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TECHNOLOGY, ISLAMABAD



# Impact of Bank Diversification on Effectiveness of Monetary Policy: Case of Pakistan

by

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in the

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*Dedicated to my beloved parents and my siblings who always encourage and support me.*



## CERTIFICATE OF APPROVAL

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## *Abstract*

The study examines the impact of the moderating role of bank diversification and the interest rate on the effectiveness of the monetary policy. By using banking sector data in Pakistan, this study examines the relationship between the effectiveness of monetary policy and the diversification of banks. Study reveals that bank diversification enhances the effect of monetary policy. For this study, the dependent variable is monetary policy having loan growth as its main element and the independent variable is bank diversification with its major factors i.e. equity, liquidity, size, and diversification. Interest rate is considered as an interaction term to about how moderates the relationship between an independent variable and dependent variable. Monetary policy affects the economy through several channels such as monetary policy impacts the money supply in an economy, which influences interest rates and inflation rate. For example, it increases the financing costs of organizations and thereby decreases investment. This is the interest rate channel. Monetary policy may also affect the behavior of banks such as bank lending. For that purpose, Panel Regression (Fixed Effect Model), correlation and descriptive statistics are used to find out the impact of bank diversification on the effect of Monetary Policy. The finding of this study shows the negatively significant relationship between monetary policy and bank diversification so it indicates that restrictive monetary policy has a larger effect on banks with diversified assets. These results suggest that bank decrease their loans as they become more diversified.

**Keywords: Monetary Policy, Bank Diversification, Loan Growth.**



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# Abbreviations

|             |  |
|-------------|--|
| <b>BIS</b>  | Bank for International Settlement      |
| <b>CB's</b> | Consolidated Banking Statistics        |
| <b>CBK</b>  | Central Bank of Kenya                  |
| <b>CRR</b>  | Cash Reserve Requirement               |
| <b>DSGE</b> | Dynamic Stochastic General Equilibrium |
| <b>E.U</b>  | European Union                         |
| <b>GDP</b>  | Gross Domestic Product                 |
| <b>LG</b>   | Loan Growth                            |
| <b>MP</b>   | Monetary Policy                        |
| <b>OMO</b>  | Open Market Operations                 |
| <b>PBC</b>  | People Bank of China                   |
| <b>SRR</b>  | Statutory Liquidity Ratio              |
| <b>SME</b>  | Small Medium Scale Enterprises         |
| <b>U.S</b>  | United State                           |

# Chapter 1

## Introduction

### 1.1 Theoretical Background

Monetary Policy (MP) is an essential part of economic policy that deals with money supply growth rate and size for any economy. It is a powerful tool that helps to regulate the macroeconomic indexes just as inflation moreover a comparable regulatory organization is answerable for formulating the Monetary Policy (MP).

Monetary policy (MP) tends to help to raise the financing cost of firms and consequently reduces the investment. It necessitates the usage of instruments of Central Bank to influence interest rates along with money supply in any economy to mediate the financial markets and overall prices. MP has a deep impact on the economy using various channels. For case in point, it inflates the costs of financing corporations and as a result the investment is decreased. This phenomenon is also known as the Interest Rate Channel. The behavior of Banks is deeply impacted by this phenomenon. Balance sheets must be regulated by Banks to meet the new reserve requirement rate in case the central bank refuses reserves. Restraint liabilities that can be accessed by the banks i.e. Remuneration of their reserves is helped by cash deposits (CD) else, assets adjustment must be needed by the bank, specifically the loans. This phenomenon is known as the bank lending channel.

These studies dismiss the relationship between MP and business diversification

(BD). In the preceding study we are investigating diversification effect of the assets of banks on the Bank Lending. This study focus mainly on examining the connection among the Bank Diversification and Monetary Policy. By utilizing the level data of banks in Pakistan, we can probe the link between the effectiveness of Monetary Policy and Bank Diversification. More specifically, at times of recession, MP involves some monetary tools which tend to increase the supply of money and lowers the rates of interest just to trigger the aggregated demand in the economy. The process of allocation of the capital in such a way that it reduces the exposure to any one certain asset or risk is called diversification. A common approach toward diversification is risk reduction or volatility by putting your investment in different type of assets. Foregoing studies have been done to observe the certainty that either the behaviour of lending to individual banks depends on their features or any other stated parameters this was done with the help of the Bank Lending Channel. [Kashyap and Stein \(2000\)](#) found out that smaller banks is to lessen their lending in response to shrink the MP. In addition to the former reference, ([Altunbaş, Fazylov, & Molyneux, 2002](#)) also shows the impact of MP on smaller banks usually rely on capitalization. Hosono (2006) demonstrated that the banks having low value of liquidity in response to the tightening of MP results in decrease value of their lending. Moreover, [Gunji and Yuan \(2010\)](#) found out that the MP impact is stronger on lending for banks that are less profitable.

According to bank lending network, earlier research has examined whether the lending performance of single banks be determined by on their features. Using numerous clarifications, ([Kashyap & Stein, 2000](#)) establish that minor banks decrease their advancing in reaction to contraction of MP. Furthermore, [Altunbaş et al. \(2002\)](#) verified that banks through low liquidity reduction and loaning in reaction to constriction their MP. Additionally, [Gunji and Yuan \(2010\)](#) originate that the effect of MP on loaning is better used for less banks that makes money.

The process like monetary transmission method that also affects the monetary techniques is essential as well as far appropriate towards the success associated with monetary policy. Yusof (2006) evaluated the monetary policy approach in order to have a certain effect on total and sectoral outputs in Asian countries

specifically Malaysia, Indonesia, the Philippines, Singapore and Thailand. The research applied co-integration and VECM method. Karim et al. (2006) examined the effects of MP on many conventional banks of Malaysia by giving capitals to several financial markets using VAR model.

[Cetorelli and Goldberg \(2008\)](#) reviewed economic policies by using the bank financing approach of two different type of banks, which includes locally focused banks that do not have worldwide access, as well as banks with international exposure. Their research highlighted that monetary policy exclusively moves throughout locally focused banks but internationally focused banks depend on central funds marketplace in stabilizing their particular liquidity. That is why, they determined about the bank financing approach when you look at the US are going to be reducing in strength in case banking sector gets to be more globalized.

Empirical studies on the banks of United States found out the channel of bank lending existence. In specific, ([Kashyap & Stein, 1995a](#)) claimed that the MP impact on is stronger on lending for banks which have less liquid balance sheets this time they used the bank-level data of the United States to 1993 from period of 1976. [Kashyap and Stein \(2000\)](#) found out the evidence that the undercapitalized banks are not capable of raising the alternative of funds to continue the loans of finance during contractionary policy in the United States. During recent research, the results that was deducted by [Kishan and Opiela \(2000\)](#) found out the evidence that the undercapitalized banks are not capable of raising the alternative of funds to continue the loans of finance during contractionary policy in the United States. During recent research, the results that was deducted by [Kishan and Opiela \(2006\)](#), suggested that U.S. contractionary MP reduce the loans of the banks having low and small relative capital to those having capital that is high, and MP that is expansionary is not capable of increasing the growth of loan of the capital that is low of banks is relative to the banks that are high capital. In 2006 Ashcraft pointed out a different supply of loan response to alter in the rate of across banks federal funds in the United States. During the elasticity output aggregate to lending of bank is very scarce.

MP is extrinsic to the decisions of intermediaries of finance, and as it has ability to vary over time that makes it possible to separate it from differences of cross-section in correlation in the path between investments of internal funds and organizations of finance using state variable MP. It will also examine the differences of cross-section in banks responses to MP and that in return can be explained easily by internal capital markets. It is evident by ([Kashyap & Stein, 1995a, 2000](#)) research that large banks have this capability of undoing the 6 Fed policies and response analyzing of the banks that are smaller to MP. Specially, my research is mainly focused on the differences between two classes of smaller banks in sensitivity of loan cash flow across different MP regimes. Banks of first class are operated within BHCs (multi-bank holding companies) by whom only one large bank is controllers. Several studies are being held on correlation between MP and financial-stability policy and on the recommendations for splitting these two. This canvass of MP is challenged through this synopsis that during the crisis of banking, rates of interbank interest become a key factor and is being used widely by the central banks for limiting banking threats systems and the markets of interbank. During recent crisis that was started in 2007August, in both the European Union and United States the interest rate setting, seemed to be heavily geared towards the stress of alleviation in the system of banking and in particular in the interbank market. Previously Policy of rate of Interest have been used in disruptions of finance similarly, Good friend in 2002 indicated the point that Fed restricted the rates of interest aggressively in reaction to two of the most serious financial crises. In October 1987, stock market crashed and following the trouble default of Russia in 1998.

The long debated view originated by Bagehot (1873) is also contradicting the practice of interbank rates reduction during financial central banks. It must also provide the banks liquidity having high penalty rates of interest and that can also be seen in example quoted by Martin in 2009. They are developing a specific interbank market model and trying here to prove that central banks policy of rate of interest of can directly be improved the conditions of liquidity in the lending market of interbank rate during crisis finance. In their model optimal policy is



comprised of minimizing the rate of interbank during a crisis. This model implies that during a systemic crisis the separation supported conventionally between MP and prudential regulation should be disclaimed.

In practice, Bank revenues is said to be cyclical from lending point of view and they are significantly relying on the stage of the economic cycle and loan customers strengths both. Financial advice and fee based services constitute more stability in stream of revenue, banks might emphasize on revenue lines of these types to smoothen the finance performances. They are likely to continue through different parameters a functional diversification like as insurance, commercial banks, and investment banks other financial services that are accomplished potentially of making revenues in different ways.

Espouser of 'diversification' suggested that BD can be benefitted by maintaining abilities across products and managerial skills (discussed in McLaughlin and Iskandar-Datta,2007), acquiring economies of scope by stabilizing overall profits and fixed costs over products spreading (Walter and Saunders, 1994 and also discussed in Lown et al, 2000). This study is mainly focused on MP and its impact on BD. Herwany in 2017 studied the impact of MP about the stock market liquidity in Indonesian market. His work concluded the effectiveness of MP on market liquidity and further concluded that between stock prices MP there is a negative relationship.

Central Bank use to communicate through MP for growth of economy. The money availability and its supply is mainly kept under control. The political goals are related to economic levels under the influence of government. The macro economic strength can be realized by achieving these goals. Central bank usually controls and manages the MP. Time Precision is the basic factor to be looked after by utilizing economic tools for the process of MP to be effective and smooth.

The stability of economy is solely dependent on MP. State Bank of Pakistan (SBP) controls economic activities by performing certain monetary actions. We can divide MP into two systems based on historical background. The period before 1990s was first type of system and the period after that can be categorized as second system. SBP conducts MP in Pakistan by using both indirect and direct tools.

MP is also being used by the central banks as a control over money, reported by Oxford Dictionary of Economics, and also its supply is being used to effect the economy. MP intervenes to ease financial crisis all over the world.

The relationship between aggregated stock liquidity and MP have been examined empirically by number of studies and mix trend is observed. [Goyenko and Ukhov \(2009\)](#) reported that in the markets of United States (US) for the period 1962-2003 there existed the strong predictability power of MP towards liquidity. The positive shocks of fund rate and negative shocks can result in decrease of the market liquidity as being found out in number of studies. MP shocks are being advanced from bond market to stock market and here bonds market is being served as a transmitter. However, [Chordia et al. \(2005\)](#) explained that MP has fair anticipating power for market liquidity.

In using diversification the academic literature measures to analyze business models of banks, and this research evaluate the diversification effect strategies on firm performance using the index of focus that is based on the squares summation of shares in various bank income mix items and balance sheets. Most of the existing studies up till now examine the models of bank business in terms of the mixture of both assets and income. This research are also considering the mixture of funding and hence the addition of a third dimension for analyzing this model. The strategy of bank funding intermediation activities is recognized as crucial for banks as the banking industry is becoming more complex significantly, dependent and global on developments of financial markets because of structural financial changes bring innovation and deregulation of finance. In 2009 [Borio](#) noted that funding strategy alterations on the asset side can be triggered by weaknesses.

One of the most significant strategy in the literature of finance is Diversification. This is also important strategy for banks as a financial institution. Credit portfolio of banks can be diversified to enhance the throughput and to lessen the credit Portfolio critical risk. Tremendous amount of studies has been done in the area of diversification.

[V. Acharya and Naqvi \(2012\)](#), was one who studied the importance of diversification on credit portfolio of banks. He inspected the Italian banks deeply and found

out that both diversification i.e. sectoral and industrial lessens bank returns while producing precarious loans. However in (Hayden, Porath, & Westernhagen, 2007), found out that diversification seem to be linked the minimization in the returns bank after the deep investigation of German banks, and even after taking control of risk. Only in very few cases (e.g., banks industrial diversification and high-risk) they got statistically notable positive relationships between bank returns and diversification in 2004 Kamp et al. analyzed banks of Germany that they might be diversifying their portfolios of loan or may be focusing on particular industries and realized that many banks significantly enhanced portfolio of loan diversification. Dionne and David discussed how big banks in Sweden manage their portfolio of loan and scrutinized the strategy behind portfolio of loan diversification in 2005 at banks. In 2006 Schertler found out that in total domestic lending by credit cooperatives and bank savings (include their regional institutions), specific sectors, banks that are highly specialized and smaller banks gives positive response and, in related cases, more strongly to domestic sectoral growth.

It's necessary to understand the transmission mechanism for MP. Because of its importance, many banking organizations have studied it extensively at theoretical as well as at empirical level. The present evidence shows that banks change their behavior of lending in very specific ways that further follows alteration in MP. Is there any effect of balance sheets of banks on MP? Japanese are now a days paying heed to this question. Some economists argued that expansionary of Japan MP during the 90s was not much actual than in earlier times that is because of non-performing loans of banks and sparse capitals put constraints on their ability to increase new loans mentioned in (Nagahata & Sekine, 2002), while rest argued that such a credit crisis is not necessary (Krugman, 1998).

In September 2002 MPC (Monetary Policy Committee) was established and used the MPR (Monetary Policy Rate) between the tools of other monetary to stabilize and control the economy. The Monetary Policy Rate for all the other rates serves as a reference rate in economy, in 2011 BOG. This rate also work as an indicator that regulates liquidity and macroeconomic stability in an economy. The private sector is the most important factor in growth rate of economy. In the private sector

a large number of constituents are determined in the SME (Small Medium Scale Enterprises). The contribution of this sector for gross domestic product (GDP) of Ghana by creating jobs can't be underestimated.

Financial intermediation which is measured usually by the interest rate spread is a very pivotal factor in the development of economics through resources mobilization for effective objectives (Folawewo & Tennant, 2008). Scanty access to finance or credit and high cost of credit quench the productivity and growth of Small Medium Scale Enterprises and consequently decelerate the economic growth. It's believed by some economists that liberalization of finance steers the growth and vice versa. Baoko, Acheampong, and Ibrahim (2017) concluded in their research that enhancing the mobilization of deposits do not translate into credit supply to the private sector. Also, (Abor & Biekpe, 2007) said that Small Medium Scale Enterprises that are older and larger usually depend on the loans of banks. Therefore, if there are favorable lending rates in the financial market to the Small Medium Scale Enterprises they will be easily able to access finance at a lower cost which will push forward the growth.

Santos and Castro in 2010 said that the MP valuation as it is being one of many key factors that affects the rate of lending abruptly. However, there are different kinds of transmission mechanisms in MP to ensure its potency. The lending channel of a bank is possible under two situations only; if there are bank-dependent borrowers for their loan requirements and if the loans supplied by these commercial banks are influenced by movements in an economy's MP (Coll, Torres, Santander, et al., 2005). Therefore, in a prospered economy that depends mainly on bank lending and who has a highly concentrated financial sector there it becomes the responsibility of the Central Bank to make MP effective.

In his paper (Mishkin, 2011), emphasized that it is a serious duty of monetary authorities that they need to be oracles in exploring the influence of policy actions and monitoring on an economy when conducting any MP. This requires a very deep knowledge of the transmission of monetary mechanism. Monitoring Policy Rates changes influence the lending rate of commercial banks and as it increases or reduces

the amount of money available to the market for business and to individuals for trading.

The era of 1990s was about the economy liberalization era where controls of interest rate were detached and rates of exchange were made more flexible, escorting in a new era of MP where the main tool was open market operations (OMO). This period was characterized via widening interest spread and high interest rates that inhibited that restrain the assist of flexible interest rate policy as savings reducing the cost of capital and increase in financial. The competition against double digit inflation rate was spurred on by accommodation of troubled banks and excessive money supply. In an atmosphere of extreme uncertainty and instability, CBK used indirect tools to mild inflation. In 1996, the CBK Act was modified and this allowed the CBK to shift from broad money targeting to broader money targeting as the principal concept of stock money, (Kinyua, 2001).

Further current study has focused on studying effect of MP on measures of total assets related profit like returns of bank. The composition and size of the banks' balance sheet is also affected by the level of rates of interest, and these balance sheet changes can contribute to the better explaining the changings in bank profits. For instance, there exist a long existing proof that linkage of contractionary MP is to lower the aggregated credit, discussed in papers of ([Kashyap & Stein, 1994](#); [Blinder, Ehrmann, Fratzscher, De Haan, & Jansen, 2008](#)), which in return would contribute to lower the income interest. Banks also change their liabilities composition of (e.g. term deposits related to wholesale funding) in interest rates response of changes in, assets (e.g. debt securities holdings relative to bank credit) and further creating channels for rates of interest to influence the income of bank. With a combined study we contribute to the literature the interest rate levels effect on income of bank and evolution of balance sheet, growth examining of these variables level in addition to the returns of bank that constitute the existing work focus on interest rates and bank profitability. This widespread approach can guide us understanding the transmission of MP for bank profits in a better way.

It is essential to understand the link among profitability and interest rates of bank for evaluating effect of stance of MP as captured by the structure of interest rate,

such as, the yield curves slope and level on the financial sector soundness. MP isn't for sure a single influential factor on the structure of interest rate, but it still has a major influence on it. The affect are set by the central bank on longer-term and rates short-term rate through securities direct purchases and by market expectations guidance of participants about the rate of short-term.

After the Great Financial Crisis the relationship amongst bank profitability and MP has acquired great importance. Interest rates short termed has crumpled to zero value and interest rates that are long termed degrades to low levels historically, notably in the central bank forward guidance wake and central bank asset that are purchases of large scale in major advanced economies. Significantly, 10-year estimated term premia in a number of jurisdictions have mostly been negative.

The relationship between bank profitability and MP is not extendedly researched. Many papers analyze the link among business conditions and profitability of bank, production of different results on the link among the structure of interest rate and profitability of bank as a by-product only. In general, ([Demirgüç-Kunt & Huizinga, 1999](#)) to relate the macroeconomic indicators to banks profit, such as interest rates that are real. They found out that the real interest rates that are high are connected to interest margins that are high and profitable, specially in countries that are developing where deposits demand are commonly paid below the interest rates of market. Current cases from the preceding literature comprise of the paper of ([Gambacorta, 2009](#)), who used data of aggregated banking sectors for the OECD 10 countries and found out the certain relationship between the yield curve slope and net interest rate income. Between the short-term interest rate and bank loss provisions they got a positive relationship. In ([Bolton, Santos, & Scheinkman, 2008](#)) obtained same results using data of bank level and allowed it for effects that were asymmetrical over the cycle of business. The research explored the relationship between MP and Bank Diversification in more depth and just concentrating on the link among the bank performance and interest structure rate.

By taking into account many empirical literature review, we concluded that expansionary MP shocks persistently increasing risk of bank asset in the United

States, but here we are trying to model the risk of bank asset held in a framework of DSGE and evaluating how should MP be conducted in the presence of a risk taking channel. As discussed by (Dell’Ariccia, Igan, Laeven, & Tong, 2014), just assume that if banks can have a choice from a continuum of investment projects, each defined by different risk return characteristics. As the depositors cannot observe choice and moreover the owners of bank are protected by limited liability, an agency problem emerges, banks are isolated partially from the downside risk of the investment and hence choose a level of risk that exceeds what would be chosen if these frictions were absent. With respect to this benchmark case latter, excessive risk leads to inefficaciously low levels of capital, consumption and output. Moreover, we are showing that real risk lower levels of the free rate induce banks to choose more risky investments.

MP mainly works along with the quantities or prices. Nevertheless, the capacity of CB varies tremendously to effect market conditions. The efficacy of its actions by price setting essentially evolves financial systems to transmit the MP signaling effect. Un actualized financial markets and shallow banking systems hamper the efficiency of the MP signal, while exchange that is inflexible rate reign leave a little slot for the rate of exchange of channel to perform a specific role in the Monetary transmission Mechanism (MTM). Conversely, intercession over different quantities is often tethered to propensity of CBs to affect the credit supply, but constrained credit and excess liquidity environments can soften the MTM through the credit channel.

When we utilize MP under the Islamic banks rules, in assessing the MTM specific care is required. Financial systems of Islamic bank are heterogeneous, they can still be in developing phase or they can be long lived Islamic, considering it less or more mature conventional banking system. Introducing Islamic banks in the environments that are macro financial where the channel of interest rate is well established through the Islamic financial system that can result in conventional MPT, even if this transmission has not been prophesied by the CB.

The important presence of Islamic banks in other parts of the world and in

Malaysia, coupled with the regional and global financial crises that happened periodically, has panned up a lot of interest in the business model of Islamic banking. The main interest has been now on how business operations of Islamic banking respond to the stance of MP or variations of interest rate considering a key aspect of the MTM under a dual banking system. As elaborated by (Ergeç & Arslan, 2013), spot the behavior of Islamic financing and its relation towards MP variables is central for MTM, risk management and financial stability. Moreover, understanding the potential of MTM particularly through the lending channel of bank will be changed as the Islamic banking system assumes an important increase in role as in the case of Malaysia. For properly implementing MP it will be crucial in future. The BLC relies on behavior of bank as MTM is an integral part. According to channel lending, MP should have this potential of transferring the supply of loan of various banks and some of the borrowers should be dependent on that bank. Shrinking MP can, due to credit market imperfections, lower the loan supply challenged by various banks. Supply of loan is enhanced by Expansionary policy on the lending of some banks due to a lack of constraints. Thus, for MP given stance, bank lending evidence channel rises from the asymmetric cross-sectional loan response through unconstrained and constrained banks. These policy effects on the growth of loan, and on expenditures, apprehend the money channel or regular interest rate.

On 1st January 1999, 11 countries of Europe irrevocably fixed their currencies exchange rates and with the conduct of a single MP started monetary union in Governing Council responsibility of the of the Central Bank of Europe. This creation for several countries of a single currency demand the understanding need of the process of transmission of MP in area of new currency. While wide array is offered by different transmission theory of channels (e.g. interest rate channels the exchange rate or asset price.), those who offer a significant role are special interest banks here and mostly there are two reasons.

Specialize? The literature diversification in corporate finance focus is established well, in fact it isn't yet obvious that either conglomerates perform more poorly or better than firms that are focused. Furthermore, the conclusions may or may



not apply to the sector of banking in the general of finance literature corporate, because from other firms banks are different. Also banks face conflicting regulations sometimes and supervision by whom incentives are created to diversify or focus. Entry, asset, and branching restrictions of investment often encourages focus, while to reduce risks the supervisors tend to motivate diversification.

There are some researches on the relationship between performance of banks and diversification but with the evidence of supporting both arguments there is no solid consensus so far. Diversification proponents suggest that banks that are diversified can benefit from managerial skills of leveraging geographic regions, and abilities across products (discussed by McLaughlin and Iskandar-Datta in 2007), through spreading fixed costs gaining economies of scope over regions and products (Puri and Drucker, 2009), and supermarket providing's of finance to the customers who made the demand of multiple products. On other side, focus supporters discuss that the banks which are diversified can suffer a dilution of the managements comparative advantage by going beyond their existing expertise (Klein & Saidenberg, 2000), diversification inducing competition (Winton, 1999), and resulting from value-decreasing increased agency costs activities of the managers who have reduced their personal risk (Amihud & Lev, 1981; S. Deng & Elyasiani, 2008; Laeven & Levine, 2007).

We measured differences in expected costs and profits among focused banks that are diversified and hypothetic banks based on the diversification economies framework. Diversification can be categorized in four dimensions such as deposits, loans, geography and assets. We found out that all these four diversification dimensions lessen the profits and conversely increasing the costs for the banks of China even after risks controlling, and these results continue throughout regardless of different measures of alternative of performance and diversification. Besides this we found out that conglomerate affiliation and foreign ownership play an important alleviating role for Chinese banks in the discount of diversification, in a way that conglomerate affiliation experience fewer economies of diversification or the foreign ownership banks with (either minority foreign or majority foreign), in other words, suffering less from increase in costs and loss of profits when they diversify.

For the stabilization of banking systems, it requires macroeconomic environment that is stable which helps to get the effective and efficient growth of savings and decision of investment. The banking performance of systems particularly in the MP areas, financial stabilization and transparent fiscal policy must be comprehended by measures of macroeconomics. SBP plays a significant role in the effectiveness and efficient economy growth by providing guidelines that are suitable to the organizations finance thus making possible for mobilization of the resources and the investors for the country's economic development. The risk capability of prediction and avoidance in order to overcome the losses is essential for the banks success. The easiest and effective funding source for competitive banking institutions is profit and it is the key requirement of any banking organization. In financial market the rising competition makes it obligatory for the banking industries success. These are the main reasons for the observation of the profitability of bank deeply as it is becoming a prime concern all over. They are also altering the effectiveness and efficiency of banks handling their portfolios like liabilities and assets to achieve maximum profitability and discover the areas where it can have potential space for enhancement in further profitability.

Besides the indecisive literature findings, most of the evidence of empirical documented on BD up till now is based primarily on other developed countries market and United States, by relatively fewer discussion and insight on the effects of diversification in the banking industry in transitional or emerging economies ([Odesanmi & Wolfe, 2007](#)) might be one of the few exemptions. When size consideration the on the world economy and impact of some markets that are emerging (like China) one may be surprised on noticing a big gap lie in the literature of banking and there aren't any experimental studies to document the diversification impact of strategies on Chinese performance of banks.

Contrarily, focus proponents argue that banks the diversified can suffer from weakening the respective management advantage that further result in organizational inefficiency ([Klein & Saidenberg, 2000](#)). The BD may also result in competition increase, which might make diversification less attractive (1999, Winton). For diversified banks, the costs of agency may increase more, as it might help in the

reduction of personal risk for the managers instead of value creation in stakeholders best interest (Amihud & Lev, 1981; S. Deng & Elyasiani, 2005; Laeven & Levine, 2007). international borders activities can lead to enhance the political risk and foreign exchange and different language dealing difficulties, cultures and laws, that can destroy shareholder value (S. Deng & Elyasiani, 2005)( Parke and Miller,2002), (Fauver, 2004).

In 2009 Busch and Kick examined the diversification income in the banking industry of (Goetz, 2012) studied how a diversification in banks affect the risk taking of competing and its own risk taking behavior, non-diversified banks. These findings shows that a banks diversification also impacts the competitors risk taking, even if these are not diversifying banks their activities. In (Fang, Hasan, & Marton, 2011), improvised that loan diversification negatively associated whereas diversification asset is directly proportional to bank performance.

To understand a concept that how geography diversification affects the banks, first we need to take a note of national MP through the rate of channel interest and the balance sheet channel that its impact can be asymmetry on different geographic areas (Carlino & DeFina, 1998; Smets et al., 2014) both provided the same evidence. But as a matter of fact some areas are more heavily affected than others. The organization of banking that operates in local and multiple economies might face a very different performance, liquidity situations, and loan demand, in every local market that is subjected to local borrower conditions (A. B. Ashcraft & Campello, 2007). The demands of sectors of manufacturing is more pro-cyclical for credit because the demands of durable goods manufactured are also pro-cyclical. The manufacturing sector as being more capital intensive, also focuses on investment that is less when we have usually high interest rates. When interest rates are high it result in increase of depress collateral values, debt services, erode cash flows, and thus reducing the worthiness of credit of borrowers and results increase of the external premium of finance. All loans including real estate, consumer and industrial are affected heavily. towns of Industries are infected more strongly by tightening monetary, not only by its direct impact upon companies of manufacturing, but also by its indirect effect on properties of real estate and local individuals,

whose worthiness of credit and values assurance are compromised for the reason that the income is slow and local economy employment growth in the industrial towns.

By following the study of (Kishan & Opiela, 2000) in his research paper that he published in 2000 we use a data of bank balance sheet to estimate the bank response of lending to the strategy of alterations in MP stance between 1991 and 1999. In contrast to the earlier European study by (De Bondt, 1999), banks are classified by us according to capital strength to see if these features may have a significant lending impact on the channel and size of asset. Using a data approach of panel, we found out that across the system of EMU, banks that are undercapitalized (of any size) are drawn to respond more to policy alterations. There are less evidences that suggest that only small banks that are undercapitalized are the bank lending channels conduit. These results, however, need to be qualified. Italy and Spain are the only two countries where the bank lending channel evidence is found. From suggestion, it appears that the lending channel of bank is pervasive more for the banks operating that is undercapitalized in the other EMU countries that are smaller.

Transmission mechanisms of monetary in United States using a set of microdata for banks were (Kashyap & Stein, 2000). In this paper it was evaluated that the lending impact on MP is strong for banks whose liquid balance sheets are less. Using data of banks for four European countries, Italy, Spain, France, and Germany, in (Favero, Giavazzi, & Flabbi, 1999) evaluated that the monetary contraction effect of in 1992 depended on size, liquidity of banks and the countries of their operation.

CBR level is announced and reviewed at least every two months including its movements by the MPC (Monetary Policy Committee), well in direction and magnitude both, and it further signals the MP stance. The commercial bank's proportion CRR which should be placed at CBK and these deposits are held at no interest in the CRR account. CRR reduction in the liquidity release enhancing the commercial banks capacity for credit expansion. This is then expected to increase the banks interest income and hence profitability increased. The CRR

increase tightens liquidity and also could dampen inflationary pressures that is demand-driven.

Very less research have focused specifically on the interest effectiveness of profitability rates of bank. English studied in 2002 that the relationship among bank margins of interest rate and risk of interest rate for industrialized countries that are 10 in number. It was found that the yield average on assets of bank is related more closely to rates that are long term than the average liabilities yield, interest margins can be raised by a steep yield curve. Recently, ([Alessandri & Nelson, 2015](#)) established a long-run relationship that is positive between the profitability of bank in the UK, yield slope of the curve and level.

Effectiveness of assessing MP is complex in the Islamic Banking presence, because through conflicting it needs constant examining and multiple dimensions sometimes. This includes the Islamic principles fundamental of profit-and-risk sharing and ex-ante interest payment, prohibition the conventional segment spillovers to the financial system of Islamic segment and the instruments in place and the MP framework. In the Islamic banking presence the MP needs to address the shallowness of financial system, fiscal dominance issues, and structural excess liquidity as in any of conventional systems. Public sectors Dominance, distorted the environments of credit also maximize the MP scope transmission via Islamic banks, or direct monetary financing of fiscal deficits.

## 1.2 Research Gap

This study measure the diversification and the relationship exist between the diversification measure and effectiveness of monetary policy. In Pakistan there is very limited research done on bank diversification and effectiveness of monetary policy so this research relies on research in Pakistan. There is no research conducted on Pakistani sample before so this research is conducted on check the relationship between bank diversification and effectiveness of monetary policy in Pakistani sample as banking sector of Pakistan because it is necessary to address impact of bank diversification on effectiveness of monetary policy in Pakistani banks. In Pakistan

it is necessary for banks need diversification in their income sources. Banks operating in competitive environment are more stable as they diversify their portfolios that results into enhanced performance and risk adjusted returns for the banks (Ampudia & Van den Heuvel, 2018).

### **1.3 Problem Statement**

Many issues regarding to monetary policy in the whole economy of the world raised by many researchers in their investigations. Monetary policy affects the economy through various channels. For example, it increases the financing costs of businesses and there by decreases investments. A major political issue is the relation of central banks to their governments: the fixed exchange rate system enables them to dominate monetary policy, but the system may yet collapse. The failure of the economy to achieve one of the Fed's targets would then activate a shift in monetary policy. The choice of a target, or set of targets, is a critical one for monetary policy. Possible targets contain money growth rates, interest rates, and the price level or expected changes in the price level.

### **1.4 Research Question**

#### **Research Question 1**

What is the impact of Bank diversification on effectiveness of monetary policy?

#### **Research Question 2**

How interest rate moderates the relationship between Bank diversification and effectiveness of monetary policy?

### **1.5 Objective**

#### **Research Objective 1**

To check the impact of bank diversification on effectiveness of monetary policy.

### **Research Objective 2**

To check the impact how interest rate moderates the relationship between Bank diversification and effectiveness of monetary policy.

## **1.6 Significance of the Study**

This study provide the guidelines to policy makers and researchers to increase the scope of monetary policy and bank diversification. This study will provide the multi theoretic concepts for improving the effect of monetary policy and policies about bank diversification practices. Monetary policy may also effect the behaviour of banks such as lending behaviour.

This study is going to recommend policy to Pakistani banks because Pakistani banks are not diversified. Pakistani banks are not use the policy of diversification or portfolio investment. As banks purpose is giving loan. For example commercial banks never give loan to agriculture. It never use diversification policy. Firstly the purpose of this study is to check is there any diversification policy in Pakistani banks exist or not. Secondly if diversification is happening then it would be more diversified for getting positive results and approve performance profitability. Pakistani banks did not give loan to different areas. So to sort out this issue this study is conducted and recommend the policy to Pakistani banks for diversification.

Loans growth has a significant and positive sign over all the pre-crisis regressions; the attitude to increase credit in that period was considered one of the most crucial driver to increase profitability and a good health indicator of a bank. Study of association between monetary policy and bank diversification is new and mixed evidence is being observed. This work is contextual in nature which actually means that yet Pakistani market is not fully explored and investigated in the context of Pakistani bank diversification and its possible effect on effectiveness of monetary policy.

MP is important in decisions the Pakistan makes about economic practices and regulations, but equally important are the fiscal policies, which government spending and tax reform are geared toward in stimulating the economy. Over all pre-crisis regressions Loans growth has a significant and positive sign; during the period of attitude to credit increase was considered for the bank a good health indicator and most crucial driver to increase profitability.

It is important for central banks is to conduct MP to accomplish price stability (low and stable inflation) and it help manage the economic fluctuations. Central banks conduct monetary policy by adjusting the supply of money, generally through open market operations. As these information is not equally available to everyone in the financial institutions and monetary policy effect business diversification. So, it can be hypothesized that bank diversification should be affected by monetary policy. This work is an empirical testimony about the above mentioned association of monetary policy and bank diversification of Pakistan.

## **1.7 Plan of the Study**

Chapter 2 includes the literature review of the past studies and hypothesis of the study. Chapter 3 covers the research methodology of the current research study. Data analysis and results are covered in Chapter 4. Finally Chapter 5 conclude the findings, and recommendation of the current research study.



# Chapter 2

## Literature Review

In Kenya [Were, Nyamongo, Kamau, Sichei, and Wambua \(2014\)](#) examined the effect of monetary policy by applying a macro econometric structural model. They have been used the variables interest rate and policy rate. In accordance to the bank lending methods and interest rate they have used this data. Findings of their study shows that variation in rate of monetary policy affects short term rates at a reasonable margin while it affects slightly on long term lending rates. In other words monetary policy rate effects on inflation that is negligible and on real economy.

The impact of MP shocks on Islamic and conventional and banks investigated by Syed H kassim, (2009). In Malaysian domain they have considered a dual banking system. They have used data from January 1999 to December 2006. Different variables used by them. For monetary policy measurement they have used interest rate.

If the banks expected to encounter problems to monetary policy reacting it would prepare buffers. Increase liquid assets is one of the way to do this. On the other way, financial institutions, that diversify their liabilities or assets might able to modify to variations in reserves. Additionally, the BD suggested by [\\*berger2010effects](#) activities are affected the performance of management, and they disclose that banks which is more diversified has higher costs and low profits. The assets diversification founded by Mao and [\(S. E. Deng, Elyasiani, &](#)

Mao, 2007) leads a minimum bond-yield circulate in openly traded bank holding corporations.

As in previous studies, if diversification does affect financing, the diversification of every behaviour of banks might be affect how MP effect bank lending. Thus, current empirical framework on the monetary policy transmission tools are tend to focus and wide ranging on the financial indicators role for example liquidity and size. These research overlook the linkage among Bank diversification and monetary policy, in the form of, e.g. the assets diversification. In their study, they examined the impact of the banks and asset diversification' on bank lending. To experientially explore the bank lending network, they present a banks diversification indexes that is operate in a standard model.

A number of intermediation models suggest that, for institutions, diversification creates it easy to attain reliability sin their act as monitors and screeners of borrowers (Ramakrishnan & Thakor, 1984; Diamond & Rajan, 2009; Boyd & Prescott, 1986; Gorton, Metrick, Shleifer, & Tarullo, 2010), a necessary fraction of private money creation now takes place completely outside of the official banking system argued by (Gorton et al., 2010), by the huge overnight volume repo finance in the “shadow banking” system.

The relevance of the bank lending network has been a debatable topic in the experiential literature, due to a fundamental identification issue (Gertler & Gilchrist, 1994; Kashyap & Stein, 1994, 1995b; Rudebusch, 2002). In contrast with the lending network Namely, a decline in aggregate lending after a monetary contraction might drive by demand, than supply. In that situation, other transmission networks (for example variation in exchange rate interest rates) may cause a bank lending and economic downturn follows passively. Studies that examine the response of aggregate credit to the monetary shocks, in the essence of (Blinder et al., 2008), are therefore inconclusive as regards the bank lending network existence.

The models which is based on bank (to which their study belongs) highlight numerous kinds of networks that affects monetary policy, the Önancial sector: By the banks incentives to monitor (Dell'Ariccia et al., 2014); the skewness of bank returns (Valencia, 2014); the borrowers screening through banks (Dell'Ariccia et

al., 2014); the effect on asymmetries of information (Loisel, Pommeret, & Portier, 2012; Mojon, Penalver, & Lojschova, 2018) V-rdy, Drees and Eckwert 2013; the bank loan incentives officers or asset managers whose incentives from profit maximization deviate (V. Acharya & Naqvi, 2012; Morris & Shin, 2014) the effect on titular contracts among financial institution and creditors that cannot be complete state-contingent (Allen, Carletti, & Gale, 2009) and moral hazard when policy rates are used like a bailout mechanism (Diamond & Rajan, 2012; Farhi & Tirole, 2012).

However, related to a study is (Freixas, Martin, & Skeie, 2011), they explore the interaction among the ideal prudential regulation and monetary policy rate however their attention is on the liquidity directive, while in that study focus is on bank capital regulation (by a leverage proportion). They examine that for the equally the bank's risk runs under a crisis and the pre-crisis bank's incentives to keep cash reserves, the policy rate acts. Furthermore, for the policy rates effect liquidity regulation cannot exactly substitute, means that conducting prudential and monetary policies individually is sub-optimal. Evidence that the information regarding interest rates conquer during economic expansions, and during recessions the information regarding future corporate cash flows dominates.

Bates et al. (2013) disclose that uncertainty about regulatory, monetary and fiscal policy has a negative/inverse impact on employment, investment, and output. (Chang & Feunou, 2013) state that the degree of uncertainty surrounding future MP affects the actual economy through the hiring and investment decisions of organizations. Ampudia and Van den Heuvel (2018) In Europe, empirically track that it is important to composition of balance sheets and understand the impacts of MP decisions on banks. In specific, the two researcher infer that with high deposit ratios banks are in general low sensitive to variations in interest rates, instead when rates are less.

Arseneau (2017) shows that, the effect of MP in the banking industry of US transmitted through a variation in interest rates significantly different, and much of this heterogeneity can be described by differences of cross-bank in the provision of liquidity services. A developing literature also applying aggregate vector auto

regression model document that feedback to MP vary by household debt ([Alpanda & Zubairy, 2017](#)) and provincial housing markets ([Fratantoni & Schuh, 2003](#)).

Central bank policy should reply to aggregate argued by King and ([Goodfriend & King, 1988](#)), when interbank markets are well-organized central bank policy does not idiosyncratic, liquidity shocks. The results in their model, doesn't hold, however the returns of bank are hypothetical bank runs are eliminate and known. The purpose is that banks determines the interest rate level. Price of being liquidity short and, thus, for the long-standing requirement holders penalizes they bear the risk that is related to liquidity. The findings of their study are relates to the ([Diamond & Rajan, 2009](#)), who disclose that during a high in normal times and in crisis interbank rates should be low. The boundaries of central bank influence on interest rates based over equivalence argument of Ricardian, while a new instrument found by them in which interest rates based on the banks inelasticity is may be adjusted by central bank, for liquidity short-term demand and supply. Their study also similar to ([Schaumburg & Tambalotti, 2007](#)), who focus the trade-off faced by financial mediators among acquiring liquidity versus holding liquidity supplied through a marketplace after shocks happen. According to ([Bolton et al., 2008](#)) Efficiency based over the timing of central bank interference in, the interest rate policy level is the main focus while in our study. ([V. V. Acharya & Yorulmazer, 2008](#)) consider with imperfect competition interbank markets. Interbank liquidity historically studied by ([Huang, 2008](#)) provided through banking alliances by clearinghouses. ([A. Ashcraft, McAndrews, & Skeie, 2008](#)) investigate a interbank market model with participation frictions and credit that may be describe their experiential results of reserves hoarding by extreme interbank and banks and rate volatility.

Source of interest rate risk re-conceptualized by ([McShane & Sharpe, 1985](#)), about as the uncertainty occurring in money marketplaces, as different from the I.R on deposits and credits. In existing model incorporated risk based on the expansion of an empirical model. [Angbazo \(1997\)](#) distinguished the net interest restrictions of commercial banks replicate together the interest-rate and default and premium of risk, and the different sizes banks are complex to diverse kinds of risk.

([Hasan & Sarkar, 2002](#)) distinct investigation of the impact of I.R variation on potential loans (in-process loans) and current advances (in-place-loans) and managed to the result that ‘low-slack’ banks are certainly disclose to significantly better risk of interest rate as compare to ‘high-slack’ banks. In Asian nations by analyzing with a sample of banks, the existing paper makes contribution that accompanies the present literature. Firstly, they handle both dynamic and static misclassification issues by retaining the model of ([Hu & Schiantarelli, 1998](#)), through indefinite sample parting, to examine the methods in which net interest margins of banks affects the functional diversification. Secondly, they display that through diversifying in the fresh events and placing larger focus on revenue appearances to flat their financial performance and banks can decrease their distinctive risk.

All dimensions such as (deposits, assets, geography and loans,) of diversification concluded by ([Berger, Hasan, & Zhou, 2010](#)) that were linked with decreases profits and increases the costs. These findings were strong regardless of other measures of performance and diversification. Additionally, they saw that banks conglomerate affiliation and also foreign ownership were linkage with fewer diversification diseconomies, suggesting that conglomerate affiliation and foreign ownership might play significant mitigating roles.

Other papers establish that diversification has a positively significant effect on the earnings volatility. [DeYoung and Roland \(2001\)](#) concluded such as, that fee-based actions, which show an increasing banking share of activities, raise the total level of volatility in revenue of bank. [Stiroh \(2004\)](#), obtained the similar results who demonstrated an increasing correlation among non-interest income and net interest income. When using a structure of portfolio within United State financial holding corporations to assess the effect of increased non interest income on the equity marketplace processes of risk and return ([Stiroh & Rumble, 2006](#)) couldn’t find any link among average returns across banks and non-interest income exposure, while a positively significant relation among the volatility of market returns and non-interest income was noticeable.

On the importance of bank diversification the empirical literature has mainly focused on the query of whether the revoke of the Glass-Steagall Act permitted

United State commercial banks to decrease business risk through diversifying into non-traditional services of finance. According to (Laderman, 1999; Boyd & Runkle, 1993) the potential to decrease earnings volatility was found for the combinations of earnings streams by insurance and banking activities but was tough to found at whole for the combination of earnings streams from fee-based securities activities and banking activities that is interest-based (Allen et al., 2009) Estrella 2001).

Amihud and Mendelson (1986) study examine the link among illiquidity and stock returns, findings show that on illiquidity stock returns have positive impact. High return for holding and for the compensation less liquid stocks demanded by the investor, the empirical literature generally confirmed this theoretical proposition. Another present literature is similar to unity in liquidity. Mishra and Sahoo (2012) attempt to organize and classify the current literature to give a review of studies for modelling liquidity & its organization specific driver and macroeconomic elements. Basically liquidity is the essence of stock exchange. It is of main concern for the investors, traders, regulators, stock exchange and listed corporations. The framework related to liquidity of asset document the significant co-movement disclose through the liquidity of single stocks. To clarify illiquidity and as the illiquidity risk cannot diversify, as implied by the co-variation in stock liquidity the systematic risk elements can be used.

Eight Asian emerging market both at firm level and market level explored by Chowdhury et al. (2018). His research explore the effect of fiscal and monetary policy on liquidity of Asian emerging stock markets. In his study he employs 9 macroeconomic variables and 4 illiquidity measure and conclude that variation in administration expenditure, money supply and private borrowing positively affects market liquidity. Bank rate, short term interest rate, cost of funds i-e régime borrowing significantly impact on illiquidity. Service sector is less affected According to his work. A model that observe effect of increase/decrease in inflation on liquidity of stock market presented by (Christiano, Eichenbaum, & Evans, 1994). Result disclose that to monetary policy expansionary shock causes a severe increase in marginal costs finally leads to illiquidity.

[Barro and Gordon \(1983\)](#) examined monetary policy and its relation with government revenue and unemployment. Surprise inflation with respect to expectations of investors can be created by an investor's expectations. Outcomes shows excessive monetary inflation and growth rate. For monetary policy unemployment is independent. Central banks used monetary policy as reported by Oxford Economics Dictionary, as a control on money and its supply to affect economy. All over the world monetary policy interfere to ease financial crisis.

Through variation in nominal rate proposed by ([Drechsler, Savov, & Schnabl, 2018](#)), the liquidity is affected through central bank effects. The study conclude that liquidity will cheaper due to lower nominal rates. ([Bekaert, Harvey, & Lundblad, 2007](#)). uses daily returns averaged of the firm in the month to explore emerging equity markets and as a measure of liquidity. His framework finds that in emerging market expected returns is a major driver for the liquidity of local market.

([Al Shubiri & Jamil, 2017](#)) investigate less developing/developing countries and apply OLS fixed effect model on unbalanced panel data during 1989-2008 for whole commercial banks(686 banks) operational in Islamic nations and recognize the important factors affecting liquidity of banks. Results disclose that factors such as credit risk, inflation rate, capital ratio monetary policy negatively/inversely affects liquidity the bank. Whereas, market capitalization, size, concentration and efficiency have positive and significant relationship with bank liquidity. To explore the South Africa market [Ho \(2017\)](#) used data from the period 1975 to 2015. His study investigate the macroeconomic determinants for development (liquidity) of stock market. It study the effect of inflation rate, economic growth, trade openness and real interest rate on liquidity of South African stock market. Conclusion of the study is that trade openness and inflation rate have negatively insignificant effect on development of long-run stock market. Whereas, economic growth have long-run positive significant impact.

Various studies discover whether diversification can decrease earnings volatility through non-interest income activities and combining traditional intermediation. Several researchers provide signal for the banking sector of United State, that

there are no important advantages for earnings volatility or earnings (DeYoung & Roland, 2001) Rumble and Stiroh, 2006). This is due to fee-based activities increase the bank income's volatility and because non-interest income and net interest income are gradually correlated. The evidence is mixed for banks of Europe. On non-interest income some authors find that increased reliance has strengthened profits (Chiarozzo et al., 2008, Smith et al., 2003;). So, (Lepetit, Nys, Rous, & Tarazi, 2008) disclose that noninterest income activities expansion raises the risk of insolvency and volatility. With risk this positive relationship is most clear for small financial institutions and is essentially driven through fee and commission activities.

Moreover, the diversification in line of service and product dimensions, toward banks diversifying geographically there is also a trend. To attain economies of scale in international dimension, Banks have the potential because once a first investment is complete and structure is residence, firms can increase the organism away at a possibly reduced cost. Advantages of geographical diversification contain: in other states better access to capital markets, which possibly leads to greater power of market (S. Deng & Elyasiani, 2008) and reduced liabilities of tax as globally diversified banks can transmit resources to low tax sectors from high tax sectors. Reliable with debates, (Mahajan, Rangan, & Zardkoohi, 1996), based on United. State domestic and multinational financial institutions from 1987-1990, conclude that international banks were able to fully adventure economies scale, and had lesser disorganizations as compare national banks.

According to the Samuelson (1945) study interest rate rises it actually effected the borrowers but it has no affect the performance of banks. The borrower will bear the effect of high interest rate whereas the bank performance would not be effected through high interest rates. Because when interest rates rise then the bank charges more to debtors than the return it pays to depositors. So, both the depositor and borrower and will bear the cost. (Khawaja & Ghani, 2007) reports that, the depositors and borrowers depressed by increase in interest rate and, like saving and investment. Banks that charge high interest rate take high returns from debtors and depressing the depositors by providing low return to them which



consequences in included spreads. And the spreads are higher in Pakistan. At last, when spreads are included interest rate increases that outcomes into high returns to banks on lending and investments. And without this, there no other option for depositors to save their wealth except on prevailing rates those are offered through the banks.

Serveriens and Templeton (1992) found that diversification of banks into further financial services should decrease unsystematic risk, whereas on systematic risk there was no impact. (Berger, Hasan, & Zhou, 2009), with greater diversification of risks firm has been consistent on average but efficiency improvements with less cost or no cost. However, costs might outweigh advantages suggested by present studies, when banks select to diversify in their products. By taking an example of (DeYoung & Roland, 2001) study that find that banking sectors of U.S. changing outdated lending actions to fee-based activities that are linkage with high income instability implying high earnings instability.

To diversified banks the agency cost's classical analysis of (Lev and (Amihud & Lev, 1981) can also be used, in which diversification might help decrease the individual risk for the administrator rather than creating best interest value for the stakeholders. Except the robust policy interests (English and (2002, Group of Ten (2001) in understanding how banking sector consolidation and geographic diversification and affect the monetary policy transmission — in specific, the bank lending network, i.e., how bank loan supply affected by monetary policy — strict empirical evidence is tough to come by due to the lack of itemize micro data.

The growing strand of literature fuelled by current economic crises, has indicated to an additional network of monetary mechanism working in bank's risk bearing incentives. According to C. Borio and Zhu (2012), effect of I.R on cash flows and incomes and valuations (C. Borio & Zhu, 2012), secondly sticky' target return rates existence (Rajan, 2006) and thirdly the communication policies and reaction function of the banks (Aghion, Farhi, & Kharroubi, 2012). In Simple words, this theory speculates that a long term low interest rates might induce a greater at level procyclical risk including in financial system (Rajan, 2006), finally with portfolios generating an equilibrium of deteriorated bank, higher aggregate credit

, more volatile and lower profits (Dell’Ariccia & Marquez, 2006). Particularly, the link among bank risk taking and I.R and is displayed to be contingent on capital structure of the banks (Dell’Ariccia et al., 2014) and the monetary shock size (Valencia, 2014).

According to Adrian and Shin (2010) short period I.R are significant in defining the size of banks on balance sheet. In additional, in the United State support for a risk-taking network is offered by (Paligorova & Santos, 2013), who gather data at the Bank Holding Corporation level and explore that financial institutions charge risk taking borrowers (rather than safer borrowers) during the monetary easing lower loan spreads as compare to the monetary tightening periods. Furthermore, for local banks of smaller size the relationship among bank risk taking and policy rates appears to be more pronounced (Busch & Kick, 2009) and for well capitalized financial institutions (Dell’Ariccia et al., 2014). According to European perspective, initial suggestion of a relationship interest rates and bank risk taking is forward through (Delis & Kouretas, 2011), who build a sample for savings, cooperative and commercial banks from sixteen euro area nations and disclose that the effect of loose MP on risk assets is better for financial institutions with less capital equity and more (OBS) things. Additionally, the risk taking strength network is originates be decreased by incomes of more rigorous sensible policy moreover (LTV) or bank capital ratio (Peydró, Polo, & Sette, 2017). Interestingly, the negative or inverse link among bank risk and interest rates seems to keep even if individual instead of more samples of heterogeneous (Peydró et al., 2017; Altunbaş et al., 2002).

In the ownership structure of financial institutions with the revived interest and its effects for bank inter mediation (Cull & Peria, 2013), an existing strand of research has start to investigate how financial institutions with dissimilar possession response to monetary policy differences. By primarily concentrating on bank lending network of monetary communication (Bernanke & Gertler, 1995), First influences in this topic is expanded by (Andries & Billon, 2010), made a theoretic frameworks to analyses the impact of deposit insurance and state possession on monetary communication. As s a representative bank whose possession is shared

among the private sector and the government, (Andries & Billon, 2010) disclose that lending by public banks is small responsive to variation in monetary policy rather than borrowing from private banks because of former's greater ability to increase further payments.

By the traditional borrowing channel view, monetary policy has impact on bank loan supply and this in turn has a significant and independent effect on activities of aggregate economic. Generally, for a bank borrowing channel to exist must be fulfilled two conditions (Blinder and (Bernanke & Gertler, 1995). In other words, lenders are not able to completely insulate their actual spending from a fall in the bank loan availability i.e. bank loans for other sources of finance are not perfect alternates. On the other way, financial institutions are not able to completely insulate their loan supply by a monetary policy-induced variation in their reserves, i.e. there exist no perfect alternatives for loans in portfolios of bank. In the literature both situations have been subject to reasonable debate. Romer and Romer For example, (1990) suggested that if financial institutions are able to achieve funds through the tapping financial markets, banks would be affected by monetary policy only through variation in interest rates, So, no bank borrowing channel would be at work. Empirically the bank borrowing channel has been examined by various studies with mixed outcomes (for the euro area, see the collection of papers in (Angeloni, Kashyap, & Mojon, 2003) for the US case, (Kashyap & Stein, 2000). Thus, there is consensus, that in more market-based financial systems the higher asset substitutability level makes the less potent bank lending network.

Spanish banks sample used by Jimenez et al. (2007) and different duration models to explore that interest rates which is for lower short-term previous to loan origination outcome in banks getting more risky fresh loans. (Ioannidis, Kontonikas, et al., 2006) investigate the Bolivian case and discover that a reduction in the federal funds rate of United State prior to loan origination increase the monthly probability of default on single bank loans.

Mainly United State, studies have typically examined the response of asset ,bank loan and deposit groups to variation in monetary policy stance as proxies through federal funds rate change. Additionally, the studies also explore whether for banks

monetary policy has a different effect: asset size different (Kashyap & Stein, 1995a); liquidity and asset size (Kashyap & Stein, 1995b) capital strength and asset size (Kishan & Opiela, 2000).

According to (Kashyap & Stein, 1995a) tests whether there is significant difference in the way in which banks of Europe with varying features (in terms of liquidity and balance sheet size) react to monetary policy stance changes (short-term interest rates) under 1990 to 1995 period. De variations in money market rates used by Bondt (1998) (for monetary policy stance as a proxy) in his regression models.

A general view hold by policymakers and economists that operations of monetary policy mainly by interest rates (Ampudia & Van den Heuvel, 2018). These results was supported by (C. E. Borio & Fritz, 1995) such that the problem of speed and size banks react to variations in interest rate policy-controlled, through their borrowing rates, represent an significant transmission dimension mechanism of monetary policy. Furthermore according to the BOG interest rate of short term money market as its working target such that funding cost for financial institutions and eventually borrowing rates are to be affected through the short term rates (Kovanen, 2011). (Bernanke & Gertler, 1995) supported the in the US credit network view upon attaining a negative link among tight monetary policy and bank loans. Three month treasury bills rate used by them to capture exogenous transfer in monetary policy and finally concluded that a strong monetary policy leads to high banks borrowing rates hence loans reduce.

According to C. Borio, Gambacorta, and Hofmann (2017) work that the most other references examine the average relation among bank profits and interest rates across a panel of numerous nations. On the side, a study is for Spain focused on aggregate time series data. The dynamics and specific relation of bank variables during given state can differ through average effect glance internationally, and there is potential value in identifying this nation particular information. For the study Spain is an interesting target as it is a large economy of Europe, whose banking system was significantly affected in 2008 through the financial crisis initiated, as documented in the study of (Baoko et al., 2017).

Various studies above the periods, have appeared to statement the compassion in a double banking organization of Islamic financing to MP or I.R shocks aimed at the Malaysian case. Among others these contain, (Sukmana & Kassim, 2010). Kassim et al. (2009) and (Sukmana & Kassim, 2010) showed that the deposits of Islamic bank and funding are complex to variations in I.R and, at the similar time, in real creation as signified by industrial manufacture are not subjective to the variations. Sukmana and Kassim (2010) Kassim et al. (2009) build on by specifically concentrating on the Islamic banks roles in Malaysia in the MTM. In their analysis, inferences are based on methodology of vector auto regression (VAR). System of vector auto regression consists of Islamic financing, Islamic deposits , production index of industry and overnight I.R and by monthly data from 1994 January to 2007 May, further they provided the sensitivity evidence for the deposits of Islamic bank to the of shocks I.R. Suggesting that the shocks of interest rate affects Islamic funding concluded their Islamic deposits effects, on the occurrence of the expatriate profitable risk they hint in the Islamic banks. The Islamic financing sensitivity to MP shocks is proclaimed further by in 2011 Sukmana and Ibrahim using the data that is updated. However, no relative strength of the Islamic financing comparison has been made on the channel the conventional banks lending channel.

In 2013 in Turkey (Ergeç & Arslan, 2013) explored the interest effect shocks rate on loans and deposits held by Islamic and conventional banks, (Saraç & Zeren, 2015) investigated the long-term relationship in Turkey between conventional banks and participation banks term-deposit rates. Both analysis confirm the conclusions that are similar that the overnight interest rate movement have effects that are asymmetric in Turkey on conventional and Islamic banks and significantly cogitated with those of conventional banks.

A more recent study by (Akhatova, Zainal, & Ibrahim, 2016) examined the Islamic banks response to shocks of MP and is evaluated by using the SVAR (structural vector auto regression) specification. The research showed that the Islamic banks response hikes towards interest rate immediately as compared to its conventional counterparts. This conclusion is supported by (2017) Aysan et al. using the ARDL

panel approached 23 Muslim countries and originate that around is no significant connection among Islamic banking deposit and interest rate, the fact that leading to Islamic banks are shocks resilient 2017 Mushtaq using the ARDL panel approached 23 Muslim countries and found that there is no significant relationship between Islamic banking deposit and interest rate, the fact that leading to Islamic banks are shocks resilient.

The BLC relies heavily on the MP ability to shift the supply of loan, and on bank-dependent borrower's existence (Bernanke & Gertler, 1995). Literature has documented a lot of evidence on latter conditions (Kashyap & Stein, 2000). As balance sheet measure bank capital has factually been examined for both the United States (Kishan & Opiela, 2000) and also for the European Union (Altunbaş et al., 2002). Both of these studies argued that the capital reserved banks must be responsible to the MP that is deflated than the banks that are unconstrained. They disclosed that banks through the leverage of capital that is there are low responsive to MP ratios more than the banks that are generally capitalized better. While these research argued that BLC is supported by their results for contractionary policy, it cannot be verified by these studies that whether their results are followed from contractionary policy. When BLC argument given above is applied to MP that is expansionary, reserves increase loan injections supply, enhancing bank dependent businesses lending and augmenting the expansionary policy effects through the rate of interest or money channel (Hubbard discussed in 2002). During expansionary policy the reserve requirement is not a binding constraint and as long as banks are well-capitalized like policy can increase loan supply if a capital constraint is not binding, that forms a BLC. Thus, it is illustrated by the BLC how MP can boost the effects of the rate of interest or money channel for both expansionary and contractionary policies.

Considerably the BLC initial contribution in the literature observed the bank credits performance and the MPT using the data that is aggregated following the influential work (Bernanke & Gertler, 1995). Nonetheless, BLC factual studies is based on the data that is aggregated suffer from identification problem that is severe (Kashyap & Stein, 2000) due to the impotence of establishing either

the observed variations in behavior credit later a reduction monetary that are bank loans supply induced or driven through demands of loans. The characteristic shifts difficulties demand of loans from mortgage switches have researchers that are prompted to panel data focus to explain the implications cross-section of the channel lending that are characteristics based of banks. This substituted model recommends the probability that policy incidences might be differ through agents substantially in the recession (Cecchetti et al., 1995). The use of banking data possibly is more seeing appropriately distributional effect of the banks communication that reduce the hardly conclusive collective evidence.

Kashyap and Stein (1995a) examines the monetary policy distributional effect on credits of banks (Favero et al., 1999) examine the indication for bank-lending network in European country. Additional the study (Kashyap & Stein, 2000) find the widely using data of Europe, sets and the results differ across countries and time. According to De Haan (2003) work that in Netherlands lending network is effective but be contingent on a bank is active in the market Gambacorta (2005) work that bank-lending framework in Italy the size did not affect and MP impulse inside the reaction of banks. According to Brissimis et al. (2003) display that more and large liquidity of banks can shield their loan portfolios from MP changes and the characteristics of bank particular analytically transferal the advances supply function in Greece.

In Austria (Kaufman & Scott, 2003) examine asymmetric impact of liquidity with interest rate on bank loaning that occurs as significant final. In Euro area (Ehrmann, Gambacorta, Martinez-Pagés, Sevestre, & Worms, 2003) examine the strained banks respond more the MP than unstrained banks provide only mixed support. In Spain (Ehrmann et al., 2003) collectors of savings and traditional role of various minor banks as the capability to option to uninsured finance bases did not find the presence of a bank lending network.

Literature on credit channel of MP transmission, (Kashyap & Stein, 1994; Blinder et al., 2008) examines that the organizations that are extremely bank dependent debtors such as banks decrease their overall credit supply they are MP has a mostly strong impact. (Gertler & Bernanke, 1989; Kiyotaki & Moore, 1997) argue

that organizations also by failing their balance sheets as the PV of surety falls with rising IR affected by worsening credit market condition, and this effect might be stronger for about organizations than for other. On information system both arguments: when credit situations become inflexible such as banks tend to decrease credit appearances first to consumers about whom they has the minimum evidence organizations for which less evidence is widely available may discover it more problematic to access loan of banks (Gertler & Bernanke, 1989; Gertler & Gilchrist, 1994). For example, (Thorbecke, 1997; Perez-Quiros & Timmermann, 2000) indicates stock returns of MP the response is higher for minor organizations. Numerous research has followed the instance of (Christiano et al., 1994) and from VAR Models extract MP shocks as the inventions. (Thorbecke, 1997) found the years 1953-90 the response of United State stock returns of MP shocks, founded on federal fund charges and employs this methodology, that minor organizations' returns react more powerfully than those of larger organizations and differs significantly across industries. Patelis (1997) also employs arrives at very similar results and a related methodology, but also displays that the Monetary Policy generally explanatory influence for returns of stock is slightly low. (Conover, Jensen, & Johnson, 1999) found that equity markets react both to the local and to the United States. monetary environment, i.e. to schanges in MP and look at 16 industrialized countries.

Rigobon and Sack (2004) have examines the effect of stock market movements on cumulative demand in the account in a way that monetary policy reacts to stock market. The essence of Sack's and Rigobon dispute is that connection among interest rate and equity prices in both directions. They examine that not accounting for this endogeneity of the reaction of impact on equity markets than MP simplification might be introduce a important bias in experiential estimates. Bomfim (2001) indications that equity markets volatility greater on days after MP decisions equity returns to monetary policy inclines to be lesser on days before.

Other research examine the linkage among equity returns and MP are those of, Durham (2002), Bomfim (2001), Johnson and Jensen (1995), and Lobo (2000). For example, Lobo (2000) discovers in the year 1990-98 that discount rate had a



stronger and tightening in the federal funds.

Several studies exploring bank portfolio reactions to MP have used VAR techniques to explore the effect on lending of a variation in MP (Blinder, Blinder and Bernanke). Though such as study indication that loans decrease through lag after a contraction of MP, they never separate decreasing resulting from decreased loan demand from declining resulting from condensed loan supply. (Kashyap & Stein, 1995a) attempt to overcome this issue in aggregate data by distinguishing in small and large banks. Their dispute states the effects of supply might be arise disproportionately at small banks, they created on capital market limitations that effect banks ability to entice financing marginal source.

The relationship between bank profitability and monetary policy has gained importance following the Financial Crisis. In advanced economies, long term interest (I.R) rates to factually lower levels in several advanced markets and short term interest rates (I.R) has to nearby zero. There is broad agreement that central banks' in the initial stages of the crunch aggressive response was analytical to checking an economic and financial breakdown. Though, in current periods there has long monetary lodging may be lessening and rising apprehension the net profits because its negative side effects (e.g. Plosser, 2012; Bank for International Settlements, (Daley & DaCosta, 2012). Lower interest rates (I.R) on the profitability of banks of one side effect is also the negative effect and therefore on the reliability in banking area.

The relationship among bank profitability and MP have long been recognized in the speculative literature (Samuelson, 1945; Hancock, 1985). However in current period it has ignored such as research area. Some research have attract specially on the bank profitability the effect of interest rate (I.R). English (2002) investigate the relationship in bank interest rate (I.R) margins and interest rate risk in 10 industrialized countries. This research find that, a steep yield curve increases interest margins, such as assets average yield of banks is related to long term rates than liabilities of average yield. Previously, (Alessandri & Nelson, 2015) develop a positive long-run linkage in level and slope of the bank profitability and in United

Kingdom Yield Curve. The literature on income inequality have remained inconclusive and monetary policy for growth. (Saiki & Frost, 2014) examine wealth inequality vice versa the portfolio channel and strongly boosted income in Japan unconventional monetary policy. Coibion et al. (2017) explore that interest rate (I.R) has reduced income inequality through houses vice versa, total and consumption expenditures, higher income, earnings of labour. (Ampudia & Van den Heuvel, 2018) explore the asset purchase programs of the European Central Bank have decreased income variation by its positive influence on output and the employment of low households and, thereby recompensing households since losses creating in low level of savings interest rate (I.R).

## 2.1 Portfolio Theory

Portfolio theory, though, emphasizes that a bank's owners already can diversify their own risks to a large extent by spreading purchases over a large number of investments. Portfolio theory does not suggest the bank can negligence diversification; relatively, it advises that a bank must diversify strategically.

Portfolio theory Markowitz recommended that this development should be welcomed as diversification reduces the risks at financial organization and thus make their failure less likely. Not surprisingly, diversification gain are generally seen as a main benefit of the recent changes in financial system. Similarly, the BIS report on credit risk transfer (BIS, 2004) states the "Innovation in monetary market, and within that the growth of new financial tools such as credit derivatives is mostly to be welcomed as...s allowing better diversification..." Wagner, W. B. (2006). Diversification at Financial Institutions and Systemic Crises.

## 2.2 Research Framework

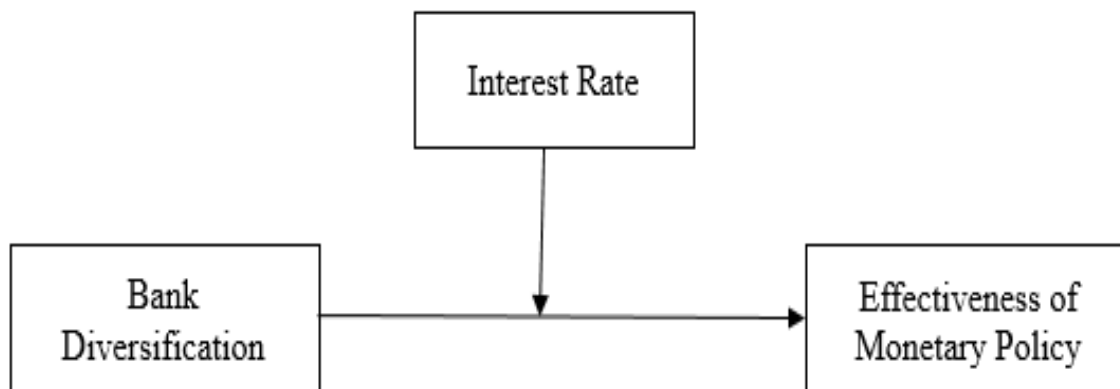


FIGURE 2.1: Research Model

## 2.3 Hypotheses

**H<sub>1</sub>:** There is a significant impact of bank diversification on effectiveness of monetary policy.

**H<sub>2</sub>:** Interest rate moderates the relationship between bank diversification and effectiveness of monetary policy.

To test the hypotheses, this research estimate a loan growth equation that includes indexes if diversification. It is evidence from the previous studies that to explore the effect of monetary policy the loan growth has been used has been used frequently due to its mechanism of monetary transmission by taken into account the demand and supply of bank loans. In this study, the nature of banking sector is stated clearly.

# Chapter 3

## Data and Methodology

### 3.1 Data Description

Research methodology is a process in which various tool, techniques and concepts are used in a study to check the answer of the research question in a methodical manner. Descriptive analysis, correlation analysis and regression models Random effects model are used to check the relationship between effectiveness of monetary policy and bank diversification.. The purpose of the study was to determine the impact of bank diversification on effect of monetary policy in financial firms. The panel data regression is conducted on dependent variable effectiveness of monetary policy for the improvement of connection between the independent variables like bank diversification with measurement size, equity, liquidity, diversification and moderating role of interest rate. Interest rate is moderator that affects the relationship between bank diversification and effectiveness of monetary policy.

Research Methodology included feature description of the methodology used in this study. It includes research design, data source, descriptionn of sample, statistics, selection of measures and model and definition of the variables employed.

#### 3.1.1 Population and Sample

Population of this study consist of banking sector of Pakistan. Monetary policy deals in financial sector due to this the Non- financial sector is not included in

working and data collected from the year 2006 to 2016.

TABLE 3.1: List of Banks

| <b>Sr.No</b> | <b>Year</b> | <b>Name of Banks</b>            | <b>Sr.No</b> | <b>Name of Banks</b>                    |
|--------------|-------------|---------------------------------|--------------|---|
| <b>1</b>     | 2006-2016   | Allied Bank Limited             | <b>18</b>    | Meezan Bank Limited                     |
| <b>2</b>     | 2006-2016   | Askri Bank Limited              | <b>19</b>    | BANKISLAMI<br>PAKISTAN LTD.             |
| <b>3</b>     | 2006-2016   | Bank Al-Falah Limited           | <b>20</b>    | Dubai Islamic Bank                      |
| <b>4</b>     | 2006-2016   | Bank Al-Habeeb Limited          | <b>21</b>    | ALBARAKA<br>BANK (PAK-<br>ISTAN)        |
| <b>5</b>     | 2006-2016   | Faysal Bank Limited             | <b>22</b>    | First Dawood Islamic Bank Limited       |
| <b>6</b>     | 2006-2016   | Habib Bank Limited              | <b>23</b>    | Citi Bank N.A                           |
| <b>7</b>     | 2006-2016   | Habib Metropolitan Bank Limited | <b>24</b>    | HSBC BANK MIDDLE EAST LTD               |
| <b>8</b>     | 2006-2016   | MCB Bank Limited                | <b>25</b>    | Duetsche Bank                           |
| <b>9</b>     | 2006-2016   | NIB Bank Limited                | <b>26</b>    | The Bank Of Tokyo-Mitsubishi            |
| <b>10</b>    | 2006-2016   | United Bank Limited             | <b>27</b>    | National Bank of Pakistan               |
| <b>11</b>    | 2006-2016   | Soneri Bank Ltd                 | <b>28</b>    | FIRST WOMEN BANK LTD.                   |
| <b>12</b>    | 2006-2016   | STANDARD CHARTERED BANK         | <b>29</b>    | THE BANK OF PUNJAB                      |
| <b>13</b>    | 2006-2016   | Saudi Pak Commercial Bank       | <b>30</b>    | The Bank of Khyber                      |
| <b>14</b>    | 2006-2016   | KASB Bank Limited               | <b>31</b>    | SINDH BANK LTD.                         |
| <b>15</b>    | 2006-2016   | JS Bank Limited                 | <b>32</b>    | Zarai Tarakiati Bank Limited            |
| <b>16</b>    | 2006-2016   | Summit Bank Ltd                 | <b>33</b>    | Industrial Development Bank of Pakistan |
| <b>17</b>    | 2006-2016   | Samba Bank Ltd                  |              |   |

Research design has two types that are qualitative research and quantitative research. According to literature, quantitative approach has been used in this

study. Some different reasons different researchers disapprove of qualitative research (Dzurec, 1989; Sandelowski, 1986; Melissa P. Johnston, 2014). While quantitative research is based on numeric values and figures. Therefore, the testing and interpretation of the data can be made in terms of numbers. Numerical approach define the it is possible that data is not only described but the relationship among variables or presented in quantifiable terms the result of study. Additionally, many researchers quarrel that in direction to obtain of then better considerate of the research problem, numeric trend of the quantitative data, quantitative approach are used to obtain results of the study (Punch, 1998; Mertens, 2003).

### **3.1.2 Data Source**

The secondary data is used for analysis which is acquired from a number of sources in this study. The data loan growth and bank diversification is sourced from annual reports of Pakistani bank and data is collected from FSA and state bank of Pakistan (KIBOR). Secondary data will be collected from the balance sheet and income statement described in the bank scope database from 2006 to 2016. Furthermore, inferential and descriptive statistics is applied along with reviews for the purpose of analysis.

### **3.1.3 Descriptive Statistics**

Descriptive statistics is captured by using the data of statistical behavior. Descriptive statistics provide the average of data, median that divide the data set into two equal segments and it is the middle value of data set, in standard deviation give the information that how much the spread of data dissemination of data from its mean value, if mean and standard deviation used separately both will be worthless so both should be used together. Skewness is used for positive and negative spread of data but kurtosis show the smoothness of data spread. Descriptive statistics used for capture the intense of variables by using descriptive statistics the monetary policy and bank diversification of financial for the period of 2006-2016 are examined.

### 3.1.4 Correlation Analysis

Correlation analysis examine the capture to degree of relationship between two or more variables. Correlation is valuable because it degree to a projective relationship between variables. It also used for deals about the direction of relationship between variables. Correlation analysis between variables specifies positive and negative relationship between various variables. Correlation analysis ranges +1 to -1. Low correlation among two variables indicate low chances of multicollinearity while high correlation among two variables show high chances of multicollinearity.

## 3.2 Econometric Model

### 3.2.1 Panel Data

Panel data contain both time-series data and cross-sectional data. When panel data have same series of time characteristics of every cross-section and variable is called balanced panel. When panel data have different series of time observations for every cross section and variable is called unbalanced panel (Gujarati,2003).

### 3.2.2 Estimation of Data by Using Panel Regression

Panel data used to capture the effect of bank diversification on monetary policy of financial sector of Pakistan. Estimation of panel data is usually done by OLS, Fixed Effect Model and Random Effect Model. Few assumption are based on intercept, slope coefficient and error term to measure the panel model regression.

$$\begin{aligned} \text{Loangrowth}_{(j,i,t)} = & \alpha_i + \beta_1 \text{Size}_{(j,i,t-1)} + \beta_2 \text{Liquidity}_{(j,i,t-1)} + \beta_3 \text{Equity}_{(j,i,t-1)} + \\ & \beta_4 \text{Diversification}_{(j,i,t-1)} + \beta_5 R_{(j,t-1)} * \text{Size}_{(j,i,t-1)} + \beta_6 R_{(j,t-1)} * \text{Liquidity}_{(j,i,t-1)} + \\ & \beta_7 R_{(j,t-1)} * \text{Equity}_{(j,i,t-1)} + \beta_8 R_{(j,t-1)} * \text{Diversification}_{(j,i,t-1)} + \beta_9 \text{Country}_j + \\ & \beta_{10} \text{Year}_t + \varepsilon_{(j,i,t-1)} \dots \quad (3.1) \end{aligned}$$

Gunji and Yuan (2018) bank diversification and monetary policy. This model show that  $i$ , is for banks  $j$  is for countries and  $t$  for years respectively  $\alpha_i$  is the individual effect and  $\varepsilon(j,i,t)$  is error term or a disturbance with a mean of zero. Loan growth is endogenous variable show the logged difference in total customer loans. Following researcher (Gunji & Yuan, 2018) Hosono (2006), Use the short term interest rate ( $r$ ) as the monetary policy shock.

### 3.2.3 Common Effect Model

This model show that coefficient of all cross sections across the time is constant and time constant. In common effect model the assumption made is problematic to happen and it leads to the inconsistency and reliability of the slope coefficient of the variables. Though, common Effect model does not capture the random and fixed effect presence in the panel data.

$$\begin{aligned} \text{Loangrowth}_{(j,i,t)} = & \alpha_i + \beta_1 \text{Size}_{(j,i,t-1)} + \beta_2 \text{Liquidity}_{(j,i,t-1)} + \beta_3 \text{Equity}_{(j,i,t-1)} + \\ & \beta_4 \text{Diversification}_{(j,i,t-1)} + \beta_5 R_{(j,t-1)} * \text{Size}_{(j,i,t-1)} + \beta_6 R_{(j,t-1)} * \text{Liquidity}_{(j,i,t-1)} + \\ & \beta_7 R_{(j,t-1)} * \text{Equity}_{(j,i,t-1)} + \beta_8 R_{(j,t-1)} * \text{Diversification}_{(j,i,t-1)} + \beta_9 \text{Country}_j + \\ & \beta_{10} \text{Year}_t + \varepsilon_{(j,i,t-1)} \dots \quad (3.2) \end{aligned}$$

### 3.2.4 Fixed Effect Model

In this model slope coefficient are constant but intercept vary from bank to bank. It assumes that there may not be temporarily effect in time series while estimation may carry cross sectional effect.

$$\begin{aligned} \text{Loangrowth}_{(j,i,t)} = & \alpha_i + \beta_1 \text{Size}_{(j,i,t-1)} + \beta_2 \text{Liquidity}_{(j,i,t-1)} + \beta_3 \text{Equity}_{(j,i,t-1)} + \\ & \beta_4 \text{Diversification}_{(j,i,t-1)} + \beta_5 R_{(j,t-1)} * \text{Size}_{(j,i,t-1)} + \beta_6 R_{(j,t-1)} * \text{Liquidity}_{(j,i,t-1)} + \end{aligned}$$



$$\beta_7 R_{(j,t-1)} * Equity_{(j,i,t-1)} + \beta_8 R_{(j,t-1)} * Diversification_{(j,i,t-1)} + \beta_9 Country_j + \beta_{10} Year_t + \varepsilon_{(j,i,t-1)} \dots \quad (3.3)$$

### 3.2.5 Random Effect Model

In random effect model intercept considered as error term and it do nothing with the cross sections (banks). This model explains the variation among the different banks. It offers following benefits.

- Fewer parameters to estimate with comparison to fixed effect model in Random effect model.
- Random effect model provide the permission for other independent variables with same number of observations. In random effect model intercept considered as error term and it do nothing with the cross sections (banks). This model explains the variation among the different banks.

The major benefit of random effect model is that it can absorb the effect of time invariant. In fixed effect model such effect added into the intercept.

$$\begin{aligned} Loangrowth_{(j,i,t)} = & \alpha_i + \beta_1 Size_{(j,i,t-1)} + \beta_2 Liquidity_{(j,i,t-1)} + \beta_3 Equity_{(j,i,t-1)} + \\ & \beta_4 Diversification_{(j,i,t-1)} + \beta_5 R_{(j,t-1)} * Size_{(j,i,t-1)} + \beta_6 R_{(j,t-1)} * Liquidity_{(j,i,t-1)} + \\ & \beta_7 R_{(j,t-1)} * Equity_{(j,i,t-1)} + \beta_8 R_{(j,t-1)} * Diversification_{(j,i,t-1)} + \beta_9 Country_j + \\ & \beta_{10} Year_t + \varepsilon_{(j,i,t-1)} \dots \quad (3.4) \end{aligned}$$

TABLE 3.2: Description of Variables

| Variables                | Abbreviation | Measurement   |
|--------------------------|--------------|---|
| Loan growth              | LG           | Loan growth is calculated as the logged difference in total customer loan.                  |
| Size                     | Size         | Size is calculated as the log of total assets.  |
| Liquidity                | LIQ          | Liquidity is the ratio of lagged liquid assets to total assets.                             |
| Equity                   | EQU          | Equity is the ratio of lagged equity to total assets.                                       |
| Short Term Interest Rate | INTR         | Twelve month average of monthly KIBOR.  |
| Diversification          | Div          | $Div = 1 - \sum_i \left( \frac{assets_i}{totalassets} \right)^2$<br>$i = 1, 2, 3, \dots, n$ |

### 3.2.5.1 Huasman Test

Huasman test used for random effect model and fixed effect model. If P-value is insignificant than common random effect model is applied. If the Chi-square and F stat. of cross-section is less than 0.05 then fixed effect model is applied.

### 3.2.5.2 Likelihood Tests

The purpose of testing the likelihood test is to clear the possibility of fixed effect or random effect model with condition that if p value were significant (less than 0.05 confidence interval) than it can be apply fixed effect model but if p value were greater than 0.05 then the study were apply common effect model and vice versa in case when p value is not significant.

# Chapter 4

## Results and Discussion

### 4.1 Descriptive Statistics

The below descriptive statistics Table 4.1, explains behavior of data about all variables of the research model from the period of 2006 to 2016. Descriptive statistics of loan growth and bank diversification were separately explained. Descriptive statistics shows that general behavior of the data, including the dependent, independent, moderator and control variable. The descriptive statistics test shows summary of data that include mean, minimum, maximum and standard deviation. The mean value tells about average of data, standard deviation tells about spread and measure of dispersion in the value of the data from the mean, standard deviation and mean are low due to the used as separately. Minimum and maximum tells about current series of data.

TABLE 4.1: Descriptive Model

|           | Mean    | Maximum | Minimum | Std. Dev. | Observations |
|-----------|---------|---------|---------|-----------|--------------|
| LG        | 2.8832  | 3.0162  | 2.6932  | 0.0769    | 279          |
| DIV       | 0.7212  | 0.8895  | 0.0861  | 0.1262    | 279          |
| EQUITY    | 0.1240  | 0.5331  | 0.0203  | 0.0935    | 279          |
| LIQUIDITY | 0.1087  | 0.4536  | 0.0302  | 0.0626    | 279          |
| SIZE      | 18.6137 | 21.3463 | 15.5169 | 1.3439    | 279          |
| INTR      | 0.9810  | 1.0973  | 0.8338  | 0.0761    | 279          |

**Table 4.1**, examine the descriptive statistics of whole variable which are used in this study. It represent the descriptive statistics for various bank diversification and monetary policy variables. The detail explanation of the above table is given in below:

The mean value of loan growth is 2.883246 and its standard deviation is 0.076943 which means 7% variation in the data of this table. This value of standard deviation confirms that loan growth from bank to bank and time may differ. Loan growth is used as measurement for effect of monetary policy. The maximum value of loan growth is 3.0162 and the minimum value of loan growth is 2.6932. Furthermore, the variation in data may also verified by the value range, which is obtained by calculating the difference between largest (maximum) value of the data and smallest (minimum) value of the data of this variable.

The average value of diversification is 0.72116 and its standard deviation is 0.126156 which means 12% variation in the data of this table. This value of standard deviation confirms that loan growth from bank to bank and time may differ. Diversification is used as dimension for bank diversification. The maximum value of diversification is 0.889513 and the minimum value of diversification is 0.086118. Furthermore, the variation in data may also verified by the value range, which is obtained by calculating the difference between largest (maximum) value of the data and smallest (minimum) value of the data of this variable.

The mean value of equity is 0.124041 and its standard deviation is 0.093529 which means 9% variation in the data of this table. This value of standard deviation confirms that loan growth from bank to bank and time may differ. Equity is used as dimension for bank diversification. The maximum value of equity is 0.533131 and the minimum value of equity is 0.020336. Furthermore, the variation in data may also verified by the value range, which is obtained by calculating the difference between largest (maximum) value of the data and smallest (minimum) value of the data of this variable.

The average value of liquidity is 0.10867 and its standard deviation is 0.062604 which means 6% variation in the data of this table. Liquidity is used as dimension for bank diversification. The maximum value of liquidity is 0.4536 and the

minimum value of liquidity is 0.0302. Furthermore, the variation in data may also verified by the value range, which is obtained by calculating the difference between largest (maximum) value of the data and smallest (minimum) value of the data of this variable. The mean value of size is 18.6137 and its standard deviation is 1.34391 which means 1.34% variation in the data of this table. This value of standard deviation confirms that loan growth from bank to bank and time may differ. Size is used as dimension for bank diversification. The maximum value of Size is 21.64243 and the minimum value of Size is 15.51688. Furthermore, the variation in data may also verified by the value range, which is obtained by calculating the difference between largest (maximum) value of the data and smallest (minimum) value of the data of this variable.

The average value of interest rate is 0.981004 and its standard deviation is 0.076129 which means 7%svariation in the data of this table. This value of standard deviation confirms that loan growth from bank to bank and time may differ. Interest rate is used as moderator for bank diversification. The maximum value of interest rate is 1.097 and the minimum value of interest rate is 0.833. Furthermore, the variation in data may also verified by the value range, which is obtained by calculating the difference between largest (maximum) value of the data and smallest (minimum) value of the data of this variable.

TABLE 4.2: Correlation Matrix

|      | LG     | DIV    | LIQ    | EQU   | SIZE |
|------|--------|--------|--------|-------|------|
| LG   | 1      |        |        |       |      |
| DIV  | 0.113  | 1      |        |       |      |
| LIQ  | -0.372 | -0.025 | 1      |       |      |
| EQU  | 0.182  | 0.449  | 0.211  | 1     |      |
| SIZE | 0.934  | 0.324  | -0.309 | 0.254 | 1    |

**Table 4.2**, enlighten the relationship among variable. Pearson correlation test adapted to explain the direction and strength of the relationship. Correlation between loan growth and diversification is positive. Correlation analysis indicates

that diversification (DIV) value 0.113 positively linked with loan growth. The high correlation shows that both indicators are dependent variable and measurement of these both mostly similar data so these were highly correlated each other. It means both variables move in same direction. If loan growth increase then diversification increase. The coefficient value of liquidity (LIQ) -0.37 indicate negatively correlation with loan growth. The coefficient of liquidity -0.025 indicate negatively correlation with diversification. Liquidity show negative relationship with diversification Correlation between liquidity and loan growth is negative. It means both variables move in inverse direction if liquidity increase then loan growth decrease. There is negative relationship between liquidity and loan growth. The coefficient value of equity (EQU) 0.182 positively linked with loan growth. The coefficient value of equity 0.44 significant and positive connection with diversification. The coefficient value of equity 0.21 positively linked with liquidity. The coefficient value of size (SIZE) 0.934 positively linked with loan growth. Equity and size show positive relationship with loan growth if loan growth increase then equity and size also increase. The coefficient value of size 0.32 positively linked with diversification. Equity and size show positive relationship with diversification. If size of bank increase then diversification of bank also increase. The coefficient value of size -0.309 negatively linked with liquidity. There is inverse relationship between size and liquidity. If size of bank increase the liquidity of bank decrease. The coefficient value of size 0.254 positively linked with equity. Equity show positive relationship with liquidity while size show negative relationship with liquidity. Size show positive relationship with equity.

## 4.2 Regression Analysis

Panel regression analysis has been described the effect of bank diversification and monetary policy practices with moderating role of interest rate. Moreover, the value of F-statistic is presenting the goodness of fit of this model and its value is important, which shows this model is specified. More addition that the constant term of this model is important, which is describe that more descriptive variables

are required to involve in the model. However, study found that direct and indirect effect of independent variables equity, size, liquidity, diversification with different proxies. The study has been found that direct significant/positive or negative role of bank diversification on loan growth in financial sector of Pakistan.

### 4.3 Test for Model Selection

According to the panel data final model selection likelihood and hauseman test were applied for improving which model is fit for study such as common, fixed and random effect model.

#### 4.3.1 Results of Likelihood Test

H0: Nul hypothesis Common effect model is appropriate

H1: Alternate fixed effect model is appropriate

TABLE 4.3: Likelihood Test

| Effects Test             | Statistic  | d.f.    | Prob. |
|--------------------------|------------|---------|-------|
| Cross-section F          | 3.071975   | -35,341 | 0     |
| Cross-section Chi-square | 105.516505 | 35      | 0     |

The purpose of testing the likelihood test is to clear the possibility of fixed effect or random effect model with condition that if p value were significant (less than 0.05 confidence interval) than it can be apply fixed effect model but if p value were greater than 0.05 then the study were apply common effect model and vice versa in case when p value is not significant. In this study likelihood test suggest study were accept alternative in which fixed effect model were more appropriate for regression analysis. Both the likelihood and houseman test were suggested the fixed effect model were more appropriate for final interpretations.

In above table shows the significant of the cross-section Chi-square with p value 0.000 and now fixed effect model can be applied.

### 4.3.2 Results of Hausman Test

H0: Null hypothesis is random effect model is appropriate

H1: Alternative hypothesis fixed effect model is appropriate

TABLE 4.4: Hausman Test

| <b>Test cross-section random effects</b> |         |         |         |      |       |
|--|---------|---------|---------|------|-------|
| Test Summary                             | Chi-Sq. | Statis- | Chi-Sq. | d.f. | Prob. |
|  |         | tic     |         |      |       |
| Cross-section random                     | 49.23   |         | 8       |      | 0     |

The purpose of testing the hausman test is to clear the possibility of fixed effect or random effect model with condition that if p value were significant (less than 0.05 confidence interval) than it can be apply fixed effect model but if p value were greater than 0.05 then the study were apply random effect model and vice versa in case when p value is not significant. In this study hausman test suggest study were accept alternative in which fixed effect model were more appropriate for regression analysis. Both the likelihood and houseman test were suggested the fixed effect model were more appropriate for final interpretations. In above table shows the significant of the cross-section random with p value 0.000 and now fixed effect model can be applied.

## 4.4 Common Effect Model

According to the direction of likelihood test study were applied random effect model to check the common effect of bank diversification on loan growth with moderating role of interest rate.

The below model show that coefficient of all cross sections across the time is constant and time constant. In common effect model the assumption made is problematic to happen and it leads to the inconsistency and reliability of the slope coefficient of the variables. Though, common Effect model does not capture the



random and fixed effect presence in the panel data. The study has been applied fixed effect model for further interpretation and discussion in this study.

TABLE 4.5: Common Effect Model

| <b>Dependent Variable: LG</b> |                    |                       |                    |              |
|-------------------------------|--------------------|-----------------------|--------------------|--------------|
| <b>Variable</b>               | <b>Coefficient</b> | <b>Std. Error</b>     | <b>t-Statistic</b> | <b>Prob.</b> |
| C                             | 1.8339             | 0.0298                | 61.5071            | 0.0000       |
| SIZE                          | 0.0470             | 0.0033                | 14.2165            | 0.0000       |
| LIQ                           | 0.0703             | 0.2307                | 0.3049             | 0.7606       |
| EQUITY                        | -0.1772            | 0.2500                | -0.7090            | 0.4788       |
| DIV                           | 0.1737             | 0.0622                | 2.7918             | 0.0055       |
| SIZE* INTR                    | 0.0124             | 0.0031                | 4.0148             | 0.0001       |
| LIQ* INTR                     | -0.1381            | 0.2338                | -0.5905            | 0.5552       |
| EQU* INTR                     | 0.1291             | 0.2526                | 0.5111             | 0.6096       |
| DIV* INTR                     | -0.2455            | 0.0685                | -3.5847            | 0.0004       |
| R-squared                     | 0.8742             | Akaike info criterion |                    | -3.5714      |
| Adjusted R-squared            | 0.8715             | Schwarz criterion     |                    | -3.4790      |
| F-statistic                   | 0.0401             |                       |                    |              |
| Prob(F-statistic)             | 696.4883           |                       |                    |              |

In the **Table: 4.5**, the outcome of the effectiveness of monetary policy and bank diversification mechanism including interaction term interest rate while using the panel regression analysis. A linear panel data model with the helping of financial firm's common effect to examine the results were used. All the coefficient of independent and interaction terms including control variables are mostly significant association with dependent variable, except one variable are insignificant. The value of  $R^2 = 0.87$  which shows that 87% fluctuation in banks loan growth due to independent, moderator and control variable correspondingly. The hausman and likelihood test show the probability. The P value of likelihood test is significant so this study didn't apply common effect model. The study has been applied fixed effect model for further interpretation and discussion in this study. This test play

the role of decision maker common and fixed effect model. Likelihood test show the F stat. and Chi-Square of cross section is less than 0.05 then fixed effect model used if P-value is insignificant than random effect model is applied

## 4.5 Fixed Effect Model

TABLE 4.6: Fixed Effect Model

| Dependent Variable: LG |             |                       |             |         |
|------------------------|-------------|-----------------------|-------------|---------|
| Variable               | Coefficient | Std. Error            | t-Statistic | Prob.   |
| C                      | 1.8201      | 0.0452                | 40.2345     | 0.0000  |
| SIZE                   | 0.0521      | 0.0037                | 13.9374     | 0.0000  |
| LIQ                    | -0.2037     | 0.2394                | -0.8508     | 0.3955  |
| EQU                    | -0.3512     | 0.2479                | -1.4169     | 0.1574  |
| DIV                    | 0.1626      | 0.0632                | 2.5717      | 0.0105  |
| SIZE*INTR              | 0.0074      | 0.0032                | 2.3374      | 0.0200  |
| LIQ*INTR               | 0.1766      | 0.2411                | 0.7325      | 0.4644  |
| EQU*INTR               | 0.3201      | 0.2503                | 1.2791      | 0.2017  |
| DIV*INTR               | -0.2294     | 0.0722                | -3.1774     | 0.0016  |
| R-squared              | 0.9043      | Akaike info criterion |             | -3.6636 |
| Adjusted squared       | R- 0.8923   | Schwarz criterion     |             | -3.2118 |
| F-statistic            | 74.9748     |                       |             |         |
| Prob(F-statistic)      | 0.0000      |                       |             |         |

The above **Table: 4.6**, describe that value of  $R^2$  (0.90) in the model which includes bank diversification determinants shows only 90% impact on loan growth of all banks of Pakistan. Loan growth 90% influenced by these measurement of bank diversification, in other word variation examine by these independent variables. In first section examined the direct impact of bank diversification determinates on monetary policy.

The coefficient value of (DIV) diversification is 0.162 significant at the level of ( $P < 0.05$ ). So it's mean bank diversification significantly/ positively impact on loan growth. When diversification increase then loan growth also increase there is positive relationship between diversification and loan growth. Sinkey and Greenawalt (1991) analyze large U.S. banks during the period 1984-87 and find that the average past loan growth is significantly positively linked to the contemporaneous loan loss rate.

The coefficient value of equity (EQU) is (-0.351) insignificant the level of ( $P > 0.05$ ). The value of liquidity (LIQ) is insignificant at the level of ( $P > 0.05$ ) so in this model liquidity insignificant impact on loan growth. The Coefficient value of size (SIZE) is 0.052 significant at the level of ( $P < 0.05$ ). These values show that size has positive and significant impact on loan growth. There is positive relationship between size and loan growth if size of banks increase then loan growth also increase.

H<sub>1</sub>: There is negative and significant impact of moderating role of diversification and monetary policy on effectiveness of monetary policy.

The coefficient value of interaction term (DIV\*INTR) is -0.229 significant at the level of ( $P < 0.05$ ). So in this model interest rate moderate the relationship between bank diversification and loan growth of banks. So according to research hypothesis (DIV\*INTR) the combine effect of diversification and interest rate on loan growth is negative. So second, hypothesis is accepted. This study results are reliable with the previous research that is done by the (Gunji & Yuan, 2018) Bank diversification and monetary policy. These shows that restrictive monetary policy has a greater effect on banks with diversified assets. These result recommend that bank decrease their loans as they become more diversified. In other words banks can limited the effect of restrictive monetary policy by concentrating their assets. The coefficient value of interaction term (EQU\*INTR) is 0.3201 insignificant at the level of ( $P > 0.05$ ). The interaction term found insignificant at the level of ( $P > 0.05$ ) so its mean interest rate don't moderate the relationship of equity and loan growth of banks. The coefficient value of interaction term (LIQ\*INTR) is 0.1766 insignificant at the level of ( $P > 0.05$ ). The interaction term found insignificant at the level

of ( $P > 0.05$ ) so its mean interest rate don't moderate the relationship of liquidity and loan growth of banks. The coefficient value of interaction term (SIZE\*INTR) is 0.0074 significant at the level of ( $P < 0.05$ ). So this model interest rate moderate the relationship between Size and loan growth of banks.

## 4.6 Random Effect Model

According to the direction of hausman test study were applied Random Effect Model to check the random impact of bank diversification on loan growth with moderating role of interest rate. The model examining the impact of independent variables on dependent variable.

TABLE 4.7: Random Effect Model

| <b>Dependent Variable: LG</b> |                    |                       |                    |              |
|-------------------------------|--------------------|-----------------------|--------------------|--------------|
| <b>Variable</b>               | <b>Coefficient</b> | <b>Std. Error</b>     | <b>t-Statistic</b> | <b>Prob.</b> |
| C                             | 1.8296             | 0.0304                | 60.1621            | 0.0000       |
| SIZE                          | 0.0485             | 0.0031                | 15.4737            | 0.0000       |
| LIQ                           | -0.0196            | 0.2172                | -0.0902            | 0.9282       |
| EQU                           | -0.2285            | 0.2331                | -0.9800            | 0.3277       |
| DIV                           | 0.1708             | 0.0581                | 2.9426             | 0.0035       |
| SIZE*INTR                     | 0.0110             | 0.0029                | 3.8139             | 0.0002       |
| LIQ*INTR                      | -0.0424            | 0.2201                | -0.1925            | 0.8474       |
| EQU*INTR                      | 0.1850             | 0.2356                | 0.7853             | 0.4328       |
| DIV*INTR                      | -0.2423            | 0.0643                | -3.7680            | 0.0002       |
| R-squared                     | 0.8514             | Durbin-Watson<br>stat |                    | 0.9468       |
| Adjusted R-squared            | 0.8483             |                       |                    |              |
| F-statistic                   | 269.3309           |                       |                    |              |
| Prob(F-statistic)             | 0.0000             |                       |                    |              |

In the **Table 4.7**, the outcome of the effectiveness of monetary policy and bank diversification mechanism including interaction term interest rate while using the panel regression analysis. A linear panel data model with the helping of financial firm's random effect to examine the results were used. All the coefficient of independent and interaction terms including control variables are mostly significant association with dependent variable, except one variable are insignificant. The value of  $R^2 = 0.85$  which shows that 85% fluctuation in banks loan growth due to independent, moderator and control variable correspondingly. The hausman and likelihood test show the probability. The P value of likelihood and hausman test is significant so this study didn't apply random effect model. The study has been applied fixed effect model for further interpretation and discussion in this study. This test play the role of decision maker common and fixed effect model. Hausman test show the F stat. and Chi-Square of cross section is less than 0.05 then fixed effect model used if P-value is insignificant than random effect model is applied.

# Chapter 5

## Conclusion

### 5.1 Conclusion

Monetary policy is collection of economic policy that manages the growth rate and size of money supply in an economy. It is being used a powerful tool to regulate the macroeconomic variables such as inflation and regulatory firms is responsible for formulating MP. Monetary policy affects the economy through several channels such as bank lending channel. For instance, it augments the financing costs of firms and thereby decreases the investment. This is also known as the interest rate channel. Monetary policy reduces the interest rate by changing the quantity of money or by changing the price of money. Monetary policy helps to raise the financing cost of firms and there by reduces the investment.

The purpose this study to check the relationship between among bank diversification and monetary policy. In this study, investigating the effect of the assets of bank diversification on bank lending. The main focus of this study to examine the impact of moderating role of bank diversification and interest rate on loan growth (i.e. Effectiveness of monetary policy). This study use the bank-level data in Pakistan period from 2006 to 2016 to explore whether diversification affects the effectiveness of MP. Data is collected from financial statement, BSA and state bank of Pakistan.

This study contributes to literature on banking and finance by examining the impact of moderating role of bank diversification and the interest rate on effectiveness of monetary policy. The findings suggests that restrictive monetary policy has a large effect banks with diversified assets therefore, banks decrease their loans as they become more diversified.

To determine the relationship between bank diversification and monetary policy descriptive statistic, panel regression and correlation models are used respectively. According to the panel data final model selection likelihood and hauseman test were applied for improving which model is fit for study such as common, fixed and random effect model. According to this study likelihood test suggest study were accept alternative in which fixed effect model were more appropriate for regression analysis Random Effect Model and Common Effect Model are not appropriate.s Both the likelihood and houseman test were suggested the fixed effect model were more appropriate for this research so fixed effect model is used. That show the direct impact of bank diversification determinates on monetary policy so in this model interest rate moderate the relationship between bank diversification and loan growth of banks. Because this model show the significantly negative relationship between interest rate and diversification so this indicates restrictive MP has a larger banks with diversified assets.

In literature review many researcher find out the relationship between monetary policy and diversification. Some researcher find positive impact of bank diversification on loan growth, some researcher find negative effect of diversification of banks and effectiveness monetary policy and as well as some researcher find no relationship between bank diversification and effectiveness of monetary policy. For this study the dependent variable is monetary policy having loan growth as its main element and the independent variable is bank diversification with its major elements i.e. equity, liquidity, size and diversification. Interest rate is considered as an interaction term to about how moderates the relationship between independent variable and dependent variable The result of this study shows that monetary policy and bank diversification has significant importance in banking sector of Pakistan. This study find the monetary policy has a higher impact on

diversified banks. The result of this study shows that there negative and significant impact of moderating role diversification and monetary policy on loan growth (i.e. effectiveness of monetary policy) so hypothesis of this study is accepted. This study result linkage with the (Gunji & Yuan, 2018) bank diversification and monetary policy and in this study hypothesis are accepted.

Finally, it is suggested that all the banks should established the unified corporate body and assign the responsibility to collect the data related to monetary policy and also to construct the monetary policy indices to assist monetary policy research in Pakistan.

## 5.2 Recommendation

This study recommended that many other countries should be selected for to check the impact of monetary policy and bank diversification. This research provide the guidelines to banks for better improvement in effectiveness of monetary policy and bank diversification. Keep an eye on monetary policy as it not only effect price but also liquidity. Study encourage to financial firms banks should bring a transparency, accountability and fairness in financial reporting because many issues in reports. Study encourage to SBP make a better policies for improvement of effectiveness MP and BD in firms compare to developed countries.

## 5.3 Future Direction

This study is based on limited to the selected developing country (Pakistan). It recommended that many other countries should be selected for impact of monetary policy and bank diversification. So the study uses the annual semi or quarterly data of banking sector for the effect can be used for future research. In this research collective study on all Pakistani banks this study can also be done separately on specialize, conventional and Islamic banks. The time frame for research work, including the ten years from 2016 to 2016, this time period can be increased by 10



years for more accurate results. Research the sample size and time period of the data may be increased by taking into account remaining firms of different sectors in future.

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