

The Drivers of Non-Performing Loans in Pakistan: Evidence from Panel Data Methods

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Abstract

This paper investigates the main drivers of non-performing loans (NPL) in Pakistan. To achieve this objective, the study uses quarterly unbalanced panel data of thirty-five (35) commercial banks from 2003Q4 to 2019Q1, and the fixed effect method is employed for estimation. Five different models have been estimated to see the impact of internal level factors along with banking competition, macroeconomic, and policy variables on NPLs. The empirical findings reveal that only the loans to deposit ratio (liquidity) among the bank-level factors has a negative significant influence on NPLs. Among the macroeconomic factors, money supply and real effective exchange rates show a significantly positive association with NPLs, while inflation rate and index of large-scale manufacturing exhibit significantly negative effects on NPLs. The coefficients of two alternative measures of market power Herfindahl Hirschman index and Lerner index also demonstrate a significant effect on NPLs. Among the policy variables, the T bill rate indicates a significant negative relation with NPLs, while the policy rate and open market cut-off rate have a positive significant effect on NPLs. The study comes to the conclusion that the macroeconomic fundamentals explain the NPLs in the Pakistani banking industry. Therefore, the improvement of the macroeconomic fundamentals will improve the health of banking sector of Pakistan.

Keywords: Non-performing loans; Market power; Policy variables; Fixed-effect method

Introduction

The financial health of the banks is revealed by non-performing loans (NPL). The losses of loans reduce the total assets of the banks because the banks cannot survive individually from one another. Given that the banks operate with backlinks, accordingly, one bank has spillover effects over the whole banking system, which creates stress and financial instability. Thus, decreasing the quality of debt generates panic and threat of systematic risk, which in turn outflows of deposits. This limits the intermediation role of the banks, consequently investment and growth. As history shows that, the increasing NPL has played a vital role in arising bank distress and crises (Gonzalez Hermosillo, 1999). Mostly financial crises and banks failure are due to unpaid loans in both developing and developed countries (Maude et al., 2017).

After the financial crises in 2007-2008 and the global recession, the average assets of the bank declined. Therefore, the quality of loans captures attention across the countries. Thus, the problem of NPLs and their effect on the real economy is the primary concern of all countries in the world. NPLs also have an impact on the banks' willingness and ability to advance loans, which affects households' and investors' demand. Those countries, which have exchange rate depreciation would lead toward higher non-performing loans, if the borrowers have outstanding in foreign currency rather than local currency and their earned incomes are not in foreign currency to hedge them [Hausmann et al. (2001)].

Few researchers examined the factors that have an impact on NPL for the Pakistan banking sector. Haneef et al. (2012) probed the effect of risk management on NPLs in Pakistan. They picked a few banks and found the result that NPLs are due to the lack of risk management. Badar and Atiya Javid (2013) carried granger causality analysis between 2002 and 2011 and checked the relationship between macroeconomic forces and NPLs. The findings denote a weak association of inflation and nominal exchange rate with NPLs. Waqas et al. (2017) has done a comparative analysis of determinants of credit risk among Pakistan, India, and Bangladesh. The empirical output presents that bank-level factors inefficiency, leverage, capital ratio, and profitability are the main drivers of NPLs.

Highlights of the banking sector of Pakistan

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Table 1 exhibits the position of the non-performing loan per year from 2015 (CY15) to 2019 (CY19) in Pakistan. The profit of the banks after tax grew by 14.76% percent in CY19 after declining up to CY18. Similarly, non-performing loans grew by 11.9% from CY18 to CY19, although the increase of non-performing loans has been continued since CY15. The ratio of NPL to gross loans reflects a decline up to CY18 and then has surged from 8.0 to 8.6. It indicates that NPLs grew in CY19, it may be the cause of economic instability in Pakistan.

After the 2nd quarter of 2007, the borrowers were unable to repay their loans to the banks. This upward trend in NPLs continued to the 2nd quarter of 2012, during this period the economy faced many challenges. Among some key challenges were high international oil prices, double-digit inflation rate, unstable exchange rate, high policy rate, and low industrial production due to energy crises.

The above discussion shows that NPL rises over time, the increasing trend of NPL could be caused by macroeconomic, market-level, and bank-level factors. Therefore, the influence of bank internal and macroeconomic factors could be the cause of systematic risk in the banking sector. This risk generates economic risk. Often the NPL shows the cause of failures of banks and financial crises both in developed and as well as in developing countries. Similarly, commercial banks face the NPL problem in Pakistan. Thus, what are the main factors responsible for creating these loan defaults in Pakistan? Therefore, the objective of this study is to probe the influence of market power, policy variables along external shock on non-performing loans. The study contributes to the literature in a way that it examines the effect of the degree of market power and policy variables on NPLs.

Following the introduction, this paper is organized as; the second section presents a review of previous studies. The data and model specifications are in section 3. Section 4 indicates the empirical results. The conclusion of the study is in section five.

Literature review

After the 2007 and 2008 financial crises, the drivers of non-performing loans (NPL) gained more significance. However, there is no accepted universal principle to model the NPL that was used in previous studies. Here, we present some empirical studies that examine the determinants of NPL.

One of the initial studies conducted by Keeton and Morris, (1987) by using data for the period from 1979 to 1985 of 2500 commercial banks of the US. They examined the determinants of loan losses. The results of the study reveal that energy, agriculture, and unsatisfactory performance of specific industries badly affected loan repayment.

The literature designates some studies as Berger and DeYoung (1997) for the US; Bikker and Hu (2002) for 29 OECD countries; Quagliariello (2007) for Italy; Pain (2003) for the UK. These studies investigated the cross-sectional and time dimensions of bank-level and macroeconomic factors and their impact on the quality of loans. These studies used bank-level factors, such as the size of the bank, margin of profit, risk management, cost efficiency, market power, and loan losses.

Some other studies explored the correlation between loans quality and macroeconomic factors by using the vector autoregressive (VAR) model. Baboucek and Jancar (2005) studied the association of macroeconomic shocks and the quality of loans of the banks of Czech by using the data for the period of 1993 to 2006. The output of this research work provides evidence that inflation and unemployment rate have a positive impact on NPL. Filosa (2007) carried the study for the Italian banking industry and found a weak association between bank soundness and macroeconomic improvements. Similarly, using reduced form VAR, Marcucci and Quagliariello (2007) found that loan default rises during economic contraction and reduces during the economic expansion in Italian banks.

Bofondi and Ropele (2011) used the quarterly data and investigated the impact of macroeconomic variables separately on households' loans and loans of firms from 1990q1 to 2012q2. The findings show that the prices of houses and real GDP indicate a negative association with non-performing loans of households, while the nominal interest rate and unemployment have a positive influence on NPL in the case of both firms and households. Louzis et al. (2012) studied the determinants of NPL in Greece by using the data for the

period of 2003q1 to 2009q3. They used the dynamic panel data method and found that macroeconomic variables, unemployment, the basic rate of interest, real GDP have a significant influence on NPL in all categories (mortgage loans, consumer loans, and firm loans). Among bank-level variables, the efficiency of management has an impact on all categories, and other factors denote different relations with different categories. Otasevic (2013) used the quarterly data from 2008q3 - 2012q2 and examined the influence of bank-level and macroeconomic factors on the NPL of the banks in Serbian. He analyzed the impact of these factors on the NPL of households and NPL of enterprises. The outcomes of the study designate that macroeconomic factors are the derivers of the non-performing loans, the lower GDP growth and depreciation of the exchange rate are worsening credit portfolios. Ekanayake and Azeez (2015) empirically tested the main drivers of NPL of Sri Lankan banks. They established that bank specific and macroeconomic factors are the main determinants of NPL.

Gosh (2015) studied factors that affect NPLs across US states. The findings of the study are that cost inefficiency, liquidity risks, greater capitalization, poor credit quality, and size of the bank significantly upsurge NPLs, while greater profitability of the bank pull-down NPLs. Cifter (2015) observed the influence of market concentration on NPL for Eastern and Central European (CEE) countries by using a fully modified ordinary least square method. For panel data set bank concentration is not significant, but an individual country case the banking competition decreases NPL in Latvia, Estonia, and Slovakia, and upsurges in Poland, Bulgaria, Croatia, Slovenia, Lithuania, and Croatia. Banking competition does not show an effect on NPLs in all countries, but the association between NPLs and bank concentration is unclear in CEE countries.

El-Maude et al. (2017) observed the causes of NPL of deposit money banks in Nigeria. The findings denote that bank size and loan-to-deposit ratio have a significant association with NPL. Waqas et al. (2017) conducted a comparative study and examined the determinants of credit risk for Pakistan, India, and Bangladesh. The outcomes of the study present that the leverage, profitability, inefficiency, and capital ratio contribute more to credit risk. Besides the macroeconomic factors also have a significant influence on credit risk. Kjosevski et al. (2019) studied the reasons for the NPL of households and enterprises in the Republic of Macedonia. The outcomes of the study designate that growth of GDP and inflation harm NPL, while unemployment and exchange rate exhibit a positive significant effect on NPLs.

Data and Model Specification

The usage of data in this research work is quarterly unbalanced panel data for the period of 2003Q2 to 2018Q4 of thirty five (35) commercial banks. The data has been collected from the quarterly financial reports of commercial banks. The macroeconomic variables' data has got from the State Bank of Pakistan.

Econometric model and strategy for estimation

The following model is used to probe the determinants of NPLs.

$$NPL_{it} = \alpha_0 + \alpha_1 NIM_{it} + \alpha_2 LQ_{it} + \alpha_3 ROE_{it} + \alpha_4 RLR_{it} + \alpha_5 MS_t + \alpha_6 REER_t + \alpha_7 INF_t + \alpha_8 LSM_t + \alpha_9 OP_t + \alpha_{10} HHI_t + \alpha_{11} LI_t + \alpha_{12} TB_t + \alpha_{13} PR_t + \alpha_{14} OMO_t + \varepsilon_{it}$$

where i denote bank, and t stands for time. The dependent variable is a non-performing loan (NPL) of bank i at time t . NIM is the net interest margin of the bank I at time t . LQ is the liquidity of the bank. ROE is the return on equity of the bank. RLR is the retail lending rate of the bank. All the above-mentioned factors are the bank level. The following are the macroeconomic variables as MS is the money supply at time t . The real effective exchange rate is denoted by $REER$ at time t . INF stands for inflation LSM is large scale manufacturing index. OP is the international oil price. The study uses two industrial level factors, these are the Herfindahl Hirschman index (HHI) at time t and LI is the Lerner index of bank i at time t . The included policy variables in the model are T bill rate (TB), policy rate (PR), and open market operation cut off rate (OMO). The description of the variables and descriptive statistics are given in table 1.

Explanation and Justifications of the Selected Variables.

Non-performing loans (NPLs): As the literature denotes research mostly uses two types of indicators for non-performing loans. One is the non-performing loans divided by total loans used by [Jimenez & Saurina (2006)]; [Fainstein & Novikov (2011)]; [Pestova & Mamonov (2012)] and [Castro (2012)]. The other is loans

losses or loans loss provision is used by [Pain (2003)]; [Pesola (2005)]; [Quagliariello (2007)]; and [Glogowski (2008)]. Here, we use the ratio of nonperforming loans to total loans as dependent variables.

Table 1. Explanation of variables

	Description	Expected Sign	Mean	S.D
Dependent Variable				
Non-Performing Loans	Non-Performing Loans/Total Loans		0.095	0.089
Independent Variables				
Net Interest Margin	Interest Earned Minus Interest Expenses/total Assets	+	0.022	0.014
Liquidity	Loans to Deposits Ratio	+	0.601	0.22
Return on Equity	Shareholders' Equity/Total Assets	-	0.096	0.068
Retail Lending Rate	Interest earned on loans/Average Loans	+	6.541	4.201
Money Supply	Log of M2	+	15.702	0.578
Exchange Rate	Real Effective Rate	+/-	4.659	0.1
Inflation	Log of CPI	+/-	1.932	0.581
Large Scale production	Large Scale Manufacturing quantum index	-	4.737	0.187
Oil Price	International Oil Price	+	4.199	0.397
Herfindahl Hirschman Index	The sum of Squares of Market Shares (loans) of Each Bank	+/-	0.086	0.016
Lerner Index	Price minus marginal cost/price	+/-	0.148	0.239
Treasury Bill Rate	6months TB rate	-	8.701	3.262
Policy Rate	Discount Rate (policy rate)	+	9.523	2.782
Open Market Operation Cut off Rate	Open market Operation Cut off rate	+	8.368	2.995

Bank-level factors

Some internal factors of the banks may affect NPLs. These are the following. Net interest margin: It is one of the main components of the probability of the banks. When the banks try to earn more interest on loans to increase profitability, the banks charge high lending rate, which in turn contributes more to NPLs.

Liquidity: The paper uses loan-to-deposit ratio as a proxy for liquidity, which presents the availability of funds that the banks could use to advance loans after receiving the funds in the form of a deposit. [Louzis et al. (2010)] and [Makri et al. (2014)] used this ratio for liquidity, we expect that it will have a positive influence on non-performing loans.

Return on Equity: It indicates the profitability and efficiency of the banks because it is the measurement of net income as compared to shareholders' equity. A higher return on equity expresses that the banks earn a greater profit. The profitable banks take less credit risk, in turn, the low NPLs.

Retail lending rate: Retail lending rate plays a central role because it directly affects the cost of advances. A bigger lending rate increases the cost of borrowing for households and investors. Hereby, a greater probability of loan default is likely to lower the ability of borrowers to repay debt.

Macroeconomic variables: The macroeconomic outlook affects the balance sheets of the borrowers and their capacity for debt repayment.

Money supply: The money supply represents the total quantity of monetary assets in the country. Here, the money consists of a demand deposit and currency in circulation. The increase in the quantity of money deteriorates the portfolio of the banks, which in turn harms NPLs. The growth of the money supply raises the deposits with the bank, so the bank increases its lending, which greater the possibility of loans default [Valipour et al. (2015)].

Real effective exchange rate: The exchange rate also has a mixed effect on NPLs [Kalirai and Scheicher, (2002)]. The depreciation of local currency can boost the competitiveness of export oriented firms,

which improves the debt servicing ability of these firms and lowers NPLs. On the other hand, the cost of loans borrowed in foreign currency goes up, which reduces the capacity of debt servicing. The relation between the exchange rate and NPLs is indeterminate.

Inflation: According to Nkusu (2011) inflation has an impact on the servicing of debt at different channels and this effect can be negative or positive. A higher general price level can make loan repayment easier either because of lowering the real value of loans outstanding or reducing unemployment according to the Phillips curve. Similarly, when wages are sticky, inflation lowers the real income of the debtors and their capability of loan repayment [Radivojevic and Jovovic, (2017)]. Besides, the monetary authority raises the policy rate to combat inflation, which transmits to retail lending rates. This increases the cost of loans, as a result of NPLs.

Large-scale manufacturing index: The paper uses this variable for demand shock. It also reflects the economic condition of the country. The progress of large-scale manufacturing indicates that the economy is growing. The increasing size of the economy generates more income and lowers financial stresses [Nkusu, 2011)].

External factor

In this global world, any shock at the international level transmits to the domestic economy. Therefore, we choose the international oil price for the external shock.

Oil price: The international oil price is used as a proxy for supply shocks. A rise in oil prices can have a negative influence on the economy because it contributes more to the expenses of the energy of households and businessmen, (Kalirai & Scheicher, 2002). Thus, the higher oil price worsens economic climate, in turn, greater loan losses.

Industry-level factors: Competition in the banking sector rendered a vigorous role because it forces the bank to improve efficiency and managerial skills, so the dominant bank gets more market power.

Lerner index: Lerner index is a more perfect measure to capture the market power of each bank than a measure of concentration. Since the Lerner index needs proper estimation of the marginal cost.

Hirschman Herfindahl index (HHI): Banks in the highly competitive market take bold steps in advancing loans, it improves the perception of risk management among borrowers, so most the competitive banking markets have less NPL [Jordan Kjosevski et al. (2013)]. According to Bolt and Tieman (2004), higher rivals of the banks compel them to involve in riskier lending practices, so the banks reduce screening procedures and relax the criteria for lending loans, as result commercial banks put a balance sheet to vulnerability, which generates NPLs. This positive sign reflects that higher concentration in the loan market, the bank might be tried to gain greater market share by lending to riskier borrowers [Jiménez et al., (2013)]. This objective of the bank to gain short-term market share, which leads to greater NPL. Therefore, we expect an ambiguous result.

Policy variables

Policy variables are those variables that the central bank uses to influence on the money market and the financial system. The policy variables are:

Treasury bill rate: The State Bank of Pakistan regularly floats treasury bills of various tenors to manage liquidity in the banking system. Commercial banks try to invest funds in T bills, which is less risky and has a high return. T bill yields are high when there is positive anticipation about stock exchange prices, inflation, and interbank rate. Therefore, the commercial banks are interested to invest in higher yields treasury bills. It implies that the availability of loanable funds with banks for the private sector becomes smaller, which further increases the lending rate due to greater demand for loans than the supply of funds, as a result, greater growth of NPLs.

Policy rate (discount rate): If there is inflationary pressure in the country, the central bank raises the policy rate, which transmits to the retail lending rate. Facing a higher lending rate, the investors reduce demand for loans, so it humpers the investment, which in turn result in low employment and low level income. Thus, a greater chance of loans default.

Open market cut off rate: Open market operation is the purchasing and selling the securities of government in the secondary market. Open market operation is one of the monetary policy instruments that the central bank uses to influence the reserve base of the banks and their loans creating capabilities. The monetary authority uses this instrument to regulate credit availability and its cost in the banking system, and then it has an impact on the money supply. According to Nnanna (2001), the lowest bid price is offered (highest discount rate) for injection (purchase) and the highest bid price is offered (lower discount rate) for mop-up (sale). It implies that higher open market operation cut off rate is the result of injection money in the system. Thus, greater funds available for the lending, so the banks advance risky loans, hence NPLs.

Estimation technique

The panel data has two dimensions cross-sectional and time series. The panel data provide information about bank behavior across the banks and across time. But the collected observations are not free from the influence of unobserved factors. These unobserved factors affect the dependent variable in the empirical analysis. The individual bank has its features, which might be affected by the behavior of the dependent variable. We want to the detention of unobserved effects because the commercial banks have some unobserved effects as managerial skill, time of existence in the industry, the location where the banks are situated, etc. all these factors may have an impact on the dependent variable. The fixed effect estimation is used to control the effect of unobserved characteristics of the banks.

Empirical Results and Discussion

Since, in this paper, we examine and focus on the impact of banking competition and policy variables on NPL. Two variables capture the competition in the market HHI and LI. But these are alternative measures of competition. In this research work, five different models have been estimated as shown in the table 3. The first model reveals the influence of bank-level factors on NPL. Except for the liquidity variable, other variables include net interest margin, retail lending rate, and return on equity do not influence NPL in the five models. The liquidity is the ratio of loan to deposit, which is significant at 10 percent in the first and fifth models, and at 5 percent and 1 percent in the remaining 2 models. The liquidity has a negative association in all the models. The ratio shows the funds' availability for advancing. If the banks have enormous liquidity, so the charge lower loan rate, as a result, debtors can return their loans to the banks. The higher ratio also denotes that banks are reluctant to lend more loans, so they make a better selection of the borrowers. As the first model reveals that the retail lending rate does not affect NPL. This is an interesting result.

Model 2 signifies the impact of bank-specific factors along with banking competition on NPL. HHI does not affect NPL, while LI is negative significantly related to NPL. Those banks have greater market power can get more access to information about borrowers, so there is less chance of loan default. As the bank gets market power is also in a better position to charge smaller lending rate, which makes the debtors to able to refund loans to the banks. Besides, the bank is in a better position to set its lending rate above marginal cost. The bank does not involve lending loans to risky projects to earn more profit. This result supports the finding of Pestova and Mamonov (2013) for Russia.

Table 2: Findings Based on the Static Panel Data Methods

Variable	Model 1	Model2	Model3	Model4	Model5
<i>Net Interest Margin</i>	-0.4233 (0.5701)	0.2700 (0.8297)	-0.7122 (0.9305)	-0.3450 (0.8981)	0.0671 (0.7306)
<i>Liquidity</i>	-0.0591** (0.0343)	-0.0737** (0.0284)	-0.0459 (0.0360)	-0.0768*** (0.0280)	-0.0468** (0.0277)
<i>Return on Equity</i>	0.0275 (0.1374)	-0.0092 (0.1418)	0.0655 (0.1304)	-0.0532 (0.1479)	0.0055 (0.1335)
<i>Retail Lending Rate</i>	0.0008 (0.0028)	-0.0013 (0.0024)	-0.0010 (0.0027)	-0.0001 (0.0023)	-0.0030 (0.0022)
<i>Money Supply</i>	NA NA	NA NA	0.0664*** (0.0209)	NA NA	0.0928*** (0.0236)

Exchange Rate	NA	NA	0.1255***	NA	0.0745***
	NA	NA	(0.0442)	NA	(0.0366)
Inflation	NA	NA	-0.0035	NA	-0.0187***
	NA	NA	(0.0071)	NA	(0.0063)
Large Scale production	NA	NA	-0.1950***	NA	-0.1051**
	NA	NA	(0.0451)	NA	(0.0342)
Oil Price	NA	NA	0.0157**	NA	0.0077
	NA	NA	(0.0089)	NA	(0.0108)
Herfindahl Hirschman Index	NA	0.4951	NA	NA	1.3841**
	NA	(0.4673)	NA	NA	(0.4905)
Lerner Index	NA	-0.0844***	NA	NA	-0.0806***
	NA	(0.0285)	NA	NA	(0.0290)
Treasury Bill Rate	NA	NA	NA	-0.0078**	-0.0061***
	NA	NA	NA	(0.0032)	(0.0026)
Policy Rate	NA	NA	NA	0.0062	0.0132***
	NA	NA	NA	(0.0045)	(0.0031)
Open Market Operation Cut off Rate	NA	NA	NA	0.0062***	0.0011
	NA	NA	NA	(0.0019)	(0.0032)
Constant	0.1317***	0.1127***	0.5440**	0.1103***	-1.4370***
	(0.0175)	(0.0417)	(0.2700)	(0.0132)	(0.4698)
Observation	1880	1866	1880	1835	1822
R-Squared	0.5812	0.8900	0.5924	0.695	0.7924
Number of bank	35	35	35	35	35

Standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1

Model 3 represents the influence of macroeconomic and bank-level factors on NPL. The results indicate that the money supply and exchange rate disclose positive significant relation with NPL. High money growth generates an inflationary environment, which reduces the real income and ability of the borrowers. A high growth rate of money indicates the availability of funds with banks, which raises lending by unpicking riskier borrowers. This outcome is in the same line as the finding of Valipour et al. (2015) for Iran. The depreciation of the exchange rate makes the imports expensive, consequently, the domestic price level goes up, which creates problems for borrowers to repay loans timely. The finding backs the result of Kjosevsk et al. (2019) for Macedonia, and Ali and Iva (2013) for Albania.

Inflation is another macroeconomic variable; it is not significant in this model. We use the growth of large-scale manufacturing quantum index as a proxy for economic growth; it also shows the demand shock. The businesspersons earn more profit during economic progress, so the repayment of the loan becomes easy for investors. Oil price is used as a proxy for supply shock, internationally higher oil price transmits into the domestic economy in the form of greater transportation cost and energy, consequently bigger cost of production and less profit, and which further contributes to the NPL.

Model 4 specifies the findings of bank-level and policy variables and their impact on NPL. The T bill rate has a positive significant effect on NPL because it is significant at 10 percent. T bill rate is the benchmark for the corporate sector, as the rate of treasury bill rises, so the cost of borrowing is also going up, which in turn high NPL. The policy rate is not significant in model4. The open market operation cut off rate is significant at 1 percent and denotes a positive influence on NPL. The purchase and sale of securities by the monetary authorities affect money supply in the system, and interest rates in the debt market. When the monetary authorities sell securities through open market operation, and hence the price of securities falls, as result interest rates go up in the debt market. Besides, the supply of money comes to be lower in the system, and the availability of funds with the banks. Subsequently, higher lending rate and NPL.

Model 5 postulates the overall effect of bank internal level, macroeconomic, market, and policy variables on NPL. Here, we get the same result, as liquidity significantly affects NPL among bank-level factors in this model like other models. Along with other macro variables, inflation has a negative significant influence on NPL. During inflation, the debt for borrowers becomes easier to pay back because the outstanding have smaller real value. Besides, the decreasing NPLs may be due the banks are more careful in selecting qualitative borrowers, so this is a similar finding of Otašević (2013) for Serbia, Ekanayake, and Azeez (2015) for Sri Lanka, and Gosh (2015) for the US. The supply shock variable is not significant in this model. Both variables HHI and LI of industry-level exhibit a significant effect on NPL. But the HHI reflects a positive association with NPLs, it implies that banks try to get more share in the loan market, due to this competition the portfolio of banks bear more risk, this increases the loans loss probability (Bolt & Tieman, 2004). This finding supports the study of Jiménez et al. (2013). Nevertheless, among the policy variables, the T bill rate has a similar significance influence on NPL in this model. However, the policy rate reveals a positive significant association in this model. It shows that if monetary authority increases the policy rate, so this high rate transmits into interbank rates and then into the retail lending rate. The higher lending rate makes new loans more expensive and the cost of previous loans becomes greater for borrowers, as result more NPL. Open market operation cut off rate does not show significant relation with NPL.

Conclusion and Policy Recommendation

In this empirical work, we analyzed the determinants of NPLs of the commercial banks in Pakistan. The fixed effect method has been used for the estimation of the model. Five different models have been estimated in this research work. In these models, we examined the impact of banking competition, macroeconomic, and policy variables on NPLs along with bank-level factors.

Among the bank-specific factors, only liquidity has a significant influence on NPLs, which is the ratio of loans to deposits. Banking competition shows a significant association with NPLs, but HHI has positive and LI harms NPLs. As the findings of the study reveal that macroeconomic factors are the main drivers of NPL. Money supply and real effective exchange rates exhibit positive significant relation with NPLs. While inflation and large-scale manufacturing index denote a negative significant influence on NPLs. We include oil price as a proxy for supply shock, this variable in model 4 has a significant positive impact on NPLs. Similarly, the policy variables in models fourth and model fifth manifest significant on NPLs. T bill rate shows a negative relationship with NPLs, while policy rate and open market operation cut off rate positively affect NPLs. Thus, the study concludes that the banking competition, macroeconomic and policy variables are the main drivers of non-performing loans in Pakistan.

The banks should increase the periodic management of credit risk and observing of the loan portfolio to lower NPLs. The banks should determine the creditworthiness of borrowers to minimize the defaulting of loans. Commercial banks should invest in T-bills when the rate is high and reduce investment government securities when the T bill rate is low to mitigate the greater level risk of other sectors to minimize the NPLs. The banks should supply more funds to debtors during the period of falling the growth of credit to enhance their capacity to repay loans, which will affect the declining growth of credit. As the result shows a negative relation of large scale manufacturing index with non-performing loans, so the government should make proper policy to boost the production of large scale manufacturing. The government carries proper planning to stabilize the exchange rate and reduce the printing of money.

Suggestions for future research, the study can conduct to include macroeconomic factors that is foreign direct investment, sovereign debt, political and institutional stability. The internal factors that can be used in the study are loan loss provision, the volatility of earnings, income diversification, return on assets, regulatory weaknesses, managerial efficiency, merger, and acquisition. One could test the tradeoff between banking market competition and banking financial stability implied by the loan channel.

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