Studies in Economics and Business Relations
https://spda.sabapub.com
ISSN (online): 2709-670X

2022 Volume 3, Issue 2: 28 – 35
DOI : 10.48185/sebr.v3i2.737

Non-Performing Loans Effects on Profitability and Lending Behavior of Commercial Banks: Empirical evidence

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Received: 28.09.2022 • Accepted: 19.11.2022 • Published: 27.12.2022 • Final Version: 31.12.2022

Abstract: This study aimed to examine the effects of non-performing loans on the profitability and lending behavior of commercial banks in Yemen. The study used a descriptive-analytical approach. The data of the study were obtained from the annual financial reports (2010 -2018) of 6 commercial banks operating in Yemen. A panel data model was used in this study. The independent variable of the study was non-performing loans as measured by non-performing loans to total loans and advances ratio (NPLS) while the dependent variables of the study were profitability (ROA and ROE) and lending behavior as measured by loans and advances growth (LAG) of the commercial banks in Yemen. To test the hypotheses of the study, regression analysis was used. The results of the study showed that there is a positive and significant effect of the non-performing loans ratio (NPLs) on the return on equity (ROE) of commercial banks in Yemen. Whereas the study found no effect of (NPLs) on the return on assets (ROA) and loans and advances growth (LAG) of commercial banks in Yemen.

Keywords: NPLs, Financial Intermediaries, Profitability, Panel Data.

1. Introduction

The banking industry has witnessed many developments, such as the openness of financial markets, intensity of competition, increased financial risks and the development of new financial instruments, which led to some challenges facing banks in developing and developed countries alike (Apergis, 2022). The financial crisis of 2007 is an example of what can go wrong if the banking system does not respect the interplay of growth and risk (Cucinelli, 2015). In the midst of the banking industry developments, and due to the increasing volume of non-performing loans, banking bears many difficulties. This requires banks to take the necessary procedures to manage and control these risks, following the best international practices to reduce potential losses. The banking sector is considered a vital focus in the economic and financial systems because of its positive impact on economic

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development through the mobilization of savings and their distribution on various investments at the local and global (Ben Bouheni et al., 2022).

The Yemeni bunking industry is essential to economic growth and development of the country because it acts as financial intermediation between the surplus and deficit economic sectors. Banks' primary responsibility as financial intermediaries is to receive deposits from the surplus unit and lend them to investors in the form of loans and advances (Isedu, 2020). In recent years, the financial reports of banks operating in Yemen indicate that non-performing loans rates have increased significantly in Yemen due to many reasons, among the most prominent war and political instability. High levels of non-performing loans (NPLs) can produce a credit crisis, which can prompt banks to avoid further lending despite high demand from borrowers, hindering the growth of both the economy and the banks.

Consequently, this study aimed to measure the effects of non-performing loans (NPLs) on commercial banks' profitability and lending behavior in Yemen. Accordingly, this study will contribute to enriching the banking and financial risks literature that explores the impact of non-performing loan risk on the financial performance of banks. The second contribution of this study is that the previous literature has investigated the relationship between the growth of credit loans and performance, or the relationship between the growth of credit loans and bank risk-taking, but to the author's knowledge, there are no studies of the specific relationship between non-performing loans and the bank’s profitability and its lending behavior.

Many studies have been done on the impact of credit risk on the profitability of commercial banks in Yemen. However, there are no studies that have examined the impact of non-performing loan risk on the lending behavior of commercial banks in Yemen. This gives us the opportunity to investigate this research gap.

2. Literature review

Different authors have expressed the concept of non-performing loans (NPLs) in the literature, and the term varies from country to country. In its report on financial soundness, the International Monetary Fund (IMF) defined nonperforming loans as those whose interest and principal payments are 90 days or more past due (Isedu, 2020). NPLs were defined as those that do not generate income for a prolonged period of at least three months (Ozili, 2022). In a similar vein, Huljak et al. (2022) emphasise that NPLs are loans that are 90 days or more past due.

Oudat (2020) examined the impact of non-performing loans on the financial performance of commercial banks in Bahrain. A quantitative approach was adopted in this study. Panel data model was adopted in this study. The results of the study showed that non-performing loans has a positive and significant relationship with the financial performance (ROE) of commercial banks in Bahrain.

Isedu (2020) examined the effect of non-performing loans on loans and advances behavior of commercial banks in Nigeria. The study relied on secondary data of 18 Nigerian commercial banks during the period 2009-2018. Phillip – Peron method is adopted for the purpose of data testing. The study found a direct relationship between non-performing loans and the behavior of loans and advances of Nigerian commercial banks.

Ullah et al. (2020) aimed to measure the effect of the non-performing loans on the profitability (ROA) of public commercial banks in Bangladesh. An explanatory research design was adopted in this study. The study relied on secondary data of 5 commercial banks during the period 2014-2018. A multiple regression was used in this study. The results of the study indicated that the non-performing loans have a significant negative relationship with the return on assets of commercial banks in Bangladesh. Bhattarai (2019) discussed the determinants of the lending behavior of commercial banks in Nepal. The SPSS program was used in this study. The results of the study revealed that there is a significant effect of interest rate spread, liquidity ratio and exchange rate on the loans and advances provided by the Nepalese commercial banks. The study also found a positive and significant impact of exchange rate on the lending performance of banks. The study also indicated that there is a significant negative impact of interest rate spread on the lending behavior of commercial banks in Nepal.

Poudel (2018) aimed to measure the effect of credit risk as measured by non-performing loans on the profitability of commercial banks as measured by the return on equity in Nepal. Descriptive research design was adopted in the study. A panel data model was used of 15 Nepalese commercial banks during the period 2002-2014. FEM was adopted for the purpose of data analysis. The results of the study indicated that credit risk had a negative and significant impact on the return on equity of commercial banks in Nepal. Serwadda (2018) examined the relationship between credit risk and financial performance (ROA) of Ugandan commercial banks. The study relied on secondary data of 20 commercial banks during the period 2006-2015 using Panel Data analysis. Descriptive statistics, correlation and regression analysis were used in this study. The study concluded that credit risk affects the financial performance of banks, as the study confirmed the existence of a negative relationship between non-performing loans and the financial performance (ROA) of commercial banks in Uganda.

Mburugu (2018) measured the impact of NPLs on the lending behavior of Kenyan commercial banks. A descriptive research approach was used in this study. The SPSS version 20 was used for the purpose of data analysis. In order to test the significant of the study model, f statistic test was adopted. The study relied on secondary data of 20 Kenyan commercial banks during the period 2013-2017. The results of the study indicated that non-performing loans had a positive and significant impact on the lending performance of commercial banks in Kenya. Ebenezer and Omar (2016) attempted to determine the impact of non-performing loans on the profitability of commercial banks in Nigeria. Panel data analysis was adopted in this study. The research sample consisted of 8 commercial banks during the period 2011-2014. The results of the study showed that the non-performing loans have a significant negative relationship with the profitability (ROA and ROE) of commercial banks in Nigeria.

Cucinelli (2015) discussed the impact of non-performing loans during the financial crisis on the lending behavior of Italian banks. The quantitative research design was adopted in this study. OLS regression and Hausman test was adopted in this study for the purpose of examine and analysis the data. The study found that non-performing loans negatively affected the lending behavior of banks. The study also concluded that there are no statistically significant differences in the lending behavior of banks during the financial crisis. Rabab'ah (2015) discussed the factors affecting the lending performance of commercial banks in Jordan. The secondary data of 10 commercial banks during the period 2005-2013 was used in the study. The results of the study indicated that there is a negative and statistically significant impact of the liquidity ratio, non-performing loans and window rate on the credit facilities of commercial banks. The results of the study also showed a positive and statistically significant effect of economic growth and the size of the bank on the credit facilities of commercial banks in Jordan. The study argued that the other independent variables affected insignificantly the lending performance of commercial banks in Jordan.

3. Hypotheses of the Study

The Hypotheses of the study were developed based on a literature review as listed below:

3.1 H_0: There is no significant effect of non-performing loans (NPLs) on the return on assets (ROA) of commercial banks in Yemen.

3.2 H_0: There is no significant effect of non-performing loans (NPLs) on the return on equity (ROE) of commercial banks in Yemen.

3.3 H_0: There is no significant effect of non-performing loans (NPLs) on the loans and advances growth (LAG) of commercial banks in Yemen.

4. Model of the Study

The model of the study consists of NPLs as independent variable while the dependent variables were profitability (ROA and ROE) and lending behavior as measured by loans and advances growth (LAG) of commercial banks. The model of the study shows in Figure 1 as follow:

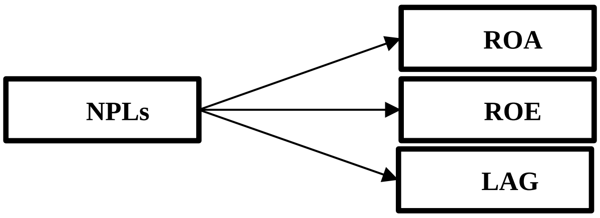

Figure 1. Research model

5. Methodology

This study seeks to examine the effects of non-performing loans on the profitability and lending behavior of commercial banks in Yemen. To achieve this goal, a descriptive analytical approach was used in this study. A Panel Data model was used in this study to estimate and analysis the data by using Eviews program. To test the hypotheses of the study, regression analysis was used. The study depends on secondary data that collected from the annual financial reports of 6 Yemeni commercial banks during (2010-2018).

6. Result and discussion

6.1. Descriptive Statistics

According to Table 1, we notice that the value of J.B indicates that the data follow a normal distribution at 0.05. Table 1 indicates that the profitability of the commercial banks, as measured by (ROA), was 0.03, and its lowest value was -0.006. In contrast, the profitability of the commercial banks, as measured by (ROE), amounted to 0.40, and its lowest value was -0.1. The highest value of the lending and advances growth (LAG) of the commercial banks was 0.51, and its lowest value was -0. 27 according to table 1, while the highest value of non-performing loans of the commercial banks in Yemen was 0.92, and the lowest value was 0.11 during the study period.

Table 1: Descriptive statistics of search variables

	ROA	ROE	LAG	NPLs
Mean	0.010480	0.120333	0.054259	0.395185
Median	0.009000	0.110000	0.000000	0.310000
Maximum	0.038000	0.400000	0.510000	0.950000
Minimum	-0.006000	-0.100000	-0.270000	0.110000
Std. Dev.	0.009219	0.105508	0.192713	0.234567
Skewness	0.897893	0.586507	0.617391	0.846547
Kurtosis	3.681524	3.747186	2.685655	2.740094
Jarque-Bera	8.300972	4.352056	3.652869	6.601759
Probability	0.015757	0.113491	0.160987	0.036851
Sum	0.565900	6.498000	2.930000	21.34000
Sum Sq. Dev.	0.004505	0.589992	1.968320	2.916148
Observations	54	54	54	54

6.2. Correlation Analysis

Table 2 indicates that there is a positive correlation between the profitability of commercial banks, as measured by ROA and ROE, and the independent variable, non-performing loans (NPLs). In contrast, Table 2 indicates that there is a weak negative correlation between LAG and non-performing loans (NPLs) of the commercial banks in Yemen.

Table 2: Correlation matrix

Variable	ROA	ROE	LAG	NPLs
ROA	1			
ROE	0.88508914452	1		
LAG	0.05821400260	0.14987081668	1	
NPLs	0.24866165053	0.28265026816	-0.22339875349	1

6.3. Hypotheses Testing

To test the hypotheses of the study, regression analysis was used. In the first hypotheses, we hypothesize that non-performing loans are not significantly affecting the return on assets (ROA) of commercial banks in Yemen. The results obtained in Table 3 are consistent with this hypotheses (β=0.009773; T=1.851272; $p > .05$), thus, the null hypotheses accepted and the alternative hypotheses rejected.

Table 3: Regression estimation – dependent variable ROA

Variable	β	Standard error	T	Sig
NPLs	0.009773	0.005279	1.851272	0.0698

In Table 4, contrary to expectations, the results showed that there is a significant effect of non-performing loans (NPLs) on the return on equity (ROE) of commercial banks in Yemen (β=0.127136; T=2.124866; $p < .05$), thus, the null hypothesis rejected and the alternative hypothesis accepted. This means that if (NPLs) are increased by 1%, this will lead to an increase in (ROE) by 12%.

Table 4: Regression estimation – dependent variable ROE

Variable	β	Standard error	T	Sig
NPLs	0.127136	0.059832	2.124866	0.0384

As expected for the third hypotheses, there is no significant effect of non-performing loans (NPLs) on the loans and advances growth (LAG) of commercial banks in Yemen. The results in Table 5 confirmed that (β=-0.184727; T=-1.664008; p > .05), thus, the null hypotheses accepted and the alternative hypotheses rejected.

Table 5: Regression estimation – dependent variable LAG

Variable	β	Standard error	T	Sig
NPLs	-0.184727	0.111014	-1.664008	0.1021

7. Conclusion

The study aimed to examine the effects of non-performing loans on the profitability and lending behavior of Yemeni commercial banks. A descriptive-analytical approach was used in this study. The independent variable of the study was non-performing loans as measured by non-performing loans to total loans and advances ratio (NPLS) while the dependent variables of the study were profitability (ROA and ROE) and lending behavior as measured by loans and advances growth (LAG) of the commercial banks in Yemen. The data of the study were obtained from the annual financial reports (2010 -2018) of 6 commercial banks operating in Yemen. A panel data model was used in this study. To test the hypotheses of the study, regression analysis was used. The results of the study indicated that there is a positive and significant effect of the non-performing loans ratio (NPLs) on the return on equity (ROE) of commercial banks in Yemen. This means that if (NPLs) are increased by 1%, this will lead to an increase in (ROE) by 12%. Whereas the study found no effect of (NPLs) on the return on assets (ROA) and loans and advances growth (LAG) of commercial banks in Yemen. This means that there are other factors that affect the return on assets (ROA) and (LAG) of the commercial banks in Yemen.

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