



# The Moderating Effect of the Covid 19 on Credit Risk of Islamic and Conventional Bank in Emerging Markets: Evidence from Palestine

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**Abstract.** Credit risk is one of the largest and most significant risk exposures facing banks. This study aims to empirically measure the impact of credit risk on the profitability of Islamic banks and conventional banks operating in Palestine. The study also aims to show if there is a significant difference in the impact of credit risk on the profitability of Islamic and conventional banks. The interactive effect of the Covid 19 pandemic with the credit risk factors is studied to prove whether the pandemic affects the profitability of both types of banks. The study analyzed the data of 13 banks (11 conventional and two Islamic banks). The sample period extends from 2011 to 2020. Banks' profitability is measured using return on assets (ROA) and return on equity (ROE). Credit risk variables are measured using the non-performing loan ratio, loan provision to gross loans, and capital adequacy ratio. In addition, a set of macroeconomic and micro-control variables are investigated. Using panel regression analysis, the study finds that credit risk significantly impacts Islamic and conventional banks' profitability. However, this effect is sensitive to the measure of profitability. While credit risk significantly impacts the ROA, it has no significant impact on the ROE. In addition, the study finds that the impact of credit risk on the profitability of Islamic banks is different from that of conventional banks. In addition, the credit risk that rises during the Covid 19 pandemic has an insignificant impact on the profitability of both types of banks.

**Keywords:** Covid 19 · Credit risk · Profitability · Islamic banks · Conventional banks · Palestine · Panel regression

## 1 Introduction

The banking sector plays an essential role in economic growth around the world. In addition, banking institutions play an essential role in the financial systems' maturity transformation and asset transformation processes. Therefore, banks are exposed to a vast array of risks that distinguish them from other organizations. One of the most prominent and most considerable risks banks face is credit risk. Credit risk is the potential that a bank borrower or counterparty will fail to meet its obligations by agreed terms. [1] mention that credit risk is an essential factor in determining the banks' profitability as the

majority of credit revenues are created by interest. Furthermore, the Covid 19 pandemic, which started in the year 2020, had a disruptive effect on the world economies and increased the vulnerability of the global financial system.

Furthermore, due to the long shutdown period in Palestine, the notional amount of the defaulted loans has increased. Therefore, the quality of the loan portfolios has declined, which led banks to tighten credits in anticipation of high defaults.

Due to the importance of managing this risk, many studies have studied the impact of credit risk on banks' profitability [1–7]. The majority of the studies find a significant negative relationship between credit risk and the banks' [1–7]. Concerning Palestine, [8] analyzes the impact of credit risk on five banks (four CBs and one IB) operating in Palestine from 2010 to 2015. The results indicate a positive but insignificant relationship between credit risk and profitability (ROA). He claims that this result is due to the realization of banks' credit risk management and the subsequent increase in interest rates to compensate for the increased perceived risk. However, the study does not measure the differential impact of bank type on modifying the relationship between credit risk and profitability.

The current study aims at providing recent empirical evidence on the impact of the credit risk on the profitability of IBs and CBs in operating Palestine. More importantly, the study investigates the moderating effect of the Covid 19 pandemic on credit risk. As well, the study is to use a large sample size with a more recent data set. The results of this paper are of significant implications to academics and practitioners. The results fill the gap in the literature of non-existing studies that compare the impact of credit risk on the profitability of both IBs and CBs and add to the body of knowledge in this area. The study also aims to provide practitioners with guidelines on whether this risk constitutes a significant threat that resources need to be devoted to actively managing this risk. Additionally, the study highlights the effect Covid 19 has on the profitability of IB and CBs.

This paper is organized as follows. The following section provides a review of the relevant literature. The section that follows is the methodology section. Then the analysis and results section, and finally is the conclusion and policy implications section.

## 2 Literature Review

### 2.1 Credit Risk

Several products and transactions within the banking business model involve credit risk. These include loans, leases, reverse repurchase agreements (reverse Repos), bonds, and derivatives [9]. Credit risk is defined as the potential loss a bank incurs due to the failure of the borrower of the counterparty to meet its contractual obligations under the agreed terms [10]. This definition views credit risk as an extreme case of insolvency. Credit position may incur a loss due to top credit deterioration of the borrower without becoming insolvent. Therefore, there are two definitions of credit risk.

Credit risk originates at the individual loan (standalone) level. Therefore, credit risk management starts at that level with prudent origination, underwriting, credit risk policy, setting appropriate limits, and the credit risk approval process. However, the assessment and management of credit risk at the consolidated portfolio level are essential [10].

## 2.2 Previous Studies

Reviewing the past literature reveals that the evidence of the impact of credit risk on profitability is contradictory. [6] finds that credit risk as measured by non-performing loan to advances loan (NPL/LA) and loan advance to total deposit (LA/TD) and loan loss provision/classified loans (LLP/CL) has a significant negative impact on the financial performance of banks (ROA). As well, [11] find a negative relationship between liquidity and profitability, and a negative relationship exists between profitability and credit risk. [7] use capital adequacy ratio (CAR) and non-performing loan ratio as proxies of credit risk. The result indicates a negative relationship between credit risk and ROA and ROE. Finally, [4] uses non-performing loans, capital adequacy ratio, impaired loan reserve, and loan impairment charges as credit risk measures. He finds that the non-performing loan ratio a significant negative relationship with the ROA, while capital adequacy ratio has a positive and significant relationship with ROA. Impaired loan reserve has a significant negative impact on the ROA. [12] examine the effect of credit risk and capital adequacy on the profitability of rural banks in the Philippines. The results indicate that the capital adequacy ratio measured as total shareholders' equity over the total assets has no significant impact on profitability. In contrast, credit risk measured as loan loss reserve over total loan has a negative and statistically significant relationship with profitability. On the Other hand, [13] find a positive relationship between non-performing loans and rural banks' profitability (ROA and ROE). The result showed that credit risk has a significant positive relationship with both profitability measures. [14] find an inverse relationship between the non-performing loan ratio (NPLR) and profitability (ROA). On the other hand, the study finds a positive relationship between loan provision/non-performing loan (LP/NPL) and ROA.

## 2.3 Hypothesis Development

Based on the above evidence provided, the following hypotheses have been developed:

*H1: Credit risk has a statistically significant impact on the performance of both types of banks IBs and CBs.*

*H2: There is a significant difference in the impact of credit risk on the performance of IBs vs. CBs.*

*H3: The Covid 19 has a statistically significant impact on the performance of banks.*

## 3 Methodology

### 3.1 Population and Sample

The study population includes 14 banks (11 CBs and three IBs). The sample includes 13 banks (11 CBs and two IBs). The excluded banks do not have a complete data set for the sample period from 2011 to 2020. Appendix 1 exhibits the sample of the study. The data used include secondary data that have been collected from the Palestinian Monetary Authority (PMA), the annual financial reports of individual banks, and those available from the Association of Palestinian Banks. In addition, the data of macroeconomic variables have been obtained from the World Bank Data Bank.

### 3.2 Variables of the Study

The variables of the study are classified into three categories: Dependent variables (DV), Independent variables (IDV), and control variables (CV). Two measures of profitability have been used, namely: ROA and ROE. Two sets of control variables are introduced: Macroeconomic variables (Real GDP growth rate and Inflation) and micro-control variables (Age and Size). Table 1 exhibits the variables of the study. In addition, to account for the incremental impact of IBs’ credit risk over that of CBs, a dummy variable has been introduced. The dichotomous variable takes the value of 1 for IBs and the value of zero for CBs.

**Table 1.** Variables of the study

Variables	Symbol	Equation	Reference
<b>A. Dependent variables</b>			
Return on Asset	ROA	Net income/ Avg. Assets	[3, 14, 15]
Return on Equity	ROE	Net income/ avg. Equity	[1, 3, 16]
<b>B. Independent variables</b>			
non-performing loan Ratio	NPLR	Non-performing loan/total loan	[14, 15, 17]
Loan provision to gross loan	LPGL	LLP/Gross loans	[15, 17]
capital adequacy ratio	CAR	Total capital/risk-weighted assets	[3, 12, 13]
<b>C. Control variables</b>			
Covid 19	2020DUM	$\begin{cases} 0: \text{years other than 2020} \\ 1: \text{years 2020} \end{cases}$	
<b>C.1 Micro</b>			
Liquidity	LQR	Liquid Asset/Total Deposits	[6–22]
Bank size	BS	Natural logarithm of total assets	[2, 18–23]
Bank orientation	DUM	$\begin{cases} 0: \text{if CB} \\ 1: \text{if IB} \end{cases}$	[13–25]
<b>C.2 Macro</b>			
Real GDP growth	RGDPG	LN (RGDP <sub>t</sub> /RGDP <sub>t-1</sub> )	[2, 7, 21–25]
Inflation	INF	LN (CPI <sub>t</sub> /CPI <sub>t-1</sub> )-1	[2]



The average bank size of CBs is relatively higher than that of IBs. In terms of distributional characteristics, the tables show that except for bank size and the macroeconomic variables, the remaining variables have non-normal distribution.

**Table 3.** Descriptive statistics of IBs

	ROA	ROE	NPLR	LPGL	CAR	BS	GDPG	INF
Mean	0.01	0.09	0.00	0.01	0.17	20.33	0.06	0.01
Median	0.01	0.08	0.00	0.02	0.15	20.31	0.05	0.02
Maximum	0.02	0.14	0.01	0.02	0.30	21.00	0.14	0.03
Minimum	0.00	0.01	0.00	0.00	0.12	19.52	0.00	0.00
Std. Dev.	0.00	0.04	0.00	0.00	0.06	0.45	0.05	0.01
Skewness	-0.25	-0.34	1.11	-1.55	1.15	-0.11	0.22	-0.10
Kurtosis	2.02	2.31	3.01	5.20	3.09	1.83	2.01	1.76
Jarque-Bera	0.90	0.71	3.73	10.88	4.00	1.07	0.88	1.19
Probability	0.64	0.70	0.16	0.00	0.14	0.59	0.64	0.55
Sum	0.17	1.56	0.04	0.25	3.13	365.96	1.14	0.24
Sum Sq. Dev.	0.00	0.03	0.00	0.00	0.06	3.49	0.04	0.00
Observations	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00

## 4.2 Correlation Matrix

The correlation matrix is presented in Table 4. Pairwise correlation coefficients between the study variables are less than 80%, which implies the absence of possible multicollinearity between the variables.

## 4.3 Model Estimation Results

Two models have been estimated using the balanced panel regression analysis by stata17. The results are as follows:

### 4.3.1 ROA Model

The estimated results of the ROA model are shown in Table 5. These results are estimated using the feasible generalized least squares (FGLS) that correct for heteroscedasticity and serial correlation.

Table 5 shows that the non-performing loan ratio (NPLR) has a negative ( $-1.39$ ) but statistically insignificant impact on the ROA at the 5% significance level. This result agrees with that of [17, 26, 27] and indicates the size of the NPLs at the Palestinian CBs is not material to affect their ROA. In other words, CBs exert prudent lending policies

**Table 4.** Correlation matrix

	ROA	ROE	NPLR	LPGL	CAR	BS	GDPG	INF
ROA	100%	65%	-14%	14%	7%	32%	12%	13%
ROE	65%	100%	-13%	-5%	-38%	62%	4%	4%
NPLR	-14%	-13%	100%	-8%	30%	-24%	11%	21%
LPGL	14%	-5%	-8%	100%	17%	-31%	38%	36%
CAR	7%	-38%	30%	17%	100%	-70%	17%	20%
BS	32%	62%	-24%	-31%	-70%	100%	-20%	-25%
GDPG	12%	4%	11%	38%	17%	-20%	100%	47%
INF	13%	4%	21%	36%	20%	-25%	47%	100%
DUM	-6%	13%	-26%	-13%	-17%	-3%	0%	0%

**Table 5.** Estimation results-ROA model

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]		Sig
NPLR	-0.139	0.08	-1.73	0.084	-0.296	0.019	*
LPGL	0.190	0.074	2.57	0.01	0.045	0.335	**
CAR	0.022	0.004	5.47	0	0.014	0.03	***
LATD	-0.001	0.004	-0.14	0.885	-0.008	0.007	
BS	0.005	0.001	7.55	0	0.003	0.006	***
GDPG	0.003	0.01	0.35	0.727	-0.015	0.022	
INF	0.079	0.04	1.98	0.048	0.001	0.157	**
DUM* NPLR	1.215	0.418	2.91	0.004	0.396	2.035	***
DUM* LPGL	0.338	0.276	1.23	0.22	-0.203	0.878	
DUM* CAR	-0.042	0.02	-2.08	0.038	-0.083	-0.002	**
DUM* LATD	0.000	0.012	-0.01	0.992	-0.024	0.024	
DUM* BS	0.000	.	.	.	.	.	
2020DUM*NPLR	0.200	0.257	0.78	0.435	-0.302	0.703	
2020DUM*LPGL	0.077	0.273	0.28	0.778	-0.458	0.612	
2020DUM*CAR	-.0199	0.017	-1.20	0.231	-0.052	0.013	
Constant	-0.094	0.014	-6.83	0	-0.121	-0.067	***
Mean dependent var	0.01		SD dependent var		0.005		
Number of obs	108		Chi-square		85.656		
Prob > chi2	0.766		Akaike crit. (AIC)		-876.539		

\*\*\* p < .01, \*\* p < .05, \* p < .1

and practices that minimize the impact of non-performing loans on their profitability. As a result, the effect of credit risk on IBs profitability is (1.076), which is statistically significant at a 1% level of significance. While the NPLR shows a negative impact, LPGL exhibits a positive (0.190) and statistically significant impact on the ROA. This result indicates that the higher the provision, the higher the operating profitability of CBs. IBs have a high and positive impact of the LPGL on their ROA (0.528), but this effect is statistically insignificant. Capital Adequacy (CAR) has a positive (0.022) and significant impact on the ROA of the CBs. This result indicates that increasing the equity to capital ratio (CAR) positively impacts the ROA. While this highlights that decreasing the financial leverage would increase the ROE, it pinpoints the possible improvement in the operating performance due to reduced leverage. Concerning IBs, the incremental effect of their capital adequacy is insignificant, which signifies that there is no statistical difference between IBs and CBs in the impact of CAR on their respective profitability. The results indicate that liquidity, as measured by LATD, has a negative (-0.001) and insignificant impact on the ROA at a 5% significance level. This result indicates that the higher the liquidity, the lower the profitability. This result agrees with that of [11]. The liquidity of IBs has no statistically significant incremental impact over that of CBs. The bank size has a positive (0.005) and statistically significant impact on the ROA. This result indicates that larger CBs have higher ROA. However, Table 5 shows no statistical difference between IBs and CBs concerning the size variable. The growth rate in real GDP, which reflects the business cycle swings, has a positive (0.003) impact on the ROA.

#### 4.3.2 ROE Model

The results of the estimated model using the return on equity (ROE) as the dependent variable is presented in Table 6. The results are estimated using the feasible generalized least squares (FGLS) that correct for heteroscedasticity and serial correlation.

The results show that the non-performing loan ratio (NPLR) has a negative (-1.22) but statistically insignificant impact on the ROE. This result indicates that the size of the NPLR at CBs is not material to affect their ROE. This result confirms that of [17, 26, 27]. This result can be interpreted on the ground that the provisioning policies of CBs are aggressive as the actual NPLs have been accounted for their impact. IBs have no statistically significant differential impact of their NPLR on profitability. While the NPLR shows a negative impact, LPGL exhibits a positive (0.904) but statistically insignificant impact on the ROE. This result indicates that the provisioning for the potential adverse effect of credit risk does not affect the profitability of CBs. The LPGL of IBs has a more significant positive incremental impact (3.188), but it is statistically insignificant. Capital Adequacy (CAR) of CBs has a positive (0.007) but insignificant effect on their ROE. This result indicates that increasing the equity to capital ratio (CAR) positively impacts the ROE. However, CAR of IBs shows a negative impact on their ROE but is statistically insignificant.

Finally, the liquidity of the CBs measured by LATD shows a positive (0.169) and significant impact on the ROE. This result indicates that the higher the liquidity, the higher the profitability. This result contradicts that of [11]. On the other hand, the impact of liquidity of IBs on their respective profitability is negative (-0.175) but statistically insignificant. Finally, the bank size has a positive (0.072) and statistically significant



**Table 6.** Estimation results- ROE model

ROE	Coef.	St.Err.	t-value	p-value	Interval]	Sig
NPLR	-1.221	1.094	-1.12	0.265	0.924	
LPGL	0.904	1.008	0.9	0.37	2.881	
CAR	0.007	0.054	0.12	0.901	0.113	
LATD	0.169	0.052	3.28	0.001	0.27	***
BS	0.072	0.008	8.53	0	0.089	***
GDPG	0.091	0.13	0.7	0.485	0.346	
INF	0.906	0.542	1.67	0.094	1.968	*
DUM* NPLR	9.841	5.692	1.73	0.084	20.997	*
DUM* LPGL	3.188	3.751	0.85	0.395	10.54	
DUM* CAR	-0.188	0.278	-0.68	0.499	0.357	
DUM* LATD	-0.174	0.167	-1.04	0.296	0.153	
DUM* BS	0.004	0.003	1.45	0.146	0.01	
2020DUM*NPLR	0.26	0.334	1.014	0.566	0.914	
2020DUM*LPGL	0.1	0.355	0.364	1.011	0.796	
2020DUM*CAR	-0.026	0.022	-1.56	0.3	0.017	
Constant	-1.534	0.188	-8.17	0	-1.166	***
Mean dependent var		0.065		SD dependent var		0.074
Number of obs		108		Chi-square		129.17
Prob > chi2		0.014		Akaike crit. (AIC)		-312.623

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

impact on the ROE of CBs. This result indicates that larger banks have a higher return to their shareholders. However, Table 6 shows no statistical difference between IBs and CBs concerning the size variable. The growth rate in real GDP, which reflects the business cycle swings, has a positive (0.091) impact on the ROE. However, this impact is statistically insignificant. The change in the purchasing power has a positive (0.906) but statistically insignificant impact on the ROE. Table 6 shows that the interactive effect of the Covid 19 pandemic with the credit risk variables (NPLR, LPGL, and CAR) has a statistically insignificant impact on banks’ profitability (ROE).

## 5 Conclusions and Recommendations

This study deals with one of the most essential and most significant risks banks face. The study finds that credit risk significantly impacts the profitability of both IBs and CBs. This effect is found to be sensitive to the measure of profitability. While credit risk significantly affects the ROA, it has no significant impact on the ROE. In addition, the study finds that the effect of credit risk on the profitability of IBs is indifferent to that of CBs. In addition, the credit risk that rises during the Covid 19 pandemic has an insignificant impact on the profitability of both types of banks.

Based on the above results, we recommend that both types of banks concentrate on managing the credit risk at the portfolio level, eliminating borrower-specific loss events and taking the benefits of cross-correlations among the borrowers. Therefore, minimize the concentration of credit that results from either conventional sources or correlated risk factors. In addition, we recommend banks reconsider the level of their capital adequacy

ratios (CAR). The results reveal that both types of banks are overcapitalized, which impacts their profitability levels and prevents them from the benefits of financial leverage. Additionally, we recommend banks expand their lending levels as the pandemic has an insignificant impact on the credit risk of borrowers. Banks need to be part of the solution as they are no part of the problem.

## References

1. Kolapo, T.F., Ayeni, R.K., Oke, M.O.: Credit risk and commercial banks' performance in Nigeria: a panel model approach. *Aust. J. Bus. Manag. Res.* **2**(2), 31–38 (2012)
2. Ekinici, R., Poyraz, G.: The effect of credit risk on financial performance of deposit banks in Turkey. *Proc. Comput. Sci.* **158**, 979–987 (2019)
3. Hurka, R.: The impact of credit risk management on profitability of Nordic commercial banks (2017)
4. Isanzu, J.S.: The impact of credit risk on financial performance of Chinese banks. *J. Int. Bus. Res. Mark.* **2**(3) (2017)
5. Kaaya, I., Pastory, D.: Credit risk and commercial banks performance in tanzania: a panel data analysis (2013)
6. Poudel, R.P.S.: The impact of credit risk management on financial performance of commercial banks in Nepal. *Int. J. Arts Commer.* **1**(5), 9–15 (2012)
7. Zou, Y., Li, F.: The impact of credit risk management on profitability of commercial banks: a study of Europe, pp. 1–93 (2014)
8. Kutum, I.: The impact of credit risk on the profitability of banks listed on the Palestine exchange. *Res. J. Financ. Account.* **8**(8), 136–141 (2017)
9. Koulafetis, P.: *Modern Credit Risk Management*. Springer, Heidelberg (2017)
10. Te, P.: *Risk Management in Banking: Principles and Framework*. Oxford Fajar Sdn. Bhd, p. 330 (2016)
11. Gholami, A., Salimi, Y.: Investigate the relationship between credit risk management and liquidity management and the profitability in banking sector. *Acad. J. Res. Bus. Account.* **2**(3), 2311–2326 (2014)
12. Mendoza, R.R., Rivera, J.P.R.: The effect of credit risk and capital adequacy on the profitability of rural banks in the Philippines. *Sci. Ann. Econ. Bus.* **64**(1) (2017)
13. Afriyie, H.O., Akotey, J.O.: Credit risk management and profitability of selected rural banks in Ghana. *Ghana: Catholic Univ. Coll. Ghana* **7**(4), 176–181 (2012)
14. Singh, S., Sharma, D.K.: Impact of credit risk on profitability: a study of Indian public sector banks. *Int. J. Res. Econ. Soc. Sci. (IJRESS)* **8**(2), 492–498 (2018)
15. Hamza, S.M.: Impact of credit risk management on banks performance: a case study in Pakistan banks. *Eur. J. Bus. Manag.* **9**(1), 57–64 (2017)
16. Hallunovi, A., Berdo, M.: The relationship between risk management and profitability of commercial banks in Albania. *Asian Themes Soc. Sci. Res.* **1**(2), 44–49 (2018)
17. Bayyouid, M., Sayyad, N.A.: The impact of internal control and risk management on banks in Palestine. *Int. J. Econ. Financ. Manag. Sci.* **3**(3), 156–161 (2015)
18. Bourkhis, K., Nabi, M.S.: Islamic and conventional banks' soundness during the 2007–2008 financial crisis. *Rev. Financ. Econ.* **22**(2), 68–77 (2013)
19. Latif, Y., Abbas, A., Akram, M., Manzoor, S., Ahmad, S.: Study of performance comparison between Islamic and conventional banking in Pakistan. *Eur. J. Educ. Dev. Psychol.* **4**(1), 17–33 (2016)
20. Loghod, H.A.: Do Islamic banks perform better than conventional banks? Evidence from Gulf cooperation council countries. *J. Manag.* **7**(3), 56–72 (2010)

21. Milhem, M., Istaiteyeh, R.: Financial performance of Islamic and conventional banks: evidence from Jordan. *Glob. J. Bus. Res.* **9**(3), 27–41 (2015)
22. Siddique, M.A., Rahim, M.: Efficiency analysis of full-fledge Islamic banks and standalone Islamic branches of conventional banks in Pakistan: a comparative study for the period of 2007–2012. *J. Islamic Bus. Manag.* **3**(2), 129–149 (2013)
23. Boahene, S.H., Dasah, J., Agyei, S.K.: Credit risk and profitability of selected banks in Ghana. *Res. J. Financ. Account.* **3**(7), 6–14 (2012)
24. Miah, M.D., Uddin, H.: Efficiency and stability: a comparative study between Islamic and conventional banks in GCC countries. *Future Bus. J.* **3**(2), 172–185 (2017)
25. Youssef, A., Samir, O.: A comparative study on the financial performance between Islamic and conventional banks: Egypt case. *Int. J. Bus. Econ. Dev. (IJBED)* **3**(3) (2015)
26. Kithinji, A.M.: Credit risk management and profitability of commercial banks in Kenya (2010)
27. Weersainghe, V., Perera, T.R.: Determinants of profitability of commercial banks in Sri Lanka. *Int. J. Arts Commer.* **2**(10), 141–170 (2013)