Impact Of Volatility In Macroeconomic Factors On The Lending Behavior Of Domestic And Foreign Banks In Pakistan

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Abstract

This paper aims to determine the impact of variations in Macroeconomic variables on the lending behavior of local and foreign banks in Pakistan. Fluctuations in economy affect the behavior of banks and other financial institutions. Positive signals regarding economy encourage the banks to lend more and vice versa. R-square value for the foreign banks was higher than that of local banks concluding that foreign banks are more affected by the macroeconomic indicators as compare to domestic banks. Percentage change in advances of local and foreign banks are studied as dependent variable while GDP, Inflation, Interest Rate, Money Supply and Exchange rate as independent variables. Seven years data (2005-2011) is analyzed using Ordinary Least Square (OLS) technique. Results indicated that interest rate is insignificant for domestic banks while GDP is insignificant for local banks' advances.

1. Introduction

1.1 Background of the Study:

Financial institutions or banks operate as intermediaries between lenders and borrowers in the financial markets. The transformation of funds from a surplus unit to the deficit unit in a financial marker is only possible through the existence of these intermediaries. Acting as an intermediary a bank uses funds either through issuing bonds to the creditors or through the loans. These transactions pose great risk for the banks as well because creditors may default due to uncertain condition of the economy. This happens when there are fluctuations in certain economic factors. Consequently instability in these factors inside economy alters the behaviors of financial institutions.

When investment opportunities arise, companies and businesses start investment in different projects. Most of the businesses acquire the required capital for the projects through borrowing funds. For this purpose they resort towards banks. According to (Gavin & Haussmann, 1998), capital is main shock absorber reserve for the bank. So they are the key sources of money to assist firms. The financiers utilize the borrowed

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funds to finance projects and generate profit. They reinvest their income ahead and ultimately the overall economy of the country is improved.

Investment opportunities pave the way for financial institutions to earn desirable profit. Firms do not go for any type of project unless it performs feasibility analysis. It requires having enough funds so that to satisfy their investment need in order to complete the project successfully. That's why investors resort towards financial markets for the sake of acquiring money as a loan because to finance the proposed projects. In such situations, intermediaries i.e. banks are the only sources of capital for them to meet the desired requirements regarding investment.

Sandra, Boris and Andreas (2008) said that if the money obtained by the banks as loan, turns out in profitable returns, then firms reinvest them into other projects which create an active business cycle and overall economy of a country is improved.

In the very first times of the independence of Pakistan, there was great shortage of resources due to political and so many other reasons. For the development of financial sector the state bank of Pakistan was established on the first July 1948. This was the central bank of the country. According to the ACT 1956 of SBP, various amendments were made for the development of banking sector of the country. In 1974, government of Pakistan nationalized all the private banks but due to the poor quality of banking products and services, it deteriorated the performance of banking sector. So under the reform policy of banking sector these banks were again privatized in 1990s (Dr.Salman & Bilal, 2011).

According to the report of state bank June 2011, there were total 44 banks (9,399 branches) operating all over Pakistan. Out of them, Local Pakistani banks (public + domestic private) were 32 and foreign banks were 12 only. Their branches were 9,341 and 58 respectively. Public sector (9 banks, 2,187 branches) included 5 commercial (1,641 branches) and 4 specialized (546 branches). Domestic private banks were 23 with 7,154 branches. (Khattak, 2011).

Pakistani banking sector has shown substantial growth in recent financial years. Total assets of banking have been increasing rapidly since 1980 despite huge challenges to banking sector (Salman & Bilal, 2011).

The recent economic survey of Pakistan conducted in March 2012 identified that the total number of scheduled banks are thirty eight in 2010-11 and the number of branches are nine thousand three hundred and ninety. Foreign banks are six and their branches are forty nine. (Economic indicators Pakistan, March 2012).

Said and Ismail (2007) said that the key asset of a bank is their advances provided

to the borrowers. In order to generate income, banks typically make out loan. It makes the bulk of income from the spread between the deposit and lending rates relative to the volume of the loan granted. Somoye and llo (2009) said that the volume of the granted loan in a given year may be the function of its certain internal characteristics such as size, deposit base, liquidity, credit policy and other internal factors. This means that the lending behavior of financial institutions can be affected to the great extent by these variables as well.

It was quoted by Wolfson (1990) that financial instability has increased in the last twenty years. Yet as surprising as the recent instability was the period of stability in the early postwar period. For the post-world war II period up to 1966, no financial crisis developed. Failure of banks and thrifts in each year were generally in the single digits.

Financial markets show regular fluctuations in different categories of variables. The variations or instability leads towards changes in certain decisions taken by the investors. In more simple words we can say that the uncertain economic environment affects the behavior of financial institutions.

According to Somoye and llo (2009) banks do not operate in a vacuum and their lending behavior may be changed due to change in macroeconomic factors and it is more challenging because it exhibits the systematic risk component that affects every participant within the economy. The lending of banks can be affected by certain internal actors like size, capital, and loan to asset ratios, credit policy, assets and liquidity as well. But external indicators also show significant participation as up to great extent, performance of the economy is reflected by the Gross domestic product (GDP), Employment level, industrial capacity utilization, Money supply, inflation and exchange rate etc which are known as the Macroeconomic factors. They stated that the positive signals from these mentioned participants ensure banks to lend their funds and vice versa. So banks loan portfolio may generally be influenced by the performance and stability of the economy. Banks make out more loans during the period of boom and less when there is recession. (Chirstopher & LLo, 2009) .

The lending behavior of banks can also be affected to the large extent due to several other actors as well. For example, companies acquire costly information about investors in order to determine the likelihood of loan default of borrowers which will have a clear effect on the credit strategies. Similarly the Monetary policy constraints may cause to alter the lending conduct of banks. Pakistan is an underdeveloped country and the economy fluctuations leads it's banking sector to amend their lending policy.

Many research studies have been carried out to identify the impact of macroeconomic indicators influencing lending behavior of different categories of banks like

the public and private sector banks, commercial and non commercial, etc. In this study, it is analyzed that what sort of response is shown by local and foreign banks regarding their advances in Pakistan to the changes in Macroeconomic factors. It is a co-relational research and quantitative secondary data is collected to measure the relationship between dependant variable (Percentage change in Advances of Local and foreign banks) and independent variables (GDP, Inflation, Interest rate, Money supply, Exchange rate). Multiple-regression model is run using OLS (ordinary least square) technique.

1.2 Research Statement:

To analyze the change in domestic and foreign bank's lending behavior due to instability in macro-economic variables in Pakistan.

1.3 Scope of the study:

Eleven local and four foreign banks operating in any city of the country is studied and seven years data of advances (2005-11) is taken from the financial annual reports in order to carry out the study. The results are generalized for the overall local and foreign bank working in Pakistan.

2. Literature Review

Many studies have been done to determine the altering behavior of banking sector in various conditions of economy in different countries. It is an obvious fact that when economy exhibits variations then financial institutions also take alternative steps to avoid risk. The below discussion is based on the efforts done by various people seeking their objectives in their zones regarding economic situations and its impact upon banking sectors. The themes of a couple of research articles have mentioned here in this research in the following manner.

2.1 The Role of Banks in Economy:

Banks perform many functions in financial system and their performance is not concealed by anybody. It precedes money to industries and businesses in order to continue their operations and benefit new opportunities. Banks usually try to have long term relationships with its borrowers so that to obtain required information time to time. They accept deposits from various households and lend them to diverse investors.

Krainer and Robert (2011) said that vital role is played by financial institutions in the economy. During resource transformation from households to the investing firms, there exists asymmetric information in the decentralized economy. In such situation,

bank acts as medium of exchange. They minimize the asymmetric information by having liabilities (deposits). Signals pass to the capital market when banks advance loan to the firm. Such signal is reflected in the assessment of excellent securities of the firm.

The basic role played by banks is that of acting as a financial intermediary. It facilitates the payment system in order to ensure the efficient allocation of the deposits which are under the custody of bank (Christopher & M, 2009).

Baum, Mustafa and Neslihan (2002) explained that commercial banks play a critical role in macro economy and these are considered as important sources of intermediated credit. They acquire costly information on borrower and overcome frictions in credit market so they extend credit base through utilizing those information and market conditions.

2.2 Economic volatility and banks' lending behavior:

When positive signals come from economy then banks generally lend more because it assures that borrower will be able to payback loan along with the accumulative interest on its right time. When the condition of economy is unfavorable, banks reduce their proceeds as loss due to default risk is expected. This is called as the lending behavior of banks.

It was stated by Baum, Caglayan and Ozkan (2002) that when default risk increases, banks reduce lending in unstable economic environment. Similarly Quagliariello (2007) discussed that banks' lending decisions can be identified by macroeconomic instability. Main reason for it is the turbulence in the distribution of economic resources. As in industrial sector the only effective source of financing is the fund provided by the banks so state bank and policy makers should carefully monitor the level of volatility in of economy with respect to macroeconomic actors.

According to Christopher S. R. and Ilo (2009) there was an obvious relationship between the instability in Macroeconomic environment and the lending behavior of banks in the long run. For this purpose they studied the Nigerian banking sector and stated that banks do not operate in a vacuum so the overall lending behavior is influenced by the regulatory and the macroeconomic environment. They studied that the macroeconomic aggregates such as GDP (Gross Domestic Product), employment level; money supply, inflation, industrial capacity utilization and exchange rate reflect the performance of the economy. In response, banks adjust their lending behavior to the signals from these factors such that positive signals make the banks become more favorably disposed to lending and vice versa.

Similarly Mario (2007) described that macroeconomic uncertainty is a significant determinant of the banks' investment decisions. Banks receive noisier signals on the expected returns of loans in periods of increasing crisis, therefore, tend to behave more unvaryingly. The central banks and supervisory authorities should monitor the degree of uncertainty on the evolution of the main economic aggregates in order to enforce financial stability. It is because bank's loans are the major sources of financing.

Alejandro and Ugo (2006) pointed out that public sector banks were less affected by changing macroeconomic environment as compare to private banks. They had done a research in Chile to check whether state owned banks and private banks equally respond in different conditions of economy. They had confirmed that publically owned banks decrease their lending less in case of recessions and also increase less in expansion. It was concluded by them that state-owned banks tends towards stabilized credit policy, hence play a useful countercyclical role. There were possible reasons why that group of banks stabilizes its credit, according to them. The first had to do with the fact that their principal (i.e. the state) internalizes the benefits that derive from a more stable macroeconomic environment and hence credit stabilization was part of the objective function of state owned banks. Second reason was that if bank failures were more likely during recessions and depositors think that public banks are safer than private banks, the former can enjoy a more stable deposited base and hence be better able to smooth credit.

Similarly these two people mentioned that foreign owned banks and domestic private banks also behave in different manner. They used the macroeconomic shock, political instability and changes in regulations as independent variables and Growth rate of loan by banks as dependant variable for their research. They had concluded that state-owned banks might play a useful credit smoothing role. The state owned banks were less responsive to macroeconomic shocks than that of private banks (both domestically and foreign owned) and hence vital role was played by public banks. The cause is when the business cycle is correlated with the relative return of investment in the host country one should expect foreign-owned banks to be more pro-cyclical than domestic-owned banks. This is because in good times they can increase lending by accessing foreign credit line while leave the country in bad times in order to look for more profitable lending opportunities abroad. While on the other hand if credit crunches are mostly due to the deposits then the foreign banks will be less sensitive to changes in economy because of their access to the outside funding. So if foreign banks are less risky in the mind of depositors, then its deposit base will be more stable and same will be the case of lending (Alejandro & Ugo, 2006).

2.2.1 Inflation and bank lending:

Rogers (2006) narrated that consumer price index (CPI) value is included while calculating the inflation and it determine the inflation. Banks demand more premiums when inflation and interest rates are up. High inflation in the economy affects the lending behavior of banks because they demand for high interest on loans. Borrowers will not be expected to accept this as the success of project is in risk in the mind of them.

Elizabeth and Smith (1999) described that the financial activity of the market or lending volume are strongly negatively related with the inflation in the long run while at the same time volume of trading in equity market is strongly positively correlated with volume of bank lending activity.

2.2.2 Gross Domestic Product (GDP) and banks' lending behavior:

It was stated by Barry and Andrew (1997) that banking crisis in rising markets tends to occur in response to a connection of unfavorable developments in domestic and international markets. Look first for countries with overvalued exchange rates and disappointing output growth, for the banks is most likely to be saddled with nonperforming loans. Look then rise in interest rates in main financial centers, the availability of funding will disturb for the bank and it become the cause of on fire crises.

2.2.3 Exchange rate and banks' lending:

Azis and Thorbecke (2002) identified this fact in Nigeria that depreciation in exchange rate and increase interest rate reduce the growth in loan and in capital at local banks compared to foreign banks. It indicated that unstable macroeconomic environment limited the credit of banks during the credit crunch in Indonesia. Evidence showed that such kinds of effects were significant. This weakening of credit creation intensified the crises. Devaluation of exchange rate provided the chances for the firms to increase their exports but these business required funds for the production. As foreign creditors withdrew funds and credit market in Indonesia were underdeveloped, so investors had to depend on banks. On the other hand when banks confined its lending, businesses compelled to cut the production and unable to increase export in the response of depreciated exchange rate. The domestic banks are usually un-hedged and thus mostly affected by exchange rate shocks that result to less access to credit. Deprecation in exchange rate badly affects balance sheet of customers, increase risk premium and reduce the loan supply of local banks.

It was narrated by Aziz and Thorbecke (2002) that fluctuations in macroeconomic environment can decrease credit creation by reducing credit worthiness of

the firm or reducing bank capital. Foreign banks did not respond very intensively to the credit restriction as the local banks did in Indonesia. It is because they were less open to disintermediation and their customers used protective methods. They explained that foreign banks were control group and the interest and exchange rate shocks reduced the capital and lending of domestic banks more than foreign banks. This evident indicated that the crises shortened domestic loan supply forcing firms to restrict exports regardless of dropping exchange rate.

2.2.4 Money supply change and advances of Banks:

Christopher and M (2009) mentioned that in long run the money supply was negatively related to the lending behavior of banks in Nigeria. 1 percent growth brings 0.4 percent reduction in advances of banks. On the other hand bank size was positively related to the banks lending. A similar 1 percent increase in bank size causes 54% growth in bank lending. Banks tend to reduce lending especially in the period of high liquidity because of the possibly low loan demand and the possible low return. Banks seek alternative sources of income earning and investments in such kind of situations to channel their funds.

2.2.5 Interest Rate and lending responses of local and foreign banks:

Aziz I. J. and Willem (2002) tested and quantitatively measured the effect of exchange rate and interest rate shocks on loan supply of banks in Indonesia. They investigated whether domestic commercial banks and foreign banks respond differently to exchange rate and interest rate shocks. It was concluded by them that as compare to local banks, foreign banks have customers who are more likely to be hedged against exchange rate risk. It is because foreign banks employ better risk management practices and that's why they are less vulnerable. Thus their response is much less to the volatility in the above mentioned economic indicators. The evidence of this fact is that increase in interest rate or depreciation in exchange rate brings much more reduction in capital of domestic banks relative to the international banks. In short there was large decrease in the supply of loan during crisis in Indonesia.

Gambacorta (2004) tested cross sectional differences in the effectiveness of banks lending channel. He studied monetary shocks and used size, liquidity and capitalization of banks as independent variables to check lending reactions and derive conclusions from the comprehensive sample of Italian banks. He suggested that heterogeneity in the monetary policy pass through exists. After a monetary restriction, deposits fall and banks reduced lending. When there was monetary tightening, there was less decrease in lending for well capitalized banks because market perceived them less risky and can easily raise uninsured deposits. On the other hand, liquid banks

protected its loan portfolio against monetary tightening by drawing securities and cash. Size factor was somehow irrelevant in this case. Small banks were not more sensitive to monetary policy shocks as compared to large banks in Italy.

Eichengreen and Rose (1997) reported from (Eichengreen & Fishlow, 1996) that when interest rates increase, it limits foreign banks' inflow. It is a great problem for the banks in developing economies especially for those having an inconsistent trend to fund themselves from foreign markets. So they have to offer high profits to attract foreign depositors. Growth in interest rate in offshore becomes the cause of fall in the growth of their funding.

Kashif and Muhammad (2011) examined factors which explained banks' credit to businesses in rising global challenges and fluctuating financial environments. Growth in credit from banks to private sector was taken as dependent variable while growth of liabilities from abroad, growth in domestic deposits, real market growth, money market rates, M2 as percentage of GDP, exchange rate and inflation as major independent variables to explain the behavior of bank credit. They had focused on supply side for their findings and used autoregressive distributed lag (ARDL) Model or econometric approach. The annual data from 1971 to 2008 for Pakistan was used. On the basis of their empirical results, the domestic deposits, foreign liabilities, economic growth, exchange rate and monetary conditions had significant impact on banks' credit in Pakistan particularly in case of long run. Whereas the rest of two indicators, that is money market and inflation did not affect private credit. Further, credit to business was not influenced by domestic deposits in short run. Reason for this may be that banks do not issue immediate loan from currently deposited amount by account holders. Moreover the financial health and liquidity of banks had also played significant role in loan determination.

3. Methodology

The methodology of this research is comprised of the below.

3.1 Population:

Population for local banks included 32 domestic Pakistani banks (public and domestic private) while 12 foreign banks inside the country is population for foreign banks in this research.

3.2 Sample:

Sample of total fifteen banks is selected for this testimony including eleven local and four foreign banks. As foreign banks are less than domestic that's why sample for

foreign banks is confined to only four banks. But it is chosen on equal percentage base (34%) with respect to population size of each sector. Statistic (lending behavior of sample banks) is analyzed and their results are generalized over the parameters of both categories.

3.3 Sampling technique:

Since quantitative studies requires probability sampling, so random sampling technique was used for the current thesis. Based on it, only 4 banks are chosen out of 12 foreign banks (34% of its population) and 11 banks from local of total 32, (34% of its population).

3.4 Data Collection:

Secondary data (Advances of understudying banks) was processed and it was picked up from balance sheet of published financial annual reports of each bank ranging from 2005 to 2011. Sources like Karachi Stock exchange, Business Recorder, the website of State Bank of Pakistan etc were visited to collect the desired advances of banks. Data of independent factors was taken preferably from the World Bank site and economic survey of Pakistan (2010-11).

3.5 Operational definition:

Domestic are banks incorporated in Pakistan and their head offices are inside the country while bank branches, not having head-offices in Pakistan are called foreign banks. Lending behavior of banks means the increase or decrease in loan given by each selected sector of banks when there is tense situation in economy. GDP, Inflation, Interest rate, Money supply and Exchange rate are those indicators that fluctuate with the passage of time in external economic environment.

3.6 Hypothesis:

Ho: There is no significant effect of volatility in macroeconomic variables on the lending behavior of local banks.

H1: There is significant effect of volatility in macroeconomic variables on the lending behavior of local banks.

Ho: There is no significant effect of volatility in macroeconomic variables on the lending behavior of foreign banks.

H1: There is significant effect of volatility in macroeconomic variables on the lending behavior of foreign banks.

3.7 Model and Analysis Technique:

Model is used to check dependency or relationship between variables. Panel data has been applied to show the impact of change in Gross Domestic Product, Inflation, Interest Rate, Money Supply and Exchange Rate. Since it is co-relational and Quantitative research and independent variables are more than one, so multiple-regression has applied using Ordinary Least Square (OLS) tool. Following Model was applied to analyze the data for both local and foreign banks individually.

$$Y = \alpha + \beta_1(X_1) + \beta_2(X_2) + \beta_3(X_3) + \beta_4(X_4) + \beta_5(X_5)$$

Where, Y = advances, α = Constant (average effect of other unspecified variables),

β = slope (or responsiveness of dependant variable)

X1 = GDP (Gross Domestic Product)

X2 = Inflation,

X3 = Interest Rate,

X4 = Money Supply and

X5 = Exchange Rate.

3.8 Justification of Variables:

❖ Advances:

It is taken as a dependant variable which shows the lending behavior of banks in different years in reaction to fluctuations in internal and external (Macroeconomic) factors of banks. These are net loan- proceeds and are major assets of banks having place in balance sheet. Percentage change in net annual advances for each consecutive year has calculated in this research.

❖ GDP (Gross Domestic Product:

It is the value of all products in the country in a particular period. GDP comprises total investment, government and consumers' expenditures, adding the value of exports and subtracting the value of imports. Gross domestic product postulate the growth and strength of economy inside country. It has taken in percentage growth form.

❖ Inflation:

This variable measures rise in overall prices of commodities. Normally, it is calculated on annual bases as a percentage increase in prices of products. Rise in

inflation reduce purchasing power of money and little quantity of goods can be bought. Bank willingness of lending decreases when inflation increases because of the fear that money will not have the current value in coming times. Inflation and lending of banks are negatively related. It is derived on consumer price index (CPI) bases taking 2005 as base year.

❖ **Interest Rate:**

Interest rate is the most important variable for the analysis of banking sector lending decisions. Banks are very sensitive to the variations in interest rate and whole economy especially the investment decisions are affected much. When interest rate rises, it becomes barrier for the firms to obtain loan from banks because return (cost) increases for them. Ultimately investors do not go for projects and investment opportunities are lost. It has computed by taking the average of twelve months interest rates in each year.

❖ **Money supply:**

It is also called the money stock, in the amount of monetary assets available in an economy at particular time period. When money supply rises, consumers decrease the money demand so they will be unwilling to get loan from banks even on low interest rates. Consumer demand is weak, therefore banks are taking this opportunity to improve their balance sheets rather than increase lending. It has calculated as % of gross domestic product for every period.

❖ **Exchange rate:**

It is the value of currency which is expressed and measured in the form of exchange value of another currency. Exports odds increase when exchange rates depreciate and this leads towards more productions from the side of firms. The cost of production is controlled through taking loans from banks. Thus lending behavior of financial institutions is affected. It has measured as Pakistani rupees per US dollar in different years.

4. Analysis of Data

Data has been analyzed for both sectors of banks individually in the following way so that to distinguish that which sector of banks show its responses more as compare to other.

4.1 Data analysis of local banks:

Regression technique has been run upon the collected data to analyze the effect of macroeconomic variables on lending behavior of local banks. The significant level

is taken as 5 percent to check the relationship between dependent and independent variables. The following outcomes are obtained for local banks after applying the OLC (Ordinary Least Square) model.

Table 4.1: Measurement of the impact of volatility in Macroeconomic variables on lending behavior of local banks.

4.1.1 Interpretation of results of Domestic banks:

The above Table 4.1 illustrates the statistical results obtained by the OLS for the local banks of Pakistan. Eleven domestic banks have been analyzed taking seven years data of advances from 2005 to 2011. For better understanding the local banks' outcomes in table 4.1 are interpreted in following hints.

Model 1: Pooled OLS, using 77 observations Included 11 cross-sectional units Time-series length = 7 Dependent variable: Advances__					
	Coefficient	Std. Error	t-ratio	p-value	
const	365.339	181.707	2.0106	0.04817	**
GDP__	5.18285	1.97594	2.6230	0.01066	**
Inf__	3.34147	1.15537	2.8921	0.00508	***
IR_	4.43572	3.26924	1.3568	0.17914	
MS_	-5.47707	2.72317	-2.0113	0.04809	**
ER	-2.88379	1.30769	-2.2053	0.03068	**
R-squared		0.327142	Adjusted R-squared		0.279758
F(5, 71)		6.904013	Pvalue(F)		0.000027

❖ Significance of Model:

The results state that the P-value (F) is equal to 0.000027 which is less than 0.05. It indicates that overall model is significant for local banks' advances. So we reject our null hypothesis and accept the alternative hypothesis. Thus there is significant impact of macroeconomic variables on the lending behavior of local banks.

❖ Significance of independent variable:

P-value for GDP is 0.01066 which is less than 0.05 so it is significant at 5%. It has positive impact on advances because its coefficient (Beta) value is +5.18285. 1% change in Gross Domestic Product brings about 5.18285% positive variations in advances of local banks. Inflation has beta (+3.34147) means 1% rise in inflation will increase the loans by 3.34147% and its p value is 0.00508 < 0.01 so it is significant at

1%. This variable has direct relationship with the dependant variable. Interest rate positively but insignificantly affect the advances because its p-value is $0.17914 > 0.05$. It is only 5 percent surety that 1% increase in interest rate brings 4.43572% improvement in lending. Money supply and Exchange rate significantly affect the behavior of local banks as their p-values are $(0.04809 < 0.05)$ and $(0.03068 < 0.05)$ respectively. Both money supply and exchange rate have inverse relationship with advances. 1% change in Money supply and exchange rate brings about 5.47707% and 2.88379% negative changes respectively in the advances of domestic banks. The results can be expressed in the following equations form as well.

$$Y = \alpha + \beta_1(X_1) + \beta_2(X_2) + \beta_3(X_3) + \beta_4(X_4) + \beta_5(X_5)$$

$$\text{Advances} = 365.339 + 5.18285(\text{GDP}) + 3.34147(\text{Inflation}) + 4.43572(\text{Interest Rate}) - 5.47707(\text{Money Supply}) - 2.88379(\text{Exchange Rate}).$$

❖ R-square value:

R-square value is 0.327142 which shows that 32% variations are explained in advances of local banks due to fluctuations in GDP, inflation, interest rate, money supply and exchange rate.

❖ Durbin-Watson value:

This value is 1.644646, which is less than its standard, so there is no auto co-relation between the independent variable of this study.

4.2 Data analysis of foreign banks:

The below results are got after applying the Ordinary Least Square tool for the foreign banks. The analysis was done on 5 percent confidence interval.

Table.4.2: Measurement of the impact of volatility in Macroeconomic variables on lending behavior of foreign banks.

4.2.1 Interpretation of results of the foreign banks:

Table 4.2 is explained in these sub points for international banks.

❖ Significant of the Model:

The value of F-statistic for foreign banks is $0.006018 < 0.05$ thus model is significant for the foreign banks' advances as well. The null hypothesis is rejected while alternative is accepted. This means that there is significant effect of GDP, inflation, interest rate, money supply and exchange rate upon the lending behavior of foreign banks.

Model 1: Pooled OLS, using 28 observations Included 4 cross-sectional units Time-series length = 7 Dependent variable: Advances__					
	Coefficient	Std. Error	t-ratio	p-value	
const	2290.01	639.12	3.5831	0.00166	***
GDP__	6.53552	6.95	0.9404	0.35724	
Inf__	13.9882	4.0638	3.4421	0.00232	***
IR_	32.7123	11.4989	2.8448	0.00942	***
MS_	-32.5835	9.57824	-3.4018	0.00256	***
ER	-18.1584	4.59955	-3.9479	0.00068	***
R-squared		0.502239	Adjusted R-squared		0.389112
F(5, 22)		4.439588	P-value(F)		0.006018

❖ Significance of the independent variable:

Gross domestic product insignificantly affects the advances of foreign banks as its p-value (0.35724) has exceeded from 5%. Its relationship is positive because β is +6.53552. This means that the impact of Inflation and Interest rate is significant at 1% as their p results are (0.00232 < 0.01) and (0.00942 < 0.01) respectively. The co-efficient outcomes illustrate that these factors are directly related with advances. Remaining two indicators, Money supply and exchange rate have negative beta so inversely affect the lending attitude of foreign banks. Both are significant at 1%. The results are illustrated in the below equation.

$$Y = \alpha + \beta_1(X_1) + \beta_2(X_2) + \beta_3(X_3) + \beta_4(X_4) + \beta_5(X_5)$$

$$\text{Advances} = 2290.01 + 6.53552(\text{GDP}) + 13.9882(\text{Inflation}) + 32.7123(\text{Interest Rate}) - 32.5835(\text{Money Supply}) - 18.1584(\text{Exchange Rate}).$$

❖ R-square Value:

The value of R-square is 0.502239 indicating 50% impact of understudying macroeconomic factors upon the lending behavior of foreign banks.

❖ Durban Watson:

Result of Durban Watson test is 1.455841 that does not exceed its standard, thus there is no auto correlation among the variables.

5. Conclusion & Recommendations

5.1 Conclusions

The consequences of this report proved that lending behavior of the domestic and foreign banks are significantly affected due to fluctuations in Macroeconomic environment. It is concluded from the outcomes that GDP, and Inflation significantly and positively affect the advances of local banks. 1% rise in GDP brings 5.18285% and positively affect the advances of local banks. 1% rise in GDP brings 5.18285% and Inflation carry out 3.34147% increase in advances of local banks. Money supply and Exchange rate significantly and negatively related to domestic banks advances. . 1% change in Money supply brings 5.47707% and exchange rate 2.88379% negative change in the advances of domestic banks. Interest rate show insignificant and positive effect upon advances.

Foreign banks lending behavior is also affected by the instability in macroeconomic indicators. Inflation and Interest Rate have significant and positive relationship while Money Supply and Exchange Rate significantly and negatively related to the lending responses of foreign banks. 1% change in Inflation brings about 13.9882 percent changes where as 1 percent fluctuation in Interest Rate brings 32.7123% change in the advances of foreign banks. On the other hand if 1% change comes in Money Supply or Exchange Rate, their affect on foreign banks will be 32.5835% and 18.1584% respectively but this effect is occurred in the form of negative or inverse response by foreign banks regarding their advances in given period. The effect of GDP is insignificant for foreign banks.

Conclusion obtained from the overall results illustrates that Foreign Banks are more responsive to the instability in macroeconomic variable as compare to domestic Banks in Pakistan. It is because R-square value and beta values of the macroeconomic variables are high and their effect was 50.2239% on the advances of foreign banks while the overall model is significant for local banks at 32.7142% and effect of these factors is 32.7142% for Domestic banks' advances. Thus the impact of volatility in Macroeconomic factors on the lending behavior of Foreign Banks is more than that of the Domestic Banks in Pakistan.

5.2 Recommendations:

- ❖ It is recommended that if government takes proper steps to control the fluctuations in certain macroeconomic variables, then there could be expectations by banks to provide more and more loan to the investors.
- ❖ More extensive work is required to be done through analyzing further macroeconomic variable so that to get more proper conclusions for the local and foreign banks lending behavior. This area need to be studied further through taking relatively large sample size so that to obtain more

precise results.

- ❖ There is another gap for further study to analyze the impact of instability in macroeconomic variable on the lending behavior of commercial and non-commercial banks in Pakistan.

5.3 Limitations:

There are banks whose annual reports in certain years were not available. Because of this there was problem in data collection that's why data of only seven years (2005-11) had acquired. Small sample was chosen and it is sampling disadvantage for this research.

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