2017) have explored the impact of frictions raised because of disturbance in credit supply on macroeconomic performance in line with the empirical findings of Lopez-Salido, Stein, and Zakrajsek (2015), Mian, Sufi and Verner (2015) and Krishnamurthy and Muir (2016)).

Before the crisis, Mishkin (2007) has had presented his research at a conference of the Deutsche Bundesbank; the central bank of the Federal Republic of Germany. This is a handsome contribution to examine the state of monetary policy before the financial crisis. He has presented nine basic scientific economic principles to meet the expected risk of adverse selection of monetary policy tools for credit markets. Theses nine economic principles were derived from the conceptual foundation of monetary theories and through supporting empirical evidences. In this context, he guided almost all central banks to revisit the policy stances in line with the following outlines: i) All the central banks and governments should believe that inflation is always and everywhere a monetary phenomenon; ii) In an economy, they should consider the importance of price stability in their economies; iii) There is not long-run trade-off between unemployment and inflation; iv) Crucial role of expectations in determining

inflation and in transmitting the monetary policy to achieve the macroeconomic objectives; v) Central banks are recommended to raise their real interest rates along with higher inflation in compliance with the Taylor Principle; vi) In most of the economies, monetary policy is conducted subject to the time-inconsistency problem; vii) The governments should ensure the independence of central banks because it improves the efficiency of monetary policy and credit markets; viii) These economies should be committed to ensure the presence of a strong nominal anchor that plays a vital role to bring good monetary policy outcomes; and ix) Finally, the policymakers are strongly recommended to observe the role of financial frictions dynamically in business cycles of economy.

The first eight principles are the fundamental elements that have been given the titles of the new neoclassical synthesis (See, for example, Goodfriend and King, 1997). Conceptually, almost all academician and practitioners of central banks are agreed upon these eight principles. The last principle about the important role of financial frictions in business cycles, has not been the part of models explicitly, that were adopted to analyze the policies of central banks, though it is understood carefully by most of the theorists and practitioners, but not by all central bankers.

3.10 Review of Important Determinants to Credit Channel of Monetary Policy

There are different variables explaining credit supply of different firms and banking organizations. This study reviews the literature of important determinants of credit supply. First, we review monetary policy variables that affect credit supply decision of a financial organization. Similarly, these monetary policy stances control the credit supply to achieve the macroeconomic public objectives. Further, bank-specific variables are also traced out from literature affecting credit issuance of a banking institution. Lastly, the macroeconomic

variables affecting the aggregate economy are discussed with a special reference to banking institution from perspective of credit supply of banks.

3.10.1 Monetary Policy Measures of Central Banks

Monetary policy influences economic growth, inflation, exchange rates and unemployment through different transmission channels. There are different different interest rates as measure of monetary policy. We have included interbank offered interest rate for Pakistan and Malaysia because it is more relevant to the selected sample of banks. Similarly, Caporale, Çatık, Helmi, Ali, and Tajik (2016), and Ibrahim (2017) in Malaysia, Hanif and Khan (2012) in Pakistan, Nguyen, Vu, and Vu (2016) in Vietnam, Amarascakara (2009) in Srilanka and Schmitz (2003) in European Countries, Gómez-González, Kutan, Ojeda-Joya and Ortiz (2016) in Colombia, and Sun, Gan Hu (2010) in China have used interbank offered interest rate as measure of monetary policy.

A change in the policy rate affects different rates of money market, like repo rate and KIBOR (Karachi Interbank Offered Rates), that further affects the long-term interest rate. Specifically, KIBOR is a benchmark rate that determines the borrowing cost for consumers and businesses affecting the decisions of public to consume, save, or invest. Low interest rates lead households to save less and consume more out of their income. Generally, because of low interest rate firms do more investment and hire more workers, which affects income positively through increases in output. In contrast to this, households save more and consume less to get the benefits of high interest rates. Similarly, investors' demand for funds decreases in case of high interest rate, making overall economic activity slowdown. On the empirical grounds, Taylor (1995), Meltzer (1995), Arena, Reinhart and Vázquez (2006), Mohanty and Turner (2008) and Tenreyro and Thwaites (2016) have documented that the interest rate channel has substantial impact on consumption and investment spending through interest rate shocks. Further, Gerlach

and Smets (1995) have compared the effects of monetary policy on output and prices in the G-7 countries using a short-term interest rate as policy variable.

Interbank interest rate is used as the monetary policy instrument to influence bank loans (Gomez-Gonzalez and Grosz, 2007; Mello and Pisu, 2009; Caporalc, Çatık, Helmi, Ali, and Tajik, 2016; Ibrahim, 2017; Hanif and Khan, 2012) because it reflects the costs of bank's borrowing which further affects bank's lending decisions. Further, the terms and conditions emerging from these monetary policy rates are found different in both countries (State Bank of Pakistan, 2013; Bank Negara Malaysia, 2017).

Kashyab and Stein (1994, 1995) have found monetary policy indicators are associated negatively and statistically significant and this result supports the presence of bank centric view of monetary policy for United States. These empirical results indicate the existence of the centric view of monetary policy. Similarly, these results are in accordance with existing literature, such as Sharpe (1995), Hasin and Majid (2012) and Janjua, Rashid, and Qurrat-Ul-Ain (2014). More Recently, Aikman, Lehnert, Liang, and Modugno (2017) have noted that tight monetary policy has not impact on financial conditions by making them tight in the situation where credit is above the average trends and is not able to make the economy slow. This finding is consistent with the evidence about passive transmission process to forward the Treasury rates in high-credit periods of economy. So, the credit is a vital conditioning financial variable that has a substantial impact on macroeconomic performance. Similarly, Jermann (2016) presented a model for pricing interest rate swaps where financial frictions for holding bonds limit arbitrage opportunities in a market. Finally, the model finds a negative association between the term spread and the swap spread in line with Stepanchuk and Tsyrennikov (2015). Further, Akhatova, Zainal, and Ibrahim (2016) have evaluated comparatively the credit channel of Islamic banks and conventional banks for Malaysia the interbank offered interest rates

monetary policy measures. They have noted that conventional bank credit and Islamic bank financing are responding significantly to monetary policy measures. However, the dynamic behaviour of Islamic bank financing appeared different to alternative specifications of the SVAR throughout the analysis.

In this thesis, we have selected the interbank offered interest rate as measures of monetary policy for the banks of Pakistan and Malaysia.

H1: Policy variables are negatively related to the credit supply of banks.

3.10.2 Bank Size

Bank size is one of very important variable to define loan supply of any firm. Tomak (2013) has investigated the dependency of bank lending on bank size, interest rate, deposit, GDP and inflation in Turkish banks over 2003–12. He has found that the credit supply of Turkish banks depends on bank size and inflation rate. There are several aspects of size explored about how it affects credit supply of an organization. Malede (2014) has investigated banks' size and credit growth and found a positive and significant association between them, consistent to Dietricha, and Wanzenriedb (2009) and Aikman, Lehnert, Liang, and Modugno (2017). Pruteanu (2004) has explained that bank size appears negative as monetary policy gets tight but in expansion it turns to positive sign. In case of tight monetary policy, Kashyab and Stein (1995) have documented that small-sized banks are affected more as compared to large banks because of issuance of commercial papers and equity to make money in monetary tightening period. However, Hulagu (2012) has noted that the negative coefficient indicates that small-sized banks supply more credit in contractions of monetary policy.

Over the period of 1990-95, De Bondt (1999) considered the bank-level data of Belgium, France, Germany, Italy, the Netherlands, and the United Kingdom. They have found the bank lending channel in Germany, Belgium, and the Netherlands. Further, the effects of monetary

policy actions are found on the loan supply of small-sized and relatively illiquid banks of these regions. In a similar study, Favero, Giavazzi and Flabbi (1999) have explored the credit channel of bank through a cross section data of bank's balance sheets for European countries (France, Germany, Italy and Spain). They observed poor responses of credit supply of banking sector to tight monetary policy in 1992. However, they found significant comparative difference among the countries and across the size of banks that permit them to shield the credit supply of banks from a squeeze in liquidity.

Köhler, Hommel, and Grote (2006) have investigated that the ability and alternate sources of banks to refinance the operations. This arrangement affects the liquidity position of banks therefore the availability of loans in tightening monetary policy. There is a vital role of capital markets, interbank lending and borrowing or internal markets that depends on underlying informational frictions among banking corporations. In context of informational asymmetries, large banks face less impact of monetary policy than small banks that have more informational asymmetries. Similarly, the costs of funding are expected to be lower for large banks.

Gertler and Gilchrist (1994) have compared the bank dependent firms' investment on the basis of size. They concluded that the inventory investment of small firms is more sensitive to a monetary policy shock as compared to large firms. Similarly, they have found the same differences on the bases of size.

Overall, Alper, Hulagu, and Keles (2012), Köhler, Hommel, and Grote (2006) and Schmitz (2004) have found that banks' credit supply increases significantly with an increase in bank size and they have reported the positive relationship between bank size and the credit supply of banks. However, one should note that these results are contrary to Pruteanu (2004) and Janjua, Rashid and Qurrat-Ul-Ain (2014), who have come with a negative association between bank size and credit supply. There are mixed results in empirical studies of banks because this

relationship appears negative during tight monetary policy, and it becomes positive as expansionary monetary policy starts (Pruteanu, 2004).

H2: Bank size is positively related to the credit supply of banks.

3.10.3 Bank Liquidity

Kashyab and Stein (1997) have explored the impacts of monetary policy on credit supply of banks. These are the banks which have less-liquid assets in their balance sheet and found that less liquid banks supply more during tight monetary policy. Similarly, Santis, and Surico (2013) have reached to the conclusion that excessive cost of capital has been a basic problem for small, less liquid, and less capitalized banks. They recommended to increase the number of corporate and saving banks to improve the market environment in substantial way. Alper, Hulagu, and Keles (2012) have analysed the impact of monetary policy on credit supply of banks through liquidity that is positive and a significant determinant of bank credit supply in Turkey. They have dealt microdata of individual banks to meet the objectives of study.

Malede (2014) has developed hypothesis to evaluate the relationship between the ratio of liquid assets to deposit and banks' lending. He found a positive and highly significant empirical relationship because as the ratio of liquid asset to deposit is high, a bank's loans and advances also become high because a bank collects large liquid assets enabling management easy to convert it to cash at a low cost. As a result, the coefficients display that a change of one unit in liquidity ratio brings commercial banks' lending to increase by 0.723 %. Köhler, Hommel, and Grote (2006) have concluded that the existence of the bank lending channel in the Baltic through banks' capital and liquidity. There was found the pass through of monetary policy impulses to the real economy. Moreover, liquid and capitalized banks react less strongly to monetary contractions than the banks with poor liquidity and capital, that respond strongly. These empirical evidences show that banks' liquidity, plays a very important role to growth of

loan, whether this liquidity is arranged by domestic arrangements or through foreign liabilities. Ehrmann, Gambacorta, Martínez-Pagés, Sevestre, and Worms (2001) have had an inclusive assessment of the banks' structure and financial markets in the euro area. They developed several hypotheses to gauge the role of banks in monetary policy transmission. They found that the liquidity of individual banks plays a vital role in determination of banks' loan supply.

Kashyap, Stein, and Lamont (1994) have investigated the differences of individual publicly traded companies in inventory investment distinguishing them on basis of bond ratings and those without bond ratings. They have found that the non-rated companies are smaller and bank dependent as compare to the rated companies. Further, they have observed that the inventories of the non-rated companies were responding more to their own cash holdings than the inventory movements of the rated companies because there was not significant liquidity effect for the rated companies in the Fed restrictive monetary policy regime of 1982 recession.

Similarly, they observed the patterns of firms for the 1974–75 recession in the USA during tightening of monetary policy. The bank-dependent firms are cash sensitive because of inventory investment if loan supply is varying with monetary policy.

On the empirical grounds, Alper, Hulagu, and Keles (2012) and Köhler, Hommel, and Grote (2006) have noted that the coefficient of banks' liquidity is negative and statistically significant, suggesting that liquidity affects negatively the credit supply of banks. It means the selected banks are facing a shortage of liquidity stock to absorb monetary policy shocks. Although, Schmitz (2004) and Hasin and Majid (2012) have indicated a positive and significant relationship of banks' liquidity and loan growth, implying that liquid banks adjust the tightening of monetary policy.

H3: The liquidity of banks is negatively related to the credit supply of banks.

3.10.4 Banks' Capital

The impact of banks' capital on lending behavior have been widely debated since the Basel Capital Accord of 1988 (Gambacorta and Mistrulli, 2004). Moussa and Chedia (2016) have indicated a positive relationship between capital and bank lending in line with Beatty and Liao (2011), De Young, Gron, and Winton (2005), Heuvel (2002), Diamond and Rajan (1999), and Sharpe (1995). Similarly, Bermanke and Lown (1991) have found a positive link of initial capital ratios with bank lending and employment using equations linking bank lending, capital ratios and employment. On the same pattern, Labonne and Lame (2014) have focused on French banks and found a positive and significant association between banks' capital and loan growth. Similarly, Köhler, Hommel, and Grote (2006) have found that the bank lending channel exists in the Baltic through banks' capital and liquidity. There was found the pass through of monetary policy impulses to the real economy. Moreover, liquid and capitalized banks react less strongly to monetary contractions than the banks with poor liquidity and capital, that respond strongly. The understanding of the bank's capital- lending nexus can be developed through empirical evidence from emerging economies.

Furthermore, Berajas and Almas (2005) have observed positive and significant impact of capital ratios on loan supply, means that higher capital ratios allow a bank to supply more loans in latin America. Carlson (2013) has explored the trends of capital ratios and US commercial banks' lending and found that their relationship was sound during and shortly after financial crisis of 2007-08. Auclert (2017) has also focused upon capital gains and losses whether these are nominal or real, affect a lot the comprehension of the transmission mechanism of monetary policy. This empirical finding has a profound implication to formulate a successful monetary policy.

Gambacorta and Shin (2016) have found that higher bank capital leads to greater credit supply to market because of lower funding costs in better capitalized banks. Indeed, bank capitalisation

has been a centre point of discussion in monetary policy authorities after the financial crisis. While most of financial supervisors have been concerned with the solvency issues as the banking system is weakly capitalised in most of countries. Busch and Memmel (2015) have explored a general confusion between the macroeconomic objectives of unlocking bank lending and the supervisory objectives of soundness of banking system. The former entails expanding the credit, the later requires the cutting credit back. Their focus is on the link between bank capital and credit with a concentration on macroeconomic conditions. Brei and Gambacorta (2016) have noted the regulatory differences across the countries. They have defined the constraints of banks in terms of capital. A bank is declared with a capital constraint when the difference of a bank's capital ratio from the regulatory minimum is lower than the 10th percentile of the distribution of distances. In addition, several studies in the literature such as Moussa and Chedia (2016), Schmitz (2004), Bernanke and Lown (1991) have also reported the positive relation of capital with the credit supply of banks. Further, the positive impact of capital supports the prediction of monetarists that well-capitalized banks survive more in contractions of monetary policy.

On the other hand, however, Berrospide and Edge (2010) have explored that the impact of the bank's capital on the bank lending is an important determinant to explore the relationship between the financial conditions and macroeconomic indicators of economy through banks. Methodology of shared regression analysis have been adopted to test the bank credit supply by large banks and found a negative and not statistically significant coefficient, it implies slight impact of the ratio of capital to the total assets (CAP) on credit supply of the commercial banks in Jordan. Similarly, Ehrmann, Gambacorta, Martinez-Pagés, Sevestre, and Worms (2003) have found that tight monetary policy has a serve negative effect on less capitalized bank's credit expansion. Thus, we can say that there are mixed empirical evidences about impact of banks' capital on lending behavior. Similarly, Janjua, Rashid, and Qurrat-Ul-Ain (2014),

Berrospide and Edge (2010), Ehrmann, Gambacorta, Martinez-Pagés, Sevcetre, and Worms (2003) have reported a negative impact of capital on loan growth of banks because overall the banks are not well capitalized. The reason of negative association is explored by Alper, Hulagu, and Keles (2012) who have noted that small size banks and less capitalized banks were facing more burden of monetary policy.

H4: Banks' capital is positively related to the credit supply of banks.

3.10.5 Coverage Ratio

In bank-specific determinants, the coverage ratio is a key determinant of the bank's lending in existing literature of credit channel of monetary policy. Abedin and Dawan (2016) have found that the coefficient of coverage ratio is positive and statistically significant, suggesting that bank with high coverage ratio in their cash flow streams issue more credit. Likewise, Kaleem and Isa (2006), Sanrego and Nikmawati (2010) and Alaro and Hakeem (2011) have documented the positive relationship between coverage ratio and banks' credit supply. In contrast to most of the previous empirical studies that show a negative association between coverage ratio and banks' credit supply because coverage ratio reflects the immediate impact of tightening the monetary policy on financial position of banks as coverage ratio is a ratio of earning before distribution of interest and taxes to interest expenses (see, for example, Janjua, Rashid, and Qurrat-Ul-Ain, 2014; Alper, Hulagu, and Keles, 2012).

Claessens, Coleman, and Donnelly (2017) have explored the effects of continuous very low interest rates on banks' net interest margins (NIMs), coverage ratio and profitability through using the data for 3418 banks from forty-seven countries from 2005 to 2013. They have discussed country-specific and cross-country and found that low interest rates affect the bank NIMs more than high interest-rates. Further, the interest income margins are greater than interest expense margins because of this impact. Similarly, balance sheets with short maturity

are more affected than balance sheets with long maturity. The effect of very low interest rates on banks 'profitability is found less strong, perhaps low interest rates earn some valuation gains. Further, banks manage the adverse impact of low rates upon profitability, possibly through decreasing cost and increasing more noninterest income business activities. There is found a negative association between coverage ratio and low interest rates because coverage ratio reflects the banks position in term of earning before bearing any tax or interest expense.

H5: The coverage ratio of banks is positively related to the credit supply of banks.

3.10.6 Credit Risk

Credit risk is an important determinant of credit supply decision of banking sector. Pouvelle (2012) has defined the credit risk as the non-performing loans (NPL) to total loans ratio and it is adopted as a proxy against the internal measure of risk. Its sign is found negative in relationship with banks' lending. It means an increase in the loan portfolio riskiness may weigh on banks' ability to resume lending. Pruteanu (2004) has explored the relationship of credit risk and credit supply decision of banks and documented a negative association of credit risk with credit issuance of banks. This result implies as credit risk increases, bank credit supply decreases, implying that a decrease in proportion of classified loans leads to an increase in banks' credit supply. Further, he has explained that the classified loans become a basic source to increase credit risk because it is described as ratio of classified loans to total loans. Similarly, Malede (2014) has observed that credit risk appears to be negatively related to banks' credit supply, suggesting that when the credit risk of a bank increases the bank become conscious in issuing loans.

Pruteanu (2004) has explored the estimations with the proportion of classified loans to total loans as bank characteristic and noted response of banks' lending. Noteworthy, the overall coefficients to characterize the linear relationship between them, have opposite signs for the

two periods. In 1st period it was positive and negative for the 2nd period. However, the significant positive relationship in the 1st period is mainly due to mainly Czech and foreign participation. This perspective promises well with the possibilities on banks' soft budget constraints. Whereas, for the 2nd period, the results show that there was a change in the banks' behaviour to mainly Czech participation and same negative sign is captured in case of foreign banks for credit risk, implying the fact that major portion of classified loans is detected from banks' lending to residents. Although, overall sign of credit risk to banks' loan supply is negative in line with existing literature.

In contrast to the above-mentioned relationship, Skała (2012) and Norden and Weber (2010) have explored the positive association between bank's credit risk and credit growth of banks. Further, Skała (2012) has noted that the most of existing banking literature associates loan growth with an increased credit risk. He has proved the relationship between loan growth and risk with a speedy portfolio expansion because of increased repayment problems. A possible justification that the new customers appear with low quality as compared to the existing customer base, but financial institutions accept these new customers through charging adequate risk premiums on supplying credit to them. Thus, despite of growing overall risk profile of loan, credit supply is found increasing in competitive environment.

H6: The credit risk of banks is negatively related to the credit supply of banks.

3.10.7 Profitability

Profitability works as a blood for a bank to survive in competitive market. It works like a bridge through providing extra loan disbursement facility to a financial institute to meet the goals of organization in long-term and short-term as well. Banks should ensure to have profitability by their business activities for their shareholders to secure for them non-discriminatory returns and for their managers because it pledges more flexible capital ratios to enhance the business,

even in the setting of an uncertain business environment. Similarly, Amandeep (1999) has noted that profitability is an essential part of a growing business unit to keep trustworthiness of shareholders, management, and long-term creditors. In this way, profitability aids to maintain the financial soundness of a banking organization. Based on the above facts, we can say that an organization should raise more absolute amount of revenue through diversified sources and boost up its profit to compete the counterparts. Similarly, Abedin and Dawan (2016), De Young, Gron, and Winton (2005) and Sharpe (1995) have documented that banks' profitability had positive relationship with credit supply of banks.

Banks are not an exception to keep the profitability as a prime objective of their activities for the smooth running of business in today's competitive environment. Further, banks playing the role of financial intermediation have a significant impact on the economic development through soundness of financial system. So, management can usually work to recognize profit determinants at the time of decision making to find out the driving forces within and outside of the organization. Specifically, the efficiency argument to maximize the profit frameworks that an organization should be committed to maximize profits as it is the course of action that will lead the organization to an efficient and welfare maximizing outcome (Jensen, 2001; Jensen, 2002). Overall, Jensen (2002) has found that banks' profitability is positively and significantly associated to banks' credit supply decisions. Most of the previous empirical studies found a positive impact of profitability on credit growth of banks, appealing to financial approach that more profitable banks are willing to issue more credit to industry.

Abedin and Dawan (2016) have noted that expansionary monetary policy through money supply in economy increases the banks' profitability. Therefore, depositors will confidently keep their money in profitable banks, assuring that more advances will generate profit for them. Further, profitable banks can absorb the shocks of tightening monetary policy by using internal funds. Furthermore, Bech and Malkhov (2016) have explored an additional mechanism that

the credit supply of banks may appear less responsive at very low interest rates, despite of controlling demand and the bank-specific conditions of the market. In this mechanism, there are very low interest rates as potential reason worsening the profitability of banks' credit supply business. Further, monetary authorities are not found effective in boosting lending through very low interest rate. It is notable that the above empirical results are found after controlling the conditions of financial cycle. Similarly, different bank-specific characteristics are also controlled, that include liquidity, capitalization, risk and income diversification and funding costs to enterprises.

H7: The profitability of banks is positively related to the credit supply of banks.

3.10.8 Debt to Equity Ratio

The debt to equity ratio is major determinant representing the complete liability side of a bank. The prudential regulations of a central bank regulate the both components of this ratio in specific regulatory brackets. It is found as an important determinant of commercial bank's credit supply decision in existing literature. Janjua, Rashid, and Qurrat-Ul-Ain (2014) have found that the debt to equity ratio appears to affect credit supply positively and significantly, indicating that as the debt to equity ratio grows, the banks supply more credit to market because the banks are capable to issue more credit. Similarly, Sanrego and Nikmawati (2010) and Pouvelle (2012) have also documented a positive impact of debt to equity ratio on credit supply of banks, indicating that as the debt to equity ratio grows, the banks supply more credit to market because the banks are capable to issue more credit. However, Pouvelle (2012) has noted a negative association in the variables under discussion, indicating that a rise in the leverage ratio leads to a decline in a banks' solvency. Moreover, the banks' management is restoring their profitability and solvency in case of high leverage ratio, instead of issuing more credit to the industry. He has indicated that the leverage ratio growth has a significant impact whether organization is in financial turmoil or in tranquil periods. Although, the leverage ratio growth

adopts different signs, indicating a non-linear relationship. Initially, it has a negative relationship with loan supply in tranquil periods because a rise in the leverage ratio leads to a decline in a banks' solvency. On other side in financial turmoil periods, its sign is positive due to banks' higher risk aversion behaviour what leads them to deleverage on banks' assets, decreasing loan supply. It continues, even when banks' solvency margins are restored in next periods.

H8: The debt to equity ratio is positively related to the credit supply of banks.

3.10.9 GDP Growth

Financial environment affects the credit decisions of financial institutions in an economy. The GDP growth is found as potential variable explain the supply of banks' credit. Imran and Nishat (2013) have explored the positive impact of GDP growth on credit supply because it affects domestic income positively, enabling consumers to deposit more in banks that allow them to issue more credit to the economy in line with Alper, Hulagu, and Keles (2012). Similarly, Pruteanu-Podpiera (2007) examined the impact of the indicator of monetary policy, GDP and inflation on total loans in banking sector of Czech banks over 1996 to 2001. He found a significant strong positive effect of GDP on credit supply of banks, whereas the sign of interest rates was negative to loan supply.

However, Pouvelle (2012) has found the puzzling coefficient for GDP growth, negative and significant in between the periods of business cycles, the banks' management is restoring their profitability and solvency. This may affect credit supply decision despite a pick up in the business cycle. Similarly, Hussain (2012) has also investigated the impact of monetary policy on GDP growth and inflation by using VAR analysis and GDP growth is found with negative empirical sign, suggesting that an increase in GDP growth will lead to a decrease of credit growth in banks. Because, there are other than bank sources to finance shortage of funds in a

growing economy. On the same pattern, Touny (2014) has found a negative impact of GDP growth on banks' credit supply. Likewise, Janjua, Rashid, and Qurrat-Ul-Ain (2014) have found that GDP growth is negatively related to credit supply of banks in case of Pakistan.

Further, Aikman, Lehnert, Liang, and Modugno (2017) have recommended that the role of credit needs to be considered in the monetary policy transmission process and financial conditions of an economy. Specifically, the policy dynamics attract a policymaker significantly when credit-to-GDP appear growing faster than average trend over the time. These dynamics are built on the costs and benefits of using monetary policy to harmonize the extremes and to stop the undesirable build-up of credit (See, for example, Gourio, Kashyap, and Sim (2018), Svensson (2016), Aikman, Lehnert, Liang and Modugno (2017)).

H9: GDP growth is negatively related to the credit supply of banks.

3.10.10 Inflation

Inflation is a key determinant of commercial bank's lending in existing literature of credit channel of monetary policy. Schmitz (2004) indicated that there was found the negative effect of inflation on banks 'loan growth. He noticed macrocosmic disturbances in the beginning of transition which cause high inflation, resulting to lower credit growth in banks. Similarly, Taner (2000) has examined the impact of inflation and uncertainty on credit market. The empirical evidence reveals that unpredictable inflation raises interest rate because of excessive cost of loanable fund. This increase in cost of funds affects the demand downward and it leads to low bank lending volume. Likewise, Emon (2012) has observed that lenders are very aware about adverse impact of inflation that devalues the amount of loan. To hedge the risk, lenders increase interest rate, lessening credit supply. Further, Borio and Gambacorta (2017) have noted that most of the central banks and monetary authorities have taken revolutionary measures to boost up the demand and inflation in their economies since the financial depression

of 2007–09. After all, growth has not been disappointingly restored and inflation has also found low. This finding is also consistent with recent literature as explored by Amador and Nagengast (2015) and Bech and Malkhozov (2016).

In contrast, Alper, Hulagu, and Keles (2012) investigated the effect of the real GDP and inflation on loan growth. They found that real GDP appears with positive and significant coefficient, whereas, the coefficient of inflation is equal to 1, implying accounting identity of dependent nominal variable in Turkey. Hussain (2012) has also investigated the impact of monetary policy on real GDP and inflation by using VAR analysis and found the inflation is positively related to credit supply of banks, implying that an increase in inflation will lead to an increase in credit growth in banks. Because, there are other than bank sources to finance shortage of funds in a growing economy. Inflation is found to be positively and significantly related to credit growth of banks.

More recently, Ippolito, Ozdagli, and Perez-Orive (2017) have noted that the rate of inflation has strong effects on investment. Most of the financial model consider an inflation rate exogenously determined by monetary policy. These inflationary effects are not particularly surprising as investment is found distorted in different models incorporating financial frictions. Moreover, monetary policy can reduce the real debt burden in the case of increasing inflation and expectations about inflation by investors as discussed by Gomes, Jermann, and Schmid (2016) and Evans, Fisher, Gourio, and Kran (2015).

H10: Inflation is positively related to the credit supply of banks.

3.11 Monetary Management in Islamic Economic Framework

Islam is a balanced way of life revealed to provide for the welfare of humanity by establishing harmony on moral and material requirements of people. Similarly, Islam promotes

socioeconomic justice and brotherhood human beings. Since economic reforms are an important aspect of the Islamic revival. Moreover, the Islamic economic system has also received an increasing interest in last a few decades. Further, Chapra (1985) has explored that the elimination of Riba being an essential feature of Islamic economic activities and the development of an alternate Riba-free products for monetary management and banking system operations have forwarded some great challenges to Muslim intellectuals. Fortunately, this subject has drawn the maximum attention of researchers and practitioners to be explored by them from different perspectives. At spot, we discuss a few integral building blocks from the literature work on the subject to move forward. It is notable that the elimination of Riba is not an independent injunction to develop an Islamic economic system. Rather, it is part of a broad social and moral philosophy of Islamic framework. Further, it is an integral part of a set of unified and coherent values of a complete code of life. Therefore, Islam is not only concerned to remove *Riba* from the prevailing interest-based system only, rather to present an alternate system establishing harmony on moral and material requirements of people along with profound contribution to resource allocation, capital formation, stability and growth of economy.

3.11.1 Monetary Management in Early Islamic History

The current monetary system has come into existence after a long time of evolution. Chapra (1996) has reported that there is no notable evidence for monetary policy in the era of the Prophet Muhammad (PBUH) in early history of Islam. Although, some evidences are found about prevailed currencies and about not to fix the prices in market of Madina at limited level. Therefore, multiple suggestions are brought to adopt a unique monetary system in Islamic economic framework. In era of the Prophet Muhammad (PBUH), the monetary system was consisting a bimetallic standard of gold (Dinar) and silver (Dirham) coins which were prevailing all together in same economy. Further, the prevailing ratio between gold (Dinar) and

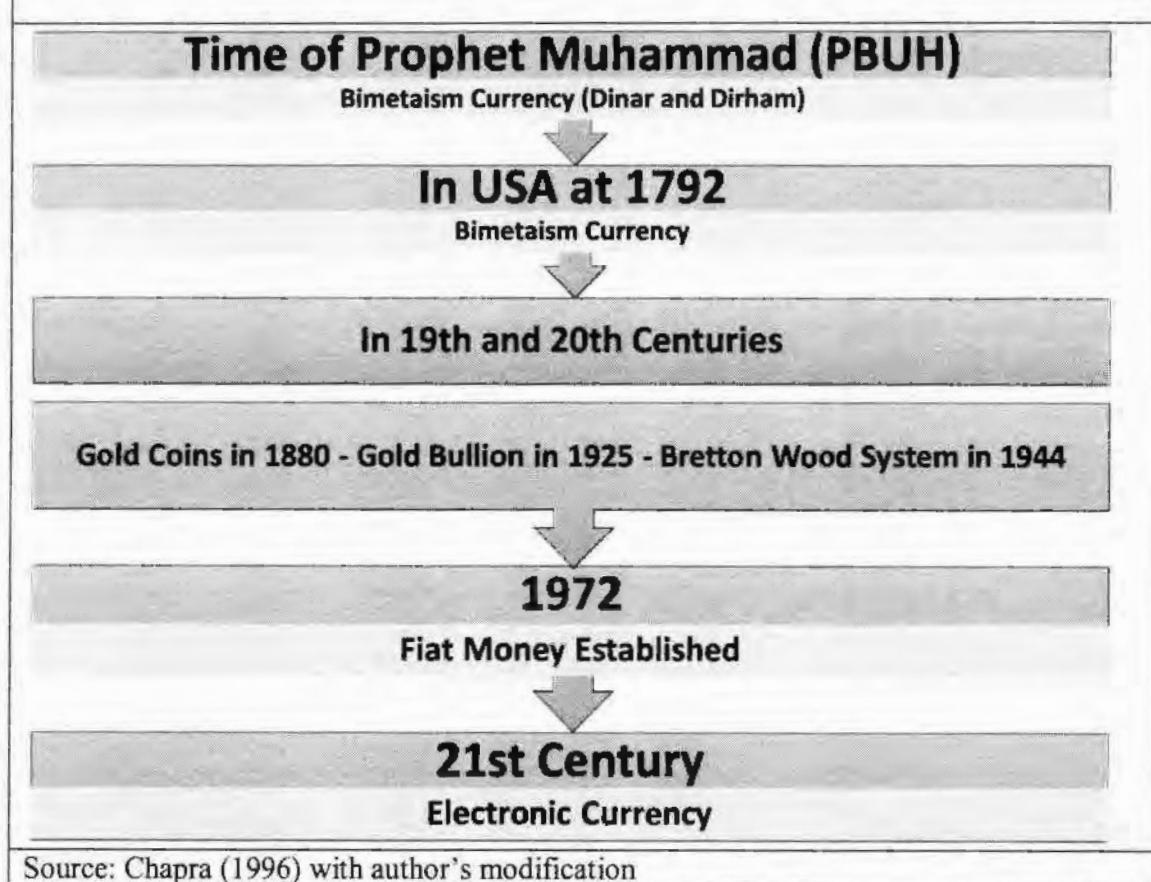
silver (Dirham) coins was 1:10, respectively. Almost, this ratio kept maintained stable in the era of the first four caliphs till 661 A.D (40 A.H in Islamic Calendar). Over the passage of time, these two metals had been fluctuated in terms of their relative prices. The exchange rate between Dinar and Dirham reached to 1: 12 in the Umayyad period (41AH/662AD-132AH/750AD), while the exchange rate reached to 1:15 in the Abbasid period (132AH/750AD-656AH/1258AD). Later, the ratio between both currencies fluctuated badly over the time in various parts of world. We have summarized the evolution of money in Figure 3.1.

In the early Islamic state of Madina, there was not concept of changing the money supply through discretionary measures because there were not prevailed the banking system to transmit the monetary policy through credit channel. Moreover, there was working commodity money system extensively. Similarly, credit was not playing any role in creating money because only a few traders were using credit in practice. In this simple market, Almighty Allah nullified the interest from business transactions in different five divine revelations gradually and Holy Prophet Muhammad (PBUH) provided the regulations that were governing the transaction of commodity money system (Barter System). This regulation is titled “ربالبیوع-“ Riba of Trade” for six commodities that were prevailing in the system of barter trade. The Holy Prophet (PBUH) said, “(Don’t sell) Gold for gold, silver for silver, wheat for wheat, barley for barley, dates for dates and salt for salt – like for like, equal for equal (Same quantity), and hand to hand (Spot Transaction); if the commodities differ, then you may sell as you wish, provided that the exchange is hand to hand (Spot Transaction).” (Bukhari: 2176 and Muslim: 1587). The 1st two commodities were prevailed currencies; Dinar and Dirham from money market and remaining four are the top consumable commodities of consumer basket. Similarly, there is also an evidence about monetary management that the prices soared in market of Madinah and people came to the Holy Prophet (PBUH) and requested to fix the price, but he denied and said:

مَنْ لَا يَعْلَمُ فِي بِعْضِ الْمُؤْمِنِينَ إِنَّمَا أَنْذِلْنَا إِلَيْكُمْ إِنَّمَا أَنْذِلْنَا إِلَيْكُمْ رِزْقًا أَنْ يَبْشِّرَنَّ الْمُسْتَقْدِرِينَ هُوَ اللَّهُ إِنْ

"Allah is the real price maker, controls plenty or shortage of anything and He is the sole provider. I wish to see to Him without injustice to any one of you in your blood or in your money" (Abu Dawud, 3: 286).

Figure 3.1: Historical Evolution of Currency



In same line of interest prohibition, As-Sadr (1989) has explored that the promissory notes and negotiable instruments were managed to be used in the way that the emerged credit was not playing any role in creation of money. In other words, promissory notes or bills of exchange (draft) were allowed to buy a real good or to receive money with zero fee. Technically, these documents can never be issued merely for the purposes of credit in the market. A creditor can sell these documents, but a debtor is not allowed sell them further without taking the possession

of underlying asset to comply with basic requirements of Islamic law of business contracts. Therefore, there is not found a market to sell or buy the negotiable instruments in speculative way. Thus, credit cannot create money through debt instruments in market. This arrangement appeared to affect the equilibrium of the commodity and the money market on the basis of transactions where money is achieved only through rendering an economic service in labour market or through selling a commodity in goods market.

In other words, money is exchanged in business activity that is based on real value-addition and in compliance with Shari'ab. As a result, there is maintained an equilibrium point between money market and goods market in the economy in such a way that the volume of money becomes equivalent to the value of the produced goods. Further, modern monetary instruments, open market operation (OMOs), trading of the negotiable instruments were not a part of monetary management in the early Islamic period.

3.11.2 Interpretation of Islamic Monetary Policy in Modern Context

Muslim society has been conducting their economic activities through money and dealing with some form of banking type activities since its inception. Although, some important issues about money, banking practices and monetary policy operations have emerged with an entirely new perspective in the 20th century (Siddiqui, 1978). An initiative of modern banking practices, globalization of financial intermediation, establishment of financial institutions in Muslim states, the excessive use of paper currency and then electronic transactions, trade of stocks across the borders and the increase in public developmental debt have put the jurists, Islamic bankers, regulators and Islamic economist with a lot of new questions to be answered. To meet these queries, Muslim economist and modern jurist tried to revisit Western institutions with an objective to make them interest free with necessary modification or to devise Shari'ah compliant alternatives that may achieve the objectives of public policy as well. These theories are institutionalized because a good number of Muslim countries got freedom in same period

and political independence also helped them to grow the injunctions of Islam. Similarly, their desire to spell out the distinctive Islamic economic approach, especially contradicting to Capitalism and Socialism, led them to bring a number of fresh formulations in domain of monetary policy.

Ahmad (1984) has noted that a significant contribution in the field of monetary policy was made at the 1st International Islamic Economics Conference held in Makkah in February 1976 and the New International Economic Order held in London in 1977. In line with same agenda, a seminar on Islamic Monetary and Fiscal Economics held at Makkah in 1978 and the selected papers are edited by Muhammad Arif (1978) and International Centre for Research in Islamic Economics King Abdulaziz University Jeddah has published the proceedings of conference in an independent book. Likewise, a seminar was organized on same agenda in 1981 at Islamabad. Next, an international conference on Islamic Banking and Strategies for Economic Cooperation was concluded at Baden-Baden, southwestern Germany in 1982. In continuing, the 2nd International Conference on Islamic Economics was held at Islamabad, Pakistan in 1983. A sizable number of books, monographs, research papers and proposals were produced containing innovative ideas and fruitful discussions as proceedings of these conferences and seminars. It must be appreciated that Council of Islamic Ideology Pakistan contributed the most significant intellectual-cum-operational blueprint to eliminate the Riba (Interest) from a modern interest-based economy through Panel of Islamic Scholars, Economists and Bankers in 1980. Similarly, Chapra (1985) has explored that this report of Council of Islamic Ideology Pakistan proved a milestone towards the development of an interest-free model of modern practices of Islamic economy. This report was derived from intellectual work of contemporary Muslim scholars in last a few years towards an interest-free economy.

In continuity to above mentioned conference, Chapra (1985) has incorporated the suggestions of Islamic economists in the three main objectives of Islamic monetary policy: i) to achieve the

economic well-being of human beings with full employment and optimum rate of economic growth for economy; ii) to ensure stable value of money and iii) to maintain socio-economic justice and fair distribution of income and wealth among masses. The former two objectives are also considered in conventional monetary theory, but the third one has been added as a new dimension contributed through Islamic monetary literature. Moreover, Ariff (1982) and Uzair (1982) have raised some introductory questions on the working of conventional monetary policy in the 1978 seminar at Jeddah.

3.11.3 Prominent Views of Islamic Monetary Policy

Islamic economists have presented Islamic monetary policy views, but three views were dominant on this aspect of Islamic monetary policy. First, Al-Jarhi (1983) is one of the pioneer Islamic economists contributing to monetary policy and financial structure of an interest-free economy in details. In his view, monetary policy players are central bank, commercial banks, private sector business and the treasury. It is interesting that he has come with an idea to debt instruments with zero interest. In his view, there is neither the required reserve ratio nor the discount rate would exist as policy instrument in interest-free monetary policy. In final verdict, he supports the monetarists rule to manage the money supply in Islamic economic framework. Secondly, Chapra (1985) and his proponent think to adopt the existing conventional tools of monetary policy with necessary amendment about to negate interest element. Thirdly, some others have proposed to use equity-based PLS-securities for monetary policy actions along with other Shari'ah compliant instruments in line with 2nd view. Although, Naqvi (1981) has criticized an equity-based economic system because this system makes the return on investment unstable as compared to conventional interest-based system. Moreover, investors 'expectations are uncertain in returns on investment. Therefore, there is a need to hedge the risk of loss through deposit insurance scheme for depositors, otherwise the financial market especially and the whole economy in general will become highly unstable. Likewise, Naqvi

(1981) and Kuran (1986) are convinced that people of this Islamic monetary society will not save and invest due to not having interest as a motivating tool that is found in conventional society. As a result, the state must intervene to compel them to participate in investment activities for expansionary monetary policy. In an Islamic economy people will move to save and to invest optimally only if the state intervene in the market. Further, Kuran (1986) agreed that all the banks will not agree to finance the firms on profit and loss sharing principal of Islamic finance.

Zarqa (1983) argued that every real business has to face uncertainties, therefore Naqvi (1981) cannot say that equity financing increases these uncertainties, rather it reorganizes the consequences of uncertainty to all business partners promoting stability to a business entity. Each head of business partner will bear its share of a loss incurring from business activities without affecting inversely normal business activities or defaulting to their commitments. This equity-based profit and loss sharing is not creating disturbances because of distributing the losses in rainy days. In contrast, the conventional system relieves the financier from bearing any type of risk in terms of uncertainties by transferring the complete risk profile to investor. So, interest-based system leads to instabilities and economic disturbances in market. Similarly, Khan (1986) stated that Islamic financial models adjusts relatively in speedy way to different shocks than interest-based traditional models. Further, he has mentioned with reference to Henry Simons that conventional banking system is instable leading to financial crisis because of interest-based mechanism and proposed an equity-based financial system with 100 % reserve banking in line with equity-based Islamic economic system. Further, Khan (1986) has noted that a good number of Islamic economists have developed different models of Islamic monetary policy that are based on demand and supply of money in IS-LM framework to elaborate an interaction of monetary policy and real sector.

Khan and Mirakhor (1989) have developed a theoretical model through IS-LM framework to study the impacts of monetary policy actions on macroeconomic factors within framework of Islamic economic system. They have argued that any change in supply of money and Modarabah-based financing would affect the macroeconomic variables equally. As a result, an expansion in monetary policy will decrease the return rates and increase an aggregate output. At the same time, Khan (1986) has supported to regulate the PLS ratios to meet the objective of monetary stability. He has assumed that these actions influence upon only new deposits of banks and not on the existing one. He has discussed the two-window banking model: the first window is specific for demand deposit (100% reserve + no return or interest to be paid), and the other window would be utilized for investment purposes based on profit-loss sharing or equity mechanisms (there would not be guarantee on principal and return + no official reserve requirements). Basically, the framework of Khan (1986) is based upon the model developed by Meltzer (1951) and extended by others. Khan (1986, 1992) has presented a macroeconomic model on the financial side and monetary policy works in an Islamic economy similar to interest-based economy with an addition to a better speed of adjustment in a situation of disequilibrium. In contrast, Hasan (1991) has criticised some aspects of Khan and Mirakhor's model. Although, he has admitted that the rate of return (r) that is received by the banks on loans must be related to the rate (rb) the banks are liable to on their liabilities as explored by Khan and Mirakhor (1989). As the matter of fact, r and rb cannot be zero even if we simplify the analysis by assuming that operational and other costs of bank are zero. If someone proves that $rb < r$, the results of these models would be challenged as the equality of these two rates is the foundation of all analysis. Siddiqui (2008) has also referred the criticism of Hasan that the equality of the two rates is not possible on the basis of two-tier Mudarab'ah model.

Once again, Khan and Mirakhor (1994) have highlighted the role of Mudarab'ah mode for deposit mobilization, and the role of lease financing instruments available in the Islamic

financial market. They provided a set of information similar to conventional existing market with necessary modifications. Further, they have pointed out that along with the Islamic banking system, the primary, secondary and money markets are required to meet the basic requirement of monetary policy actions in Islamic economic framework. Indeed, Mudarab'ah and Mushark'ah certificates would appear as necessary tools of monetary policy in line with Shari'ah legitimacy. They have also framed macroeconomic stability in terms of the stability of price and sound balance of payments as the prime objective of monetary policy.

Khan (1996) has also contributed theoretically with a model to determine the income, to grow the economy, and to achieve the comprehensive development in an Islamic economy. He has emphasized that growth can be manipulated through mobilization of human resources on supply-side in Islamic financial system. The said system ensures an implicit Islamic macroeconomic model which leads the economy to the level of full employment, resulting to economic growth and further development. Similarly, Choudhry and Mirakhori (1997) has concentrated on to bring new instruments of Islamic monetary policy. They have discussed about how to use equity-based securities of government with specific rates of returns on the basis of budgetary surplus for the monetary management in Islamic economic framework. There is a tremendous contribution titled "IIIE's Blueprint of Islamic Financial System (1999)" presented by International Institute of Islamic Economics (IIIE) from International Islamic University Islamabad, Pakistan on the issue of monetary management of an Islamic economy. Although, it is not explored largely in the literature of Islamic economics and finance. It outlines institutional framework, role of central bank, policy instruments and possible choices for monetary management in an Islamic economy.

Tahir (2013) has given two messages in his theoretical study on institutional framework with specific reference to fiscal and monetary policies in an Islamic economy. First, a fresh thinking is invited for the revival at the systemic level. There are possible changes that would help in

achieving the objectives of policy. Second, there is a place to work out through an active role of government on both economic and distributive planes of a public policy. In his opinion, the government should confine itself to the governance only. In the light of Shari'ah, the development of monetary aspect would be helpful in achieving the economic goals of a country. Even on the monetary side of an economy, the prime role of the central authority may be largely regulatory.

3.11.4 Empirical Evidences on Credit Channel through Islamic Banks

In more recent studies, there is discussed the empirical literature on monetary policy, instruments and the transmission mechanism in Islamic economic framework. Although, Aktheruddin (2016) has noted that Islamic finance have developed in the last four decades but a remarkable contribution in domain of Islamic monetary management is found in the eighties and nineties. Kia and Darrat (2007) have discussed profit-loss sharing banking systems through modelling money demand behaviour in Islamic Republic of Iran. Over the period of 1966–2001, there is found demand for M1 and PLS deposits. The demand equation for profit-loss sharing deposits is found with consistent trend after applying different policy-based shocks and non-policy-based shocks. They have concluded that profit-loss sharing instruments are reliable for monetary management in line with theoretical evidences of Chapra (1992, 1996) and Khan (1986) who indicate about stable trends through development of profit-loss sharing system in Islamic economic system.

Alaro and Hakeem (2011) explained the basic differences of contractual obligations between Islamic versus conventional banks, that appears in differential impacts of credit supply from dual-banking system economy. They explore that Islamic banks do not deal in interest-based loans and participate on a profit-loss sharing basis in industry. Moreover, the rate of return on equity shares is not determined through speculation; rather Islamic banking shares accept the effects of real economy. Sanrego and Rusydiana (2013) have explained that an economic agent

substitutes the loan-based credit by available profit-loss sharing credit in Islamic banks. As a result, this Shari'ah mechanism creates a balance between monetary and real sectors of economy, controlling inflation as well. Similarly, Majid and Hasin (2014) differentiated Islamic banks to conventional counterpart on the basis of alternate products on both sides of balance sheet, despite of meeting the same demand of market.

These products of Islamic banking are based upon a variety of underlying contracts. Depository accounts are devised on basis of Qar'd and Modarbah, whereas the financing is based Murabha, Mudarabah, Musharakah, Diminishing Musharkah, Ijarah, Salam and Istisn'ah contracts. Adebayo, Hassan, and Kabir (2013) and Mansoori (2010) have added that these Shari'ah compliant contracts incorporate built-in business ethics. Further, the capital structure decisions of Islamic banks operating in Pakistan are also found empirically with unique features (Shah, Rashid, and Zaman, 2017). Furthermore, the policy makers should consider fundamental differences of dual banking system; Islamic and conventional banks in same economy, otherwise there may appear puzzles to monetary policy (Chapra, 1985; Chaudary and Mirakhor, 1997; Farahani and Masood, 2013). On empirical basis, Zulkhibri and Sukmana (2017) in Indonesia, Shah and Rashid (2019), Rafay and Farid (2019), Shah, Rashid, and Mansoori (2018) and Zaheer, Ongena, and Wijnbergen (2013) in Pakistan, Cevik and Charap (2011) and Cevik and Teksoz (2012) in GCC and Shah and Rashid (2019), Akhatova, Zainal, and Ibrahim (2016), Majid and Hasin (2014), Sukmana and Kasim (2010), Sanrego and Nikmawati (2010), and Hardianto (2004) in Malaysia have investigated the existence of banks' centric view of monetary policy transmission from perspective of Islamic banks. Overall, they have explored potential gaps to be explored and recommended to monetary authorities to devise the policy instrument through incorporating the fundamental differences of the operations of Islamic banks versus conventional banks, otherwise monetary authorities may select an adverse monetary policy action.

Cevik and Charap (2011) have analysed the interest rate of conventional banks on depositary accounts and the rate of returns of Islamic banks on PLS based depositary accounts from Turkey and Malaysia on dataset from January 1997 to August 2010. On empirical grounds, they have documented a sound cointegration and correlation. Further, they have noted that conventional banks' interest rates Granger cause the returns of the Islamic banks in depositary accounts using the pairwise causality tests and the multivariate causality tests. Furthermore, Islamic banks fund their operations through participatory PLS arrangements at liability side, but they tend to use non-PLS modes in building assets. In addition, Islamic banks compete to their conventional peers through availing profit equalization reserves. They have concluded that the instruments of Islamic financing require a well-functioning Islamic money market and sound regulatory framework to regulate the operation properly. This arrangement is prerequisite for analyzing the impact of Islamic banks in transmission mechanism of monetary policy.

In recent days, many economists have investigated comparative differences of monetary transmission mechanism between Islamic and conventional banks in countries having dual monetary system. Sukmana and Kassim (2010) have investigated the role of Islamic banks through credit channel of monetary policy transmission mechanism for Malaysian economy over the period of January 1994 -May 2007. For empirical evidence, this transmission mechanism of monetary policy is examined through the co-integration test. Further, the impulse response functions are also availed to analyze the variables dynamically. Furthermore, the variance decomposition analysis is also part of their research design to observe the changes. They have found that Islamic banks' financing and deposits are the important determinants to the transmission mechanism of monetary policy in Malaysia. Particularly, deposits and financing of Islamic banks are found significant in creating an association of the monetary policy measures with the real output through transmission mechanism of Islamic banking

channels. They have recommended that monetary authorities should consider the Islamic banking industry while implementing monetary policy in economies with dual banking system. Further, they have recommended to move to the development of Islamic money market to achieve the well-functioned trends of Islamic banks and to accelerate the transmission mechanism of monetary policy through Islamic banks.

Cevik and Teksz (2012) have empirically investigated the effectiveness of the monetary policy transmission mechanism in the countries of Gulf Cooperation Council (GCC). The research design was based on SVAR model using quarterly data over 1990–2010. They have found that the bank-centric view of monetary policy is found significantly effective in transmission mechanism of monetary policy, whereas exchange rates are not playing a substantial role because of the pegged exchange rate regimes. They have argued that bank credit supply increases with expansionary monetary policy. Moreover, the important determinants of the interest rate and bank credit channel work through the balance sheets in transmission process of monetary policy. They have also acknowledged the role of Sharia-compliant securities like sukuk with denomination of domestic currency. These Islamic securities facilitated to park surplus liquidity available in interbank Islamic money markets. They have recommended that the empowerment of financial intermediation would help to strengthen the transmission mechanism of monetary policy. Similarly, the development of liquid domestic capital markets would also play an important role in transmission process through credit channel of Islamic banks in the GCC countries.

Zaheer, Ongena, and Wijnbergen (2013) have found that small and less liquid Islamic banks or Islamic banks similar in size and liquidity of conventional banks, reacted like large conventional banks in phase of tight monetary policy and continue supplying credit apart of their size and liquidity positions. Therefore, they have concluded that monetary policy is not effective in case of Islamic banks if they continue growing with double digit as the case of

Pakistan. In other words, the growth of Islamic banking industry would adversely affect the credit view of monetary policy. Hence, monetary authorities should consider the growing sector of Islamic banking in devising the instruments of monetary policy.

Basu, Prasad, and Rodriguez (2015) have noted that Islamic banks are facing problem of excess liquidity as compared to conventional banking sector in the GCC. This excess liquidity of Islamic banks affects the growth of banks and the objectives of monetary policy through absorbing the effects of tight monetary policy actions. They ask for quick efforts to establish an Islamic money market and modern Shari'ah compliant instruments for monetary policy transmission in Islamic economic framework.

Akhatova, Zainal, and Ibrahim (2016) have evaluated the credit channel of Islamic banks versus conventional banks in Malaysia. They have focused on the lending (Conventional banks) and financing (Islamic banks) responses to monetary policy actions and other policy and market shocks. They have analysed the research problem in framework of structural vector autoregression (SVAR) specification. Overall, they have noted that monetary policy has affected both the credit supply of conventional bank and the financing behavior of Islamic bank significantly. However, the financing behaviour of Islamic banks appeared relatively different to the monetary policy indicators. According to them, these findings are generally robust to alternative specifications of the SVAR throughout the analysis.

Caporale, Çatık, Helmi, Ali, and Tajik (2016) have also investigated the credit channel of Islamic banks in Malaysia over the consolidated data of the period 1994- 2015. They have analyzed the problem through a two-regime TVAR model with an acceptance of nonlinearities in the model. They have noted the relative differences between Islamic and conventional banks. Islamic banks are found passive as compared to their conventional counterpart during monetary policy shocks in the different growth regimes of the economy. As positivity of Islamic banking

industry, Islamic financing contributed positively even in low growth regime. Overall, the impact of Islamic financing is found positive to growth of economy. This is also a cross check of the effects of Islamic economic contracts that contribute to prosper the economy.

Zulkhibri and Sukmana (2017) have investigated the responses of Islamic banking financing to monetary policy actions and financing rates through a panel regression methodology from 2003 to 2014 in Indonesia. On the empirical grounds, the financing rate is found with a negative impact Islamic banks' financing, while the bank-specific characteristics are found with a positive influence on Islamic banks' financing decisions that differ depending on their characteristics. The impact of size and capital is more than liquidity on financing decisions of Islamic banks. However, the effects of monetary policy are found insignificant on Islamic banks' financing, reflecting that the transmission of monetary policy through Islamic banks is weak. Interestingly, Islamic banks have expanded in terms of deposit growth and liquidity during the sample period. So, there is crucial need to consider an emerging share of Islamic banks in formulating monetary policy, otherwise it may create hurdles in achieving the objectives of policy. Recently, Omer (2018) found that the effects of monetary policy shocks on the retail prices of Islamic banks are similar to those for conventional banks. Moreover, he showed that when extra liquidity of Islamic banks is controlled through different measures, the pass-through impact of the policy rate to returns on Islamic financing (lending rate) even strengthens further.

Unlike the other countries, Pakistan and Malaysia are running the dual banking system in their economies, Islamic and conventional scheme of banking system is coexisting in their economies. This makes the both countries unique one in supplying credit from two different strands of banking systems. Therefore, the credit channel of monetary policy through banks can be investigated channel from two different aspects in Pakistan and Malaysia. First, the traditional credit channel for conventional banks, Second, the financing channel of Islamic

banks to fuel the business activities. Further, we compare the responses of dual banks; Islamic versus conventional banks to monetary policy actions.

H11: Islamic banks respond less to monetary tightening as compared to their conventional peers.

3.12 Impact of Monetary Policy on Credit Supply of Banks across Size and Liquidity

The impact of monetary policy tightening is evaluated on the basis of size and liquidity in line with Kashyap and Stein (1995 and 2000) who have developed a new approach by studying the impact of monetary transmission mechanism in terms of size and liquidity of banks. In their panel data analysis, they have collected microeconomic quarterly data of individual bank balance sheets against every insured U.S. commercial bank from the period of 1976 to 1993. They have developed the model for empirical investigation through developing the proxies for the informational asymmetries of banks. They have the liquidity of banks' balance sheets and banks' size measured in total assets. They have found that the smaller and less liquid banks are affected more due to the impact of monetary policy on the balance sheets of banks. Similarly, Gertler and Gilchrist (1994) have also found that the lending channel of small-sized firms along with other variables is more responsive to the monetary policy indicators as compared to the credit supply of larger firms. However, Ashcraft and Campello (2007) and Ciccarelli, Maddaloni, and Peydró (2015) have noted that these results might be appeared due to a contraction of banks' credit supply and they have verified the existence of the balance sheet channel of monetary policy transmission mechanism.

Further, Ippolito, Ozdagli, and Perez-Orive (2017) have shown that a quantitatively significant balance sheet channel transmission channel of monetary policy is found for the firm's that avail credit of bank to finance their business activities. In their analysis, size and liquidity are found significant variables explaining the credit decision of financial firms. Likewise, Peek and

Rosengren (1995), Kishan and Opiela (2000), Heuvel (2002) and Aikman, Lehnert, Liang, and Modugno (2017) have also explored the same view of monetary policy in term of size and liquidity of banks. Further, Kashyap and Stein (2000) have suggested to include the interaction terms between the monetary policy measures and bank individual characteristics to identify the bank lending channel. This strategy is also to be followed in our study

H12: Small-sized banks are affected more due to tight monetary policy as compared to their large peers.

H13: Less-liquid banks are affected more by tight monetary policy as compared to their more-liquid peers.

This study, therefore, adds to the literature in the following ways: First, using the robust two-step system-the Generalized Method of Moments (GMM) estimator as econometric approach, the existence of bank-centric view of credit channel of monetary policy transmission is verified in Pakistan and Malaysia. Second, this study has examined the role of the credit channel of monetary policy through Islamic versus conventional banks: a first-time comparison of both industries in Pakistan and Malaysia with respect to their response to monetary tightening. Third, the responses of Islamic versus conventional banks to monetary policy actions, are gauged based on size of banks. Further, the differential impact of monetary policy tightening on Islamic versus conventional banks is analyzed on bases of liquidity of banks.

3.13 Increasing Share of Islamic Finance over the Globe: A Paradigm Shift

The global Islamic banking and financial industry has achieved a rapid growth in different markets, and it expanded into new geographies by increasing its pace. Therefore, central banks of concerning countries should keep an eye upon responses of Islamic banking industry in conducting monetary policy to achieve macroeconomic goals. Moreover, Islamic banks are

different in nature and composition of assets and liabilities as compare their conventional counterpart. Otherwise, it would appear as problematic segment of economy to transmit effective monetary policy for macroeconomic targets. There would appear monetary policy puzzles, making it ineffective.

Islamic economic theories are institutionalized in last quarter of the 20th century. On the practical grounds, Islamic economic philosophy has been institutionalized with a wide range of financial product in compliance with Shari'ah. There are fundamental differences between conceptual models of Islamic banks versus conventional banks resulting with the differences in relationships, agency costs, contractual obligations, legal impacts, accounting treatments and their responses to monetary policy actions. Islamic banking is an emerging market over the globe and this industry holds a substantial share of credit supply in Pakistan and Malaysia with dual banking system; the Islamic and conventional banking system. In Pakistan and Malaysia, Islamic banking is recorded at 11.6 percent and 35.4 percent respectively, as the market share of total banking assets and Islamic deposits are recorded at 13.7 percent of banking industry by the end of June 2017. In global context, the size of Islamic financial industry has been reached from \$1.66 Trillion to \$2.1 Trillion and expected to achieve the target of \$3.4 Trillion by end of 2018. Hence, Islamic Finance assets are 1% of the global financial market of \$127 Trillion in assets (IFSB, Islamic Financial Services Industry Stability Report, 2017).

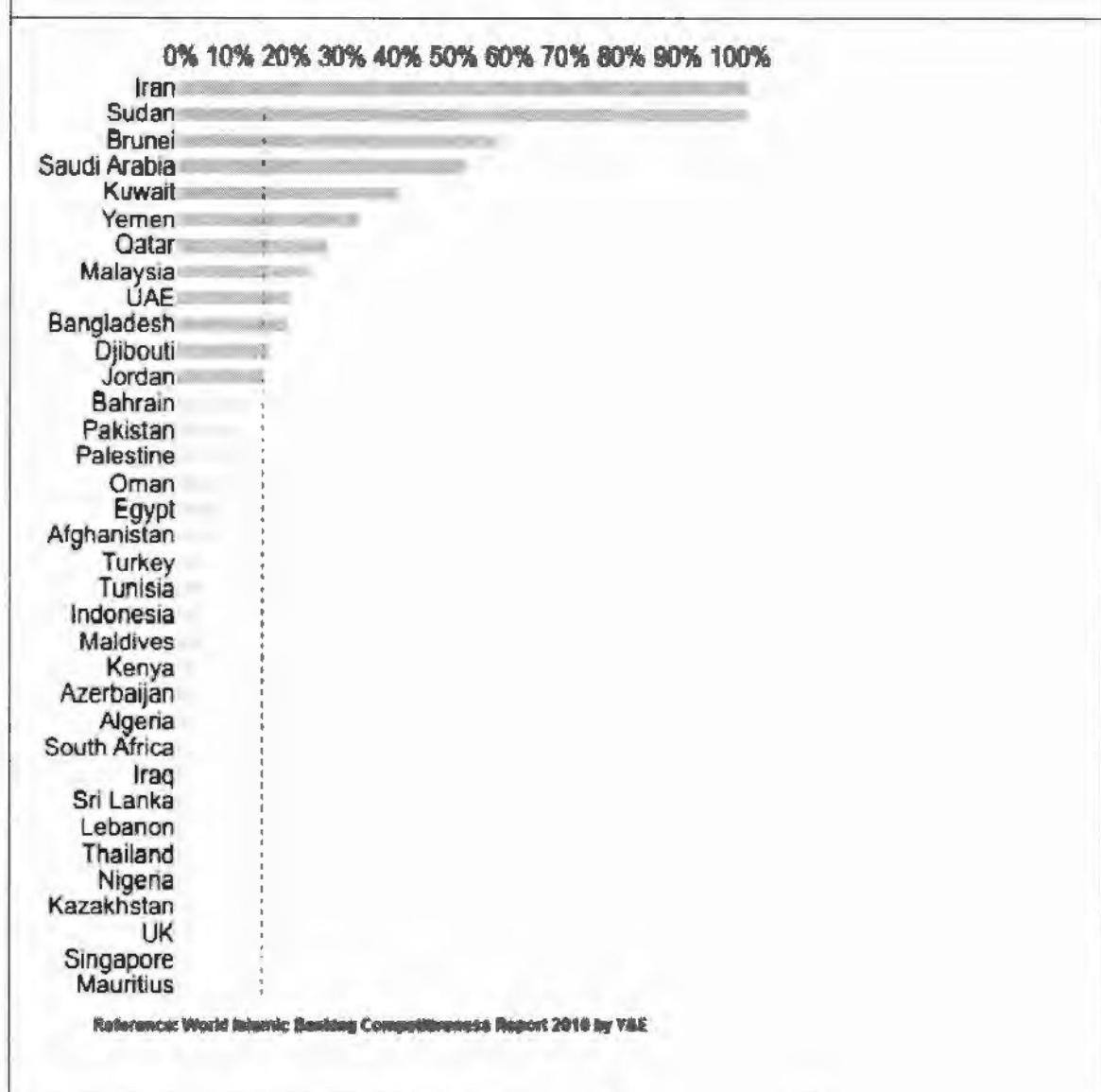
The development of the Islamic banking industry needs a parallel support of Islamic monetary instruments and Islamic capital markets to manage the newly emerging industry and economy as well. It is a need of time for countries such as Sudan and Iran that operate fully Sharia-compliant banking systems, they have parked out the interest-based banking system and replaced the conventional banking system with Shari'ah compliant Islamic banking system. Similarly, some other countries are facing monopolistic status of Islamic banking industry, such as Malaysia, Brunei, Jordan, Indonesia, Bangladesh, Kuwait, Pakistan and the United

Arab Emirates are example of dual banking system economies. In this regard, Brunei, Bahrain, Indonesia, Sudan, Malaysia, Pakistan, and UAE have already initiated some of Islamic monetary instruments to accommodate the emerging system of Islamic finance, this is done as a first step in this direction of the development of Islamic financial market. Likewise, sukuk are increasing with dominant base to these monetary instruments. However, those instruments are designed on debatable contracts among Islamic scholars and the majority of them declared that such monetary products are not Shari'ah compliant. Some grey and black areas of these Sukuk are yet to refined from Sharia perspective (Mansoori, 2010). Similarly, Chaudary and Mirakh (1997) have noted that the most of central banks avail moral suasion as a supplement tool to other policy instruments in the market. The use of moral suasion is debatable among academician and practitioners because the assessment of merits and demerits of it is quite difficult. The strategy of moral suasion may take many forms in the economy from persuasion to directives. It is strongly recommended to use the option of moral suasion rarely, when its usage gives an incentive to other monetary policy instruments to make them effective in transmission process of monetary policy.

In Ernst and Young's latest Islamic Banking Competitiveness Report (2017), Islamic financial market has expanded rapidly over the past decade reflecting the demand for Sharia-compliant services and products over the globe. Over 2000 to 2016, Islamic banks' capital has grown from \$200 Billion to an incredible \$3 Trillion and expected to touch \$4 Trillion by the early 2020. The annual growth rate of 19.7 % in Islamic financial sector is putting pressure on conventional financial institutions to offer Sharia-compliant services in the market. Specifically, the participation of Islamic products users from non-Muslim majority countries is also showing no signs of slowing down in Islamic banking market.

Although Islamic banking assets are appeared slowdown over the globe between 2015 and 2016 (in US Dollar terms), but the domestic market share of same industry increased as compare to total banking assets in most of countries.

Figure 3.2: Islamic Banking Share in Total Banking Assets by Jurisdiction



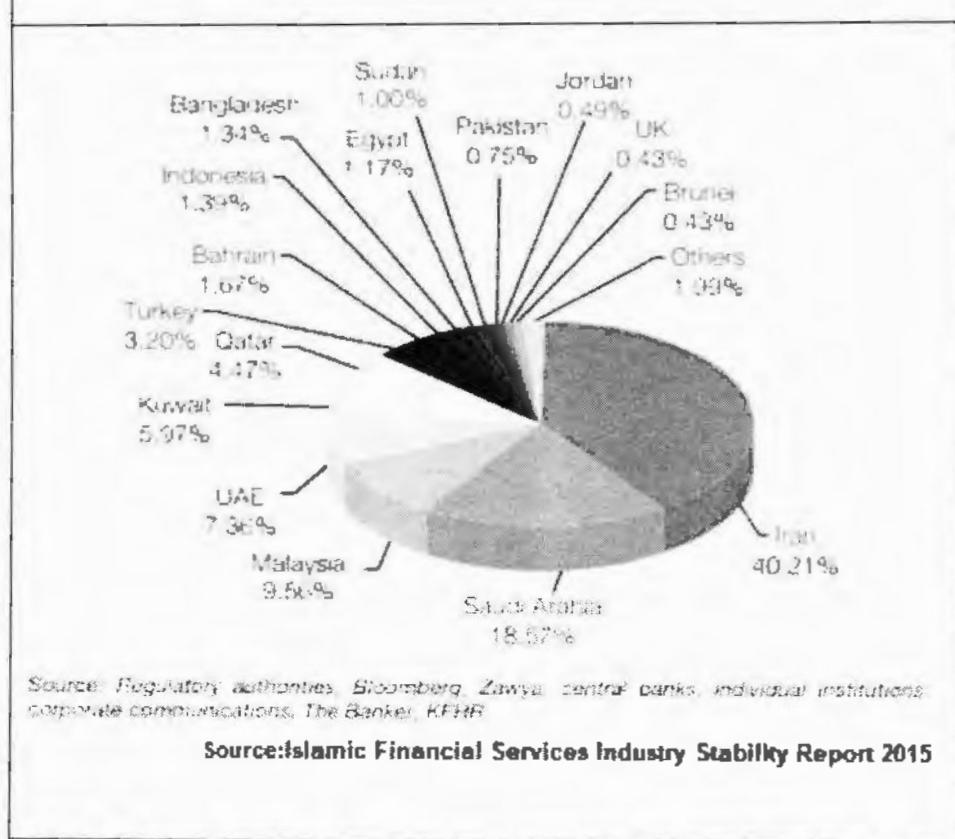
Recording the expansion in 35 jurisdictions, Islamic banking has increased the domestic market share in 18 countries while remaining on same constant trends in eight other countries. Iran and Sudan are also included in these eight countries that hold 100% banking market shares

(See Figure 3.2). Interestingly, there are emerging four new jurisdictions: Afghanistan (5.9%), Maldives (4.3%), Iraq (1.5%) and Kazakhstan (0.1%) with a notable growth rate in banking market. In 2016, some other countries have achieved the landmarks. For example, Jordan has reached to 15.2% market share for Islamic banking in its total domestic banking sector [2015: 14%]. Likewise, some other countries are now boasting to about 50% share of Islamic banking. Brunei is the most prominent emerging jurisdiction with accounting 57% [2015: 49%] of the domestic market share. Similarly, Saudi Arabia has followed up with a 51.1% share of Islamic banking in 2016 [2015: 48.9%].

Aside from Iran and Sudan, Islamic banking is taking a substantial share of industry in seven other countries as of 2016 – namely, Brunei, 41%; Malaysia, 21.9%; Saudi Arabia, 51.3%; Kuwait, 38%; Qatar, 25.1%; the United Arab Emirates (UAE), 17.4%; and Yemen, 27.4% of the domestic banking sector (see, Figure 3.2). Interestingly, these markets are operating Islamic banking sector alongside conventional banking sector as dual financial system with possible changing in their existing regulatory system to accommodate Islamic financial institutions (IFIs) and hold more than 5% of the global Islamic banking assets.

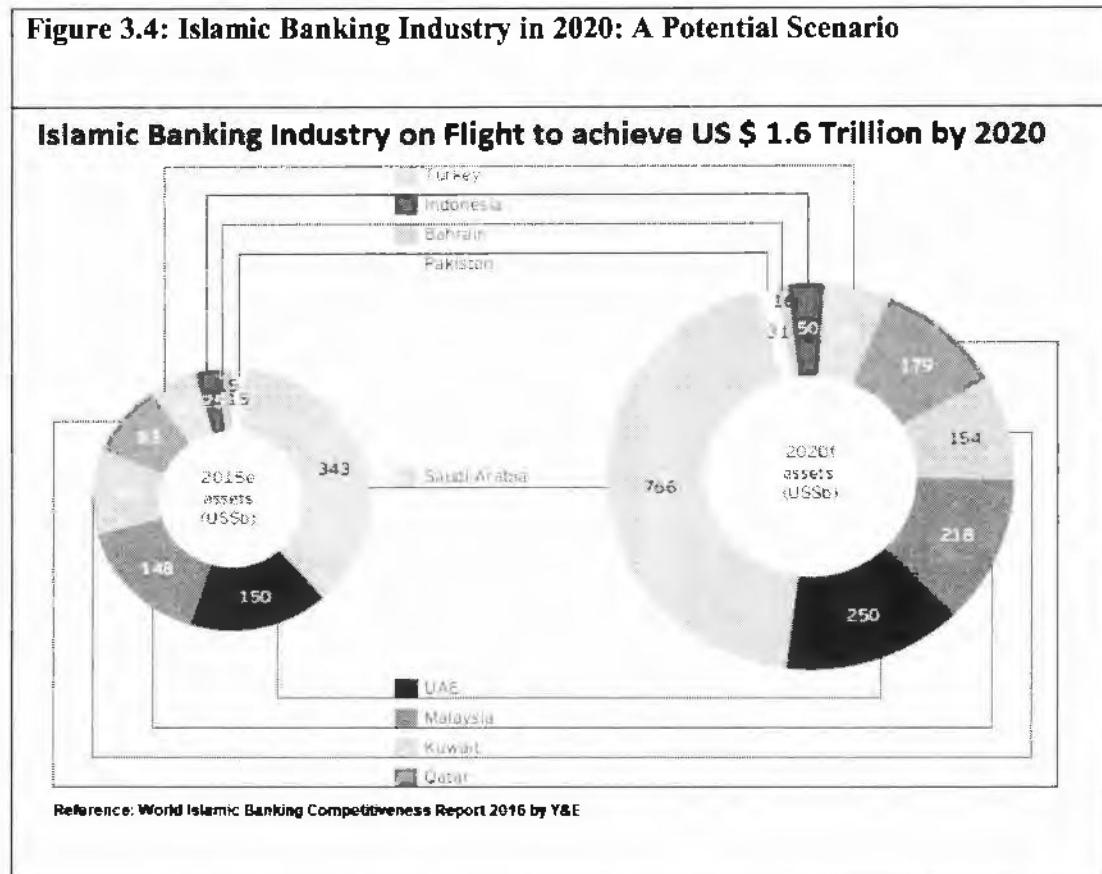
Bangladesh, Pakistan, Jordan, Bahrain, and Turkey are growing rapidly to achieve the heights of Islamic banking and finance. In context of the historical growth rates Islamic banking assets of these markets, we are confident that Islamic banking will get systematic importance in these countries. Their government agencies are also providing legal covers and regulatory facilitates to enable Islamic banking working in line with the provisions of Islamic law. We can observe the shares of the global Islamic banking assets in Figure 3.3.

Figure 3.3: Shares of Global Islamic Banking Assets



The adoption of Islamic banking and finance is very low from some the other regions, particularly Europe and Sub-Saharan Africa. Although the growth prospects in near future are hopeful on the basis of recent initiatives and projects in several niche Islamic banking and financial markets. In 2014, Azerbaijan, Afghanistan, Tajikistan, Morocco, and Uganda are moving to regulatory developments for hosing Islamic banking and financial markets. Similarly, the sukuk sector is also achieving new landmarks with the primary sovereign sukuk market debuts of Senegal, Maldives, the Emirate of Sharjah, and South Africa. Similarly, the sovereign debuts are also initiated by some competing conventional financial centers such as Hong Kong, Luxembourg, and the UK. Overall, the Islamic financial industry is deepening in different conventional markets, especially in the GCC and in a few selected countries of Asia.

Figure 3.4 is reflecting the potential of Islamic banking industry in 2020 as projected by Ernst & Young's latest Islamic Banking Competitiveness Report (2016).



In sum, Islamic banking is an emerging market over the globe and this industry holds a substantial share of credit supply in Pakistan and Malaysia with dual banking system; the Islamic and conventional banking system. In Pakistan and Malaysia, Islamic banking is recorded at 11.6 percent and 35.4 percent respectively, as the market share of total banking assets and Islamic deposits are recorded at 13.7 percent and 38.7 percent of banking industry by end June 2017.

3.14 Conclusion

In an economy, a central bank's behaviour in formulating monetary policy is characterised by some specific patterns that reflect the composition of an economy. As a regulator, a central bank meets the complex process of decisions about how a central bank regulates its policy

instruments responding to the macroeconomic environment. Monetary policy is conducted through a suitable number of the monetary instruments that are the tools in the hands of monetary policy regulators through which they conduct the policy and achieve the objectives of their policy. These instruments help to achieve the objectives of monetary policy through promoting the maximum employment, stabilizing the prices and moderating long-term interest rates. The classical instruments of monetary policy consist discount and rediscount rate, open market operations, variations allowance reserves, credit limits, bank refinancing rate. These instruments change over the time according to the objectives of regulators in different economies.

Monetary policy transmission is the mechanism through which monetary policy transmits the decisions into changes in the real GDP, the rate of inflation, and other macroeconomic indicators (Taylor, 1995). In monetary economics theory, monetary policy transmission mechanism is commonly termed as "black box" (Bernanke and Blinder, 1995). We have discussed these channels of monetary policy; namely interest rate channel, exchange rate channels, asset price channel, inflation expectations channel, direct monetary channel and the credit channel. The bank-lending channel of monetary policy works through the response of credit supply to the indicators of monetary policy such as interest rates and other policy instruments. Therefore, the credit channel of monetary policy transmission can also be said an enhancement mechanism to the interest rate channel. Bernanke and Blinder (1988) are the first who laid down the foundation for the roles of banks in monetary policy transmission. Bernanke and Blinder (1992), Kashyap and Stein (2000), and Kishan and Opiela (2000) have confirmed the presence of lending channel in the United States.

The focus of our study is the credit channel of monetary policy through different perspectives in economies of Pakistan and Malaysia with dual banking system; the Islamic and conventional banking system. We have reviewed the empirical literature to examine the impacts of monetary

policy indicators on banks' credit supply in different economies. The description of specific variables and rationale of their selection for this study is discussed there as well. In literature, we have reviewed the banks after categorizing them as Islamic and conventional banks. Further, the research hypothesis is developed for each potential variable to observe the impacts of monetary policy indicators on banks' credit supply with a specific reference to size and liquidity of banks. Moreover, we have developed the theoretical background of the hypothesis to observe the impact of monetary policy on conventional versus Islamic Banks on basis of size and liquidity.

Fundamentally, Islamic banks are different in nature and composition of assets and liabilities as compared to their conventional counterparts. Therefore, on basis of unique contractual and motivational features of Islamic financial institutions we have reviewed the literature the response of Islamic financing to monetary policy and the potential gaps that requires to be explored for understanding the credit channels through Shari'ah based financing instruments to achieve the macroeconomic objectives of monetary policy in historical evolutionary phases.

In several recent studies, there is discussed the empirical literature on monetary policy, instruments and the transmission mechanism in Islamic economic framework. In implementing monetary policy through Islamic banks, a central bank can only use instruments that managed in accordance with Islamic financial theory. Conceptually, Islam provides a degree of freedom to Scholars to update Islamic knowledge stream through Ijtehad with necessary condition. Similarly, most of the traditional monetary instruments that do not rely on interest, are consistent with Islamic principles and required a minor amendment. Some studies, such as Zulkhibri and Sukmana (2017) in Indonesia, Akhatova, Zainal, and Ibrahim (2016) in Malaysia, Shah and Rashid (2019), Rafay and Farid (2019), Shah, Rashid, and Mansoori (2018) and Zaheer, Ongena, and Wijnbergen (2013) in Pakistan, Cevik and Charap (2011) and Cevik and Teksoz (2012) in GCC and Majid and Hasin (2014), Sukmana and Kasim (2010), Sanrego

and Nikmawati (2010), and Hardianto (2004) again in Malaysia have also examined monetary policy transmission channels from perspective of Islamic banks. Overall, these studies have documented that there is a potential gap to explore the responses of microeconomic data of Islamic banks to monetary policy of a central bank. Indeed, if both Islamic and conventional banks are the part of financial system, then any instrument of monetary policy should have to affect the economy by affecting both types of banking. Thus, it is worth exploring whether Islamic banks hinder or intensify the monetary policy mechanism. Therefore, this dissertation aims to find out the existence of credit channel of monetary policy transmission for Pakistan and Malaysia.

The global Islamic banking and financial industry has achieved a rapid growth in different markets, and it expanded into new geographies by increasing its pace. The size of Islamic financial industry has been reached from \$1.66 Trillion to \$2.1 Trillion and expected to achieve the target of \$3.4 Trillion by end of 2018. Hence, Islamic Finance assets are 1% of the global financial market of \$127 Trillion in assets. Therefore, central banks of concerning countries should keep an eye upon responses of Islamic banking industry in conducting monetary policy to achieve macroeconomic goals. Moreover, Islamic banks are different in nature and composition of assets and liabilities as compare their conventional counterpart. Otherwise, it would appear as problematic segment of economy to transmit effective monetary policy for macroeconomic targets. There would appear the adverse unexpected outcomes and monetary policy puzzles making it ineffective.

In nut-shell, on basis of unique contractual and motivational features of Islamic financial institutions (IFIs), Hardianto (2004), Kaleem and Isa (2006), Sukmana and Kassim (2010), and Cevik and Teksoz (2012) have indicated the potential gaps that requires to explore the credit channels through Shari'ah based financing instruments to achieve the macroeconomic

objectives of monetary policy. Yet, we know less about the relative role of Islamic banking in monetary policy transmission mechanism.

4. Islamic and Conventional Banks: Historical Background and Conceptual Framework

4.1 Introduction

Islamic and conventional banks are expected to respond differently to monetary policy actions in Pakistan and Malaysia. These differential impacts have drawn the intention of researchers to know about theoretical background of Islamic *versus* conventional banking models and contractual obligations.

The basic concept of conventional banking model is found since medieval Roman empire and prevails over the time in different forms, but the current banking practices are developed on capitalistic model in the 17th century. This conventional model earns dominant portion of income through interest charged on loan contracts offered in substance of diversified financial products. In reflection of this conceptual model, conventional banks are fundamentally based on Riba (interest) lending and borrowing business operations with risk-aversion behaviour and it leads ultimately to social injustice and economic downfall. However, Islamic banking (Arabic: إسلامية مصرفية) is a financing activity in compliance with Shari'ah (Islamic law) and it is practically applied through the Islamic economics framework. Some of the Islamic modes finance include *Mudarab'ah*, *Musharak'ah*, *Murabahah*, *Salam*, *Istisn'ah* and *Ijar'ah* which support the development of real sector economy to enhance growth of an economy. Shari'ah prohibits from interest (Riba, Usury, Rhibit) paid on all loans of money. Similarly, investment should be strictly in Halal (valid, permissible) goods or services, whereas any investment contrary to Islamic principles (e.g. pork, porn or alcohol) is also Haram (void). In line with same instructions, El-Gamal (2001) has explored that several traditions of Holy Prophet Muhammad PBUH are found in prohibition of games of chance and prohibition of *bai-al-gharar* (Uncertainty of legal results).

Over the last 1400 years of Muslims' history, these prohibitions have been practiced in varying degrees in Muslim communities to achieve the objectives of Shari'ah. In the 2nd half of 20th century, a number of Islamic banks formed to apply Islamic law of business contacts to private and semi-private commercial institutions for Muslims' concentration areas. The Islamic banking industry is lauding for returning to the path of "divine guidance of economic welfare" by rejecting the interest based economic system of the West. Overall, a unique feature of Islamic banking is profit-and-loss sharing (PLS) paradigm with complete removal of interest (Riba). In recent days, Islamic banking and finance is an emerging market all over the globe with double digit growth rate. In practice, these differences appear in different terms between Islamic *versus* conventional banking. Hence, Islamic and conventional banking performing their operations consistent with two different conceptual models. This study intends to evaluate the conceptual models of both strands of banking practices along with a review of their historical development.

4.2 Historical Development of Conventional Banking Sector

In investigation, the word "bank" replicates the origin of banks lies in temples. In the New Testament, it is mentioned that when Christ drove the money changers dealing in prevailing currencies out of the temple in Jerusalem, he overturned their tables. Similarly, in Greece, the bankers were termed as *trapezitai*, a word derived from the tables where they sat for their transactions. Likewise, the English word "bank" is also borrowed from the Italian *banca*, to represent a bench or a counter. In Italy, as the commerce and the arts were revived, the business of banking had resumed. In another perspective, the word "bank" is derived from the Italian word "banco", a bench – associated with the Jews in Lombardy; a region in Northern Italy. Traditionally, the Jews had used to hold the benches in the market for the exchange of money and bills. If a banker had got failed, his bench was broken by the public in protesting manner; and the word "bankrupt" is adopted from this context of default (Russell, 1916).

The history of banking goes back to prototype banks where the merchants used to make grain loans to farmers and traders among cities. This practice was adopted around 2000 BC in Assyria and Sumeria, the ancient civilizations. Assyria was a major Mesopotamian kingdom and empire of the ancient Near East and the Levant, existing in the 25th century BC in the form of the Assur city-state, till collapse between 612 BC and 609 BC. Similarly, Sumer is the earliest known civilization in the historical region of southern Mesopotamia, modern-day southern Iraq, at the time of the Chalcolithic and Early Bronze ages, and interestingly it was the first civilization in the world with Ancient Egypt and the Indus Valley between 5500 BC and 4000 BC. Later, lenders based in temples made loans in ancient Greece and during the Roman Empire. These operations were based on accepting deposits and the change of money. Same at this time, probably the same operations of lending money are also found in ancient China and India.

The credit of crucial historical development of banking system goes to medieval and Renaissance Italy, especially the prosperous cities of Florence, Venice and Genoa. On the 14th century in Florence, the Bardi and Peruzzi families are found dominated in banking development through initiating the banks' branches in many other parts of Europe (Hoggson, 1926). Similarly, in 1397 the Medici bank; the most famous Italian bank was established by Giovanni Medici (Goldthwaite, 1995). Since 1472, Banca Monte dei Paschi di Siena that is the oldest bank in Siena, Italy and existing yet (Boland, 2009).

The development of banking institutions spread from northern Italy to the Holy Roman Empire, and throughout the northern Europe in the 15th and 16th century. It was preceded by a series of establishment of banking in Amsterdam at the Dutch Republic in the 17th century. Likewise, banking was established in London since the 18th century. During the 17th century, the basic banking activities started in different regions. These functions include deposits collection, money changing, financing activities, moneylending, and transferring funds were changed and

further these related to the issuance of bank debt. This innovation appeared as alternate of gold and silver coins and fostered the industrial growth through providing safe means of payment and discounting the debt for business. In the last quarter of 17th century, banking sector appeared as an important source of financing to the operations of the combative European states. This emerging role of banking sector lead to the need of government regulations to manage their activities and to protect the users' rights. Hence, there emerged the concept of central banks very 1st time. Moreover, there appeared aggressively the new banking strategies and practices in Amsterdam and London. There was also appeared a source of confidence elsewhere in Europe.

In 1695, the Bank of England issued the permanent banknotes in 1695. Initially, the bank came forward promising to pay the bearer of banknote on demand. These banknotes were hand-written, and these were issued on the basis of deposit or without deposit. Later, the standardized notes were printed for public and announced publicly ranging from £20 to £1,000 in 1745, then signature of cashier appeared on banknote in 1855 (Andriades, 1923). The 18th century appeared with wide range of banking services including cheques, clearing facilities, overdraft protections, credit arrangements and security investments. Originally, these cheques were initiated in the 1600s and banks themselves were supposed to settle the payments by direct arrangements to the issuing bank in England. Then, they started settling at central markets in 1770, and by the 1800s a banker's clearing house as found to facilitate the users of these cheques. The London clearing house developed a mechanism of clearing accounts where accounts of each participant were settled down before ending the day. In 1728, the very first overdraft facility was initiated by the Royal Bank of Scotland (RBS) to facilitate the public (Steel, 1923).

The industrial revolution, factors mobility, innovations and international trade affected positively the growth of banks in London. The innovative financial products increased the

scope of banking industry with passage of time. Similarly, the merchant-banking families started issuing credit to public through banks. Further, they started dealing in everything from underwriting of bonds to initiate loans from abroad. As a result, the merchant banks led to economic growth, international trade growth, profiting from seaborne shipping of England. In banking history, there are two prominent immigrant families, Rothschild and Baring. In London, they initiated to develop merchant banking firms to enhance the business lines in the late 18th century and occupied the world banking market through innovative facilities in the next century.

In 1797, a great push appeared in banking history of the Bank of England, when England was threatened by the Battle of Fishguard by Revolutionary France and cash payments were suspended by the Bank of England. Due to panic of this incident, the English Parliament authorized the Bank of England and other bankers of country to issue notes of low denomination.

In the case of Japan, Norio (2005) has narrated that the Meiji government attempted to formulate modern banking system in line with French models very 1st time in 1868, which continued until 1881. They imported the minting machines from Britain and established the Imperial minting department. Later banking advancement was led by Masayoshi Matsukata as formative figure in banking history of Japan.

In Islamic countries, the commercial banks were introduced into Muslim countries when they were passing through political and economic downfall in the late 19th century. Most of Muslim states were converted as colonies of British and French empires. In context of this political scenario, main banks of these imperial powers opened their local branches in the capitals of subject countries. These banks catered mainly to facilitate international trade requirements of foreigners. As a result, the local citizen were unaware of the modern banking system. However,

it became difficult to deal international business partners without banking services with passage of time even then many devout Muslims appeared interest sensitive and they confined themselves to a limited banking activity such as current accounts and money transfers. Kuran (2004) has explored that during the tenth century, Islamic law has provided solutions to credit shortage and supported interest-free credit and investment instruments. These were similar to advances prevailing in the non-Islamic world, but prior to the 19th century there was not found a single financial institute recognized as bank in the Muslim world. Until the 1920, there was not emerged the first Muslim majority-owned bank.

4.3 Establishment of Central Banking

The Bank of Amsterdam was established 1609 and then it performed as a model central bank for the functioning in the capacity of monetary exchange. By following this model, the development of central bank came into existence. Although, another early central bank was the Sveriges Riksbank that was established in 1668, but this remained for short time (Charles, 2011). Quinn and Roberds (2005) have outlined a model for the Bank of Amsterdam; the first true central bank. They have employed a variant of the Freeman (1996) model of money and payments. First, they have analyzed the problematic monetary situation in the Netherlands before the establishment of the Bank. Finally, they have described the model about how a central Bank could meet the situation through performing its commercial obligations.

In England, in the 1690s, the supply of public funds was very low, but the government was in need to accumulate funds to sponsor the ongoing clash with France. The government of William III was not able to borrow the £1,200,000 at 8 % because of low credit at London. The government attracted the subscribers for loan by using the name of the Governor and the company of the Bank of England. These both names selected to get confidence of subscribers in the market. Finally, the bank was given an absolute authority to possess the government's

balances exclusively, and the same bank was declared as a limited-liability only corporation to issue banknotes (Bagehot, 1873). Similarly, the lenders were supposed to give cash to the government, and they are also authorized to issue the notes against the security of the government bonds, the same were also allowed that can be lent again. Only in 12 days, the £1.2M were raised and the Navy was rebuilt through half of this amount. In 1694, Charles Montagu, 1st Earl of Halifax has devised the model of central banking for the bank of England. Although, three years ago William Paterson had been proposed the same model, but the model was not implemented. Even, current global banking is based upon same philosophy of central banking (Macmillan Report, 1931). It was proposed that the central bank will collect a loan of worth £1.2 Million for the government. In this process, the Governor and Company of the Bank of England would be guarantor for the fundamental rights of the subscribers incurring in the process of this deal. This central banking system provided confidence with long-term banking privileges including the issue of notes. On the legal grounds, the Royal Charter was issued on 27 July 1694 via the Tonnage Act 1694 (Roseveare, 1991).

The Bank of England was originally a private institution, but it was converted to a public authority to maintain a sound financial system by the end of the 18th century. The central bank faced the currency crisis of 1797, and it stopped government to convert the notes into specie payment as depositors were withdrawing the amount from central bank. In spite of all crisis, the central bank was given a status of as an organ of the state for next operations. Accordingly, different authorities and responsibilities were given in mandate of central bank. Further, Henry Thornton had been a merchant banker in market and monetary theorist as well. He is titled with the father of the modern central banking system. Moreover, he was against the real bills doctrine and supported the bullionist position. Further, he endorsed the earlier theories of Knut Wicksell in domain of the process of monetary expansion about the cumulative process that elaborates the Quantity Theory of money theoretically in its coherent form.

In 1802, Thornton had written a book "An Enquiry into the Nature and Effects of the Paper Credit of Great Britain" in response to 1797 currency crisis. He had documented that an increase in paper credit never appear to be a cause of the crisis. He has recommended the Bank of England the ways to strengthen the value of the pound and the British monetary system as well (Baugrand and Thornton, 1981).

The Bank Charter Act of 1844 restricted all commercial banks and the provisional banking companies to issue their own banknotes and the mandate to print the currency notes was given to the Bank of England with an effective monopoly. Further, the Bank of England also accepted the title of "the lender of last resort" when it was criticized due to its discouraging response to the crisis of Overend-Gurney in the 1870. Walter Bagehot; the journalist had analyzed the matter of Lombard Street in handful way. He supported the agenda of making the central bank officially as the lender of last resort in a description of the money market during the period of credit crunch. Due to his contribution, this is referred to as "Bagehot's dictum".

Following the Bank of England, European countries started establishing central banks during the 19th century. In 1800, there occur the War of the Second Coalition in France. In these days, the Banque de France started its operation as the central bank of France, especially to finance war through public funds. In 1913, the Federal Reserve Act was passed by the US Congress and the US Federal Reserve was established to manage the credit system and payments of the country. Similarly, Australia established its first central bank in 1920, Colombia started in 1923, Mexico and Chile initiated in 1925 and Canada and New Zealand started in 1934. Brazil was the only independent country that did not established its central bank for long time, then Brazil founded the central bank in 1945. After independence from colonial system of British and France, African and Asian countries also came forward to establish their central banks or monetary union. In Pakistan, State Bank of Pakistan (SBP) was established immediately after independence. The ordinance was implemented in June 1948, and SBP started operations on

July 1, 1948. In Malaysia, Bank Negara Malaysia is the central bank which started operations on 26 January 1959. In recent years, Bank for International Settlement is endorsing a harmonized system to remove the discrepancies among global banking market.

In the 21st century, a revolution in telecommunications and computing brought a big change in operations. There has been increased the size of industry and spread geographically through financial liberalization. The recent financial-crisis of 2007–2008 hit many banks badly affecting some of the largest banks of the world and started a debate about monetary policy actions and banks' regulation. Bourkhisa and Nabi (2013) have noted that the global financial crisis has beaten the conventional banking sector badly, whereas Islamic banks survived during this bitter position. This success has increased an interest in the Islamic banking business model.

4.4 Development of Islamic Economic Thoughts

Islamic economic thoughts are as old as this universe exists in light of Quran. In text of Quran 27 Prophets are mentioned to guide humanity at all perspectives of life along with economic aspect especially (Al-Quran, 7:101). Although, according to a Hadith 1, 24,000 Prophets were sent to different nations over the globe (Bukhari, 1324). Interestingly, Allah Almighty sent these Prophets with support of revelation to guide the people (Al-Quran, 12:231) and He assigned them diversified professions in practical life. Hazrat Adam was a farmer and Gabriel; an angel was sent to teach him how to sow the earth to sustain the life through production of wheat (Ibn e Kasir, 1373). This was a starting point to initiate the agriculture sector to meet the fundamental economic need of food. Hazrat Noah is found as a carpenter and helmsman; who made the boat and led it to survive in grand flood (Al-Quran, 23:28 and the Bible: Genesis 7:11–12). The existing literature reveals Hazrat Hud as a merchant; Hazrat Saleh as a camel-driver; Hazrat Ebrahim (Abraham) as a dairyman at Aleppo, then a Philosopher in palace of Nimrod

(Al-Quran, 2:258 and the Bible: Genesis 19:1-26) and afterwards he travelled to Mecca and built the Ka'bah, as a mason (Al-Quran, 2:126); Hazrat Ismail, as a hunter; Harat Ishaq as a shepherd; Hazrat Yaqoob (Jacob) as a rational man; Hazrat Yousuf (Joseph) in the prison (Al-Quran, 12:25) as a watchmaker, treasury minister (Al-Quran, 12:55); and then a king (Al-Quran, 12:99); Hazrat Shoaib (Jethro) as a reformer for business practices of his nation (Al-Quran, 7:85); Hazrat Moosa (Moses) as a shepherd (Al-Quran, 20:18), a political leader at Pharaoh's court (Al-Quran, 20:47 and Torah; Exodus 14:7, II:47)- (TheBible, 2002); Hazrat Zilkefel as a baker; Hazrat Loth as a chronographer and preacher of human ethics; Hazrat Elias as a professional weaver in cloth industry; Hazrat Daud (David) as an armourer in domain of metallurgy; Hazrat Solomon as a basket-maker of the leaves of palm-trees and later as an architect (Al-Quran, 34:13); and Hazrat Armya (Jeremias) as a surgeon; Hazrat Eesa (Jesus) as a traveller and presenter of miracles with a unique knowledge superior to that of Greeks; He made the dead to live and he rubbed his hand on individuals inflicted with blindness and leprosy and they turned to normal human patterns (Al-Quran, 3:49 and the Bible; Mt. 28:1-10; Mk. 16:1-11; Lk. 24:1-12; Jn. 20:1-18); and then after six hundred years, Hazrat Mohammed (PBUH); the last of the prophets appeared as a merchant, a soldier, a leader of house, an economist, a chief Justice all the supreme qualities of earlier in same personality (Al-Quran, 7:157). Due to these superior characteristics, Almighty Allah blessed him with the title of compassionate to all creatures as He revealed "We have sent you for no other reason but to be a mercy for all creatures (Al-Quran, 21:107)." Further, Allah has made him the role model for all humanity (Al-Quran, 12:231).

In the biography of Holy Prophet Muhammad (PBUH) when the events are narrowed down in perspective of Islamic economic thoughts, it is found that he led a business caravan to Syria on Modarb'ah partnership bases sponsored by a wealthy Arab lady Khadija (Muslim: 3456). She got impressed because of his professional behaviour and honest profitable dealing and married

to him. Similarly, when interest-based transactions were eliminated completely in chronological order of four divine instructions revealed to Holy Prophet Muhammad (PBUH), there appeared a severe liquidity shortage problem for farmers and manufacturers at Madinah market. In accordance to it, Holy Prophet Muhammad (PBUH) allowed forward sale; salam contract for agriculture markets and Istisn'ah contract for manufacturing market subject to specific conditions of Shari'ah compliance contracts (Abu- Daud: 573). He also managed inflow and outflow sides of Islamic treasury (Bait-tul-Mal) through all types of zakat on financial capital (dirham and dinar), crops, animals, minerals and running business. His followers also did employment contracts and dealt in different commodities on lease basis (Ijarah). The spending heads of Islamic treasury are also provided at microfinancing and operational level (Al-Quran 07:547). The proceedings of holy war were also managed through different proportions 80:20 between participants and Islamic treasury, respectively (Al-Quran 45:376). In broad spectrum of distribution of wealth, Islamic law of inheritance was introduced assigning different proportion to legal heirs of a deceased person (Al-Quran 04:231). Overall, Prophet Muhammad (PBUH) presented an interest-free Islamic economic system on practical basis with sound institutional reforms.

The literature on the development of Islamic economic thoughts has not been on a smooth path. Accordingly, a research institute of Jordan; **الاسلامية الحضارة لبحوث الملكي مجمع** has compiled a tremendous literature in five volumes *al-Faharis al-Tahliliyah li'l-Iqtisad al- Islami-* الفهارس التحليلية للاقتصاد الإسلامي (1985-86) in Arabic language a source guide on Muslim institutions and practices (RIJ, 1985-86). They have brought reference on more than hundred topics of Islamic economics and proved to be a great help in exploration of Islamic economic ideas, institutional bodies and practices throughout Islamic history. Although, this literature covers the leading period of Islamic culture and civilization. Reviewing the existing literature, Siddiqi (1992) has

divided the historical perspective of economic thoughts into four phases. First, the foundation phase that starts from the early period of Islam and dates up to 450AH/1058AD.

Table 4.1: Historical Phases of Islamic Economic Thoughts

Phases	Description	Time-Period	
		Islamic Colander	English Calendar
1 ST	The Formation Period; It covers the period just after death of the Holy Prophet (PBUH) till the end of the Companions' era (Sahaba) and companions of the companions (Tab'een) when Islamic economic ideas were fully based on internal sources.	11 AH – 100 AH	632 AD-718 AD
2 ND	The Translation Period; In this period the Greeks and other foreign ideas were imported and translated into Arabic language. Hence, the Muslim scholars became on advantage to get benefits from the intellectual legacy of humanity with practical work. (2nd–5th/8th–11th centuries).	2 nd – 5 th Centuries	8 th – 11 th Centuries
3 RD	The Re-translation and Transmission Period; In this phase, the Greco-Arab Islamic ideas with edition and addition reached to Europe through translation and European scholars who got knowledge at Muslim countries.	6 th – 9 th Centuries	12 th – 15 th Centuries
4 TH	The Imitation and Stagnation Period; The formation of new ideas was almost stopped in these two centuries.	10 th - 11 th Centuries	16 th -17 th Centuries
5 TH	The Awakening and Stirring Period; The voices for renovation and overhaul the thinking were come up from Muslim world.	12 th - 13 th Centuries	18 th - 19 th Centuries
6 TH	The Modern Islamic Economic Thought; A good number of Muslim states raised up for political and Islamic economic revival till the contemporary practices of Islamic financial institutions over the globe.	14 th century- till date	20 th century- – till date

In this phase, jurists, sufis, and philosophers contributed to the economic thoughts of Islamic literature. Second Phase, this phase occupies over four centuries from 450AH/1058AD to 850AH/1446AD. Over this period, the Islamic scholars derived the rich intellectual heritage of Islam from primary sources and did map it with contemporary practices and that in addition to the Qur'an and Sunnah. Third Phase, it ranges between 850AH-1350 AD to 1446 AH-1932 AD, when stagnation took the Muslim minds in its grip for 700 years approximately. The stagnation long scene was dropped when fresh stirring started. Forth Phase; It begins from 1350 AH/1932AD to ongoing current period of revival.

Further, Islahi (2008) has expanded the various phases of Islamic economic thoughts and classified them into six phases with some contribution from author presented in Table 4.1. The 20th century may also be subdivided into four sub-phases.

- I) 1st quarter of the 20th century; In 1st quarter, there was overall institutional development, especially the most of countries developed central banks to manage their financial market for economic development. Parallel to conventional counterpart, a special attention was paid to revisit socio-economic economic literature for revival of Islamic identity. It may take the title of "Pre-take off Period".
- II) The 2nd quarter of the 20th century; In this phase Islamic economic thoughts were interacted with conventional economic theories of the West. It may be termed as "Take-off Period".
- III) The 3rd quarter of the 20th century; In this 3rd quarter, private individuals came forward as independent researcher on large scale and it can be called "A Big-Push Period".

IV) The 4th quarter of the 20th century; Islamic economic theories are institutionalized in last quarter. when institutions also joined hands to develop it. On practical grounds, Islamic economic thoughts are recognized to develop Islamic financial institutes with a wide range of financial product in compliance with Shari'ah. It may be discussed with the title of "The Inception of Modern Islamic Banking and Finance" in detail.

4.5 The Inception of Modern Islamic Banking and Finance

The modern development of Islamic economics and finance started at the turn of the 20th century. In history, the diversified contribution of Muslim scholars of the past is an intellectual heritage of Islam. At same time, they have framed the economic problems faced in their own time at micro and macro level.

Islamic banking means a banking system that is in accordance with Islamic law (*Shari'ah* principles) in framework of Islamic economics. Thematically, Islamic banking is different from conventional banking because conventional banking model is based on the role of financial intermediation between excess funds of households. These funds are mobilized through bargaining on interest. Interest is strictly prohibited in Islam and declared a war against Allah Almighty and Holy Prophet (PBUH). Therefore, banks are not allowed to offer a fixed rate of return on deposits at liability side and are not permitted to finance a business on the base of interest on asset side of banks' balance sheet. The profit-loss sharing (PLS) contracts are the ideal standard for Islamic business transactions. *Mushark'ah* and *Modarib'ah* are predominantly concepts for joint venture and PLS system.

In real world, due to divine commitments about interest, borrowing from the banks to meet the liquidity shortage of business and depositing cash in investment accounts were strictly denied by Muslims. As time passed by, governments, businesses and individuals started

business with bank intentionally and unintentionally at limited level. On the empirical grounds, Shabir (2008) has explored that 72% of Muslim population is not participating in financial transactions due to interest sensitive behavior, although they have surplus funds to invest. Therefore, this state of affairs has invited the Muslim intellectuals to come up to meet this potential need by maintaining Muslims' business needs in framework of Islamic law of business contracts (Ghafoor, 2007).

In Islamic banking model, assets and liabilities are managed in the way that depositors and users of funds share profits and losses with the banks. The proponents of Islamic banking philosophy, thus, argue that Islamic banking is better as compared to conventional peers in absorbing monetary policy shocks or other adverse shocks because the losses shared partially by the depositors in Islamic banks (Khan and Mirakh, 1989; Iqbal, 1997). Similarly, Chapra, (1992) and Mills and Presley (1999) have noted that the PLS feature of Islamic investment vehicles gives confidence to Islamic financial institutions to finance a relatively longer-term project with higher risk-return and, thus, to accelerate growth of the country.

Since the beginning of contemporary practices of Islamic Financial institutions (IFIs) in the 1970s', the industry has passed a long way to be considered as a reliable alternate to conventional counterpart. IFIs have evolved from a little size to a substantial volume with an existence in major financial markets. Currently, IFIs are rendering a good number of financial products to Muslim and non-Muslim territories over the globe. The size of the industry is US\$1.8 trillion with annual growth rate 17 % per year approximately. The devotion of Shari'ah and educational institutions and the struggle of dedicated regulatory authorities, and the commitment of researchers are sources to develop the industry. In global perspective, there are different market players in the field of IFIs, for example, Islamic banks, Islamic fund management companies, takaful operators, Islamic mutual funds, sukuk market, Islamic monetary instruments, and Islamic brokerage companies. This conducive environment is

providing confidence to investors to participate in Islamic finance to fulfil the financing needs of public and private sectors of the economy. Recently, the IFIs have 430 full-fledged Islamic banks and Islamic financial institutions. Similarly, 191 conventional banks are offering Islamic banking facilities through windows operations in more than 75 countries.

4.6 Shari'ah Approach for Economic Matters

The divine instructions of the Quran or Sunnah are the primary sources to Islamic ideology and practices in real world. Ibn Taymiyyah (1328) has classified these instructions from perspective of the acts and deeds of individuals into two types:

- i) Ibadaat (عبادات) are the devotional acts that improve religiousness of a person. It is accepted that devotional acts are sanctioned by injunctions of the Shari'ah. All necessary instructions are given to perform the obligations. Thus, what is not commanded cannot be made obligatory.
- ii) Adat (عادات) are the transactions that need in daily routine matters. The maxim of permissibility will govern these types of matters. There would be permissibility as a general rule in absence of prohibition.

ان الاصل في الاشياء الاباحة الا ان يكون هناك دليل يدل على حرمته

On natural pattern, everything is permissible unless it is prohibited explicitly by Allah (SWT) and His Messenger; Muhammad (PBUH).

Similarly, Securities Commission Malaysia has compiled a handful draft on Islamic Commercial Law (fiqh-ul-Muamalat) in which these instructions are divided into two main categories:

- (i) Primary instructions that explain certain issues in detail.
- (ii) Primary instructions that give basic principles and general guidelines (SC, 2009).

These diverse types of orientation have intended to serve the certain purpose of Shari'ah. The first category of instructions usually includes fixed issues and matters which are transcendental

such as Islamic theology, Ibadaat (عبادات) and other beliefs and acts that may never be changed regardless of the time and place. For instance, there are same instructions for basic five pillars of Islam. Similarly, these primary instructions have framed the revealed punishments (الحدود-) against the specific offenses; murder, theft, drinking, highway robbery, adultery and slanderous accusations in Islamic criminal law (جنائي -فقه). Likewise, these divine instructions cover all the aspects of marriage, divorce, family matters and inheritance in detail.

The second category of instructions give basic principles and general guidelines in many areas of Adat (عادات). These matters provide a room for flexibility and can be changed over the time, place and circumstances. This degree of freedom can lead to variations in interpretations, although this explanation will not forgo the basic principles of divine sources. Thus, various interpretations and flexibility makes application possible which would not have been possible. In nutshell, different people at different places over different time periods may seek guidance. The lawgiver conceded the right to Muslim Jurists (فقهاء) to frame specific rules for Muamalat/ Adat (عادات), which may be deemed necessary under prevailing circumstances based upon "Ijtehad- اجتہاد". This methodology of Shari'ah provides people a reasonable degree of liberty in their dealings with each other and entering into contracts and transactions.

4.7 Governing Principles for Islamic Business Contracts

Islamic law of business transaction (المالية-المعاملات فقه) is an integral area of Islamic law (الفقہ-). Islamic law of contracts and business transactions deals with general principles of contracts, the ingredients of contracts, eligibility criteria of contracting parties, conditions of subject matter, the nature of compensation in contracts, classification of contracts in terms of valid, invalid and void contracts. Further, the disturbing external attributes should be made as explicit as possible. These attributes include Riba (Interest), Gharar (Uncertainty) and Zulam (Injustice) to any one of the parties. Similarly, any additional clause in contract that may bind a party through an irrelevant condition that is not in control of the liable party, would be

nullified because of injustice. Moreover, the validity of the contract also requires that motivating cause of a contract should be in accordance to the higher objectives of the Shari'ah.

There is also options theory of Islamic law of business contract to manage the complete risk profile about specification, performance, quality and quantity of subject-matter.

There are some general principles to keep an Islamic business contracts in compliance with Shari'ah. Mansoori (2004) has classified these general principles of a contract into free mutual consent between parties, prohibition of *gharar* (uncertainty), prohibition of *riba* (Interest), prohibition of *qimar* (gambling) and *maysir* (games of chance), prohibition of *khilabah* and *ghishsh* (fraud and deception), prohibition of *bayatain fi bai* (combining two inconsistent contracts with each other), principles of *entitlement to profit with risk & liability for loss*, observance of *maslahah* and *maqasid al-shariah* (The objectives of Islamic law) and permissibility as general rule; these are fundamental general principles to meet the instructions of Qur'an and Sunnah.

These broad principles are very important to know the contractual relationship of parties on both sides of Islamic banks' balance sheet. This study intends to explain a few governing principles that provide basis to the conceptual framework of Islamic finance as follows:

4.7.1 The Law of *Halal* (Lawful) and *Haram* (Unlawful)

Allah Almighty is supreme power to declare Halal (Lawful) and Haram (Unlawful) about a dealing or usage of anything among human beings. Halal (Lawful) are the commodities or the dealings that are allowed by Islamic law (Shari'ah), whereas Haram (Unlawful) are those that are forbidden by Islamic law (Shari'ah) (Al- Kasani,1191). Further, Usmani (1999) has explored that the law of Halal and Haram plays a vital role in determining Muslim individual's behaviour in daily routine matters and in establishing justice and stability in the whole society. Specifically, the operation of this law has great and far-reaching effects in the economic sphere of a society. Therefore, Shari'ah has presented a detailed code of rules concerning Halal and

Haram forms about commodities, sources of earnings, heads of spending as well as right and wrong economic dealings on ethical basis. We can compare the behaviours of conventional consumer's behaviour to an Islamic consumer's behaviour with paradigm of *Halal* and *Haram*. In conventional economics, a consumer's goal is to achieve maximum level of satisfaction of his/her materialistic needs. He/she is not concerned to evaluate the things and dealings on through screening criteria of *Halal* and *Haram*. If a consumer finds satisfaction in wine drinking would be considered as perfectly rational. So, this is the sole criterion of well-being in his/her point of view. On the other hand, the Islamic viewpoint is completely different in evaluating a consumer's behaviour. In Islamic economic theory, the goal of the consumer is to achieve real welfare of this life and life hereafter (Khan, 1986). This goal of Islamic economic agent can only be achieved by respecting the screening criteria of *Halal* and *Haram*. Accordingly, an Islamic economic agent can please Allah Almighty as prime source of satisfaction to take a rational decision (Derigs and Marzban, 2008).

Shari'ah provides a complete set of instructions respecting the bounds of *Halal* and *Haram* about how to produce wealth. It explores in detail the right and wrong means of earning wealth and licences to adopt the lawful means only. The *Halal* means are the earnings by hand that consists of mental or physical labour. Holy Prophet Muhammad (PBUH) has declared these means the best form of earning (Bukhari: 2432). Similarly, inherited wealth, gifts, bonuses and legal prizes are also considered as sources of wealth. The *Haram* means include the income earned from the manufacturing, facilitating, purchasing or selling of all prohibited items. Likewise, the inflow of income derived from *Riba* (Interest), bribery, deception, *Gharar* (Uncertainty), false statements, gambling (*Maysir*), hoardings (*Ihtikar*), smuggling, Narcotics, stealing, robbery, blackmailing, dancing, vulgarity, porn websites, speculation, forced business dealings (*Mukr'ah*), hazard, undue influence, monopolistic exploitation and *Tabkhees* (Quality low and price high).

In modern practices of Islamic capital market, the law of *Halal* and *Haram* provides basis to *Shari'ah* screening methodology that is used to segregate the *Shari'ah*-compliant stocks from non-*Shari'ah* compliant stocks in a particular market. This *Shari'ah*-compliant stock screening methodology supports investors to cope up with Islamic values to park their excess liquidity in Halal market (Mamat, 2002). However, there are differences in formulating screening methods due to the differences of juristic opinions among scholars, cultural diversifications and geographical limitations among markets. Currently, there are two notable *Shari'ah* screening methodologies prevailing in capital market. First, the Securities Commission (SC) Malaysia introduced the Kuala Lumpur Stock Exchange *Shari'ah* Index (KLSEI) in 1997 to organize the Islamic capital market (ICM) plan through a systematic Halal market mechanism. The ICM is supposed to provide a place where activities should be free from the involvement of *Haram* elements (SC, 2002). Second, Dow Jones Market founded the first Islamic Index in 1995, to provide a market to Islamic fund managers to manage their business operations in compliance with Islamic law of business transactions (Wilson, 2004). This initiative appeared as guiding star for other stock markets and financial institutions in proposing their own Islamic Indices in terms of *Halal* and *Haram* activities, like the Wellington Islamic Index, the Financial Times Stock Exchange (FTSE), the Global Alliance Islamic Index and the Citi Bank Islamic Index.

4.7.2 Prohibition of Riba (ربا)

Riba (ربا) is derived from base verb (ربأ - زبأ - زبأ - زبأ) that means to grow, to increase, to rise, to add, *however*, not every increase or growth is prohibited by Islam. Technically, Riba (ربا) is named interest (modern name), usury (in Medieval Latin language with Christian context) and Ribit (in Hebrew language with Jewish context). Interest is effortless profit, free from compensation, free of exchange. The term Riba in Arabic and ribbit in Hebrew are used to express the same meanings of interest.

According to Oxford (2012) dictionary, the word “Usury” is derived from Medieval Latin *usuria*, “interest”, or from Latin *usura*, “interest”. Usury is the practice of making unethical or immoral monetary loans which unfairly enrich the lender. Originally, usury is meant the interest of any kind charged on beneficiary. A loan is also called usurious due to excessive and abusive interest rates charged by lenders. The original word usury was used to mean paying a rent for the use of money; the meaning was changed to mean, in today’s language, lending at an excessive interest rate. Merriam-Webster (2018) has explained that historically and even today, charging any type of interest is considered usury in Christian, Jewish and Islamic societies. The person who practices usury is called a usurer, whereas, a more common term is “loan shark” in modern English. The term “Usury” also depicts in the sense of condemning or taking advantage of others' misfortunes on a moral ground or it is an interest rate which may be regulated by law.

There are social implications of perceived “unjust” or “discriminatory” to lending practices are unique characteristics in historical versions of usury. The historian Paul Johnson (1987) has commented that most early religious systems prevailing in the ancient Near East had not forbidden usury. Similarly, their secular codes were also not against usurious practices. These societies regarded dead matter as alive, like plants, animals and people. Hence, if someone lent food money, objects or any type of monetary tokens, it was legitimated to charge interest (Heichelheim, 1970). Food money includes the grains; olives, dates, seeds and animals. These objects were lent out as early as 5000 B.C among the Mesopotamians, Hittites, Phoenicians and Egyptians where interest was legal and usually it was fixed by the state. Johnson (1987) noted the different view of the matter in the Hebrew Bible.

Zgur (2007) has reviewed historically that financial intermediation services of banking in the Roman Empire, were quite different from modern banking. During these times, the most banking activities were operated through private individuals’ operations in available liquid

assets and shortage of asset. Temin (2004) has noted that the annual rates of interest were varied in between 4% to 12%, but when the interest rate was higher, it reached either 24% or 48%. It is notable that monthly interest rates tended to range from simple fractions to 3% to 4%, perhaps due to usage of Roman numerals by lenders.

Moneylending during the Roman Empire was largely dealt on private individual basis until the harvest time. Mostly, the rich men took the high risk to capture the high interest rate. Although, interest was determined privately through open market forces and it was not almost entirely restricted by law. Similarly, investment was not regulated through a specific body for sake of an objective, rather it was dealt as a matter of seeking the personal profit. Banking services in terms of credit collection and distribution were of the small-sized, a variety of back-street type, administrated by the shopkeepers of the urban lower-middle class. By the 3rd century, acute currency problems in the Empire drove such banking into decline (Young, 1977). The wealthy people who were able to collect the benefits of the situation appeared as moneylenders when there was an increase in tax demands at the last declining days of the Empire. Eventually, this situation demolished the farmer class by reducing tenant-farmers to serfs. This bitter reality is evident that usury is nothing except the exploitation of the poor (Moehlman, 1934).

It is found that the First Council of Nicaea had forbidden clergy from dealing in any transaction based upon usury in 325 (Canon 17). Interestingly, usury was interest of any kind at that time, the canon had prohibited the clergy to lend money at all types of interest rates even 1 % per year was also eradicated. Later ecumenical councils also generalized this prohibition to the laity (Noonan, 1993). Onward, Lateran III commanded that the person who would deal in interest-based loans, could never receive the sacraments and Christian burial. Pope Clement (V) took the belief in the right to usury a heresy in 1311 and eradicated all type of secular legislation. Pope Sixtus (V) also discouraged the interest-based transactions as detestable to

God and man and demanded by the sacred canons, and it was contrary to Christian charity (Moehlman, 1934).

The Bible scripture is very clear on the issue; it strictly forbids to lend or to borrow at usury in any form or disguise for any reason. For instance, the following evidence is found in the Book of Leviticus which is the third book of the Torah and the third book of the Hebrew Bible (The Old Testament), the same book pertains God's speeches to Moses that he is commanded to deliver to all the people of Israel:

"Thou shalt not give him thy money upon usury, nor lend him thy victuals for increase (Leviticus 25:37)."

The second important reference is found in the Book of Deuteronomy that is the fifth book of the Torah (a section of the Hebrew Bible) and the Christian Old Testament:

"Thou shalt not lend upon usury to thy brother; usury of money, usury of victuals, usury of anything that is lent upon usury (Deuteronomy 23:19)"

Israelites were prohibited to lend Israelites on basis of interest, but to lend non-Israelites on interest. Most of these loans among Israelites were for the purpose of business. Although, it was observed generally, it appeared as advantageous to avoid getting into debt at all and to avoid them being bound to someone else in loan. Further, debt culture was intended to vanish and especially not to use it to finance consumption, but to take an interest-free loan only when loan is necessary. However, the prevailing laws against usury were also endorsed by Prophets and these were among many laws for which people were cursed for breaking them (Moehlman, 1934). Johnson (1987) has noted that the Torah deals lending as philanthropy in a poor community with an objective of collective survival of Jews, but which is not obliged to be more charitable towards outsiders. Moreover, a great deal of Jewish legal business scholarship in the

Dark and Middle Ages had been devoted to conduct the business dealings fair, honest and efficient. Hunt (1996) have noted that as the Jews were not accepted for most of professions by local rulers, the Western churches and the guilds. As a result, they were deprived from top order opportunities and pushed them into marginal occupations considered inferior in society, such as tax and rent collecting and moneylending. Infect, natural conflict between creditors and debtors prolonged to social, political, religious, and economic tensions.

The Christians kept the Jews in financial oppression in the areas where they were most disliked, and if Jews reacted in comply with charging interest on moneylending to non-Jews (The Torah: Deuteronomy 23:19), they faced a sever reaction due to racism. This factor appeared as cause of their unpopularity and making them under pressure. In such a way, the Jews became an element in a vicious circle for general public living with them. On the other hand, the Christians condemned interest-based lending and borrowing absolutely in compliance with the Biblical rulings. In practice, there was a sever reaction against people dealing interest-based loans in 1179 onward. Catholic rulers frequently kept financial burdens on the Jews. Due to this stressed environment, the Jews reacted through engaging themselves in localities and business line where Christian laws were relaxed for them socially and economically in their favour. Hence, they got engaged in the hated trade of moneylending (The Bible: Matthew 21:12-13, Matthew 5:17-18).

Noonan (1993) has explored as theological historian that “the doctrine of usury was enunciated by popes, expressed by three ecumenical councils, proclaimed by bishops, and taught unanimously by theologians.” It is also evident in early literature that the condemnations against usury were found from the Vedic texts of India (Jain, 1929). Similarly, *Karim (2010)* has recorded that the condemnations are evidenced in religious literature of Buddhism, Judaism, Christianity, and Islam. Over the time, many nations from ancient Greece to ancient Rome have outlawed the interest-based loans from society. Eventually, the Roman Empire

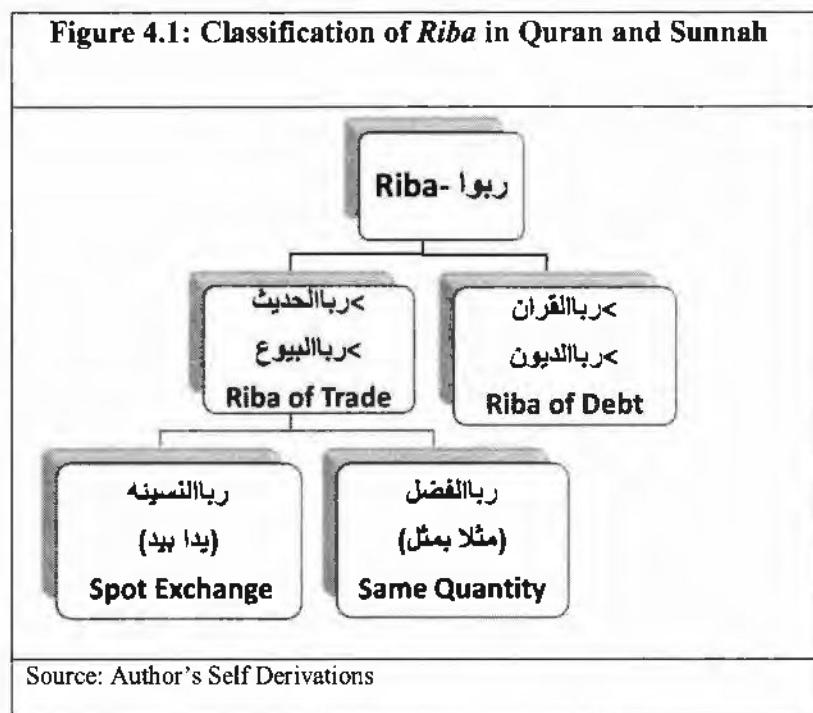
raised the barrier and allowed interest-based loans with restricted interest rates, though the Catholic Church in medieval Europe strictly nullified the charging of all interests at any rate in transactions.

Eisenstein (2011) has found the pivotal change in the English-speaking world that these countries legislated the interest to be charged on lending and considered the interest as lawful rights of lender. The 1545 Act, "An Act Against Usuries" (37 H. viii 9) of King Henry VIII of England can be referred as 1st legislation for interest. Thus, the original teachings of Buddhism, Judaism, Hinduism, Christianity, and Islam prohibit lending money with a stipulated increase on borrower against a specific time-period. Further, Russell (2011) has explored that a number of religious leaders and philosophers had been denounced usury in the ancient world including Moses, Plato, Aristotle, Cato, Cicero, Seneca, Aquinas, Muhammad, Jesus, Philo, and Gautama Buddha. For example, Cato said: "And what do you think of usury?"—"What do you think of murder?".

It is notable that interest of any kind is strictly forbidden in Islam. In compliance with Islamic economic system, the specialized codes of Islamic banking and finance have been developed to cater the investors' ambition to act upon Qur'anic law. Abdul-Rahman (2011) has noted that almost 800 years before, St. Thomas Aquinas and John Calvin were finding out a path to meet the commercial needs in line with the basic principle of the prohibition of charging interest presented by Prophets: Moses and Jesus. At same time, Muslim traders were practicing Riba-free financing to meet the commercial and trading needs of Muslims and non-Muslims. the capital needs of Muslims and non-Muslims to finance their trading and commercial activities. Muslim businessmen, traders, merchants and the non-Muslims interacting with Muslims were acting upon interest-free system according to the codes for commercial transactions in the Middle East, India, China, Central Asian countries and some European countries. This prevailing ethical financial system was based on Shari'ah (Islamic Law), that can be titled the

Judeo-Christian-Islamic law and values. These divine rules and codes were finalized, detailed and promoted by the revelation of the Qur'an and practices of Prophet Muhammad (PBUH) that evaluates and incorporates all God's messages from the Torah, the Gospel and other divine testaments revealed in same book between the years 611 and 634 to Holy Prophet (PBUH) as last Prophet with last book.

The Qur'an has addressed the issue of *Riba* in the five verses with a specific chronological order. In this economic reforms agenda, "Riba of Debt- ربا-الديون" was excluded gradually from economic transactions and the backdoor of this legislation was also shut down through traditions of Holy Prophet Muhammad (PBUH) on the subject through nullifying "Riba of Trade- ربا-البیوع".



It is important to note there is not any difference of opinion among all Islamic schools of thought about the prohibition of *Riba* (Interest) because the primary sources of Shari'ah, i.e. the Qur'an and Sunnah, strongly condemn *Riba*. However, there are different juristic opinions

in determining the meaning of Riba or what constitutes Riba, for the conformity of economic activities to the tenets of the Shari'ah. The first type "Riba of Debt- ربا الديون" is purely related to charge interest on moneylending that was widely prevailing in Arab Markets. The revealed verses can be considered in Figure 4.2:

Figure 4.2 Text of Verses on Prohibition of Riba

1st Revelation

وَمَا أَنْتُمْ بِالْأَذْيَارِ فِي أَمْوَالِ النَّاسِ فَلَا يَنْبَغِي عَذَابُهُمْ مَا أَنْتُمْ مِنْ ذُكْرٍ وَلَا يَنْبَغِي رَحْمَةُ اللَّهِ فَلَوْلِكُمْ فَمُمْضِيُّوْنَ

"That which you give as Riba (interest) the people's wealth, increases not with God; but that which you give in Charity, seeking the goodwill of God, multiplies manifold". Room [30: 39]

2nd Revelation

وَأَخْيَرُهُمُ الْيَهُودُ وَقَدْ كُفَّا عَنْهُ وَأَكْلُهُمُ أَمْوَالَ النَّاسِ بِالْبَطْشِ ۖ وَأَعْذَنَتِ الْكُفَّارُ مِنْهُمْ عَذَابًا أَلِيمًا

"And for their (Jews) taking interest even though it was forbidden for them, and their wrongful appropriation of other people's property, we have prepared those among them who reject faith a grievous punishment." Nisa [4: 161].

3rd Revelation

"يَا أَيُّهَا الَّذِينَ آتُوكُمُ الْأَيُّوبَ اتَّخِذُوا أَهْوَانَهُ وَلَا يَأْتُوكُمْ وَلَا تَأْتُوكُمْ فَلَيَخُوضُوا

O believers; take not doubled and redoubled interest, and fear God so that you prosper in this life and hereafter. Aal-Imran [3: 130].

4th Revelation

الَّذِينَ يَأْكُلُونَ الرِّبَاحَ لَا يَرْجِعُونَ إِلَّا كُمَا يَتَقْوِيُ الَّذِي يَتَعَبَّدُهُ الْمُبْعَدُونَ مِنَ النَّاسِ ذَلِكَ بِأَنَّهُمْ قَالُوا إِنَّمَا أَنْتَ مُغْنِي بِمَا لَمْ يَرِدْ إِلَيْهِ وَأَخْرَى اللَّهُ أَنْتَ
وَخَرَمَ الرِّبَاحُ فَلَمْ يَرِدْ مَوْعِدُهُ فَلَمْ يَرِدْ فَلَمْ يَرِدْ وَأَمْرُهُ إِلَى اللَّهِ وَمَنْ عَادَ فَأَذْلَلَهُ أَصْحَابُ الْكُرْبَلَةِ فِيهَا خَالِدُونَ {275-276}
يَتَعَبَّدُهُ اللَّهُ وَيَنْهَا الصَّدَقَاتُ وَمَا لَهُ لَيْسَ بِمُكَافَرٍ لَّهُمْ {276-277} إِنَّ الَّذِينَ آتَوْا وَغَيْرُهُمْ أَصْحَابُ الْمُصْلَحَاتِ وَأَنَّهُمْ
الْأَكْبَرُ هُمُ الْأَجْرَمُونَ عِنْدَ رَبِّهِمْ وَلَا خَوْفٌ عَنْهُمْ وَلَا هُمْ بَخَلَدُونَ {277-278}

“Those who devour usury will not stand except as stands one whom the Evil one by his touch has driven to madness. That is because they say: “Trade is like usury”. But God has permitted trade and forbidden usury. Those who after receiving direction from their lord, desist shall be pardoned for their past. Their case is for God to judge. But those who repeat (the offence) are the companions of the fire; they will abide there forever. God will deprive usury of all blessings but will give increase for deeds of charity. For He loves not creatures ungrateful and wicked. Those who believe and do deeds of righteousness and establish regular, prayers and regular charity will have their reward with their lord. On them shall be no fear, nor shall they grieve.”

5th Revelation

إِنَّمَا الَّذِينَ آتَوْا أَنْوَارَهُمْ وَذَرُوا إِلَيْهِمْ مِّنَ الْرِّبَاحِ إِنْ كُنْتُمْ مُّتَوَسِّطُونَ {278-279} فَإِنْ لَمْ تَنْفَعُوا فَلَذُنْهُمْ يَخْرُبْ بِمَنْ أَنْهَا فَرِسْكُوكِي قَادِنْ
كُنْتُمْ فَلَذُنْهُمْ رَّوْسُ أَنْوَالَكُمْ لَا تَظْلِمُونَ وَلَا تُظْلَمُونَ {279-280} فَإِنْ كَانَ ذُرُّ عَزْرَةَ فَتَبَطِّرَةَ (إِنْ مَسْتَرَّةَ وَلَدَ تَصْدُقُوا خَيْرَ لَكُمْ إِنْ
كُنْتُمْ تَغْلِبُونَ {280-281}

“O you who believe! Fear God and give up what remains of your demand for usury, if you are indeed believers. If you do it not, take notice of war from God and His apostle, but if you turn back you shall have your capital sums. Deal not unjustly and you shall not be dealt with unjustly. If the debtor is in difficulty, grant him time, till the time of ease, but if you remit it by way of charity, that is best for you if you only know (al-Baqarah 278-280).

These verses of the Qur'an expressly prohibit from evil of Riba (Interest). This banned type of interest is called "ربا الديون" -Interest of loan contract" where interacting parties are titled creditor and debtor. It is also named "ربا القرآن" because all of instructions related to prohibition of loan contracts are revealed in Qur'an by Almighty Allah. Although, first two instructions were revealed in normative sense at Makkah, then next express prohibitions were imposed according Islamic calendar in 3 A.H (624 AD). Finally, the strict prohibition was revealed in the year 10 AH, a few weeks before the death of holy Prophet Muhammad (PBUH).

Table 4.2 Riba Prohibition-Chronological Order of the Quranic Revelations	
Nature of Instruction	Reference
General Instruction	Ar- Room [30:39]
Riba- No Increases Vs. Zakat- Increases	
Riba- One of causes to Jewish Punishment	An- Nisa [4: 161]
Compound Riba Prohibition for Believers	Aal- Imran [3:130]
Distinction between Riba and Trade	Al- Baqrah [2:275-277]
Final Absolute Prohibition	Al- Baqrah [2:278-280]
War against Allah and Holy Prophet	
Source: Author's self-Derivation	

The second type of Riba is called "ربا البيوع" because of specific instructions of Holy Prophet (PBUH) for six commodities that were prevailing in the system of barter trade. It is also named "ربا الحبأ" because the tradition of Holy Prophet provides legal basis to this specific type of Riba (Interest).

فَإِنْ رَبَّنَ الْأَوْصَلَى إِلَهُ عَنْهُمْ فَلَا مُلْمَدٌ الْأَنْهَبُ بِالْأَنْهَبِ وَالْأَنْعَةُ بِالْأَنْعَةِ وَالْأَنْزَلُ بِالْأَنْزَلِ وَالْأَعْمَرُ بِالْأَعْمَرِ وَالْأَفْرُ بِالْأَفْرِ وَالْأَنْجَنُ بِالْأَنْجَنِ مَثَلًا

”يَعْلَمُ بِزَوْجِهِ بِسَوْأِهِ فَإِنَّهُ أَخْلَقَهُمْ بِهِ الْأَمْمَاتُ فَلَمْ يَعْلَمُوا كَيْفَ يُنْتَهِيُ إِذَا كَانُوا يَدْ

The Holy Prophet (Pbuh) said, “(Don’t sell) Gold for gold, silver for silver, wheat for wheat, barley for barley, dates for dates and salt for salt – like for like, equal for equal, and hand to hand; if the commodities differ, then you may sell as you wish, provided that the exchange is hand to hand.” (Bukhari: 2176 and Muslim: 1587)

On the basis of the above clear text of the Qur'an and Sunnah (Hadith), the word Riba is wider in defining the interest of loan-contract and the extra proceeding of a barter transactions as well. In other words, the word “ربو” “Riba” is not restricted to only interest “ربالديون” rather it also Riba also includes to “ربالبيوع” the nonmonetary exchanges (Al- Kasani,1191). Similarly, Ayub (2007) has included sale/exchange transactions in framework of “ربالبيوع”, particularly from the perspective of foreign exchange transactions with important implications in today's world.

Ahmad (1995) has noted that Riba-ul-Jahiliyyah (Interest of PreIslam) was prevalent at the time when Holy Prophet (PBUH) brought economic reforms agenda. The process of *Riba-ul-Jahiliyyah* in which the creditor used to ask debtor for interest at the maturity date and received the interest mount, if the debtor was found capable or swap it for another larger debt of longer maturity period by increasing interest amount. Some people confused and defined Riba as difference between the maturity value of the old debt and new debt amounted for a longer time. Some people have wrongly differentiated consumption and production loans through charging usury and Interest as reward, respectively, then declared that former is not allowed, whereas, the later is allowed. Likewise, another confusion was raised by allowing interest-based institutional loan, whereas the prohibition is about personal loans. None of these distinctions, however, are justified, all kinds of Riba were prohibited by Islamic economic code.

Historically, the Christianity in much of Medieval Europe, the Judaism, the Hinduism, the Buddhism and Islam in many parts of the world today, have regarded charging any kind of interest for loans as sinful. As the matter of fact, this interest-sensitive theory of economic perspective is institutionalized by Muslim intellectuals through inception of modern Islamic banking in recent decades.

4.7.3 Prohibition of Khatar/Gharar (Uncertainty)

Gharar is one of the major causes of the Invalidity of a contract. It is an external prohibited attribute that invalidates the contracts. Literally, Gharar means risk or hazard. Imam Sarakhs (1090) has defined that *Gharar* is found where the consequences of a transaction are not known. Ayub (2007) has summarized different definitions of jurists that “Gharar” means hazard, chance or risk (Khatar). Khatar/Gharar is found where the liability of any party is uncertain, contingent to other thing or the payment from one side is uncertain. Further, “Gharar” is the sale of a thing that is not found or the sale of a thing whose consequences are unknown or a sale pertaining hazard. For instance, a sale contract in which a party does not know whether the element of contract will come to happen or not, e.g. the sale of a fish in water (Sunan Abi-Daud: 243), or a bird in the air (Bukhari: 523).

There is very limited literature about Gharar (Uncertainty) in Islamic knowledge stream. Although, there is potential of the topic to develop it through an integration of modern concepts of risk management in conventional financial stream. Uncertainty cannot be excluded from any contract, rather risk-taking is a condition for the entitlement to profit in business. Holy Prophet (PBUH) said:

”بِالضَّمَانِ - الْخَرَاجُ“

Entitlement of profit is for the person who takes the risk.

However, there is problem to define the extent of uncertainty that nullifies a transaction. Later, Islamic jurist have differentiated Gharar into Gharar-e-Kathir (Thick Uncertainty) and Gharar-

e-Qalil (Thin Uncertainty) and declared that only those contracts that have Gharar-e-Kathir (Thick Uncertainty) are nullified. Therefore, some degree of Gharar-e-Qalil (Thin Uncertainty) is acceptable in the products' structure of Islamic business and finance. However, many areas still need Ijtihad to identify the problem of Gharar-e-Kathir (Thick Uncertainty) and to reduce it to Gharar-e-Qalil (Thin Uncertainty), particularly in forward products of agriculture and manufacturing products on salam and Istisn'ah, respectively, the area of Takaful operations, the secondary market of Shari'ah securities and derivatives in Islamic finance.

Holy Prophet (PBUH) has prohibited Bai al-Gharar (Tirmadhi: 1206; Sunan Ibn-Maja: 2234). Imam Bukhari (870) has not reported the Hadith on Bai al-Gharar but captioned a chapter "Bai al-Gharar and Habal-al-Hablah" (i.e. Uncertainty and sale of foetus is in the womb of the animal). Under this title, he has mentioned the Hadith forbidding the "Habal-al-Hablah" and sale through touching (Mulamasah) and sale by throwing pebbles (Munabadhah). (e.g. bartering items without inspection). Al-Ayni, has derived the multiple forms of Gharar from the title of a Bukhari's chapter "Bai al-Gharar and Habal-al-Hablah" in his famous book "Umda-tul-Qari Sharh-e-Bukhari - البخاري صحيح شرح - القاري - عددة". Further, he has said that the Hadith prohibits from the Habal-al-Hablah sale, which is one of the forms of Gharar. Thus, Imam Bukhari refers to the multiple forms of Gharar that is forbidden. This hadith prohibits from a specific transaction that refers to the prohibition of all items of similar description (Al-Ayni, 1451). From this, the jurists have derived a general principle that a contract must not be doubtful and uncertain in terms of the rights and obligations of the parties, otherwise it would lead to deceive any one of the parties. In sum, the subject-matter of the contract must be identified, the price and terms must be known (Ma'lum) without any ambiguity. This would be generalized for all objects that can be measured, counted or weighed. At same time, these are subject to the prohibition of Riba-ul- Fadl.

Al- Kasani (1191) has reported that Islamic law has denied the power to sell in the following three cases to avoid from uncertainty:

1. Things that do not exist as object of transaction.
2. Things that exist but not in possession of seller or their availability is uncertain.
3. Things that are exchanged on uncertain delivery and unspecified payment.

Such transactions are forbidden to avoid disputes, fraudulent dealings and injustice in trade and other daily economic matters. Abdullah ibn Abbas has extended the prohibition of Bai al-Gharar (Uncertainty) to Bai al-Ghaib (An absent object). In this case, the purchaser has the right of option of seeing (Khiyar-rur- Royah) to revoke the contract if it is not according to specifications of the session of contract.

4.7.4 Free Mutual Consent (بن قد المتعاد رضا)

A contract is valid only when there is free mutual consent as a prerequisite. Mutual consent is a fundamental cause that puts obligations of contracts on interacting parties. Free mutual consent means that is not obtained through coercion, fraud, misrepresentation or some other illegal means renders a contract invalid in the Shari'ah. Likewise, a contract is also invalid when it is made by intoxicated person, by the way of joke or through mistake because free mutual consent to accept consequential obligations is missing in these types of cases.

The principle of free mutual consent in a contract is derived from divine instructions of Qur'an and Sunnah.

”يَا أَيُّهَا الَّذِينَ آمَنُوا لَا تَنْهَاوُا أَمْوَالَكُمْ بَيْنَكُمْ بِالْبَاطِلِ إِلَّا أَنْ تَكُونَ تِجَارَةً عَنْ تَرَاضٍ بَيْنَكُمْ

وَلَا تَنْهَاوُا أَنفُسَكُمْ ۝ إِنَّ اللَّهَ كَانَ بِكُمْ رَحِيمًا ۝

“O you who believe! Eat not up your property among yourselves unjustly except it be a trade amongst you, by mutual consent. And do not kill yourselves (nor kill one another). Surely, Allah is Most Merciful to you (4:29).”

There are traditions of Holy Prophet (PBUH) to support the free mutual consent among parties as prerequisite condition. Holy Prophet (PBUH) said:

“The contract of sale is valid only by mutual consent” (Sunan ibn-e-Majah, 2245)

In another tradition, Holy Prophet (PBUH) said:

“My people are forgiven for that which they have done through mistake, forgetfulness and under coercion”.

The principle of free consent requires that the consenting parties have certain and definite information about the subject matter of the contract and its consideration, and they also know the rights and obligations arising from it.

4.7.5 Observance of *Maqasid al-Shariah*

Islam is a complete code of life (Aal-Imran: 119) and Holy Prophet (PBUH) is sent as compassion to all creature of Allah over all universe (Al-Anbiya: 107). It covers the whole life including social, political, economic and financial perspective that lead to a social justice and economic prosperity. This conception can be realized through hierarchy of the higher objectives of Shari'ah, also known as Maqasid al-Shari'ah. Rightly, Sha'tibi (1388) said that the objectives are the essence of Shari'ah practices.

قال الشاطبي: ”و المقصود أرواح الأعمال“ المواقفات: 344/2.

Maqasid al-Shari'ah theory is considered to be the the guiding principle of Islamic way of life. It covers all the aspects of life realizing that Islam can address all the requirements of a society from fundamental individual's rights to deal with foreigners in matrix of international law. On gross roots, Imam Ghazali (1111) has presented a handful model of the higher objectives of Islamic law (Maqasid al-Shari'ah) that acknowledges the fundamental rights of every individual in a handful way.

"ومقصود الشرع من الخلق خمسة، وهو أن يحفظ عليهم دينهم ونفسهم وعقالهم وناسلهم وما لهم، فكل ما يتضمن

حفظ هذه الأصول الخمسة فهو مصلحة، وكل ما يفوت هذه الأصول فهو مفسدة ودفعها مصلحة"

المستضاف: 287/1

Imam Ghazali (1111) has explained that the objective of the Islamic law is; to protect the faith, life, intellect, progeny and wealth of people. Everything/action that protects these five objectives would be called "Wisdom- مصلحة", and which will nullify these objectives would be "degrading factors- مفسدة", thus to eradicate it is "Wisdom- مصلحة".

These can be said fundamental right of an individual. Ali and Hasan (2014) noted that it is about a Shari'ah maxim (جلب المصلحة أو دفع المفسدة) *jalb al masaleh* (attainment of benefits) or *daf al-mafasid* (removal of degrading factors).

Kamali (2008) has explored that the word "Maqsid" reflects a meaning of purpose, objective, principle, intent or goal. It comprises the wisdom and knowledge behind rulings, the objectives of particular actions. The Shari'ah is predicated on the benefits of the individual and that of the community, and its laws are designed to protect these benefits and facilitate improvement and perfection of the conditions of human life on earth. On behalf of Imam-ul-harain Jawaini (d.478 AH/1085 AD), Shatibi (1388) has divided general objectives into three categories in a descending order of importance; i) *Daruriyyat* (Essentials) which include the faith, life, intellect, progeny and wealth of people. ii) *Hajiyyat* (Complementary) which consists of what is needed by the community for the achievement of its interest and the proper functioning of its affairs. If it is neglected, the social order will not collapse but will not function well. Likewise, it is not on the level of what is indispensable (*daruri*) (Ibn Ashur, 2006). iii) *Tahsiniyyat* (embellishments) which are in the nature of desirable parts as they seek to attain refinement and perfection in the customs and conduct of people at all levels of achievement (Kamali, 2008).

The list of these objectives is not confined within five objectives only, rather it is extended based upon Shari'ah maxim (جلب المصلحة أو دفع المضرة) *jalb-ul-masaleh* (attainment of benefits) or *daf-ul-mafasid* (removal of degrading factors). Similarly, Ibn-e-Taymiyya (1328) said to prolong the list on basis of giving benefit and to protect from harmful things. Acting upon this rule, Sidiqi (2008) has included "Environmental Protection", Chapra (2008) has added "Good Governess and supervision". Further, Ibn-e-Ashur (2006) has prolonged the list from economic perspective especially; the circulation of wealth, the economic development, the poverty elevation, the fair distribution of wealth, the promotion of transparency and accountability, to void the disputes and to ensure the stability, to uphold and promote justice in acquiring wealth and to sustain the ownership.

In finding out the Shari'ah verdict for complex conditions of today, sometimes the important doctrines of Islamic jurisprudence (*Usul-ul-Fiqh* - الفقه اصول) such as general consensus (*ijma-*اجماع), analogical reasoning (*qiyas*-قياس) and even *ijtihad* (اجتهاد) seem to be burdened. Then, the *maqasid* approach have become an accurate access to meet the essence of the *Shari'ah* to cope up with the prevailing sociopolitical environment of the Muslim countries (Kamali 2008). Similarly, Maqasid approach is underlined as important pillars to enhance the advancement of financial structure in line with the basic requirements of Islamic law of business transaction in framework of Islamic economic system. In addition to the Islamic jurisprudence, Maqasid theory has been emerged as the most complete mechanism to improve the value to the current Islamic finance nowadays. Moreover, it may also be called a complementary approach to all existing Islamic divine instructions through developing the wisdom of these instruction of Allah Almighty and Holy Prophet (PBUH). In nutshell, Maqasid theory is considered to be appeared as the cornerstone or the guiding principle for development of alternate products in contemporary Islamic financial architecture.

4.7.6 An Application of Islamic Legal Maxims into Islamic Banking and Finance

Muslim Jurists have developed the useful tools to come up with new rulings in contemporary world. One of these tools is the Islamic legal maxims (Al-qawa'id al-fiqhiyyah-). الفقهية القواعد.

Az-Zuhaili (1996) has defined that Islamic legal maxims are the principles which are summarized through a number of fiqh rules associated to each other. These Shari'ah maxims are very important rules for Muslim jurists, muftis, academicians and judges to exercise Ijtihad to making decisions as they are supposed to convey the spirit of divine instructions, wisdom of pre-cautionary measures, logic of prohibitions and philosophy of Islamic law. Moreover, Islamic financial maxims play a vital role in provision of an alternate Shari'ah based system to replace the existing conventional banking system. Islamic law provides some precautionary measures to nip evil in the bud through blocking all those channels that eventually lead to injustice and this is termed "رائع الذ سد".

Mansoori (2012) has explored that the intention and motivating cause of a contract affect the legal status of a contract in Islamic legal matrix. He has mentioned a maxim "الامور بمقاصدها" - بالنيات انما الاعمال that is based upon a Hadith "The basis of all acts is objective thereto" that is based upon a Hadith "The acts are judged through intentions" (Bukhari:1). In Islamic banking, the status of depository accounts can be discussed within framework of this maxim as the objectives of contracting parties will determine legal position of contract. Further, Mansoori (2012) has linked some more maxims about role of intention in different contracts:

العبرة في العقود للمقاصد والمعانٍ لا للألفاظ والمباني

It means that a contract accepts the legal impact of the intents and meanings not to the words merely and phrases. The current Islamic jurists consider wadi'ah or amana'ah based deposits as loan contract in Islamic commercial banks because of not fulfilling the essential conditions of wadi'ah or aman'ah and the objectives of interacting parties. Further, Al- Kasani (1191) has

categorized the deposited amount into different three categories with three types of contractual right and obligation between the parties. First, if a deposited object was in money form and the trustee used it without prior permission of depositor, wadi‘ah amount would be changed into a loan transaction. So, any usage of amount would be a debt borrowed by debtor and its use would accrue in the favour of creditor. Second, if a depositor allowed the usage of amount as an agent, the contract would be dealt as agency contract (Wakala-tul-Istismar) with a predetermined agency fee in favour of agent. Third, if a depositor allowed to invest the amount on basis of profit-loss sharing, it would be partnership contract; Modarib’ah. Similarly, another maxim is very important and may work as a guiding principle for product development departments of Islamic banking and financial institutions and it may work a good tool for regulators in Shari’ah auditing of these institutes offering Islamic products.

کل حیله پتوصل بھا الى ابطال حق او احراق باطل هی حرام

“Every legal artifice whereby nullification of a right or affirmation of a wrong, is devised is unlawful.”

In Encyclopedia of Islam (510/3), “Hilah- حیله” means an artifice, and a stratagem. In Islamic legal interpretations, “Hilah- حیله” is defined as the use of legal means for extra-legal ends, that are not in themselves legal or illegal, and these extra-legal ends cannot be achieved directly with the straight sources provided by the *Shari’ah*. This indirect source of “Hilah- حیله” enables a person to achieve his objectives with a turned interpretation, otherwise he had no choice but to act against the provisions of sacred law, to arrive at the desired result. These maxims demonstrate widely their applications in the field of banking and finance. Especially, in the light of maxim of “Hilah- حیله”, there can be observed the correct legal position of some controversial contracts like bay-al-nah (الوفا بيع), bay-al-wafa (عینه بيع), tawarruq (تورق), commodity murabah’ah (مرابحه) for liquidity management prevailing in markets, and sale plus

lease back sukuk. This discussion provides a sound context to deal with the various schools of jurisprudence towards the legal stratagems (Hiy'al-حيل).

On affirmative side, Ibn Taymiyyah (1328) has mentioned the maxim of permissibility that would govern the contemporary matters of Islamic Financial Institutes (IFIs). There would be permissibility as a general rule in the absence of prohibition.

ان الاصل في الاشياء الاباحة الا ان يكون هناك دليل يدل على حرمته

On natural pattern, everything is permissible unless it is prohibited explicitly by Allah Almighty and His Messenger; Muhammad (PBUH).

Hasan (2007) has concluded that the legal maxims are very important to achieve truly halal products and to have valid financial transactions. These maxims should be considered on priority basis in developing products, regulating banks, supervising practices, and auditing the financial statements of Islamic Financial Institutions (IFIs). Moreover, there is crucial need to deploy qualified and knowledgeable Islamic jurists with specialization in contemporary Islamic financial practices to void any misinterpretation of the Shari'ah maxims that are derived from the Qur'an and Sunnah. This selection criteria will make them to apply and analyse the operations in an honest and unbiased manner, that will necessarily manage Shari'ah compliance risk of Islamic banks.

4.7.7 Zakat as Basic Pillar of Islam

Zakat (زكوة) is derived from Arabic origin “بِرْزَكُو زَكَا” means "that purifies". It is a form of alms-giving treated in Islam as a religious obligation on Muslim individuals when someone fulfils a specific criterion of wealth that is called “*Nisab*” (Salehi, 2014) and in Quranic ranking, it is next after prayer as part of basic five pillars of Islam (Hallaq, 2013).

In Islamic ideology, Zakat is considered a way to purify one's income and wealth from sometimes worldly, impure ways of acquisition (Al-Qur'an. 9:103). Further, Murata and Chittick (1994) has presented a broad scope of purification that ablution (*Wudu*) purifies the human body, prayers (*salat*) purifies the soul of a person, zakat purifies wealth and overall these all are conducted to please Allah almighty as prime objective of them.

”خُذْ مِنْ أَمْوَالِهِمْ صَدَقَةً تُظْهِرُهُمْ بِهَا وَضُلِّلُهُمْ إِنْ صَلَاتُكُمْ سَكِّنٌ لَهُمْ وَاللَّهُ أَعْلَمُ بِعِلْمِهِ“

”Take Sadaqah (alms) from their wealth in order to purify them and sanctify them with it and invoke Allah for them. Verily! Your invocations are a source of security for them, and Allah is All-Hearer, All-Knower (Al-Qur'an. 9:103)“

Zakat is paid on income and the value of all of one's possessions (Décobert, 1991). Its ratio is customarily 2.5% of a Muslim's total annual retained savings for lunar year and a stock of wealth that meets the criteria of Nisab (Al-Qaradawi, 1999). The collected amount is spent on different heads of spending as prescribed Allah almighty in following words:

”إِنَّمَا الصَّدَقَاتُ لِلْفُقَرَاءِ وَالْمَسَاكِينِ وَالْعَابِدِينَ عَلَيْهَا وَالْمُؤْلَفَةُ قَلْوَبُهُمْ فِي الرَّقَابِ وَالْفَارِمَينَ وَفِي سَبِيلِ اللَّهِ وَابْنِهِ“
”السَّبِيلُ فِرِيضَةٌ مِنَ اللَّهِ وَاللَّهُ أَعْلَمُ حَكِيمٌ“

Sadaqat (here it means zakat) are only for the Fuqara (poor), and Al-Masakin (the poor) and those employed to collect (the zakat); and to attract the hearts of those who have been inclined (towards Islâm); and to free the captives; and for those in debt; and for Allah's Cause, and for the wayfarer (a traveler who is cut off from everything); a duty imposed by Allah. And Allah is All-Knower, All-Wise (Al-Qur'an; 9:60)“

The payment and disputes on zakat have played a major role in the history of Islam, notably during a series of the wars of Ridda (Apostasy) (الرِّدَّةُ حِرْبَوْبَ); the 1st Caliph Abu Bakr Sidiq (R.A) took military actions against rebels during 632 and 633 AD. Today, zakat system is working on voluntary basis in most Muslim countries, while zakat is regulated by the state as

well in Libya, Malaysia, Pakistan, Saudi Arabia, Sudan, and Yemen (Marty and Appleby, 1996; Hasan, 2015).

In an Islamic economic system, Zakat is a basic source to collect the fund at revenue-side and a viable source of fair-distribution of wealth at expenditure-side. Both sides of the system are vibrant with all modern beauties of the theory of diversification to manage the risk-profile of an economy. Therefore, fiscal side of Islamic economic system is presented and practiced in a handful way over the time.

In modern Islamic financial practices, AAOIFI (Accounting and Auditing Organization for Islamic Financial Institution) is a set of Shari'ah, accounting, governance standards for the Islamic banking and financial institutions that have been agreed upon by most of Islamic financial market operators, registered in Bahrain in 1991 as an autonomous international corporation that does not generate profits. AAOIFI in FRS 1 (The Financial Reporting Standard No. 1) has instructed about to pay Zakat that all Islamic banking and financial institutions should reflect Zakah Payments in their financial statements on behalf of shareholders and investors.

In Malaysia, Islamic Banking Institutions (IBIs) will pay Zakat under IFSA 2013, on behalf of the shareholders from banking ownership and on behalf of depositors from savings of banks. The half of accumulated payment of Zakat would be given to State Islamic Religious Councils (SIRCs) and the remaining would be distributed by IBIs themselves. Similarly, the Zakat practice under one of IBIs that supervised by the Development Financial Institution Act (DAFIA) 2002, the shareholders will pay the banking Zakat and the depositors will pay the saving Zakat. In accordance to the DAFIA 2002, if the Head of Islamic Banking Division of IBIs was paid more than the accumulated Zakat amount to all State Islamic Religious Councils (SIRCs) in terms of the size and population of respective state. Now, the SIRCs would be fully

authorised by IFI to distribute the accumulated Zakat among the defined spending heads without giving any single cent back to IFI (Badarulzaman, Azhar, Ismail, and Thalbi, 2016).

4.7.8 Waqf

Waqf is a charitable endowment concept and institution that provide an avenue for mutual help (Hassan, Kayed, and Oseni, 2013). In other words, Waqf is the retention of an asset for a charitable or humanitarian objective in general, or it is donated for a specific group of individuals such as family members of the donor. Ayub (2007) has explored that Islamic jurists has classified Waqf into three types in the literature of Islamic jurisprudence: i) religious Waqf, ii) philanthropic Waqf and iii) family Waqf. Further, Al- Kasani (1191) has documented that the ownership of the Waqf asset is transferred from donor to Waqf as a separate entity that is capable to accept or to transfer the title of ownership. The usufruct of Waqf is assigned to the participant, whereas its property cannot be sold. Similarly, Waqf property can neither be inherited nor donated to anyone. Considering juristic principals of Waqf, a donor can be benefited from his/her Waqf asset.

Khorshid (2004) has come up with modern applications of Waqf fund in the framework of Islamic Insurance along with other Islamic business contracts like Modarba'ah and Wakal'ah. Similarly, Ayub (2007) has also noted that a renowned group of contemporary jurists and members of the Shari'ah councils of the Islamic Development Bank (IDB), Organization of Islamic Cooperation (OIC), and the Accounting and Auditing Organization of Islamic Financial Institutions (AAOIFI) have declared Waqf model as the best practice for Takaful (Islamic Insurance) industry. They have approved a structure for Islamic insurance with combination of Wakalah and Waqf model after evolving through different steps inline with rules of Shari'ah.

On practical grounds, the beneficiaries of Takaful product are the originator of the Waqf. They contribute in Waqf pool for cooperation among them with intention of covering loss if there occur sudden loss to any contributor. It is interesting to know that the contribution to the Waqf fund is declared in policy documents as a donation to the Waqf fund by the policyholders. Now, these donations are not in ownership of and they do not have any claim on the donated fund. The Islamic insurance operator invests the funds in different Halal options. As a result of business deal, there are entitled the shares the profits to the Waqf fund as legal entity and the policyholders also receive their respective shares from the profit as they are also beneficiaries of the invested fund.

4.8 Fundamental Differences between Islamic Banking and Conventional Banking

There are fundamental differences between conceptual models of Islamic banks versus conventional banks resulting with the differences in relationships, agency costs, contractual obligations, legal impacts, accounting treatments and their responses to monetary policy actions. Kuran (2004) has differentiated that Islamic banks are based on real business deal and real economic activities which take risk and bound in *Shari'ah* limits to acquire profits while conventional banks are fundamentally based on *Riba* (interest) lending and borrowing business operations that avoid bearing risks and thus leads to social injustice and later execute to economic crises and depressions. These fundamental differences affect the nature of operation and contractual obligation among banks and clients, affecting the transmission mechanism of monetary policy between Islamic *versus* conventional banks of countries with dual banking system. These differences are summarized in Table 4.3.

Further, Islamic banks cater for the public interest first within the framework of Islamic economics and to achieve the primary objective of halal (lawful) economic growth, whilst the

conventional banks concentrate on making profit where interest of the bank comes first without any screening of Halal and Haram.

Table 4.3: Differences between Conventional Banking and Islamic Banking	
Conventional Banking System	Islamic Banking System
Conventional banking is based on human-made interest-based model within framework of capitalism.	Islamic banking is based upon the governing principles of <i>Shari'ah</i> within framework of the objectives of <i>Shari'ah</i> .
Money is a commodity with intrinsic value besides medium of exchange and store of value. Therefore, it is sold at a price higher than its face value and it can also be rented out.	Money is a medium of exchange and originated for store of value without holding any intrinsic value in it. Therefore, it cannot be sold out at higher prices or it cannot be rented out as well.
Conventional banks earn predetermined interest income from loans. Major portion of their income is interest income.	Islamic banks work on the profit-loss sharing principle, accordingly they focus more on investment, assessments and valuations.
Interest on basis of the time value of money, is main source of income.	Profit on exchange of goods and services is the basis for earning profit.
The objective of profit maximization is unrestricted by derivatives trading.	Islamic banks also aim to maximize profit but subject to <i>Shari'ah</i> restrictions.
The agreement for exchange of goods and services is not made in disbursing cash finance, running finance or working capital finance.	The exchange of goods and services is compulsory to execute the agreements of <i>Murabah'ah</i> , <i>Salam</i> , <i>Istisn'ah</i> and <i>Ijarah</i> contracts.
Government takes loans from central banks without initiating capital development expenditure through money market operations.	Government can never take loans through money market operations except making sure delivery of goods to National Investment fund.
Real growth of wealth among public does not take place because money circulates in a few hands.	Real growth of wealth takes place among public through multiplier effect and it transfers into the ownership of a lot of people.
In case of default or delay payment, conventional banks charge a penalty amount against customer recorded as income to banks.	In case of delay payment, Islamic banks charge a self-imposed amount against customer credited in charity account for welfare projects.

Based upon these facts, it is ample proof that the Islamic banks are well-capitalized, higher inter mediation ratio, and good asset quality. Fundamentally the difference between Islamic banking and conventional banking is that the idea fairness to the clients is theoretically focused on the idea of Islamic Banking itself. Conventional banks aim to maximize returns and minimize risks. The bank's interest income come in the way that is opposed to the Islamic banking system.

4.9 Fundamental Differences between the Balance Sheets of Islamic versus and Conventional Banks

In context of bank-centric view, Bernanke and Gertler (1995) have described a broader credit channel with the name of the balance sheet channel from perspective of financial market imperfections that play an important role in monetary policy actions. They have emphasized on the role of financial market imperfections that increases a firm's cost of credit through weakening the balance sheet of firm directly and indirectly. A direct effect of restricted monetary policy reflects on the firm's balance sheet in accounts payable because of an increase in interest rate to be paid with principal amount to lenders. Similarly, an indirect effect arises, the capitalized value of the firm's long-term assets decreases because of an increase in interest rate. This balance sheet channel is defined from conventional perspective of market imperfection. Now, this study intends to extend another perspective of different responses of Islamic versus conventional banks. It requires to investigate the fundamental differences between the balance sheets of Islamic banks and conventional banks to understand why Islamic banks respond differently as compare to conventional banks to monetary policy actions of central banks. The stylized balance sheets for Islamic bank in Annexure 2 and Annexure 3 and for conventional banks in Annexure 4 and Annexure 5 are available to find out comparative differences from perspective of accounting treatment in case of Pakistan. Similarly, the same

differences can also be observed for Islamic bank in Annexure 6 and Annexure 7 and for conventional banks in Annexure 8 and Annexure 9 in case of Malaysia.

A balance sheet is the statement of condition or the statement of financial position of a business entity. Technically, it is a financial report about the value of a company's assets, liabilities, and equity capital at the end of an accounting period, such as a quarter or a year. The financial transactions of a bank are generally recorded on two-sides of the balance sheet; the asset side and the liability side. First, the asset side consists of cash, cash equivalents, the financing facilities that the banks provide to their clients. The cash is paid on depositors' demand and held to meet the running expenses of a bank. Now a day, especially vault cash is installed in ATMs (Automated Teller Machines). Hence, a bank whether it is Islamic or conventional has to maintain a certain level of cash compared to its liabilities to maintain solvency in same way. Further, a bank must hold some cash as reserves; the amount maintained in a bank's account with the central bank as a regulator, that determines the legal reserves for strength of banking sector. The legal reserves account is also used as instrument of monetary policy by adjusting the minimum reserve level in account. The cash equivalents are short-term asset as they are nearly equivalent to cash. It is a short-term investment that can either be availed as cash or converted shortly to cash without loss of value, like demand deposits, T-bills, and commercial paper. The difference is that the interest-bearing instruments can never be used in Islamic banking operations in same line of action. Then, the core business modes of banks are recorded on asset-side of banks with fundamental differences between Islamic and conventional banks. For instance, a conventional bank advances loans to the clients and finances the business operations on interest-basis, whereas an Islamic bank finance the business operations to clients on the basis of profit such as *Murabha*, *Salam* and *Istisn'ah*, on the basis of profit-loss sharing such as *Mudarb'ah* and *Mushark'ah* and on the basis of rent such as

Ijarah (See Annexure 2). These are sale-based, partnership-based and lease-based contracts respectively, between Islamic bank and clients as contractual relationship.

Second, the liability side of a balance sheet refers to the deposit and investment facilities that the bank provides to clients and equity capital at the end of liability side. A conventional bank accepts funds in current accounts on zero interest rate and term deposit accounts on a fixed interest rate for depositors and convert them as asset through interest bearing advances to other clients with shortage of funds. The earned interest distributed amongst the account holders and the bank on predetermined ratio. On the other hand, an Islamic bank deals with two types of accounts; current accounts on basis of loan (*Qar'd*) at zero-interest rate and investment accounts on the basis of *Mudarb'ah* at predetermined profit-ratio in a Shariah compliant manner. Although, Islamic banks title these investment accounts with different names like saving accounts, term deposit in Annexure 3, presenting the balance sheet of Alfalah Islamic Bank Pakistan, but underlying contract is based upon *Mudarb'ah*. In *Mudarb'ah*, depositors provide funds that are collected in *Mudarb'ah* pool and an Islamic bank invest them in *Shari'ah* compliant projects on profit-loss basis. The profit of investment is assigned to participants of *Mudarb'ah* pool according to predetermined ratio as mentioned in account opening form. These two different vehicle contracts *Mudarb'ah* and loan for investment accounts of Islamic and conventional banks, respectively, have different legal and financial impact in contractual obligation and in calculation of risk exposure as well.

This risk exposure's calculation will note conventional banks riskier because depositors are not responsible for any default in loan contract, whereas, Islamic banks are less risky because depositors are sharing loss in case of bank's default as underlying *Mudarb'ah* contract bound them to bear the loss. Therefore, the capital adequacy ratio requirements are more for conventional banks as compare to Islamic banks in countries with dual-banking system. Equity

capital is dealt among share holders within framework of *Mushark'ah*. They are owner of business and liable to obligations as per investment share.

4.10 Conclusion

After examining the historical backgrounds and conceptual frameworks of Islamic *versus* conventional banks, we may expect how operations of Islamic banks may differ as compared to conventional banks, affecting the transmission mechanism of monetary policy of the economies with dual banking system to meet their credit requirements. Finally, we found that Islamic banks are different in nature and composition of assets and liabilities as compared to their conventional counterparts. On basis of unique contractual and motivational features of Islamic financial institutions (IFIs), Hardianto (2004), Kaleem and Isa (2006), Sukmana and Kassim (2010), and Zaheer, Ongena and Wijnbergen (2013) using aggregate data on Islamic banking have examined the response of Islamic financing to monetary policy and the potential gaps that requires to be explored for understanding the credit channels through Shari'ah based financing instruments to achieve the macroeconomic objectives of monetary policy. Overall, this chapter has drawn the attention of the monetary policy authorities to different alternate channels through which they can conduct an effective monetary policy. Policymakers should take into account the improvement of institutional structure, a well-functioning Islamic money market and sound regulatory framework, as prerequisite to make the transmission of monetary policy more effective in countries with dual banking system such as Pakistan and Malaysia.

5. Data Description and Empirical Framework

5.1 Introduction

This chapter explains data and empirical framework of study. There is collected unbalanced panel data of banking sector of Pakistan and Malaysia on annual basis. Likewise, we have constructed the variables; the banks' credit supply as dependent variable, the monetary policy indicators, the bank specific variables and the macroeconomic conditions. This chapter deals with the rationale of the selection of these specific variables for this dissertation. It starts with a baseline model that is designed to observe the impact of the monetary policy indicators, the bank specific variables and the macroeconomic conditions on credit supply decisions of the banks of both countries. By extending the baseline model, these effects are also observed after categorizing banks as Islamic and conventional banks through empirical models. Further, the impacts of monetary policy indicators on banks' credit supply is also examined on basis of size and liquidity for both countries. Moreover, this chapter explores the model to observe the impact of monetary policy on conventional and Islamic Banks on basis of size and liquidity.

At the end, this chapter explains the robust two-step system-the Generalized Method of Moments (GMM) estimator proposed by Arellano and Bover (1995) and then it was fully developed by Blundell and Bond (1998) to examine the impacts of monetary policy indicators on banks' credit supply. The relevance of the GMM estimator is justified for all 36 regressions to evaluate the models empirically. In sum, this research design facilitates to measure the credit channel of monetary policy the monetary policy indicators, the bank specific variables and the macroeconomic conditions on the basis of an unbalanced annual panel dataset of Pakistan and Malaysia.

5.2 Data Description

This study uses dataset of conventional and Islamic banks along with selected macroeconomic variables and monetary policy indicators from Pakistan and Malaysia. We construct an

unbalanced annual panel dataset for banking sector of both countries through various sources. Although, there are some differences in accounting treatment of different economic activities because of the fundamental differences of the conceptual models of Islamic *versus* conventional banks. Data on policy variables are also collected from central banks of Pakistan and Malaysia to observe the impact of monetary policy stances on the credit supply of Islamic *versus* conventional banks. Further, data are described in four subtitles to observe the sample, sources, and the fundamental differences in accounting treatment of different activities in the following way.

5.2.1 Description of Dataset

In Annexure 10, there are Islamic and conventional banks of Pakistan and Malaysia. This study covers the period from 2005 to 2016 on annual basis. The bank level data on bank-specific variables is collected in line with Kashyap and Stein (2000), who have also investigated the panel data of the individual bank level. They have observed that monetary policy particularly affects the lending behavior of small banks with less liquid balance sheets. We have collected the bank level data on bank-specific variables from financial statements of the banks from concerned websites

This study uses a sample of five full-fledged Islamic banks, 6 Islamic branches/divisions of conventional banks and 17 conventional banks to carry out the empirical analysis of Pakistan. For Malaysia, we have selected 11 Islamic banks and 10 conventional banks for empirical analysis. Overall, the data on bank-specific and macroeconomic variables are collected from financial statements of banks, available on their websites. We have also collected some data from the publications of State Bank of Pakistan (SBP) and Bank Negara Malaysia (BNM), World Development Index (WDI), International Financial Statistics (IFS) of IMF, and Orbis

Bank Focus (Bankscope); a service from BREAU VAN DIJK; A Moody's Analytics Company.

Some data of conventional banks are taken from Thomson Reuters Datastream.

We have selected the dataset of Pakistan and Malaysia to investigate responses of Islamic *versus* conventional banks to monetary policy actions because of the following solid reasons; First, the economies of Pakistan and Malaysia are almost banks' dependent that increases importance of banks' credit channel of monetary policy transmission. Secondly, unlike other countries, Pakistan and Malaysia comprises the economies with dual banking system; Islamic and conventional banks in same market with modern practices. Thirdly, these both countries are using accounting system in line with modern practices of international accounting standards for their financial institutions. Moreover, Islamic banking operations are dealt in modern practices of Accounting, Auditing Organization of Islamic Financial Institutions (AAOIFI) and Islamic Financial Services Board (IFSB) through central banks in Pakistan, State Bank of Pakistan (SBP) and Malaysia, Bank Negara Malaysia (BNM) with some additional *Shari'ah* compliance requirements to be regulated through *Shari'ah* governance framework. Fourthly, the accounting differences of both banking strands are harmonized to make them comparable for further analysis in same economy. Lastly, data are available of Islamic and conventional banks and managed by their central banks.

Further, the impact of monetary policy tightening is investigated in line with Kashyap and Stein (1995 and 2000) who have developed a new approach by studying the impact of monetary transmission mechanism on microeconomic panel data for individual banks balance sheets against every insured U.S. commercial bank from 1976 to 1993.

5.2.2 Sources of Data

A set of panel data on the bank-specific and macro-economic variables, is selected from financial statements of commercial banks, the publications of central banks; Bank Negara Malaysia (BNM)¹ and State Bank of Pakistan (SBP)², World Development Index (WDI)³, The International Financial Statistics (IFS) of IMF⁴, and Orbis Bank Focus (Bankscope); a service from BREAU VAN DIJK- A Moody's Analytics Company⁵. Although, some data of conventional banks of both countries is taken from Thomson Reuters Datastream⁶.

5.2.3 Fundamental Differences in Accounting Heads

There are some fundamental differences in accounting treatment of conventional versus Islamic banks in financial statements. Especially, Islamic branches of conventional banks are dealt in annexures of financial statements with the title of “Islamic Banking Business” as essential requirement of regulator; the central bank. These annexures consist all of basic heads of the business of Islamic banking enabling the users to select their concerned data for Islamic banking and financial products.

In conventional banks, there is title of “Loans or Advances” for credit supply, whereas credit is supplied with title of “Islamic financing” in Islamic banks. Further, Islamic financing is decomposed into Murabha, Ijarah, Musharkah, Modarbah, Diminishing Musharkah, salam and

¹ <http://www.bnm.gov.my/>

² <http://www.sbp.org.pk/>

³ <http://data.worldbank.org>

⁴ <http://www.imf.org>

⁵ <https://www.bvdinfo.com>

⁶ <https://financial.thomsonreuters.com/en/products/tools-applications/trading-investment-tools/datastream-macroeconomic-analysis.html#insight>

Istisn'ah in balance sheet items. Technically, the depositors accounts are also different between dual-banking system. In conventional banks, there is loan contract for current and saving accounts, assigning a relationship of lenders and borrowers for depositors and banks, respectively. On the other hand, Islamic banks deal current account on loan basis similar to conventional counterpart at zero interest rate, whereas, saving accounts are titled with "Investment accounts" in Islamic banks based on "Modarbah" contract. In data collection, a researcher should be careful about saving account and investment account with their foundation contract of loan and Modarbah for conventional and Islamic banks, respectively. A latest version of stylized balance sheet of Islamic banks is available in Annexure 1 and Annexure 2 for Pakistan and Annexure 5 and Annexure 6 for Malaysia.

Similarly, items of income loss statements are also dealt differently in conventional versus Islamic banks. First "Profit / return earned on financings, investments and placements" is gross income as starting point of the balance sheet of Islamic banks, then "Return on deposits and other dues expensed" is negated to get "Net spread earned". Further, in second portion provisions are subtracted from this spread. In third phase, there are other sources of income to be added into income passed on from second step. These sources are fee, commission, brokerage income, dividend income, income from dealing in foreign currencies, capital gain on sale of securities, unrealised gain / (loss) on revaluation of investments classified as held for trading. In forth phase, other expenses; administrative expenses, other provisions / write offs and other charges are entertained. Finally, tax is deducted from income and accounts are settled among shareholders.

In financial statements of Islamic banks, there is required an additional statement of sources and uses of charity fund. In Islamic banks, a self-imposed penalty is an essential document for customer, if he/she does not meet the instalment criteria of a contract. This amount is credited in charity account and spent on deserving specified heads of spending. So, a there is statement

of sources and uses of charity fund is issued along with other financial statements. Conceptually, financial penalty cannot be charged as income of Islamic banks in Islamic financial law. On other edge, conventional banks deal it as income in their statement of income-loss accounts. At bottom line, these both sectors have managed credit and default risk in separate ways of accounting treatment.

5.2.4 Data on Monetary Policy Variables

In line with Caporale, Çatık, Helmi, Ali, and Tajik (2016), and Ibrahim (2017) in Malaysia, Hanif and Khan (2012) in Pakistan, Nguyen, Vu, and Vu (2016) in Vietnam, Amarasekara (2009) in Srilanka and Schmitz (2003) in European Countries, Jiménez, Ongena, Peydró, and Saurina (2012) in Spain, Gómez-González, Kutan, Ojeda-Joya and Ortiz (2016) in Colombia, and Sun, Gan Hu (2010) in China, we have selected the interbank offered interest rate as measures of monetary policy to analyze the impact of monetary policy tightening on banks' credit supply in Pakistan and Malaysia.

Table 5.1. Interbank Interest Rate as Monetary Policy Measures		
	Pakistan	Malaysia
Years	Interbank Interest Rate	Interbank Interest Rate
2005	9.58	3.378
2006	11	3.499
2007	10.43	3.537
2008	16.11	3.492
2009	12.8	2.126
2010	14.12	2.48
2011	12.34	2.909
2012	9.75	3.003
2013	10.48	3.005
2014	9.9	3.127
2015	6.79	3.251
2016	6.76	3.11
	Source: State Bank of Pakistan	Source: Bank Negara Malaysia

Interbank offered interest rate affects the long-term interest rates in market. Specifically,

KIBOR (Karachi Interbank Offered Interest Rate) in Pakistan provides benchmark that determines the borrowing cost for consumers and businesses affecting the decisions of public to consume, save, or invest. Like, In Malaysian market interbank offered interest rate works as monetary policy measure. Low interest rates lead households to save less and consume more out of their income. Generally, because of low interest rate firms do more investment and hire more workers, which affects income positively through increases in output. In contrast to this, households save more and consume less to get the benefits of high interest rates. Similarly, investors' demand for funds decreases in case of high interest rate, making overall economic activity slowdown. The concerned data of monetary policy rates is collected from official websites of the central banks; BNM for Malaysia and SBP for Pakistan.

5.3 Variables Construction

In Table 5.3, we have described the credit supply of banks as dependent variable, the monetary policy indicators, bank-specific variables and the macroeconomic conditions as independent variables. To examine the existence of credit view of monetary policy and different responses of Islamic and conventional banks' credit supply, we consider several bank-specific, macroeconomic variables as control variables and alternative measures of monetary policy. Similarly, the rationale of selection of these variables is discussed in detail.

5.3.1 Credit Supply of Banks: Dependent Variable

The credit view focuses the role of financial assets and liabilities in transmission of monetary policy. The credit view explains that macroeconomic models are required to be distinguished among different nonmonetary assets from perspective of bank *versus* non-bank sources of funds or internal *versus* external financing. Further, it also highlights the differential impact of any change in credit conditions on responses of borrowers.

Table 5.2: Description of Variables

	Variables	Description	Sources
Dependent Variable	Conventional Banks' Credit Supply	Ratio of gross loans to total assets (In case of conventional banks)	Financial Statements of Banks
	Islamic Banks' Credit Supply	Ratio of financing to total assets (In case of Islamic banks)	Financial Statements of Banks
Monetary Policy Measure	Interbank Offered Interest Rate	Interbank offered interest rate as the monetary policy instrument to influence bank loans	SBP and BNM
Bank-Specific Variables	Bank size	Log of total asset	Financial Statements of Banks
	Liquidity	Cash + cashequivalent / total assets	Financial Statements of Banks
	Capital	(Total shareholderequity/total assets) $\times 100$	Financial Statements of Banks
	Coverage ratio	(EBIT/InterestExpanse) $\times 100$	Financial Statements of Banks
	Credit risk	Ratio of classifiedloans to totalloans	Financial Statements of Banks
	Profitability	(Profit after tax/total assets) $\times 100$	Financial Statements of Banks
	Debt to equity ratio	Debt/Equity Ratio is a debt ratio used to measure a company's financial leverage, calculated by dividing a company's total liabilities by its stockholders' equity.	Financial Statements of Banks
Macroeconomic Conditions	GDP Growth	$\frac{GDP_t - GDP_{t-1}}{GDP_{t-1}} \times 100$	SBP and BNM
	Inflation	As provide by SBP for Pakistan and BNM for Malaysia	SBP and BNM

In Table 5.2, we begin with bank credit supply as dependent variable: the ratio of gross loans to total assets for conventional banks and the ratio of financing to total asset for Islamic banks. The banks' credit supply is defined as the ratio of gross loans to total assets in case of conventional banks and as financing to total assets according to the financial statements of Islamic banks in line with Akhatova, Zainal, and Ibrahim (2016) in Malaysia and Shah and

Rashid (2019) in Pakistan. The bank-lending channel of monetary policy works through the response of credit supply to the indicators of monetary policy such as interest rates and other policy instruments. Therefore, the credit channel of monetary policy transmission can also be said an enhancement mechanism to the interest rate channel. Bernanke and Blinder (1988) are the first who laid down the foundation for the roles of banks in monetary policy transmission. Bernanke and Blinder (1992), Kashyap and Stein (2000), and Kishan and Opiela (2000) have confirmed the presence of lending channel in the United States. More recently, Zulkhibri, and Sukmana (2017) in Indonesia, Shah and Rashid (2019), Rafay and Farid (2019), Zaheer, Ongena, and Wijnbergen (2013) in Pakistan, Cevik, and Charap (2011) and Cevik and Teksoz (2012) in GCC and Akhatova, Zainal and Ibrahim (2016), Stepanchuk and Tsyrennikov (2015) in Malaysia, have verified the credit channel of Islamic banks empirically.

5.3.2 Monetary Policy Measures

In Table 5.3, the monetary policy measure: the interbank offered interest rate is used in line with Caporale, Çatık, Helmi, Ali, and Tajik (2016), and Ibrahim (2017) in Malaysia, Hanif and Khan (2012) in Pakistan, Nguyen, Vu, and Vu (2016) in Vietnam, Amarasekara (2009) in Sri Lanka and Schmitz (2003) in European Countries, Gómez-González, Kutan, Ojeda-Joya and Ortiz (2016) in Colombia, and Sun, Gan Hu (2010) in China, to analyze the impact of monetary policy tightening on banks' credit supply in Pakistan and Malaysia.

The decline of credit supply of banks due to an increase in policy interest rate implies the existence of bank centric view of monetary policy transmission mechanism (Pruteanu, 2004; Alper, Hulagu and Keles, 2012; Sukmana and Kasim, 2010). In our baseline model, we examine the direct effect of monetary policy measure, whereas, in the extended models, we interact this measure with dummy variable of Islamic and conventional banks to examine the

differences between Islamic *versus* conventional banks in terms of their response to monetary tightening. Further, the impacts of monetary policy measure on banks' credit supply is also examined on basis of size and liquidity. Moreover, we explore the models to observe the impact of monetary policy tightening on conventional and Islamic banks on basis of size and liquidity for Pakistan and Malaysia (State Bank of Pakistan, 2013; Bank Negara Malaysia, 2017).

5.3.3 Banks' Characteristics

In Table 5.2, unique characteristics of the banks; bank size, liquidity, capital, coverage ratio, credit risk, profitability, debt to equity ratio are elaborated in accordance with existing literature to explain the credit channel of banks. We have selected the banks' size because it appeared as potential variable explaining the credit supply of banks (Gambacorta and Shin (2016); Alper, Hulagu and Keles (2012); Janjua, Rashid and Qurrat-Ul-Ain (2014); Köhler, Hommel and Grote (2006); Pruteanu (2004); Schmitz (2004)). Banks' liquidity is another bank specific variable to explain the variation of credit supply of banks in line with Olmo, Azofra and Sáiz (2018), Alper Hulagu and Keles (2012), Hasin and Majid (2012), Köhler, Hommel and Grote (2006) and Schmitz (2004). On same pattern, Gambacorta and Shin (2016), Moussa and Chedia (2016), Labonne and Lame (2014), Bertrand and Edge (2010), Schmitz (2004), Ehrmann, Gambacorta, Martinez-Pagés, Sevestre and Worms (2003), and Bernanke and Lown, (1991) have explored the banks' capital as an important variable to determine the credit supply of banks. As an important factor, the coverage ratio accepts the immediate impact of tightening the monetary policy on financial position of banks (see, for example, Kaleem and Isa (2006), Sanrego and Nikmawati (2010), Alaro and Hakeem (2011), Alper Hulagu and Keles (2012) and Abedin and Dawan (2016)).

In empirical investigation of credit supply, Pruteanu (2004), Foos, Norden and Weber (2010), Pouvelle (2012), and Skala (2012) have considered the credit risk closely related to credit

issuance of banks. Further, Pouvelle (2012) has defined the credit risk as the non-performing loans (NPL) to total loans ratio and it is adopted as a proxy against the internal measure of risk of financial institutions. Banks' profitability is found positively and statistically significant in relationship with banks' credit supply (Sharpe, 1995; Amandeep, 1999; De Young, Gron, and Winton, 2005; Bech and Malkhov, 2016; Abedin and Dawan, 2016).

On the empirical basis, the impact of debt to equity ratio on credit supply of banks is also explored by Sanrego and Nikmawati (2010), Pouvelle (2012) and Janjua, Rashid, and Qurrat-Ul-Ain (2014). Further, Pouvelle (2012) has indicated the banks' management is more likely to restore their profitability and solvency in case of high leverage ratio, instead of issuing more credit to the industry. These bank specific variables are the unique characteristics of banks that help in explaining the fluctuations of credit supply of banks. In line with the existing empirical literature, we have selected these variables to examine the existence of banks' centric view of monetary policy.

5.3.4 Macroeconomic Conditions

The role of macroeconomic conditions GDP growth and inflation in explaining the credit supply of banks is found in line with existing empirical literature. Hussain (2009), Pouvelle (2012), Gourio, Kashyap, and Sim (2018), Svensson (2016) and Aikman, Lehnert, Liang, and Modugno (2017) have noted the GDP growth plays a vital role to determine the credit issuance. Similarly, Hussain (2009), Alper, Hulagu, and Keles (2012), Evans, Fisher, Gourio, and Kran (2015), Gomes, Jermann, and Schmid (2016), Ozdagli, and Perez-Orive (2017) have found a significant impact of inflation on the banks' lending to economy. In addition, Pruteanu-Podpiera (2007) has explored the impact of monetary policy indicators, GDP and inflation on total loans of the banking sector of Czech banks over 1996 to 2001.

5.4 Models Specifications

Our dissertation is mainly focussing the credit channel because it highlights the role of banking sector in monetary policy transmission mechanism by concentrating on the lending channel of banks and the balance sheet channel of banks (Kashyab and Stein, 1994; Bernanke and Gertler, 1995). Although, Bernanke, and Blinder (1988), Gertler and Gilchrist (1993), Bernanke and Mark (1995), Domac and Giovanni (1998), Garretsen and Swank (1998), Guender (1998), Suzuki (2001), Evans, Fisher, Gourio, and Kran (2015), Jermann, and Schmid (2016), Ekimova, Kolmakov, and Polyakova (2017), Olmo, Azofra, and Sáiz (2018), Shah and Rashid (2019), and Rafay and Farid (2019) have explored the banks' centric view of monetary policy and they have analyzed the importance of the banking sector in the monetary policy transmission mechanism and impact of disturbances in the banking sector on the aggregate economic activity. Further, we deal with different models to explore the impact of monetary policy on credit supply of banks with some additional specifications. First, the baseline model is estimated to examine the impact of tight monetary policy on credit supply of banks through bank specific variables and macroeconomic conditions in Eq. (5.1) for Pakistan and Malaysia sparingly.

The baseline model is extended to explore the differential impact of tight monetary policy on Islamic *versus* conventional banks' credit supply in Eq. (5.2) for Pakistan and Malaysia in line with Shah and Rashid (2019), Akhatova, Zainal, and Ibrahim (2016) and Shah, Rashid, and Mansoori (2018). Further, we examine the differential impact of tight monetary policy on credit supply of banks on basis of size in Eq. (5.3) for Pakistan and Malaysia in line with Kashyab and Stein (1995), Kashyap and Stein (2000), Kishan and Opiela (2000), Pruteanu (2004) and Janjua, Rashid, and Qurrat-Ul-Ain (2014). In next step, we have observed the impact of monetary policy tightening on Islamic *versus* conventional banks on basis of size in Eq. (5.4) for Pakistan and Malaysia sparingly. Furthermore, Further, we examine the differential

impact of tight monetary policy on credit supply of banks on basis of liquidity in Eq. (5.5) for Pakistan and Malaysia in line with Kashyab and Stein (1997), Kashyap and Stein (2000), Köhler, Hommel and Grote (2006), Alper, Hulagu and Keles (2012) and Malede (2014). Furthermore, we have observed the impact of monetary policy indicators on Islamic versus conventional banks on basis of liquidity in Eq. (5.6) for Pakistan and Malaysia one by one.

5.4.1 Impact of Tight Monetary Policy on Banks' Credit Supply of Pakistan and Malaysia

The baseline model is estimated to examine the impact of monetary policy on the credit supply of banks in Eq. (5.1). Our first baseline model takes the following form.

$$Y_{it} = \beta_i + X_{it}\alpha + Z_t\theta + \rho M_t + \mu_t + \varepsilon_{it} \quad Eq. (5.1)$$

We can define the variables of the baseline model as Y_{it} is the banks' credit supply; a dependent variable. The banks' credit supply is defined in Table 5.2 for conventional banks and for Islamic banks. In model, “ i ” denotes the individual banks' dimension and “ t ” represents the time dimension. The intercept “ β_i ” expresses the individual-specific effects and “ μ_t ” indicates the year-specific fixed effects. The error term in the model is denoted by “ ε_{it} ”.

In Eq. (5.1), the X_{it} is a vector of observable characteristics of bank “ i ” at time “ t ”. In particular, we include characteristics of bank defined in Table 5.2. Next, the Z_t is a vector of macroeconomic conditions; the GDP growth and inflation is added to consider the effects of macroeconomic conditions on the banks' credit supply. The M_t is a vector of the proxies of the monetary policy measures defined in Table 5.2. The coefficients α , θ , and ρ are representing the responsiveness of banks' credit supply to each unit change in the vector of the characteristics of banks, in the vector of the macroeconomic conditions and in the vector of the monetary policy measures, respectively.

5.4.2 Impact of Tight Monetary Policy on Islamic *versus* Conventional Banks' Credit Supply

In Eq. (5.2), we augment the baseline model by including the Islamic banking dummy and conventional banking dummy into the specification. Specifically, we interact the both dummies with the monetary policy indicators to examine the differential response of Islamic and conventional banks. Finally, we expand our empirical model by incorporating interaction terms to ascertain the effects of monetary policy indicators on credit supply of Islamic versus conventional banks. The augmented model enables us to examine the differential impact of alternative monetary policy measures on credit supply of Islamic versus conventional banks.

$$Y_{it} = \beta_i + X_{it}\alpha + Z_t\theta + \rho_1 M_t \times D_i^{IB} + \rho_2 M_t \times D_i^{CB} + \mu_t + \varepsilon_{it} \quad Eq. (5.2)$$

We can define the elements of the augmented model as Y_{it} is the banks' credit supply; a dependent variable. The banks' credit supply is elaborated in Table 5.2 for conventional banks and for Islamic banks. In model, "i" denotes the individual banks' dimension and "t" represents the time dimension. The intercept " β_i " expresses the individual-specific effects and " μ_t " indicates the year-specific fixed effects. The error term in the model is presented by " ε_{it} ".

In Eq. (5.2), the X_{it} is a vector of observable characteristics of bank "i" at time "t". In particular, we have defined the characteristics of banks in Table 5.2. Next, the Z_t is a vector of macroeconomic conditions; the GDP growth and inflation is added to consider the effects of macroeconomic conditions on the banks' credit supply.

The $(M_t \times D_i^{IB})$ is the interaction term between dummy of Islamic banks and monetary policy indicators; where M_t is a vector of the proxies of the monetary policy measures in interaction with Islamic banks. Similarly, the $(M_t \times D_i^{CB})$ is the interaction term between dummy of conventional banks and monetary policy indicators; where M_t is a vector of the proxies of the monetary policy measures like lending rate, deposit rate, and the interest rate spread in

interaction with conventional banks. The α and θ are the coefficients, representing the responsiveness of banks' credit supply to each unit change in the vector of the characteristics of banks and in the vector of the macroeconomic conditions, whereas ρ_1 and ρ_2 measure the credit supply of Islamic banks *versus* conventional banks due to one unit change in the vector of the interaction term of monetary policy alternate measures with Islamic banks and due to one unit change in the vector of the interaction term of monetary policy alternate measures with large banks, respectively. If ρ_1 is found greater than ρ_2 , it implies that Islamic banks are affected more due to monetary policy actions. The vice versa indicates that monetary measures affect conventional banks more as compared to Islamic banks.

Estimation of this augmented model of Eq. (5.2), enables us to examine whether Islamic banks' credit supply and conventional banks' credit supply counterparts respond differently to changes in the monetary policy measures. To examine such effects, we augment the model presented in Eq. (5.2) by including interaction terms, namely, Islamic banks' dummy and conventional banks' dummy. Similarly, we can say: D_i^{IB} is a dummy variable for Islamic banks. Specifically, D_i^{IB} will take value 1 for i^{th} Islamic banks in year t, if monetary policy affects them, and zero otherwise. Similarly, D_i^{CB} is a dummy variable for conventional banks. Specifically, D_i^{CB} will take value 1 for i^{th} conventional banks, if monetary policy affects them, and zero otherwise. In short, the augmented model (5.2) enables us to examine the differential impact of monetary policy measures on credit supply of Islamic banks *versus* conventional banks.

5.4.3 Impact of Tight Monetary Policy on Banks' Credit Supply on Basis of Size

The baseline model is extended through adding the small-sized banks dummy and large-sized banks dummy into the specification. Specifically, we interact the both dummies with the monetary policy indicators to examine the differential response of banks across their size on

the basis of their assets in Eq. (5.3). Finally, the augmented model enables us to examine the differential impact of alternative monetary policy measures on credit supply of small versus large banks across the banks' size.

$$Y_{it} = \beta_i + X_{it}\alpha + Z_t\theta + \rho_1 M_t \times D_i^{small} + \rho_2 M_t \times D_i^{large} + \mu_t + \varepsilon_{it} \quad Eq. (5.3)$$

We can define the elements of the augmented model as Y_{it} is the banks' credit supply; a dependent variable. In model, " i " denotes the individual banks' dimension and " t " represents the time dimension. The intercept " β_i " expresses the individual-specific effects and " μ_t " indicates the year-specific fixed effects. The error term in the model is presented by " ε_{it} ".

In Eq. (5.3), the X_{it} is a vector of observable characteristics of bank " i " at time " t " defined in Table 5.2. Next, the Z_t is a vector of macroeconomic conditions; the GDP growth and inflation is added to consider the effects of macroeconomic conditions on the banks' credit supply.

The $(M_t \times D_i^{small})$ is the interaction term between dummy of small banks and monetary policy indicators; where M_t is a vector of the proxies of the monetary policy measures in interaction with small banks. Similarly, the $(M_t \times D_i^{large})$ is the interaction term between dummy of large banks and monetary policy indicators; where M_t is a vector of the proxies of the monetary policy measures in interaction with large banks. The α and θ are the coefficients, representing the responsiveness of banks' credit supply to each unit change in the vector of the characteristics of banks and in the vector of the macroeconomic conditions, whereas ρ_1 and ρ_2 measure the credit supply of small-sized banks *versus* large-sized banks due to one unit change in the vector of the interaction term of monetary policy indicators with small banks and due to one unit change in the vector of the integration term of monetary policy indicators with large banks, respectively. If ρ_1 is found greater than ρ_2 , it implies that small banks are affected

more due to monetary policy actions. The vice versa indicates that monetary measures affect large banks more as compared to small banks.

Estimation of this augmented model of Eq. (5.3) enables us to examine whether small banks' credit supply and large banks' credit supply counterparts respond differently to changes in the monetary policy measures. To examine such effects, we augment the model presented in Eq. (5.3) by including interaction terms, namely, small banks' dummy and large banks' dummy. Similarly, we can say that D_i^{small} is small-sized bank's dummy variable. The D_i^{small} is equal to 1 for i^{th} bank, if the assets of a specific bank are compared and found less than that of all banks, and zero would be assigned otherwise. Similarly, D_i^{large} is a dummy variable for large-sized bank. Specifically, D_i^{large} is equal to 1 for i^{th} bank, if the assets of a specific bank are compared and found less than that of all banks, and zero would be assigned otherwise. Summing up the discussion, the augmented model (5.3) enables us to examine the differential impact of alternative monetary policy measures on credit supply of small-sized banks *versus* large-sized bank.

5.4.4 Impact of Tight Monetary Policy on Islamic *versus* Conventional Banks' Credit Supply on Basis of Size

The baseline model is extended through adding the small Islamic banks dummy, the large Islamic banks dummy, the small conventional banks dummy and the large conventional banks dummy into the specification. Specifically, we interact the four dummies with the monetary policy indicators to examine the differential responses of Islamic *versus* conventional banks' credit supply on basis of size in Eq. (5.4). Finally, we expand our empirical model by incorporating interaction terms to ascertain the effects of monetary policy indicators on credit supply of Islamic *versus* conventional banks' credit supply on basis of size. Thus, our extended model (5.4) is specified as follows:

$$Y_{it} = \beta_i + X_{it}\alpha + Z_t\theta + \rho_1 M_t \times D_i^{SIB} + \rho_2 M_t \times D_i^{LIB} + \rho_3 M_t \times D_i^{SCB} + \rho_4 M_t \times D_i^{LCB} + \mu_t + \varepsilon_{it} \quad Eq.(5.4)$$

In Eq. (5.4), Y_{it} is the banks' credit supply; a dependent variable. In model, "i" denotes the individual banks' dimension and "t" represents the time dimension. The intercept " β_i " expresses the individual-specific effects and " μ_t " indicates the year-specific fixed effects. The error term in the model is presented by " ε_{it} ".

In Eq. (5.4), the X_{it} is a vector of observable characteristics of bank "i" at time "t". Next, the Z_t is a vector of macroeconomic conditions; the GDP growth and inflation is added to consider the effects of macroeconomic conditions on the banks' credit supply.

The $(M_t \times D_i^{SIB})$ is the interaction term between dummy of small-sized Islamic banks and monetary policy indicators; where M_t is a vector of the proxies of the monetary policy measures. Similarly, the $(M_t \times D_i^{LIB})$ is the interaction term between dummy of large-sized Islamic banks and monetary policy indicators; where M_t is a vector of the proxies of the monetary policy measures in interaction with large banks. The $(M_t \times D_i^{SCB})$ is the interaction term between dummy of small-sized conventional banks and monetary policy indicators; where M_t is a vector of the proxies of the monetary policy measures. Similarly, the $(M_t \times D_i^{LCB})$ is the interaction term between dummy of large-sized conventional banks and monetary policy indicators; where M_t is a vector of the proxies of the monetary policy measures.

The coefficients α and θ are representing the responsiveness of banks' credit supply to each unit change in the vector of the characteristics of banks and in the vector of the macroeconomic conditions. The ρ_1 and ρ_2 are the coefficients to express the differential impacts of monetary policy alternate measures on small-sized Islamic banks *versus* large-sized Islamic banks, whereas the coefficients of ρ_3 and ρ_4 represent the different responses of small-sized conventional banks *versus* large-sized conventional banks to alternate measures of monetary

policy. Similarly, we can say that D_i^{SIB} is a dummy variable for small-sized Islamic bank, D_i^{SIB} is found equal to 1 for i^{th} bank, if the Islamic bank is small, and zero otherwise. Likewise, D_i^{LIB} is a dummy variable for large-sized Islamic bank, D_i^{LIB} is found equal to 1 for i^{th} bank, if the Islamic bank is large, and zero otherwise. Further, D_i^{SCB} is a dummy variable for small-sized conventional bank. D_i^{SCB} is found equal to 1 for i^{th} bank, if the conventional bank is small, and zero otherwise. Furthermore, D_i^{LCB} is a dummy variable for large-sized conventional bank., D_i^{LCB} is found equal to 1 for i^{th} bank, if the conventional bank is large, and zero otherwise. In nutshell, the augmented model enables us to examine the differential impact of alternative monetary policy measures on credit supply of Islamic versus conventional banks across the banks' size.

5.4.5 Impact of Tight Monetary Policy on Banks on Basis of Liquidity

The baseline model is extended through adding the less-liquid banks dummy and the more-liquid banks dummy into the specification. Specifically, we interact the both dummies with the monetary policy indicators to examine the differential response of banks across their stock of liquidity in Eq. (5.5). Finally, the augmented model enables us to examine the differential impact of monetary policy measures on credit supply of less-liquid banks *versus* more-liquid banks.

$$Y_{it} = \beta_i + X_{it}\alpha + Z_t\theta + \rho_1 M_t \times D_i^{LL} + \rho_2 M_t \times D_i^{ML} + \mu_t + \varepsilon_{it} \quad Eq. (5.5)$$

We can define the elements of the augmented model as Y_{it} is the banks' credit supply; a dependent variable. The banks' credit supply is defined as the ratio of gross loans to total assets for conventional banks and the ratio of financing to total asset for Islamic banks. In model, "i" denotes the individual banks' dimension and "t" represents the time dimension. The intercept " β_i " expresses the individual-specific effects and " μ_t " indicates the year-specific fixed effects.

The error term in the model is presented by " ε_{it} ".

In Eq. (5.5), the X_{it} is a vector of observable characteristics of bank "i" at time "t". Next, the Z_t is a vector of macroeconomic conditions; the GDP growth and inflation is added to consider the effects of macroeconomic conditions on the banks' credit supply.

The $(M_t \times D_i^{LL})$ is the interaction term between dummy of less-liquid banks and monetary policy indicators; where M_t is a vector of the proxies of the monetary policy measures in interaction with less-liquid banks. Similarly, the $(M_t \times D_i^{ML})$ is the interaction term between dummy of more-liquid banks and monetary policy indicators, where M_t is a vector of the proxies of the monetary policy measures in interaction with large banks. The α and θ are the coefficients, representing the responsiveness of banks' credit supply to each unit change in the vector of the characteristics of banks and in the vector of the macroeconomic conditions, whereas ρ_1 and ρ_2 measure the credit supply of less-liquid banks *versus* more-liquid banks due to one unit change in the vector of the interaction term of monetary policy indicators with less-liquid banks and due to one unit change in the vector of the interaction term of monetary policy indicators with more-liquid, respectively. If ρ_1 is found greater than ρ_2 , it implies that less liquid banks are affected more due to monetary policy actions. The vice versa indicates that monetary measures affect more liquid banks more as compared to less liquid banks.

Estimation of this augmented model of Eq. (5.5) enables us to examine whether less-liquid banks' credit supply and large banks' credit supply counterparts respond differently to changes in the monetary policy measures. To examine such effects, we augment the model presented in Eq. (4.1) by including interaction terms, namely, less-liquid banks' dummy and large banks' dummy. Similarly, we can say that D_i^{LL} is a dummy variable for less-liquid bank. Specifically, D_i^{LL} is found equal to 1 for i^{th} bank, if the bank is less liquid, and zero otherwise. Likewise, D_i^{ML} is a dummy variable for more-liquid bank. Specifically, D_i^{ML} is found equal to 1 for i^{th} bank, if the bank is more liquid, and zero otherwise. Overall, the augmented model (5.5) help

us to evaluate the differential impact of monetary policy measures on credit supply of less liquid banks *versus* more liquid banks.

5.4.6 Impact of Monetary Policy on Islamic *versus* Conventional Banks' Credit Supply on Basis of Liquidity

The baseline model is extended through adding the less-liquid Islamic banks dummy, the more-liquid Islamic banks dummy, the less-liquid conventional banks dummy and the more-liquid conventional banks dummy into the specification. Specifically, we interact the four dummies with the monetary policy indicators to examine the differential responses of Islamic versus conventional banks' credit supply on basis of the stock of liquidity in Eq. (5.6). Finally, we expand our empirical model by incorporating interaction terms to ascertain the effects of monetary policy indicators on credit supply of Islamic versus conventional banks' credit supply on basis of liquidity. Thus, our augmented model (5.6) is specified as under:

$$Y_{it} = \beta_i + X_{it}\alpha + Z_t\theta + \rho_1 M_t \times D_i^{LLIB} + \rho_2 M_t \times D_i^{MLIB} + \rho_3 M_t \times D_i^{LLCB} + \rho_4 M_t \times D_i^{MLCB} + \mu_t + \varepsilon_{it} \quad Eq. (5.6)$$

In Eq. (5.6), Y_{it} is the banks' credit supply; a dependent variable. In model, " i " denotes the individual banks' dimension and " t " represents the time dimension. The intercept " β_i " expresses the individual-specific effects and " μ_t " indicates the year-specific fixed effects. The error term in the model is presented by " ε_{it} ".

In Eq. (5.6), the X_{it} is a vector of observable characteristics of bank " i " at time " t ". Next, the Z_t is a vector of macroeconomic conditions; the GDP growth and inflation is added to consider the effects of macroeconomic conditions on the banks' credit supply.

The $(M_t \times D_i^{LLIB})$ is the interaction term between dummy of less-liquid Islamic banks and monetary policy indicators; where M_t is a proxy of the monetary policy measure. Similarly, the $(M_t \times D_i^{MLIB})$ is the interaction term between dummy of more-liquid Islamic banks and

monetary policy indicator; where M_t is a proxy of the monetary policy measure in interaction with large banks. The $(M_t \times D_i^{LLCB})$ is the interaction term between dummy of less-liquid conventional banks and monetary policy indicator; where M_t is the proxy of the monetary policy measure. Similarly, the $(M_t \times D_i^{MLCB})$ is the interaction term between dummy of more-liquid conventional banks and monetary policy indicator; where M_t is the proxy of the monetary policy measure.

The coefficients α and θ are representing the responsiveness of banks' credit supply to each unit change in the vector of the characteristics of banks and in the vector of the macroeconomic conditions. The ρ_1 and ρ_2 are the coefficients to express the differential impacts of monetary policy alternate measures on less-liquid Islamic banks versus more-liquid Islamic banks, whereas the coefficients of ρ_3 and ρ_4 represent the different responses of less-liquid conventional banks versus more-liquid conventional banks to alternate measures of monetary policy. Similarly, we can say that D_i^{MLIB} is a dummy variable for more-liquid Islamic bank. D_i^{ML} will take the value equal to 1 for i^{th} bank, if the Islamic bank is more-liquid, and zero otherwise. Likewise, D_i^{LLIB} is a dummy variable for less-liquid Islamic bank. Specifically, D_i^{LL} will take the value equal to 1 for i^{th} bank, if the Islamic bank is less-liquid, and zero otherwise. Further, D_i^{MLCB} is a dummy variable for more-liquid conventional bank. D_i^{MLCB} will take the value equal to 1 for i^{th} bank, if the conventional bank is more-liquid, and zero otherwise. Furthermore, D_i^{LLCB} is a dummy variable for less-liquid conventional bank. D_i^{LLCB} will take the value equal to 1 for i^{th} bank, if the conventional bank is less-liquid, and zero otherwise. In summary, the augmented model (5.6) help us to evaluate the differential impact of monetary policy measures on credit supply of Islamic *versus* conventional banks across the banks' liquidity for Pakistan and Malaysia.

5.5 Estimation Methods: The Generalize Method of Moments (GMM) Estimator

The Generalized Method of Moments (GMM) is a generic method for estimating parameters in econometric models. The GMM estimator forwards accurate solutions to the diversified econometric problems. It also fulfills complete the linear moment conditions which are specified by different econometric models to estimate the equations. The GMM estimator was initially developed by Arellano-Bond (1991) and fully designed by Arellano-Bover (1995)/ Blundell-Bond (1998). This estimator is a dynamic panel data estimator, recently emerged as the most popular panel data estimator among the researchers and it is being used in the empirical literature because of its several advantages over other panel data estimators. In addition, Blundell and Bond (1998) have noted that the GMM estimators are robust with respect to non-normality of the dependent variable defined in an econometric model. Further, they have suggested that the finite sample bias can be managed by adding lagged first difference and lagged levels instruments as well, in the instrument set. This method improves the performance of the model by negating the finite sample bias. Moreover, the system-GMM technique controls for individual heterogeneity in a handful way. The system-GMM retains variations among firms because it estimates the model in levels and at first differences as well. Furthermore, this technique utilizes differenced lagged regressors as instruments for level equations. Furthermore, the GMM estimator avails some extra instruments during estimation of econometric models.

We apply the robust two-step system-the Generalize Method of Moments (GMM) estimator to explore the banks' centric view of monetary policy. Through GMM estimator, we have analyzed the importance of the banking sector in the monetary policy transmission mechanism. Further, we deal with different models to explore the impact of monetary policy on credit supply of banks with some additional specifications. First, the baseline model is estimated to

examine the impact of monetary policy on credit supply of banks through bank specific variables and macroeconomic conditions in Eq. 5.1 for Pakistan and Malaysia through the robust two-step system-the GMM estimator. The baseline model is extended to explore the differential impact of tight monetary policy on Islamic *versus* conventional banks' credit supply in Eq. 5.2 for Pakistan and Malaysia. Further, we examine the differential impact of monetary policy tightening on credit supply of banks on basis of size in Eq. 5.3 for Pakistan and Malaysia. In very next step, we have observed the impact of tight monetary policy indicators on Islamic versus conventional banks on basis of size in Eq. 5.4 for Pakistan and Malaysia. Furthermore, we examine the differential impact of monetary policy on credit supply of banks on basis of liquidity in Eq. 5.5 for Pakistan and Malaysia. In very next step, we have observed the impact of monetary policy indicators on Islamic versus conventional banks on basis of liquidity in Eq. 5.6 for Pakistan and Malaysia through the robust two-step system-the GMM estimator.

There are sound rationalities to use the robust two-step system-the Generalized Method of Moments (GMM) estimator for econometric analysis. Specifically, it effectively mitigates the problem of endogeneity and cross-sectional correlation by allowing the researchers to use both level and first difference instruments. The Arellano and Bond (1991) AR (2) is applied to test the existence of the second order serial correlation in the residuals. Further, the null hypothesis of the instruments is also tested through the J-test of Hansen (1982) whether these are orthogonal to the residuals or not.

The system-GMM estimator is preferred to many other estimators in modern econometric estimating techniques. Although, some questions are raised about to utilize the system-GMM approach. Generally, it is assumed that the two-step system-GMM estimation is more reliable in producing the efficient empirical results than the estimates of the one-step estimation on

econometric models. In fact, none can say surely about the preference the former estimator on later one. Similarly, there is not well-developed mechanism to select the set of optimal instruments. Further, the excessive use of these type of instruments in regression analysis, may push a researcher to face the problem of "many instruments". Likewise, the same problem may be more disturbing if a very limited size of sample is selected for analysis. To meet with this type of problem, we have used the J-test of Hansen (1982). It observes overidentified restrictions to ensure the validity of the instruments that are borrowed to estimate our estimation models. However, these instruments are considered valid only when their residuals do not reflect the second-order serial correlation. Although, the first-order serial correlation is possible to occur because the models of study have the dynamic contexts. Similarly, the residuals should also be ensured through the test for autocorrelation, that the second-order serial correlation is not found in the residuals. Therefore, the Arellano-Bond test for AR (2) is applied to test the serial correlation for all of the models. In short, the reliability of the system GMM estimation critically depends on whether the instruments are valid or not. Therefore, we have employed the J-test of Hansen (1982) for testing the validity of the instruments of the system GMM estimation and the Arellano-Bond AR (2) test to observe the second-order serial correlation in the residuals.

5.6 Conclusion

In this chapter, we have presented data and empirical framework of study. We have collected unbalanced panel data of banking sector for Pakistan and Malaysia on annual basis. Likewise, we have constructed the variables; the banks' credit supply as dependent variable, the monetary policy indicators, the bank specific variables and the macroeconomic conditions. We have dealt with the rationale of the selection of these specific variables. We started with baseline model for each country to observe the impact of the monetary policy indicators, the bank specific variables and the macroeconomic conditions on credit supply decisions of the banks. By

extending the baseline model, these effects are also observed after categorizing banks as Islamic and conventional banks through empirical models. Further, the impacts of monetary policy indicators on banks' credit supply is also examined on basis of size and liquidity for both countries. Moreover, we have explored the models to observe the impact of monetary policy on conventional and Islamic Banks on basis of size and liquidity.

At the end, this chapter explains the robust two-step system-the Generalize Method of Moments (GMM) estimator proposed by Arellano and Bover (1995) and then it was fully developed by Blundell and Bond (1998) to examine the impacts of monetary policy indicators on banks' credit supply. The relevance of the GMM estimator is justified for all 36 regressions to evaluate the models empirically. In sum, this research design facilitates to measure the credit channel of monetary policy the monetary policy indicators, the bank specific variables and the macroeconomic conditions on the basis of an unbalanced annual panel dataset of Pakistan and Malaysia.

In panel data, generally two approaches, fixed-effects and random-effects are availed. In order to identify one of them to have accurate estimates, we have applied the Hausman's (1978) specification. But the results of both the random effects and the alternative the fixed effects indicated to move to alternate method of Generalized Least Square Method (GLS). After regressing the models through GLS, we moved to adopt Generalized Method of Moments (GMM) estimator because the System GMM estimator effectively mitigates the problem endogeneity which is in limitations of earlier two econometric techniques. Therefore, we adopted the System GMM estimator to explore the impact of monetary policy on credit supply of banks.

6. Empirical Results

6.1 Introduction

In this chapter, the empirical results of regression analysis are interpreted in context of Pakistan and Malaysia. These models explore the impact of monetary policy on credit supply of banks with some additional specifications. First, the baseline model gauges the responses of credit supply to monetary policy indicators through bank specific variables and macroeconomic conditions. Next, a comparative differential impact of monetary policy on Islamic versus Conventional Banks is explored. Further, the empirical models define how monetary policy effect the banks on basis of size and liquidity. Specifically, these models are extended to explore the comparative different responses of Islamic versus conventional banks on basis of size and liquidity position. At last, a comparison of the effectiveness of monetary policy through credit supply between Pakistan and Malaysia is explored empirically. Overall, these models are designed to investigate credit channel of monetary policy for Pakistan and Malaysia with additional specifications and distinguish nature of banks.

6.2 Results of the Baseline Model for Pakistan and Malaysia

The results of the baseline model are presented in Table 6.1 for Pakistan and Malaysia. Panel A and Panel B present the empirical results of variables and diagnostic tests, respectively. In Panel A, the impact of interbank interest rate as monetary policy measure is observed on bank loan supply after controlling the macroeconomic indicators: the GDP growth and inflation. The monetary policy measures indicate the relationship with credit supply negative and statistically significant coefficients, supporting the presence of the centric view of monetary policy for Pakistan and Malaysia. The empirical results are consistent with the centric view of monetary policy (Kashyab and Stein, 1994). Similarly, these results are in accordance with existing literature, such as Sharpe (1995), Hasin and Majid (2012) and Janjua, Rashid, and Qurtat-Ul-Ain (2014).

In Model 1 of Table 6.1 for Pakistan, the results suggest that banks' credit supply is positively

Table 6.1. Impact of Monetary Policy on Credit Supply of Banks in Pakistan and Malaysia

Variables	Panel A. Estimation Results		Model 2. Malaysia	
	Model 1. Pakistan	SE	Model 2. Malaysia	SE
Lagged Credit Supply	0.462***	0.097	0.817***	0.038
Banks size	0.086**	0.040	0.014**	0.007
Banks Liquidity	0.648***	0.133	0.227***	0.028
Banks Capital	0.013**	0.005	0.862***	0.321
Coverage ratio	0.096	0.081	-0.098	0.162
Credit risk	-0.598***	0.095	-0.060***	0.007
Banks Profitability	0.042***	0.012	0.169***	0.009
Debt to equity ratio	0.023**	0.011	0.075***	0.010
IR. Pak	-0.078**	0.031		
IR. Mal			-0.104***	0.006
GDP Growth	0.127 ***	0.020	0.030*	0.023
Inflation	0.017***	0.005	0.019***	0.003
Constants	0.434***	0.068	0.790***	0.084
Panel B. Diagnostic Tests				
Observations	248		220	
Banks	27		21	
No. of Instruments	45		44	
AR (2)	1.39		1.35	
p-value	0.164		0.178	
J- statistic	21.53		12.47	
p-value	0.938		0.973	

Notes: The *J*-statistics test observes overidentified restrictions to ensure the validity of the instruments and distributed as chi-squared under the null of instrument validity and the Arellano-Bond AR (2) test is to observe the second-order serial correlation in the residuals. The instruments are the two to two lags [.] for model 1 in case of Pakistan and the three to four lags [.] for model 4 in case of Malaysia.

*** p<0.01, ** p<0.05, * p<0.1

and significantly related to one-period lagged credit supply. This implies that those banks hold

more credit supply (debt ratio) previously continue to supply more credit in recent days.

Inspecting the coefficients of banks' size, we have found that banks' credit supply increase significantly with an increase in bank size. This result is also consistent with the previous empirical studies that have reported the positive relationship between bank size and the credit supply of banks (Alper, Hulagu and Keles (2012); Köhler, Hommel and Grote (2006); Schmitz

(2004)). However, one should note that this result is contrary to Pruteanu (2004) and Janjua, Rashid, and Qurrat-Ul-Ain (2014), who found a negative association between bank size and credit supply. Further, Pruteanu (2004) has explained that the relationship between banks' size and credit supply of banks appears negative during tight monetary policy, and it becomes positive as expansionary monetary policy starts. Therefore, there are mixed results in empirical studies of between bank size and credit supply.

The coefficient of banks' liquidity is positive and statistically significant, suggesting that banks' liquidity affects positively the credit supply of banks. Similarly, Schmitz (2004) and Hasin and Majid (2012) have found a positive and significant relationship of banks' liquidity and loan growth, suggesting that liquid banks supply more credit to individuals and industry. Although, Olmo, Azofra, and Sáiz (2018), Alper, Hulagu, and Keles (2012) and Köhler, Hommel, and Grote (2006) have found the negative and significant association between the said variables. This empirical evidence implies that when there is more liquidity in banks, they would issue less loan to the industry and when there is shortage of liquidity stock, they will supply more credit because they are not able to absorb monetary policy shocks.

The banks' capital is positively and significantly related to the credit supply of banks. Several studies in the literature such as Gambacorta and Shin (2016), Moussa and Chedia (2016), Labonne and Lame (2014), Schmitz (2004), Bernanke and Lown, (1991) have also reported the positive relation of capital with the credit supply of banks. Further, this empirical result supports the prediction of monetarists that capitalized banks are able to absorb monetary policy shocks. This empirical evidence is contrary to Janjua, Rashid, and Qurrat-Ul-Ain (2014), Berrospide and Edge (2010), Ehrmann, Gambacorta, Martinez-Pagés, Sevestre, and Worms (2003), who have found a negative association between banks' capital and loan growth of banks

because the banks are not capitalized in better way in their samples of studies.

The coefficient of coverage ratio is positive and statistically significant, suggesting that bank with high coverage ratio increase their supply of credit. Similarly, Kaleem and Isa (2006), Sanrego and Nikmawati (2010), Alaro and Hakeem (2011) and Abedin and Dawan (2016) have found that the coefficient of coverage ratio is positive and statistically significant. In contrast to most of the previous empirical studies that show a negative association between coverage ratio and banks' credit supply because coverage ratio reflects the immediate impact of tightening the monetary policy on financial position of banks. Moreover, the coverage ratio is basically a ratio of earning before distribution of interest and taxes to interest expenses (see, for example, Janjua, Rashid, and Qurrat-Ul-Ain, 2014; Alper Hulagu and Keles, 2012).

The credit risk appears to be negatively related to banks' credit supply, suggesting that when the credit risk of a bank increases the bank become conscious in issuing loans. Similarly, Pouvelle (2012) and Pruteanu (2004) found the negative and significant relationship between said variables. Further, Pouvelle (2012) has defined the credit risk as the non-performing loans (NPL) to the total loans ratio and it is adopted as a proxy against the internal measure of risk. Its sign is found negative in relationship with banks' lending. It implies that an increase in the loan portfolio riskiness may weigh on banks' ability to resume lending. On the same pattern, Pruteanu (2004) has documented a negative association of credit risk with credit issuance of banks. He has explained that the classified loans become a basic source to increase credit risk because it is defined as the ratio of classified loans to total loans. One should note that Foos, Norden, and Weber (2010) and Skała (2012) have documented positive association between credit risk and the loan supply of banks. In addition, Skała (2012) has found that the most of existing banking literature associates loan growth with an increased credit risk. The existing empirical studies have provided evidences on the relationship between loan growth and risk because growing firms are diversifying their portfolio to manage the emerging risk that appear

mostly due to repayment problems. A possible justification that the new customers appear with low quality as compared to the existing customer base, but financial institutions accepts these new customers through charging adequate risk premiums on supplying credit to them. So, despite of growing overall risk profile of loan, credit supply is increasing in the competitive markets.

The profitability of banks is positively and significantly associated to banks' credit supply decision. Most of the previous empirical studies found a positive impact of profitability on credit growth of banks, appealing to financial approach that more profitable banks are willing to issue more credit to industry (see, for example, Sharpe, 1995; Amandeep, 1999; De Young, Gron, and Winton, 2005; Bech and Malkhov, 2016; Abedin and Dawan, 2016). Similarly, Amandeep (1999) has noted that the profitability of a firm is an essential tool to keep retain confidence of the shareholders, the long -term creditors, and the management reliability on the soundness of institution. Therefore, banks are supposed to enhance more absolute amount of revenue to boost up their profit. Furthermore, Abedin and Dawan (2016) have noted that expansionary monetary policy increases banks' profitability. In response, depositors may keep their money with banks expecting that more advances will earn more profits for them. Further, profitable banks can absorb the shocks of tightening monetary policy through availing internal funds of banks.

The debt to equity ratio appears to affect credit supply positively and significantly, indicating that as the debt to equity ratio grows, the banks supply more credit to market because the banks are capable to issue more credit. Similarly, Janjua, Rashid, and Qurrat-Ul-Ain (2014), Sanrego and Nikmawati (2010) and Pouvelle (2012) have also documented a positive association between the debt to equity ratio and the credit supply of banks. However, Pouvelle (2012) has provided evidence of a negative association in the variables under discussion, indicating that a rise in the leverage ratio leads to a decline in a banks' solvency. Moreover, the banks'

management is restoring their profitability and solvency in case of high leverage ratio, instead of issuing more credit to the industry.

When we turn to observe the impact of macroeconomic conditions on credit supply of banks, the estimated coefficients of the variable GPD growth and the rate of inflation are positive and appear statistically significant at any the acceptable level of significance. Following the existing literature on bank credit supply we use the growth of GDP as a proxy for demand for loanable funds. The positive effect of GDP growth on bank credit supply suggests that banks do more investment financing during periods when economic growth is higher. During periods of high economic growth, since banks may face less financial distress and since both consumers and business firms may be willing to pay higher returns, banks expend their investment financing. Further, in periods of good macroeconomic conditions, investment projects may yield relatively higher returns, which motive banks to supply more credits.

This result of positive association between GDP growth and credit expansion is in line with Pruteanu-Podpiera (2007), Alper, Hulagu and Keles (2012), Imran and Nishat (2013), Gourio, Kashyap, and Sim (2018), Svensson (2016), and Aikman, Lehnert, Liang and Modugno (2017) who have explored the positive impact of GDP growth on credit supply because it affects domestic income positively, enabling consumers to deposit more in banks that allow them to issue more credit to the economy. Aikman, Lehnert, Liang and Modugno (2017) have found a significant strong positive effect of GDP on credit supply of banks, whereas the sign of interest rates was negative to loan supply. These empirical evidences imply that an increase in GDP growth will lead to an expansion of credit in banks. On other hand, the negative impact of GDP growth on banks' credit supply is also reported by some other studies such as Touny (2014) and Hussain (2012). Likewise, Janjua, Rashid, and Qurrat-Ul-Ain (2014) have noted GDP growth negatively related to credit supply of banks in case of Pakistan. The individuals and business firms may decline their demand to finance their purchases and investments through

bank borrowing during period of increased economic growth. In a growing economy, they may finance their business activities by other than banks sources.

The rate of the inflation is positively and significantly related to the credit growth of banks because high inflation makes the market trends uncertain and it can wipe away the value of savings in stock. The positive association of inflation can also be justified that the banks would rush to supply credit more because cash holding costs them a lot in period of inflation. In other words, this implies that banks are likely to issue more credit responding to high inflation because high inflation devalues the stock of savings. This finding is similar to Hussain (2009), Alper, Hulagu, and Keles (2012), Evans, Fisher, Gourio, and Kran (2015), Gomes, Jermann, and Schmid (2016), Ozdagli, and Perez-Orive (2017), who have found the positive and significant impact of inflation on the credit supply of banks to economy, implying that an increase in inflation will lead to an increase in credit growth in banks. Although Schmitz (2004) and Tancr (2000) have found the negative relationship of inflation to banks' credit supply. The results also suggest that banks increase their investment financing with the rate of inflation.

In Model 2 of Table 6.1 for Malaysia, we regress bank credit supply with monetary policy measure. All the bank specific and macroeconomic variables are consistent with the results of previous Model 1 of Table 6.1 except coverage ratio that appears negatively associated with credit supply of banks in Malaysia (see, for example, Janjua, Rashid, and Qurrat-Ul-Ain, 2014; Alper Hulagu and Keles, 2012).

In Panel B of Table 6.1, the diagnostic tests reveal that our instruments are robust for both countries. It is notable that the estimates of J-test do not provide any significant evidence in favour of rejecting the null hypothesis. Thus, we can say that the instruments used in our empirical estimations are orthogonal to the residuals. Similarly, we do not find any significant evidence of the existence of autocorrelation in the residuals obtained from the baseline model.

Overall, these diagnostic tests prove the validity of the instruments applied to the baseline models for Pakistan and Malaysia.

6.2.1 Impact of Tight Monetary Policy on Credit Supply of Islamic versus Conventional Banks of Pakistan and Malaysia

The base-line models are extended by including the Islamic banking dummy and conventional banking dummy for Pakistan and Malaysia. In Table 6.2, we regress the extended model of Islamic *versus* conventional banks' credit supply considering bank-specific variables, macroeconomic conditions and monetary policy measures. In Table 6.2, Panel A and Panel B present the estimation results and the diagnostic tests, respectively, for both countries. Panel A presents the interaction terms between dummies of Islamic and conventional banks and monetary policy measure. A negative and statistically significant coefficient of monetary policy measure support the presence of banks' centric view of monetary policy. Further, the empirical results are consistent with the centric view of monetary policy to find out the differential impact of monetary policy on Islamic *versus* conventional banks. However, this negative effect is weaker in case of Islamic banks for both countries. Although, the credit channel is affected due to tight monetary policy for Islamic banks, but relatively, it is less effective to achieve the the objectives of monetary policy through credit channel of Islamic banking.

More recently, Zulkhibri and Sukmana (2017) in Indonesia, Shah and Rashid (2019), Rafay and Farid (2019), Shah, Rashid, and Mansoori (2018), Zaheer, Ongena, and Wijnbergen (2013) in Pakistan, Cevik, and Charap (2011), Cevik and Teksoz (2012) in GCC and Akhatova, Zainal, and Ibrahim (2016), Stepanchuk and Tsyrennikov (2015), Majid and Hasin (2014), Sukmana and Kasim (2010), Sanrego and Nikmawati (2010), and Hardianto (2004) in Malaysia, have explored the credit channel of Islamic banks empirically.

Table 6.2. Impact of Tight Monetary Policy on Credit Supply of Islamic and Conventional Banks

Variables	Panel A. Estimation Results		Panel B. Diagnostic Tests	
	Model 3. Pakistan	Model 4. Malaysia		
Lagged Credit Supply	0.625***	0.165	0.579***	0.044
Banks size	0.021**	0.010	0.041***	0.006
Banks Liquidity	0.736**	0.289	0.534***	0.058
Banks Capital	0.119***	0.032	0.021**	0.006
Coverage ratio	0.018***	0.006	-0.046***	0.016
Credit risk	-0.086***	0.015	-0.075***	0.005
Banks Profitability	0.042***	0.002	0.019**	0.006
Debt to equity ratio	0.043**	0.020	-0.068*	0.040
IRPak $\times D^{IBs}$	-0.014***	0.002		
IRPak $\times D^{CBS}$	-0.045***	0.021		
IRMal $\times D^{IBs}$			-0.053***	0.012
IRMal $\times D^{CBS}$			-0.093***	0.025
GDP Growth	0.088 **	0.044	0.015**	0.004
Inflation	0.019**	0.009	0.023***	0.004
Constants	0.297**	0.149	0.182**	0.063

The instruments are the two to third lags [•] for model 3 in case of Pakistan and the two to three lags [•] for model 4 in case of Malaysia.

*** p<0.01, ** p<0.05, * p<0.1

Specifically, Shah, Rashid, and Mansoori (2018), Akhatova, Zainal, and Ibrahim (2016) and Stepanchuk and Tsyrennikov (2015) have evaluated comparatively the credit channel of Islamic banks and conventional banks through different monetary policy measures. They have noted that conventional bank credit and Islamic bank financing are responding significantly to monetary policy measures. Although, the credit channel is working for Islamic banking, but relatively it is less effective to achieve the macroeconomic objectives through credit channel of Islamic banking. Overall, these results imply that monetary policy transmission through credit channel needs to be revisited for Islamic banks.

Conceptually, Islamic finance is based upon asset-backed and risk sharing arrangements, whereas, conventional banking plays the role of financial intermediation with major contracts based upon loans with transfer of risk. These features enable Islamic financial institutions to manage their depository investment accounts on Modarabah arrangement, where credit risk doesn't transfer from depositors to Islamic (Sukmana and Kasim, 2010). Similarly, the increasing pace of Islamic banks in banking industry of Pakistan and currently recorded at 11.6 percent as the market share of Islamic banking assets and deposits are recorded at 13.7 percent by the end of June 2017. Overall, the assets growth rate of Islamic banking industry is 16.6 per annum. This double-digit growing industry requires to device separate monetary policy instruments for sake of credit control and stability of economy.

These findings indicate that Islamic banks response less to monetary policy tightening as compared to their conventional peers. This is because Islamic banks' financings are not entirely based on the interest rate. Rather, Islamic banking is based on a number of Islamic contracts such as Qar'd, Bai Ina, Bai Istijrar, Mudarab'ah, Musharak'ah, Ijar'ah, Salam, Istisn'ah and Murabah'ah. These contracts are not designed to respond to the interest rates. Rather some other factors like profit-loss sharing ratios, rentals and ratio of zakat on stock affect them according to nature of contracts. Conceptually, these are sale-based, partnership-based and lease-based contracts between Islamic banks and clients with a variety of contractual relationship. Therefore, Islamic banks do less response to monetary policy changes or are less affected by any predicted or unpredictable shock of monetary policy. Further, different contractual and motivational features of Islamic banking industry require to be dealt in distinguish way by the central banks of the countries where dual-system (Islamic and conventional) banking models are working. These economies should observe that Islamic banking is playing a significant role in supplying credit to economy. The contractual nature of Islamic banking is fundamentally different. It is need of the day to entertain the emerging

industry separately, especially from perspective of monetary policy and it will not be possible without the full support and conducive environment by the government.

In case of Malaysia, it is notable that there is found a variety of monetary instruments in Malaysian financial market. These instruments include Government Investment Issue (GII), Mudarabah Interbank Investment (MII), Wadiah Acceptance (WA), Islamic Accepted Bills (IAB), Islamic Negotiable Instruments (INI), Bank Negara Monetary Notes-i (BNMN-i), Sell and Buy Back Agreement (SBBA), Cagamas Mudharabah Bonds (SMC), Sukuk BNM Ijarah (SBNMI), When Issue (WI), Islamic Private Debt Securities, and Ar Rahnu Agreement-I (RA-i) (See Chapter No. 2 for details of monetary products in Malaysia). Moreover, Islamic banks' financings are not entirely based on interest rate rather there is existing the IBOR (Islamic Banking Offered Rate) determined in Islamic Inter-bank Money Market (IIMM) in Malaysia. Therefore, Islamic banks do respond less to monetary policy measures by any predictable or unpredictable shock of monetary policy because these monetary instruments are not driven by interest completely.

In both Models of Panel A in Table 6.2, the coefficient values of the credit supply suggest that banks' credit supply is positively and significantly related to one-period lagged credit supply in all three models. This implies that those banks hold more credit supply previously would supply more credit to economy in recent period. In all three regressions, the banks' size is positively and statistically significantly related to banks' credit supply, implying that banks' credit supply increase with an increase in banks' size. This empirical finding is result is in line with the previous empirical studies such as Alper, Hulagu, and Keles (2012), Köhler, Hommel, and Grote (2006), Schmitz (2004), who have reported the positive relationship between bank size and credit supply of banks. In contrast, Pruteanu (2004) and Janjua, Rashid, and Qurrat-Ul-Ain (2014) have noted the negative association between bank size and credit supply of banks. In the empirical existing literature, there are documented mixed results about the

relationship between banks' size and credit supply. As possible justification to understand the matter, Pruteanu (2004) has explained this relationship appears negative during tight monetary policy, and it becomes positive as expansionary monetary policy starts.

The banks' liquidity is found positive and statistically significant at different levels of significance in both models, implying that liquidity affects positively the credit supply of banks. This empirical evidence suggests that when there is more liquidity in banks, they would issue more loan to the industry and when there is shortage of liquidity stock, they will supply less credit because they not able to expand financing to industry. Similarly, Schmitz (2004) and Hasin and Majid (2012) have indicated a positive and significant relationship of banks' liquidity and loan growth, implying that liquid banks increase credit supply. Although, Olmo, Azofra, and Sáiz (2018), Alper, Hulagu, and Keles (2012) and Köhler, Hommel, and Grote (2006) have found the negative and significant association between the said variables.

The coefficient values of banks' capital appear positively and statistically significantly related to the credit supply of banks for Pakistan and Malaysia. Similarly, Gambacorta and Shin (2016), Moussa and Chedia (2016), Labonne and Lame (2014), Schmitz (2004), Bernanke and Lown, (1991) have reported the positive relation of capital with the credit supply of banks. Further, the positive impact of capital supports the prediction of monetarists that well-capitalized banks survive more in contractions of monetary policy. This empirical evidence is contrary to Janjua, Rashid, and Qurrat-Ul-Ain (2014), Berrospide and Edge (2010), Ehrmann, Gambacorta, Martinez-Pagés, Sevestre, and Worms (2003), who have found a negative association between banks' capital and loan growth of banks because the banks are not capitalized in better way.

The coefficient of the coverage ratio is positive and statistically significant for Pakistan,

implying that bank with high coverage ratio in their cash flow streams increase their supply of credit similar to that of Table 6.1. On other hand, the negative and statistically significant coefficient value of credit risk for Malaysia suggests that when the credit risk increases the bank cuts down the issuance of loans consistent with the results of Janjua, Rashid, and Qurrat-Ul-Ain (2014) and Alper Hulagu and Keles (2012). They show a negative association between coverage ratio and banks' credit supply because coverage ratio reflects the immediate impact of tightening the monetary policy on financial position of banks.

The association between banks' profitability and credit supply is found statistically significant for both countries. Most of the empirical studies have found a positive impact of profitability on the credit growth of banks because the profitable banks issue more credit to industry (see, for example, Sharpe (1995), Amandeep (1999), De Young, Gron, and Winton (2005), Beech and Malkhozov (2016), Abedin and Dawan (2016)). Moreover, profitable banks can absorb the shocks of tightening monetary policy by using internal funds to smooth their business activities. Further, Amandeep (1999) has noted that the profitability of a firm is an essential tool to keep retain confidence of the shareholders, the long -term creditors, and the management reliability on the soundness of institution. Therefore, banks are supposed to enhance more absolute amount of revenue to boost up their profit. Furthermore, Abedin and Dawan (2016) have noted that expansionary monetary policy through money supply in economy increases the banks' profitability. In response, depositors may keep their money with banks expecting that more advances will earn more profits for them.

Inspecting the coefficient values of the debt to equity ratio, we have found them positively and statistically significantly related to the banks' credit supply in line with that of Table 6.1. This is an indicator of banks' lending behaviour about that as the debt to equity ratio grows, the banks supply more credit to market. Similarly, Janjua, Rashid and Qurrat-Ul-Ain (2014) and Sanrego and Nikmawati (2010) have also explored a positive association between debt to

equity ratio and credit supply of banks.

Similar to the baseline model in Table 6.1, the GDP growth is positively and statistically significantly related to the credit supply of banks in both models. As we explained in baseline models, these empirical evidences imply that an increase in GDP growth will lead to an expansion of credit for individuals and business firms through banks.

The positive and significant estimated coefficients of the rate of inflation suggest that during period of high inflation banks increase supply of credit in all three regression models because high inflation makes the market trends uncertain and it can wipe away the value of savings in stock. Similarly investigating inflation, Hussain (2009), Alper, Hulagu, and Keles (2012), Evans, Fisher, Gourio, and Kran (2015), Gomes, Jermann, and Schmid (2016), Ozdagli, and Perez-Orive (2017) have found the positive and significant impact of inflation on the credit supply of banks to economy. This implies that the banks will rush to supply credit more because cash holding costs them a lot in period of inflation and the banks are likely to issue more credit responding to high inflation because the savings in stock depreciate in case of high inflation. However, Schmitz (2004) and Taner (2000) have found the negative relationship of inflation to banks' loan supply.

In Panel B of Table 6.2, we have found the diagnostic tests reveal that our instruments are robust. It is notable that the estimates of J-test do not provide any significant evidence in favour of rejecting the null hypothesis. Thus, we can say that the instruments used in our empirical estimations are orthogonal to the residuals. Similarly, we do not find any significant evidence of the existence of autocorrelation in the residuals obtained from the baseline models. Overall, these diagnostic tests prove the validity of the instruments applied to the baseline models for Pakistan and Malaysia.

6.2.2 Impact of Tight Monetary Policy on Credit Supply of Banks on the Basis of Bank Size for Pakistan and Malaysia

The base-line models are extended after categorizing banks on the basis of their size. Two dummies; a small banking dummy and a large banking dummy are included in the equation of the base-line models to observe the impact of monetary policy measures on banks' credit supply across banks' size for Pakistan and Malaysia. In Table 6.3, we present the results of tight monetary policy on small *versus* large banks' credit supply along with bank specific variables and macroeconomic conditions.

In Table 6.3, Panel A and Panel B present the estimation results and the diagnostic tests, respectively. In Panel A, there are presented the estimation results of the bank-specific, the macroeconomic variables and monetary policy measures in two separate models for Pakistan and Malaysia. There is observed the impact of tight monetary policy measures on bank loan supply. Overall, the small banking dummy and a large banking dummy interacted with monetary policy measures are associated negatively and statistically significant with the credit supply of small and large banks that support the presence of centric view of monetary policy in both models. It is notable that small banks are more responsive to tightening monetary policy in both models. Hulagu (2012) has concluded that the negative coefficients of monetary policy indicators suggest that small-sized banks supply more credit during tight monetary policy. These empirical results are consistent with the bank centric view of monetary policy (Kashyab and Stein, 1994; Sharpe, 1995; Hasin and Majid, 2012). Moreover, the large banks are found able to absorb the effects of tightening monetary policy, whereas the small banks that are affected more due to monetary policy actions. Further, the small banks reduce their financing more than large banks. The small banks are not able to find out an external source of financing because of heavy cost of external financing. Several studies such as, Bernanke and Blinder

(1995), Kashyab and Stein (1995), and Gertler and Gilchrist (1993) have explored the credit channel of monetary policy across small *versus* large banks in line with our empirical findings.

Table 6.3. Impact of Tight Monetary Policy on Credit Supply of Banks on basis of Bank Size

Panel A. Estimation Results				
	Model 5. Pakistan		Model 6. Malaysia	
Variables	Coefficient	SE	Coefficient	SE
Lagged Credit Supply	0.691***	0.107	0.832***	0.048
Banks size	0.035***	0.011	0.053***	0.012
Banks Liquidity	0.791**	0.178	0.304***	0.061
Banks Capital	0.007**	0.003	0.032**	0.014
Coverage ratio	0.081*	0.046	0.038***	0.006
Credit risk	-0.683***	0.135	-0.059***	0.006
Banks Profitability	0.020***	0.006	0.045**	0.019
Debt to equity ratio	0.005	0.011	-0.016***	0.005
IRPak $\times D^{Small\ banks}$	-0.104***	0.016		
IRPak $\times D^{Large\ banks}$	-0.074***	0.018		
IRMal $\times D^{Small\ banks}$			-0.041***	0.002
IRMal $\times D^{Large\ banks}$			-0.055***	0.005
GDP Growth	0.045 ***	0.009	0.038***	0.003
Inflation	0.024*	0.011	0.035*	0.019
Constants	0.811***	0.277	0.237**	0.089
Panel B. Diagnostic Tests				
Observations	194		199	
Banks	27		21	
No. of Instruments	39		41	
AR (2)	1.49		0.39	
p-value	0.419		0.695	
J- statistic	15.38		11.15	
p-value	0.950		0.998	

Notes: The instruments are the one to third lags [lag (1 3)] for model 5 in case of Pakistan and the three to four lags [•] for model 6 in case of Malaysia.

*** p<0.01, ** p<0.05, * p<0.1

Overall the results of Table 6.3 are consistent with that of the baseline models. Investigating the coefficient values of the debt ratio suggests that banks' credit supply is positively and significantly related to previous years credit supply of banks, implying that the banks with more credit supply previously would also supply more credit to economy. The banks' size is

positively and significantly related to credit growth of banks in all three models. The coefficient of banks' liquidity is associated positively and significantly with credit growth of banks. Overall, banks' liquidity suggests that liquidity affects positively the credit supply of banks in both models.

In investigation of the coefficient values of banks' capital in both models, these are found positive and statistically significant with 5% levels of significance in association with credit supply of banks. This empirical result supports the economic fact that well-capitalized banks absorb the contractions of monetary policy without cutting down their credit supply. In Pakistan, SBP has provided the banks a sound banking environment with implementation of modern regulations and efficient practices making them well capitalized to meet any unfavorable shock. The same coefficient is strong in Malaysia as compared to Pakistan because of efficient financial system and financial markets.

The coverage ratio is positively and statistically significantly related to credit growth with 10 % level of significance for Pakistan and 1 % level of significance for Malaysia. The positive and significant results imply that banks with high coverage ratio would increase the supply of loan. The coefficient values of credit risk are found negative and statistically significant in both models, implying that an increase in credit risk will lead the bank to control the issuance of loans.

In both models, the coefficient of banks' profitability is noted positive with a statistically significant results as more profitable banks are willing to supply more credit to industry. Investors are confident to invest their money in banks. Furthermore, it is also evident that profitable banks can absorb the shocks of tightening monetary policy by using internal funds available with them in Pakistan and Malaysia. The debt to equity ratio appears to affect credit supply positively and statistically insignificant in case of Pakistan, indicating that an increase

in debt to equity ratio leads the banks to supply more credit to market. The same coefficient appears to affect credit supply negatively and statistically significantly in Malaysia.

Investigating the impact of macroeconomic variables; the GDP growth and inflation on credit supply of banks, there is found positive and significant association of both macroeconomic variables with dependent variables in both models except inflation is weakly associated with credit supply of banks in Pakistan.

In the Panel B of Table 6.3, the diagnostic tests result that our instruments are robust. Overall, these diagnostic tests prove the validity of the instruments applied to these extended models.

6.2.3 Impact of Tight Monetary Policy on Credit Supply of Islamic versus Conventional Banks across the Bank Size in Pakistan and Malaysia

The base-line models are further extended after categorizing the banks into Islamic and conventional banks across their size. For Pakistan and Malaysia. Four dummies; a small Islamic banking dummy and a large Islamic banking dummy, a small conventional banking dummy and a large conventional banking dummy are included in each base-line model to evaluate the responses of banks' credit supply to monetary policy indicators on basis of size for both countries. In Table 6.4, we regress the extended models of the credit supply of small Islamic banks *versus* large Islamic banks and small conventional banks *versus* large conventional banks on bank specific variables, macroeconomic conditions and monetary policy indicators for both countries.

In Table 6.4, the Panel A and the Panel B present the estimation results and the diagnostic tests, respectively. The Panel A present the estimation results of the bank-specific, the macroeconomic variables and monetary policy measures in two separate models. The impact of tight monetary policy is observed through a small Islamic banking dummy, a large Islamic banking dummy, a small conventional banking dummy and a large conventional banking

dummy on bank loan supply. After regression analysis, the impact of tight monetary policy is observed negative and statistically significant on. Overall the credit supply of banks through small Islamic banking dummy, large Islamic banking dummy, small conventional banking dummy and large conventional banking dummy with interaction terms is associated negatively and statistically significant that support the presence of bank centric view of monetary policy in both models (Kashyab and Stein, 1994; Sharpe, 1995).

In comparative sense, it is notable that small Islamic banks and small conventional banks are more responsive to tightening monetary policy as compared to large Islamic banks and large conventional banks respectively in both models. Hulagu (2012) has documented that the negative coefficients of monetary policy indicators suggest that small-sized banks supply more credit during tight monetary policy. Although, we have observed the responses of Islamic versus conventional banks to monetary policy indicators on the basis of size in Table 6.2. We have noted the Islamic banks were found less responsive to tight monetary policy. The results of Table 6.4 are consistent with that of Table 6.2 because the coefficient values of the small Islamic banks are found with lesser values as compared to the coefficient values of the small conventional banks. Similarly, the coefficient values of the large Islamic banks are found with lesser values as compared to the coefficient values of the large conventional banks. These findings indicate that Islamic banks respond less to monetary tightening as compared to their conventional peers. This is because Islamic banks' financings are not entirely based on the interest rate. Rather, Islamic banking is based on a number of Islamic contracts such as *Qar'd*, *Bai Ina*, *Bai Istijrar*, *Mudarab'ah*, *Musharak'ah*, *Ijar'ah*, *Salam*, *Istisn'ah* and *Murabah'ah*. These contracts are not designed to respond to the interest rates of monetary policy. Therefore, Islamic banks do less response to monetary policy changes or are less affected by any shock of monetary policy.

Table 6.4. Impact of Tight Monetary Policy on Credit Supply of Islamic and Conventional Banks on basis of Bank Size

Variables	Panel A. Estimation Results		Model 7. Pakistan		Model 8. Malaysia	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Lagged Credit Supply	0.428***	0.101	0.857***	0.061		
Banks size	0.077***	0.022	0.016***	0.002		
Banks Liquidity	0.732**	0.361	0.276***	0.076		
Banks Capital	0.004**	0.002	0.878	0.956		
Coverage ratio	0.010**	0.005	0.011**	0.004		
Credit risk	-0.335**	0.142	-0.069***	0.008		
Banks Profitability	0.018***	0.003	0.049**	0.022		
Debt to equity ratio	0.003	0.002	0.078**	0.032		
IRPak \times D ^{Small IBs}	-0.019***	0.004				
IRPak \times D ^{Large IBs}	-0.023**	0.008				
IRPak \times D ^{Small CBS}	-0.036***	0.008				
IRPak \times D ^{Large CBS}	-0.032***	0.007				
IRMal \times D ^{Small IBs}			-0.046***	0.002		
IRMal \times D ^{Large IBs}			-0.016***	0.003		
IRMal \times D ^{Small CBS}			-0.059**	0.029		
IRMal \times D ^{Large CBS}			-0.053***	0.003		
GDP Growth	0.175 ***	0.067	0.396	0.301		
Inflation	0.016	0.016	0.070***	0.018		
Constants	0.588***	0.229	0.139*	0.089		
Panel B. Diagnostic Tests						
Observations		248			199	
Banks		27			21	
No. of Instruments		31			43	
AR (2)		0.54			0.69	
p-value		0.592			0.492	
J- statistic		9.27			5.28	
p-value		0.902			0.988	

The instruments are the two to third lags [.] for model 7 in case of Pakistan and the three to four lags [.] for model 8 in case of Malaysia.

*** p<0.01, ** p<0.05, * p<0.1

Similarly, Hasin and Majid (2012) have explored that there is fundamental difference between contractual and motivational features of Islamic banking industry that requires to be dealt it in a distinguish way by the policy makers of central banks of the countries where coexist dual-

system banking models. Although, the credit channel is working for Islamic banking, but relatively it less effective to achieve the macroeconomic objectives through credit channel of Islamic banking. Overall, these results imply that the small banks are affected badly in tightening monetary policy, the monetary authorities should consider their constraints in every policy stance and should devise instruments in transmission process of monetary policy by focusing credit channel for Islamic banks in line with their unique characteristics.

Overall, these results suggest that small Islamic banks are affected less by tight monetary policy as compared to small conventional banks. Similarly, large Islamic banks are also affected less by the tight monetary policy as compared to large conventional banks. Thus, these results suggest that regardless of banks' size, Islamic banks are less affected by tight monetary policy as compared to conventional banks. These findings hold across the both countries; Pakistan and Malaysia in Table 6.2 and Table 6.4. This suggests that different effects of monetary policy across Islamic and conventional banks and across small and large banks are robust to the measures of monetary policy in both countries.

In both Models of Table 6.4, the results of banks' characteristics and macroeconomic conditions are consistent with baseline models of Table 6.1. except a change in one or two variables that is explained previously.

In Panel B of Table 6.4, the diagnostic tests reflect that our instruments are robust. Especially, the estimates of J-test recommend accepting the null hypothesis because the instruments are orthogonal to the residuals. Similarly, it is evident that there is not the existence of autocorrelation in the extended models after categorizing banks as Islamic and conventional banks on basis of size. Overall, these diagnostic tests applied to extended models prove the validity of the instruments.

6.2.4 Impact of Tight Monetary Policy on Credit Supply of Banks on the Basis of Banks' Liquidity for Pakistan and Malaysia

The base-line model is extended after categorizing banks on basis of liquidity. Two dummies; a less liquid banking dummy and a more liquid banking dummy are included in the base-line model to observe the responses of banks' credit supply to monetary policy indicators on basis of liquidity for Pakistan and Malaysia. In Table 6.5, we regress the extended model of less liquid *versus* more liquid banks' credit supply on bank specific variables, macroeconomic conditions and monetary policy indicators.

In Table 6.5, Panel A and Panel B present the estimation results and the diagnostic tests, respectively. In Panel A, there are presented the estimation results of the bank-specific, the macroeconomic variables and monetary policy measures in two models. There is observed the impact of monetary policy measures on bank's credit supply. Both of monetary policy measures are associated negatively and statistically significant with the credit supply of banks which tends to support the bank-centric view of monetary policy in Pakistan and Malaysia.

It is notable that banks with low liquidity are more affected as compared to more liquid banks to tightening monetary policy in both of models. This evidence is in line with the findings of Kashyab and Stein (1997), Köhler, Schmitz (2004), Hommel and Grote (2006), Hasin and Majid (2012), Santis and Surico (2013) and Malede (2014). Further, Santis and Surico (2013) have documented that excessive cost of capital is a big problem for small banks, less liquid and less capitalized banks. They recommended to increase the number of corporate and saving banks to improve the market environment in substantial way. In addition, Köhler, Hommel and Grote (2006) have concluded that the existence of the bank lending channel in the Baltic through banks' capital and liquidity. There was found the pass through of monetary policy impulses to the real economy. Moreover, liquid and capitalized banks react less strongly to monetary contractions than the banks with poor liquidity and capital, that respond strongly.

Table 6.5. Impact of Tight Monetary Policy on Credit Supply of Banks across the Banks' Liquidity

Panel A. Estimation Results				
	Model 9. Pakistan		Model 10. Malaysia	
Variables	Coefficient	SE	Coefficient	SE
Lagged Credit Supply	0.668***	0.121	0.568***	0.090
Banks size	0.028**	0.012	0.025	0.016
Banks Liquidity	0.108***	0.016	0.754***	0.149
Banks Capital	0.042	0.342	0.016**	0.008
Coverage ratio	0.147**	0.067	0.044*	0.024
Credit risk	-0.977***	0.230	-0.003**	0.001
Banks Profitability	0.022***	0.006	0.090***	0.024
Debt to equity ratio	0.010*	0.005	0.020**	0.007
IRPak $\times D^{Less\ Liquid}$	-0.080***	0.014		
IRPak $\times D^{More\ Liquid}$	-0.033**	0.019		
IRMal $\times D^{Less\ Liquid}$			-0.038***	0.008
IRMal $\times D^{More\ Liquid}$			-0.016**	0.008
GDP Growth	0.011*	0.006	0.061**	0.027
Inflation	0.024*	0.013	0.079***	0.015
Constants	0.486*	0.295	0.251**	0.098
Panel B. Diagnostic Tests				
Observations		194		241
Banks		27		21
No. of Instruments		39		31
AR (2)		1.49		0.19
p-value		0.419		0.851
J- statistic		15.38		6.57
p-value		0.950		0.993

Notes: The instruments for model 1 are the one to third lags [lag (1-3)], and for model 2 are the two to third lags [2]. The instruments are the two to third lags [2] for model 3 in case of Pakistan and the three to four lags [3] for model 4 in case of Malaysia.

*** p<0.01, ** p<0.05, * p<0.1

Similarly, Schmitz (2004) and Hasin and Majid (2012) have noted that liquid banks adjust the tightening of monetary policy, whereas the banks with poor liquidity respond aggressively to monetary policy actions.

Overall, more liquid banks are less negatively affected by the tight monetary policy as compared to less liquid banks. For example, in Model 6.5, when the lending interest rate increases by one basis point, the credit supply of less liquid banks decreases by -8 % of their total assets, whereas credit supply of more liquid banks decreases by -3 % of total assets in

case of Pakistan. The same coefficient is -3 % and -1 % for less and more liquid, respectively, banks of Malaysia.

The results given in Table 6.5 suggest that bank size, bank liquidity, bank capital, coverage ratio, and profitability are positively and significantly associated with credit supply of banks in Pakistan and Malaysia except bank capital appears insignificant in Pakistan. The coefficients of credit risk, and the debt to equity ratio are negatively and significantly related to credit supply of banks in both countries. These findings imply that banks facing higher credit risk, and banks having more debt financing in their capital structure supply less credits in the market. These findings are consistent with the findings of prior studies on conventional banks. Finally, we find that similar to the case of Pakistan, both the growth of GDP and the rate of inflation have a positive and statistically significant impact on the credit supply of banks in Malaysia. These results suggest that banks in Pakistan and Malaysia expand their credit supply in periods of higher economic growth and heightened inflation in the economy.

In Panel B of Table 6.5, the diagnostic tests reflect that our instruments are robust. Especially, the estimates of J-test recommend accepting the null hypothesis because the instruments are orthogonal to the residuals. Similarly, it is evident that there is not the existence of autocorrelation in the extended models after categorizing banks on basis of bank liquidity. Overall, these diagnostic tests applied to extended models prove the validity of the instruments.

6.2.5 Impact of Tight Monetary Policy on Credit Supply of Islamic versus Conventional Banks across the Bank Liquidity in Pakistan and Malaysia

The base-line models are further extended after categorizing the banks into Islamic and conventional banks on basis of liquidity for Pakistan and Malaysia. Four dummies; a less liquid Islamic banking dummy and a more liquid Islamic banking dummy, a less liquid conventional banking dummy and a more liquid conventional banking dummy are interacted with interbank

offered interest rate in base-line model to observe the impact of tight monetary policy on banks' credit supply on basis of liquidity. In Table 6.6, we regress the extended models of the credit supply of less liquid Islamic banks *versus* more liquid Islamic banks and less liquid conventional banks *versus* more liquid conventional banks on bank specific variables, macroeconomic conditions and monetary policy measures.

In Table 6.6, Panel A and Panel B present the estimation results and the diagnostic tests, respectively. Panel A present the estimation results of the bank-specific, the macroeconomic variables and monetary policy measures for both models.

In Models of Table 6.6, the impact of tight monetary policy in interaction with a less liquid Islamic banking dummy, a more liquid Islamic banking dummy, a less liquid conventional banking dummy and a more liquid conventional banking dummy is evaluated on credit supply of banks after controlling GDP growth and inflation. The coefficients of interacted terms associated negatively and statistically significant with the credit supply of banks that support the presence of bank centric view of monetary policy in both models (Kashyab and Stein, 1994; Sharpe, 1995). Comparatively, it is notable that less liquid Islamic banks and less liquid conventional banks are affected more due to tightening monetary policy as compared to more liquid Islamic banks and more liquid conventional banks in Pakistan and Malaysia.

The results given in Table 6.6 reveal that tight monetary policy has different effects on the credit supply of banks for less and more liquid Islamic and conventional banks. Specifically, the results indicate that in case of Islamic banks, although banks reduce their credit supply in response of tight monetary policy, Islamic banks with more liquid assets are less negatively affected by the tight monetary policy. The similar results are observed for conventional banks. Specifically, we find that the increased interest rate has less negative impact on more liquid banks. These results suggest that the credit supply of both Islamic and conventional banks

Table 6.6. Impact of Monetary Policy on Credit Supply of Islamic and Conventional Banks on basis of Bank Liquidity

Panel A. Estimation Results				
	Model 11. Pakistan		Model 12. Malaysia	
Variables	Coefficient	SE	Coefficient	SE
Lagged Credit Supply	0.389***	0.072	0.531***	0.055
Banks size	0.076***	0.022	0.021***	0.002
Banks Liquidity	0.119***	0.040	0.503***	0.099
Banks Capital	0.005***	0.001	0.026***	0.007
Coverage ratio	0.0139**	0.006	0.012	0.014
Credit risk	-0.402**	0.158	-0.002**	0.052
Banks Profitability	0.023***	0.004	0.041***	0.002
Debt to equity ratio	-0.024	0.022	-0.030***	0.005
IRPak \times D ^{Less Liquid IBs}	-0.019***	0.006		
IRPak \times D ^{More Liquid IBs}	-0.016***	0.005		
IRPak \times D ^{Less Liquid CBSs}	-0.033***	0.008		
IRPak \times D ^{More Liquid CBSs}	-0.029***	0.008		
IRMal \times D ^{Less Liquid IBs}			-0.029***	0.003
IRMal \times D ^{More Liquid IBs}			-0.017***	0.003
IRMal \times D ^{Less Liquid CBSs}			-0.042***	0.008
IRMal \times D ^{More Liquid CBSs}			-0.045***	0.003
GDP Growth	0.210***	0.033	0.070***	0.008
Inflation	0.017	0.012	0.022***	0.001
Constants	0.706***	0.115	0.273***	0.058
Panel B. Diagnostic Tests				
Observations	248		220	
Banks	27		21	
No. of Instruments	30		32	
AR (2)	0.20		0.43	
p-value	0.843		0.666	
J- statistic	12.60		7.90	
p-value	0.633		0.969	

The instruments are the three to four lags [■] for model 11 in case of Pakistan and the two to two lags [■] for model 12 in case of Malaysia.

*** p<0.01, ** p<0.05, * p<0.1

respond less to tight monetary policy when banks have more liquid assets. These different effects of tight monetary policy on credit supply hold for Malaysia as well (See Table 6.6).

Specifically, Islamic banks (whether they are less liquid or more liquid) are less responsive as compared to that of conventional counterparts. Although, banks are categorized on basis of liquidity, yet the evidences are consistent in line with the results of Table 6.2 which is based upon the difference of nature of operation with two different paradigms of Islamic banks and conventional banks. As a possible justification, Hasin and Majid (2012) have noted that there is fundamental difference in contractual and motivational features of Islamic banking industry than conventional banking system. Moreover, Islamic finance is based upon asset- backed and risk sharing arrangements, whereas, conventional banking plays the role of financial intermediation with major contracts based upon loans with transfer of risk. These features enable Islamic financial institutions to manage their depository investment accounts on Modar'b'ah arrangement, where credit risk doesn't transfer from depositors to Islamic (Sukmana and Kasim, 2010).

More recently, Zulkhibri and Sukmana (2017) in Indonesia, Rafay and Farid (2019), Shah and Rashid (2019), Shah, Rashid and Mansoori (2018), Zaheer, Ongena and Wijnbergen (2013) in Pakistan, Cevik and Charap (2011) and Cevik and Teksoz (2012) in GCC and Akhatova, Zainal and Ibrahim (2016), Stepanchuk and Tsyrennikov (2015), Majid and Hasin (2014), Sukmana and Kasim (2010), Sanrego and Nikmawati (2010), and Hardianto (2004) in Malaysia, have explored the credit channel of Islamic banks empirically. Specifically, Shah, Rashid, and Mansoori (2018), Akhatova, Zainal, and Ibrahim (2016) and Stepanchuk and Tsyrennikov (2015) have evaluated comparatively the credit channel of Islamic banks and conventional banks through monetary policy measures. They have noted that conventional bank credit and Islamic bank financing are responding significantly to monetary policy measures. Although, the credit channel is working for Islamic banking, but relatively it less effective to achieve the macroeconomic objectives through credit channel of Islamic banking.

Overall, these results imply that monetary policy transmission through credit channel needs to be revisited for Islamic banks.

In Table 6.6, the banks' credit supply is positively and significantly associated to its own one period lag, implying those banks that have supplied more credit in last year, would continue to supply more credit in present period. The banks' size is found positively and significantly related to banks' credit supply over the regressions. This result reflects that banks are likely to issue more credit supply as bank's size increases. The coefficient values of banks' liquidity are found positive and statistically significant in both regressions. In investigation of the coefficient values of Banks' capital, we have found it positive and statistically significant at distinct levels in association with credit issuance of banks in both models. This positive and sound empirical result supports the prediction of monetarists that capitalized banks absorb the contractions of monetary policy without cutting down their credit supply. The coverage ratio is positively and statistically significantly related to credit growth in 1st regression for Pakistan, whereas positive and insignificant for Malaysia.

The negative and statistically significant coefficient value of credit risk suggest that when the credit risk increases the bank cuts down the issuance of loans. It means an increase in the loan portfolio riskiness may make a bank to cut down the lending issuance. The association between banks' profitability and credit supply is found positive for both countries and statistically significant, implying that the profitable banks issue more credit to industry. Further, profitable banks can absorb the shocks of tightening monetary policy by using internal funds to smooth their business activities. The coefficients of debt to equity ratio has been found negative in both models, but statistically significant for Malaysia and insignificant for Pakistan. Similarly, Pouvelle (2012) has documented that a rise in the leverage ratio leads to a decline in a banks'

solvency. Therefore, the banks' management is restoring their profitability and solvency in case of high leverage ratio, instead of issuing more credit to the industry.

Investigating the impact of macroeconomic variables; the GDP growth and inflation on credit supply of banks, there is found positive and significant association of both macroeconomic variables with dependent variables in both models except inflation is insignificant with credit supply of banks in Pakistan.

In the Panel B of Table 6.6, the diagnostic tests result that our instruments are robust. Overall, these diagnostic tests prove the validity of the instruments applied to these extended models.

6.3 Conclusion

We have elaborated the empirical results of econometric models in context of Pakistan and Malaysia. We have found the impact of tight monetary policy on credit supply of banks with some additional specifications on empirical grounds. Our baseline models confirmed the existence of credit channels for Pakistan and Malaysia in Table 5.1. Next, we have found comparative differential impact of tight monetary policy on Islamic versus conventional banks in which conventional banks responded more than their Islamic counterparts for both countries. Further, the empirical models have confirmed the impact of tight monetary policy on banks' credit supply on basis of size and liquidity. Specifically, our extended models also shown the empirical evidence on the comparative different responses of Islamic versus conventional banks on basis of bank size and liquidity position. Finally, we can document that our research design support us to confirm the presence of credit channel of monetary policy for Islamic and conventional banks in Pakistan and Malaysia. Similarly, all research questions are satisfied which were raised with different specifications.

We have observed the coefficient values of monetary policy measures stronger for Malaysia as compared to Pakistan. Comparatively affective monetary policy of Malaysia is because of

professional commitment of the central bank of Malaysia. BNM's monetary policy actions are conducted to stable the prices through keeping an eye on economic growth of country. In addition, BNM plays a vital role in development of a progressive, sound and diversified financial sector which leads to the financial system stability. It also takes initiatives to deepen the financial markets role in development of real economy, including the foreign exchange market. Similarly, BNM also supervises the framework of nation's payment systems that ensures the efficiency of financial markets and security of the financial systems. Moreover, it has played an important role in developing the infrastructure for financial inclusion through easing the public to access to financial services. BNM advices the government, as a banker and an adviser, on the macroeconomic public policies and the management of public debt. It is also an independent authority with a sole right to issue the national currency and to manage the international reserves of Malaysia. These functions of BNM develop a conducive environment to work credit channel of banks efficiently as compared to Pakistan.

In Malaysia, Islamic banking sector is also found more effective as compared to that of Pakistan because of well-developed infrastructure. The Islamic banks are not entirely based on interest rate rather there is existing the IBOR (Islamic Banking Offered Rate) determined in Islamic Inter-bank Money Market (IIMM) in Malaysia. There is found a variety of monetary instruments on the basis of a number of Islamic contracts. These instruments of IIMM include Government Investment Issue (GII), Mudarabah Interbank Investment (MII), Wadiah Acceptance (WA), Islamic Accepted Bills (IAB), Islamic Negotiable Instruments (INI), Bank Negara Monetary Notes-i (BNMN-i), Sell and Buy Back Agreement (SBBA), Cagamas Mudharabah Bonds (SMC), Sukuk BNM Ijarah (SBNMI), When Issue (WI), Islamic Private Debt Securities, and Ar Rahnu Agreement-I (RA-i). Overall, Malaysian financial institutions are found efficient and smoothly working. In Malaysia, the banking sector documents 4.7% of

GDP, boasting assets worth 198.8% of GDP and hold 3% of the total employed force of the country in 2016.

Pakistan needs to get benefit from successful experience of Malaysia, especially in developing Islamic financial market and improving institutions quality that will make it able to transmit the monetary policy actions through credit channel efficiently.

7. Conclusions and Policy Implications

7.1 Introduction

The banks' credit channel of monetary policy came to the forefront of research since the 2007-08 global financial crisis. The stability of banks and their role in supplying credit to the economy was questioned. In this study, we have examined the existence of credit channel of monetary policy in Pakistan and Malaysia. While estimating the effects of monetary policy measures on banks' credit supply, several bank-specific variables and macroeconomic indicators are included in the specifications of models as control variables. Specifically, the study has examined the impact of monetary policy on credit of Islamic *versus* conventional banks. We have constructed an unbalanced annual panel dataset for banking sector of both countries through various sources. Although, we have to harmonize the differences in accounting treatment of different business activities because of the fundamental differences of the conceptual models of Islamic *versus* conventional banks. The robust two-step system-the Generalized Method of Moments (GMM) estimator is found the most relevant estimation technique to explore bank centric view of monetary policy.

7.2 Key Findings

Estimating the baseline models, we have found strong empirical evidences on the existence of credit channel of monetary policy in Pakistan and Malaysia. Further, we have noted that the lending of conventional banks and the financing of Islamic bank are responding significantly to monetary policy measures in augmented models. Although, the credit channel is working for Islamic banking, but relatively it less effective to achieve the macroeconomic objectives through credit channel of Islamic banking. Our findings are in line with existing empirical studies, for example, Shah and Rashid (2019), Rafay and Farid (2019, Zaheer, Ongena, and Wijnbergen (2013) for Pakistan, and Akhatova, Zainal, and Ibrahim (2016), Stepanchuk and Tsyrennikov (2015), Majid and Hasin (2014) and Sukmana and Kassim (2010) for Malaysia.

Thus, the relatively less responses of Islamic banks to monetary policy actions may create hurdles to achieve the desired objectives of the monetary policy. Our empirical analysis indicates that Islamic banks react differently to changes in monetary policy, mainly due to the unique nature of contracts and the fundamental differences between the conceptual models and practices of Islamic and conventional banks.

Further, we have examined that the monetary policy measures affected the small-sized banks more as compared to the large-sized banks in Pakistan and Malaysia. The same empirical evidence is found consistent in examining the interacted dummies of the small-sized Islamic banks versus the large-sized Islamic banks and the small-sized conventional banks versus the large-sized conventional banks in line with Kashyab and Stein (1995), Kashyap and Stein (2000), Kishan and Opiela (2000) Pruteanu (2004) and Janjua, Rashid, and Qurrat-Ul-Ain (2014). Furthermore, we have examined that the credit supply of the less-liquid banks is more respondent to monetary policy alternate measures as compared to the more-liquid banks in Pakistan and Malaysia. The same empirical evidence is found consistent in examining the interacted dummies of the less-liquid Islamic banks versus the more-liquid Islamic banks and the less-liquid conventional banks versus the more-liquid conventional banks in line with Kashyab and Stein (1997), Kashyap and Stein (2000), Köhler, Hommel and Grote (2006), Alper, Hulagu and Keles (2012) and Malede (2014). Since centric view plays a pivotal role in monetary transmission, therefore we have explored it from diversified perspectives.

Last but not least, the findings we present here should be an eye-opening experience to the adherents of Islamic finance and banking. Inspite of different structure of Islamic banks in theory, these findings unveil the fact that Islamic banks' financing is highly adversely influenced owing to the increased interbank interest rate in the economy. This piece of evidence provides an evidence that, rather than doing socially responsible investment on economic-

based rates of return, Islamic banks largely rely on fixed rate-based investing, which highly affected by policy interest rate of the central banks. Further, they may often use interbank offered rates as a benchmark for determining their profits and rents and thus, any change in these interest rates negatively impacts the financing of Islamic banks.

7.3 Policy Implications

The study has several implications for policy makers to implement the monetary policy efficiently. First, the monetary authorities should monitor the policy interest rates carefully in order to stabilize the credit supply of banks because the bank centric view of monetary policy playing an important role in Pakistan and Malaysia. Indeed, any disturbance in monetary policy indicators may affect adversely the credit supply of banks and subsequently disturb the economic activity.

Secondly, the results imply that the central banks; SBP and BNM need to revisit the monetary policy transmission through credit channel for Islamic banks, especially in economies with a dual (Islamic and conventional) banking system. Otherwise, there will appear monetary policy puzzles nullifying the objectives of policy. Similarly, the unique contractual and motivational features of Islamic financial institutions (IFIs) provide a justification to devise a set of Islamic financial instruments to absorb and inject the money through open market operations and other instruments in same industry. Otherwise, lack of adequate monetary instruments will lead to high intermediation cost and persistent inflationary pressures.

Thirdly, our findings reveal that Islamic banks' credit channel is active in Pakistan and Malaysia, the policy makers may consider Islamic banking as a complement channel to the monetary policy transmission mechanism. Fourthly, the policy makers should keep in preference the microeconomic aspects of banks' credit supply behavior in formulating monetary policy because we have found the small-sized banks and less-liquid banks are

affected more as compared to their counterparts. Fifthly, overall this study helps the monetary policy authority to draw their attention to different alternate channels through which they can conduct an effective monetary policy. Policymakers should take into account the improvement of institutional structure, a well-functioning Islamic money market and sound regulatory framework, as prerequisite to make the transmission of monetary policy more effective in countries such as Pakistan and Malaysia.

7.4 Future Research Agenda

This dissertation has opened the new avenues of research for upcoming researchers to find out the potential in domain of same area of research. First, the results suggest that the researchers need to explore the different alternate channels of transmission mechanism through which they can conduct an effective monetary policy. Yet, there are potential gaps to investigate the microeconomic aspects of banks' credit supply behavior in formulating monetary policy. Secondly, we think that our researchers can take benefits in devising Islamic financial products and monetary instruments from Malaysia. Although, a sound *Shari'ah* appraisal would be required as a future research agenda, of these Islamic monetary instruments that are based upon controversial vehicle contracts like *Bai-Inna*, commodity *Murabh'ah* etc. among jurists of different territories. This area of research is a challenge for future researchers to find out the ways to harmonize these juristic opinions in domain of Islamic monetary instruments, enabling the industry to move to the development of global Islamic financial market.

Thirdly, the researchers are expected to make realize the monetary authorities that the instruments of Islamic financing require an efficient Islamic money market, stable Islamic capital market and sound regulatory framework to regulate the operations properly in future research dimensions. This arrangement is prerequisite for assessing the impact on monetary policy transmission mechanism through Islamic financial market. Fourthly, these empirical

differential impacts of monetary policy alternate measure on credit supply of Islamic *versus* conventional banks, have drawn the intention of future researchers to know about theoretical background of Islamic *versus* conventional banking models and contractual obligations in legal matrix.

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Annexure 1. Monetary Policy Instruments (percent)

Monetary Policy Instruments (percent)		
	Current	w.e.f
SBP Policy Rate (Target for overnight money market Repo Rate)	5.75	21-May-16
SBP Reverse Repo Rate (Ceiling of corridor)	6.25	21-May-16
SBP Repo Rate (Floor of corridor)	4.25	21-May-16
Reserve Requirements on Banks (Rupee Applicable TDLs)		
Cash Reserve Requirement (CRR) on TDL < 1 year		
Fortnightly average for Banks	5.0	12-Oct-12
Daily minimum for Banks	3.0	12-Oct-12
Weekly average for DFIs on total TDL	1.0	1-Jan-05
Weekly average for DFIs	5.0	1-Jan-05
CRR on TL >= 1 year	0.0	4-Aug-07
SLR on TDL < 1 year		
Conventional scheduled banks	19.0	24-May-08
Islamic banks and branches	19.0	3-Jun-11
Weekly average for DFIs on total TDL	15.0	1-Jan-05
Weekly average for DFIs	10.0	1-Jan-05
SLR on TL > 1 year		
Conventional scheduled banks	0.0	18-Oct-08
Islamic banks and branches	0.0	18-Oct-08
Reserve Requirements on DFIs (Rupee TDLs)		
Fortnightly average CRR on total TDLs	1.0	12-Oct-12
SLR on total TDLs	15.0	1-Jan-05
Reserve Requirements on Foreign Currency Deposits		
Cash Reserve Requirement (CRR)		
Conventional scheduled banks	5.0	07-Apr-01
Islamic banks and branches	5.0	13-Nov-06
Special Cash Reserve Requirement (SCRR)		
Conventional scheduled banks	15.0	30-Jun-08
Islamic banks and branches	6.0	13-Nov-06
Reserve Requirements on MFBs (Rupee Deposits/ TDLs)		
CRR on TDLs < 1 year	5.0	28-May-10
SLR on TDLs < 1 year	10.0	28-May-10
DL: Demand Liabilities; TL: Time Liabilities; TDL: Time and Demand Liabilities		
DFI: Development Financial Institutions		
Source: http://www.sbp.org.pk		

Annexure 2. Stylized Balance Sheet of an Islamic Bank in Pakistan

Islamic Banking Financial Statement of Bank Alfalah

ISLAMIC BANKING BUSINESS

The bank is operating through 153 Islamic banking branches as at December 31, 2016 (December 31, 2015: 158 branches).

STATEMENT OF FINANCIAL POSITION

	Note	2016	2015
		(Rupees in '000)	
ASSETS			
Cash and balances with treasury banks		10,191,942	9,516,305
Balances with and due from financial institutions		1,672,323	2,938,812
Lendings to financial institutions		27,997,227	12,610,451
Investments - net		38,670,241	59,424,549
Islamic financing and related assets	A-II.1 & A-II.2	56,720,714	42,056,149
Operating fixed assets		2,288,031	2,285,906
Other assets		2,317,048	2,664,563
		<u>139,697,526</u>	<u>131,496,735</u>
LIABILITIES			
Bills payable		1,862,656	1,428,720
Borrowings		3,833,240	9,984,637
Deposits and other accounts			
- Current Accounts		43,990,411	38,196,882
- Saving Accounts		53,988,674	51,824,143
- Term Deposits		18,038,671	14,714,498
- Others		428,262	429,421
Deposits from financial institutions - remunerative deposits		1,113,125	240,392
Deposits from financial institutions - non-remunerative deposits		1,867	1,946
Other liabilities		6,302,957	5,303,877
		<u>129,559,863</u>	<u>122,124,516</u>
NET ASSETS		<u>10,137,663</u>	<u>9,372,219</u>
REPRESENTED BY			
Islamic banking fund		1,800,000	1,800,000
Exchange equalisation reserve		878	(56)
Unappropriated / Unremitted profit (Head Office Current Account)		6,626,936	6,463,950
Surplus on revaluation of assets - net of tax		5,427,814	8,263,894
		<u>1,709,849</u>	<u>1,108,325</u>
Remuneration to Shariah Advisor / Board		<u>10,137,663</u>	<u>9,372,219</u>
CHARITY FUND			
Opening balance		176,557	131,543
Additions during the year			
Received from customers on delayed payments & others		40,182	80,933
Non-shariah compliant Income		9,524	1,295
Profit on charity saving account		6,958	8,527
		<u>56,664</u>	<u>90,755</u>
Distribution of charity			
Welfare Works		(38,357)	(16,397)
Health		(38,850)	(24,153)
Education		(7,700)	(5,181)
Payments / Utilization during the year		(84,907)	(45,741)
Closing balance		<u>148,314</u>	<u>176,557</u>

Source: Annual Report 2016 of Bank Alfalah Pakistan

Annexure 3. Stylized Disclosure of Balance Sheet of an Islamic Bank in Pakistan

	Note	2016	2015			
		(Rupees in '000)				
A-II.1 Islamic Financing and Related Assets						
Murabaha	A-II.1.1	10,002,211	10,173,925			
Ijarah	A-II.1.2	7,912,045	7,220,136			
Diminishing Musharakah	A-II.1.3	709,981	506,584			
Musharakah	A-II.1.4	9,893,714	9,902,071			
Running Musharakah	A-II.1.5	10,424,504	3,153,938			
Salam	A-II.1.6	11,888,467	5,016,961			
Istisna	A-II.1.7	1,934,468	1,833,420			
Falah Tijarah	A-II.1.8	100,000	-			
SBP Islamic Export Refinance Scheme	A-II.1.9	2,889,840	3,410,839			
Others	A-II.1.10	965,484	838,275			
		<u>56,720,714</u>	<u>42,056,149</u>			
A-II.2 Assets under Ijarah (IFAS-2)						
a) Brief description of the Ijarah arrangements						
Ijarah contracts entered into by the Bank essentially represent arrangements whereby the Bank (being the owner of assets) transfers its usufruct to its customers for an agreed period at an agreed consideration. The significant Ijarah contracts entered into by the Bank are with respect to vehicles, plant and machinery and equipment and are for periods ranging from 3 to 5 years.						
b) Movement in net book value of ijarah assets						
		2016				
		Asset categories				
		Vehicles - Consumer	Vehicles - Corporate	Plant & Machinery Equipment	Total	
		(Rupees in '000)				
At January 1, 2016						
Cost		8,557,297	977,866	321,746	4,185	9,861,094
Accumulated depreciation		(2,510,200)	(314,461)	(157,529)	(3,287)	(2,985,477)
Net book value		<u>6,047,097</u>	<u>663,405</u>	<u>164,217</u>	<u>898</u>	<u>6,875,617</u>
Year ended December 31, 2016						
Opening net book value		6,047,097	663,405	164,217	898	6,875,617
Additions		1,130,853	491,971	373,043	-	1,995,867
Disposals						
Cost		(1,033,177)	(23,238)	(21,642)	-	(1,078,057)
Accumulated depreciation		967,859	93,294	43,752	-	1,104,905
		(65,318)	70,056	22,110	-	26,848
Depreciation		(1,201,642)	(207,184)	(74,959)	-	(1,483,785)
Closing net book value		<u>5,910,990</u>	<u>1,018,248</u>	<u>484,411</u>	<u>898</u>	<u>7,414,547</u>
At December 31, 2016						
Cost		8,654,973	1,446,599	673,147	4,185	10,778,904
Accumulated depreciation		(2,743,983)	(428,351)	(188,736)	(3,287)	(3,364,357)
Net book value		<u>5,910,990</u>	<u>1,018,248</u>	<u>484,411</u>	<u>898</u>	<u>7,414,547</u>
Source: Annual Report 2016 of Bank Alfalah Pakistan						

Annexure 4. Stylized Balance Sheet of a Conventional Bank in Pakistan

	Note	2016	2015 (Restated)	January 01, 2015 (Restated) (Rupees in '000)
ASSETS				
Cash and balances with treasury banks	6	74,071,384	62,368,790	50,515,643
Balances with other banks	7	9,373,123	16,552,207	12,331,713
Lendings to financial institutions	8	30,149,029	27,626,350	18,313,485
Investments - net	9	389,092,637	423,099,734	324,319,454
Advances - net	10	378,720,349	334,158,739	297,255,730
Operating fixed assets	11	18,133,267	17,241,968	15,740,100
Deferred tax assets	12	-	-	-
Other assets	13	17,917,264	21,559,733	24,652,168
		917,457,053	902,607,521	743,128,293
LIABILITIES				
Bills payable	14	12,886,990	9,733,929	11,758,155
Borrowings	15	178,311,035	172,393,198	55,232,916
Deposits and other accounts	16	540,944,254	640,188,735	605,963,224
Sub-ordinated loans	17	8,317,670	9,983,000	9,987,000
Liabilities against assets subject to finance lease				
Deferred tax liabilities	18	2,650,428	1,824,054	853,331
Other liabilities		14,221,914	15,131,430	14,514,599
		857,332,291	849,254,346	698,309,225
NET ASSETS				
		<u>60,124,762</u>	<u>53,353,175</u>	<u>44,819,068</u>
REPRESENTED BY				
Share capital	19	15,952,076	15,898,062	15,872,427
Reserves		15,895,652	14,164,120	12,338,026
Unappropriated profit		<u>17,337,458</u>	<u>12,362,596</u>	<u>9,613,374</u>
		<u>49,185,186</u>	<u>42,424,778</u>	<u>37,823,827</u>
Surplus on revaluation of assets - net of tax	20	10,939,576	10,928,397	6,995,241
		<u>60,124,762</u>	<u>53,353,175</u>	<u>44,819,068</u>
CONTINGENCIES AND COMMITMENTS				
		21		
Source: Annual Report 2016 of Bank Alfalah Pakistan				

Annexures 5. Stylized Disclousur of Balance Sheet of a Conventional Bank in Pakistan

9 INVESTMENTS - NET							
9.1 Investments by types							
Note	2016			2015 Restated			
	Held by Bank	Given as collateral	Total	Held by Bank	Given as collateral	Total	
(Rupees in '000)							
Held for trading securities							
Market Treasury Bills	14,021,130	-	14,021,130	13,460,197	-	13,460,197	
Pakistan Investment Bonds	20,237	-	20,237	2,423,862	-	2,423,862	
Overseas Bonds	549,915	-	549,915	2,990,933	-	2,990,933	
Fully paid up ordinary shares/ units - Listed	740,775	-	740,775	17,395	-	17,395	
	15,430,725	-	15,430,725	19,392,990	-	19,392,990	
Available for sale securities							
Market Treasury Bills	36,584,821	-	36,584,821	78,394,879	404,565	78,386,442	
Pakistan Investment Bonds	78,236,759	126,150,711	207,087,470	28,934,704	126,571,363	157,492,067	
Fully paid up ordinary shares/ units - Listed	6,223,937	-	6,223,937	5,000,753	-	5,000,753	
Fully paid up ordinary shares/ units - Unlisted	82,056	-	82,056	4,426,617	-	4,426,617	
Term Finance Certificates	514,483	-	514,483	820,594	-	820,594	
Preference Shares - Listed	108,835	-	108,835	108,835	-	108,835	
Preference Shares - Unlisted	25,000	-	25,000	325,000	-	325,000	
Receivable Participating Certificates	501,958	-	501,958	-	-	-	
Pakistan Euro Bonds	1,688,770	-	1,688,770	2,409,043	-	2,409,043	
Overseas Bonds	7,819,671	4,839,963	12,659,671	4,804,159	-	4,804,159	
Sukuk Bonds	38,663,335	5,025,937	43,687,332	33,280,442	-	33,280,442	
	104,142,571	136,014,541	321,164,312	158,491,016	139,071,928	187,562,562	
Held to maturity securities							
Market Treasury Bills	1,095,857	-	1,095,857	56,180,391	-	56,180,391	
Pakistan Investment Bonds	31,753,773	-	31,753,773	26,002,520	-	26,002,520	
Other Federal Government Securities - Bai Muajja	-	-	-	524,256	-	524,256	
Term Finance Certificates	524,256	-	524,256	524,256	-	524,256	
Pakistan Euro Bonds	706,255	-	706,255	3,347,785	-	3,347,785	
Commercial Papers	681,557	-	681,557	296,821	-	296,821	
Overseas Bonds	9,714,052	1,065,079	10,750,131	7,653,735	-	7,653,735	
Sukuk Bonds	3,847,273	-	3,847,273	4,235,816	-	4,235,816	
	49,243,035	1,036,079	50,279,112	108,206,935	-	108,206,935	
Subsidiaries							
Alfalah Securities Private Limited	110,6,000	-	110,6,000	112,6,000	-	112,6,000	
Alfalah G-P Investment Management Limited	130,493	-	130,493	130,493	-	130,493	
Alfalah G-P Value Fund	-	-	-	100,000	-	100,000	
Alfalah G-P Cash Fund	525,474	-	525,474	525,474	-	525,474	
	1,036,967	-	1,036,967	1,581,957	-	1,581,957	
Associates							
Alfalah Insurance Limited	68,990	-	68,990	68,990	-	68,990	
Sapient Wind Power Company Limited	978,123	-	978,123	978,123	-	978,123	
Alfalah G-P Money Market Fund	55,153	-	55,153	46,672	-	46,672	
Alfalah G-P Income Multiplier Fund	250,000	-	250,000	250,000	-	250,000	
Alfalah G-P Sovereign Fund	200,000	-	200,000	200,000	-	200,000	
Alfalah G-P Islamic Shura Fund	250,000	-	250,000	250,000	-	250,000	
Appollo Flurries Limited	-	-	-	790,400	-	790,400	
	1,802,156	-	1,802,156	1,584,195	-	1,584,195	
Investments at cost							
	242,40,665	132,050,120	381,458,085	291,251,033	129,071,905	419,319,029	
Provision for diminution in the value of investments	926	12,372,785	-	12,372,785	16,345,811	-	16,345,811
Investments (net of provisions)		241,327,854	132,050,120	379,275,604	281,912,212	129,071,905	412,963,216
Surplus on revaluation of held for trading securities - net	918	109	-	109	229,063	-	229,063
Surplus on revaluation of available for sale securities - net	202	7,636,013	2,071,811	9,707,824	3,365,358	522,095	3,887,453
Total investments		241,364,036	141,229,531	389,092,657	293,585,713	129,604,007	412,054,714

Source: Annual Report 2016 of Bank Alfalah Pakistan

Annexure 6. Stylized Balance Sheet of an Islamic Bank in Malaysia

STATEMENTS OF FINANCIAL POSITION
as at 31 December 2016

	NOTE	GROUP		BANK	
		31.12.2016 RM'000	31.12.2015 RM'000	31.12.2016 RM'000	31.12.2015 RM'000
Assets					
Cash and short-term funds	3	3,963,417	2,281,669	3,963,268	2,271,738
Deposits and placements with banks and other financial institutions	4	100,000	100,000	100,000	100,000
Financial assets held-for-trading	5	574,833	423,573	569,750	418,778
Derivative financial assets	6	124,572	119,359	124,572	119,359
Financial assets available-for-sale	7	9,957,286	9,637,716	9,957,243	9,638,173
Financial assets held-to-maturity	8	57,703	59,352	57,703	59,352
Financing, advances and other	9	39,189,274	34,294,690	39,189,274	34,294,690
Other assets	10	99,015	70,796	95,929	68,335
Statutory deposits with Bank Negara Malaysia	11	1,374,876	1,291,460	1,374,876	1,291,460
Current tax assets		1,279	40,127	1,737	40,111
Deferred tax assets	12	48,378	35,182	48,378	35,182
Investments in subsidiaries	13	-	-	15,825	15,825
Property and equipment	14	185,561	208,518	184,547	208,347
Total assets		55,676,697	40,763,719	55,683,301	40,761,067
Liabilities and equity					
Deposits from customers	15	45,940,414	43,556,350	45,949,715	42,564,347
Investment accounts of customers	16	3,812,261	676,109	3,812,261	676,109
Deposits and placements of banks and other financial institutions	17	30,000	-	30,000	-
Derivative financial liabilities	6	111,089	101,013	111,089	101,013
Bills and acceptance payable		46,278	122,577	46,278	122,577
Subordinated Sukuk Murabahah	18	704,393	704,390	704,393	704,390
Other liabilities	19	601,759	544,309	598,591	503,909
Zakat and taxation	20	45,946	75,817	45,919	75,847
Total liabilities		51,291,231	45,731,151	51,297,346	45,724,074
Equity					
Share capital	21	2,404,384	1,363,383	2,404,384	1,363,383
Reserves		1,981,082	1,669,385	1,981,571	1,669,770
Total equity		4,385,466	4,032,368	4,385,955	4,033,053
Total liabilities and equity		55,676,697	40,763,719	55,683,301	40,761,067
Restricted investment accounts managed by the Bank	16	141,343	82,367	141,343	67,967
Total Islamic banking asset owned and managed by the Bank		55,818,040	40,846,286	55,824,644	40,846,634
Commitments and contingencies	43	13,704,559	11,692,303	13,704,559	12,692,303

Source: Annual Report 2016 of Bank Islam Malaysia

FINANCING, ADVANCES AND OTHERS

By Train and Ship to Central Asia

Source: Annual Report 2016 of Bank Islam Malaysia

Annexure 8. Stylized Balance Sheet of a Conventional Bank in Malaysia

	Note	Group		Bank	
		2017	2016	2017	2016
		RM'000	RM'000	RM'000	RM'000
Assets					
Cash and short-term funds	5	50,334,290	58,180,545	30,714,527	38,350,931
Deposits and placements with financial institutions	6	16,988,391	15,444,630	21,372,493	19,539,287
Financial assets purchased under resale agreements	7(a)	8,514,283	7,412,513	7,633,503	7,213,313
Financial assets at fair value through profit or loss	8	25,217,493	25,495,050	7,896,677	7,980,314
Financial investments available-for-sale	9	109,070,244	91,354,354	89,286,739	74,964,701
Financial investments held-to-maturity	10	20,184,773	18,011,507	17,763,565	11,581,311
Loans, advances and financing	11	485,584,362	471,714,905	290,997,969	295,626,336
Derivative assets	12	6,704,651	6,511,703	6,865,221	8,520,918
Reinsurance/reinsurance assets and other insurance receivables	13	3,933,772	4,119,386	—	—
Other assets	14	9,698,140	10,376,560	4,801,397	3,603,512
Investment properties	15	753,555	758,482	—	—
Statutory deposits with central banks	16	15,397,213	15,874,254	7,746,700	7,580,715
Investment in subsidiaries	17	—	—	22,057,063	22,568,547
Interest in associates and joint ventures	18	2,772,324	2,210,636	472,016	452,118
Property, plant and equipment	19	2,655,018	2,375,429	1,165,908	1,290,761
Intangible assets	20	6,753,939	7,345,524	568,030	530,549
Deferred tax assets	21	859,318	950,344	315,013	358,867
Total assets		765,301,766	755,956,253	509,666,821	496,062,610
Liabilities					
Customer funding					
- Deposits from customers	12	502,017,445	485,514,920	328,938,600	371,278,295
- Investment accounts of customers*	6(b)	24,555,445	31,543,587	—	—
Deposits and placements from financial institutions	12	42,598,131	30,854,693	37,645,134	29,856,700
Obligations on financial assets sold under repurchase agreements	7(b)	5,367,086	2,951,951	5,249,316	3,937,951
Derivative liabilities	12	7,721,015	8,228,060	7,179,598	6,802,221
Financial liabilities at fair value through profit or loss	23	6,375,815	5,987,230	5,483,120	5,385,159
Bills and acceptances payable		1,894,046	1,808,066	1,384,983	1,000,777
Insurance/retakaf/contract liabilities and other insurance payables	24	25,118,843	23,948,219	—	—
Other liabilities	25	19,179,140	17,128,326	16,910,597	17,495,698
Recourse obligation on loans and financing sold to Dagamas	26	1,543,501	1,774,588	1,543,501	1,774,588
Provision for taxation and zakat	27	746,494	419,729	385,876	47,574
Deferred tax liabilities	28	732,079	777,516	—	—
Borrowings	29	34,305,618	38,847,056	27,106,442	28,927,427
Subordinated obligations	30	11,979,323	19,906,706	9,342,526	13,262,872
Capital securities	31	6,284,180	6,109,993	6,284,180	6,125,976
Total liabilities		690,118,161	665,481,430	447,414,273	439,057,078
Equity attributable to equity holders of the Bank					
Share Capital	32	44,250,380	40,149,200	44,250,380	40,198,200
Share premium	25(b)	—	38,378,705	—	28,878,705
Shares held in trust	32(c)(e)	(183,438)	(125,309)	(183,438)	(125,309)
Retained profits	33	25,268,743	14,409,675	13,572,235	4,459,832
Reserves	34	3,652,929	15,160,442	4,613,371	13,601,206
		72,988,614	68,515,731	62,252,548	57,064,632
Non-controlling interests					
		2,194,991	1,059,092	—	—
		75,283,605	70,474,823	62,252,548	57,064,632
Total Liabilities and shareholders' equity		765,301,766	755,956,253	509,666,821	496,062,610
Commitments and contingencies	31	811,374,001	786,438,609	761,441,355	721,129,524
Net assets per share attributable to equity holders of the Bank		RM6.77	RM6.72	RM5.77	RM5.59

Source: Annual Report 2017 of MAYBANK Malaysia

Annexes 9. Stylized Disclosure of Balance Sheet of a Conventional Bank in Malaysia

11. BANK ACTIVITIES AND FINANCIAL POSITION

(a) Gross impaired loans, advances and financing by economic purpose are as follows:

	Group		Bank	
	2017 RM'000	2016 RM'000	2017 RM'000	2016 RM'000
Purchase of securities	275,691	201,865	111,430	142,397
Purchase of transport vehicles	349,622	330,144	100,104	107,157
Purchase of landed properties				
- Residential	717,419	627,185	376,994	324,843
- Non-residential	992,952	925,121	572,596	820,399
Purchase of fixed assets (excluding landed properties)	1,512,007	474,886	1,483,571	419,861
Personal use	160,019	160,544	128,540	121,540
Credit card	90,831	97,424	61,177	60,647
Purchase of consumer durables	106	12	50	18
Contributions	1,104,782	1,429,745	1,306,835	1,034,455
Working capital	5,381,439	6,094,034	3,425,896	3,196,560
Others	145,811	728,139	349,530	284,021
Gross impaired loans, advances and financing	11,549,903	11,055,389	8,870,841	7,180,384

(b) Impaired loans, advances and financing by geographical distribution are as follows:

	Group		Bank	
	2017 RM'000	2016 RM'000	2017 RM'000	2016 RM'000
Malaysia	5,619,124	5,754,107	3,896,008	4,241,424
Singapore	2,931,842	1,587,353	1,897,765	1,570,957
Indonesia	1,417,699	1,993,708	-	-
Lebanon Offshore	244,721	209,953	244,721	209,953
Hong Kong SAR	886,737	1,001,921	878,849	1,051,921
United States of America	572	611	-	-
People's Republic of China	1,054	5,878	1,054	5,878
Vietnam	68,271	32,976	67,221	31,282
Bruce	38,329	21,882	38,329	21,882
Lambang	97,667	95,619	-	-
Bahrain	5,063	5,698	5,063	5,698
Philippines	123,195	135,823	-	-
Thailand	38,438	31,882	-	-
Jack	41,730	2,414	41,730	2,414
Others	15,871	38,351	-	-
Gross impaired loans, advances and financing	11,549,903	11,055,389	8,870,841	7,180,384

Source: Annual Report 2017 of MAYBANK Malaysia

Annexure 10. Sample of Banks for Pakistan and Malaysia

Countries	Conventional Banks	Islamic Banks
Pakistan	1 ALLIED BANK LTD	1 BANK ISLAMI PAKISTAN
	2 ASKARI BANK LIMITED	2 MEEZAN BANK LTD
	3 BANK AL HABIB LTD	3 DUBAI ISLAMIC BANK PAKISTAN
	4 BANK ALFALAH LTD	4 BURJ BANK LIMITED
	5 THE BANK OF KHYBER	5 ALBARAKA (PAKISTAN) LIMITED
	6 BANK OF PUNJAB	6 UBL ISLAMIC
	7 FAYSAL BANK LIMITED	7 AL FALAH ISLAMIC
	8 HABIB BANK LTD	8 ASKARI ISLAMIC
	9 JS BANK LIMITED	9 FAYSAL ISLAMIC
	10 KASB BANK LTD	10 NBP ISLAMIC
	11 MCB BANK LTD	
	12 NATIONAL BANK OF PAKISTAN	
	13 NIB BANK LIMITED	
	14 SILKBANK LTD	
	15 SONERI BANK LTD	
	16 STANDARD CHARTERED	
	17 UNITED BANK LIMITED	
Malaysia	1 HONG LEONG BANK BHD	1 RHB ISLAMIC BANK BERHAD
	2 AFFIN HOLDINGS BHD	2 CIMB ISLAMIC BANK BERHAD
	3 BIMB HOLDINGS BERHAD	3 BIMB HOLDINGS BERHAD
	4 HONG LEONG FIN	4 BANK ISLAM MALAYSIA BERHAD
	5 AMMB HOLDINGS BERHAD	5 HONG LEONG ISLAMIC BANK BERHAD
	6 CIMB GROUP HOLDIN	6 HSBC AMANAH MALAYSIA BERHAD
	7 MALAYAN BANKING BHD	7 KUWAIT FINANCE HOUSE (MALAYSIA)
	8 PUBLIC BANK BHD	8 OCBC AL-AMIN BANK BERHAD
	9 RHB BANK BHD	9 PUBLIC ISLAMIC BANK BERHAD
	10 ALLIANCE FINANCIAL	10 MAYBANK ISLAMIC BERHAD
		11 STANDARD CHARTERED
		11 SAADIQ BERHAD

