



# The Impact of Credit Risk, Liquidity, Capital, and Market Structure on Bank Profitability: Evidence from a Developing Economy

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**Abstract:** In this ever-changing competitive environment, the banking business, compared to other types of business, is ultimately exposed to risks. Banks now days are operating in a rapidly innovative industry with a lot of profit pressure that encourage them to create more and more value-added services to offer and better satisfy the customers. The Palestinian banking system operate in a risky, complex, changeable economic and political environment, bank managements should be aware of these circumstances. This study attempts to examine the impact of credit risk, liquidity, capital, and market structure on banks' profitability in a developing economy (Palestine) over eleven years (2010 - 2020). A dynamic panel analysis is applied to the sample of 12 banks with three econometric models representing profitability indicators employed by the study. In addition to the linear regression models, we used a Generalized Method of Moments (GMM) estimator. The results revealed that credit risk, liquidity, capital, and market structure impact bank profitability measured by ROA, ROE, and NPM. Cost efficiency, income diversification, and loan growth have been used as control variables had a significant impact on profitability except for loan growth had no impact.

**Keywords:** Bank Performance, Non-performing Loans, Palestine, Income Diversification

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## 1. Introduction

The banking sector has become an important and influential sector in modern economies, contributing to the formation of value-added to the economy. However, this role differs between countries, depending on the extent of development and modernity of the sector and the efficiency of its position. Therefore, most developing countries including Palestine are no exception, are directly dependent on the banking sector as the primary source of credit to finance development due to the weakness and limitation role of financial markets [1].

Despite ongoing efforts to revive banking credits, most of the Palestinian economic sectors are still underserved by the supply of bank credit and operating in a complex, risky, and changing political and economic environment [5]. Therefore, banks managers should be aware of these circumstances and develop a solid risk management framework.

Despite the large number of studies examining the impact of credit risk, liquidity levels, capital standards, and market structure on banks' profitability, still, there are disagreements about the nature of the relationship.

This study aims to examine the effect of credit risk, liquidity, capital, and market structure on the profitability of banks operating in Palestine. This study will support the local literature and fill the gap in the literature on the subject matter in many ways. Firstly, no prior study in Palestine had employed all variables combined to examine its impact on bank profitability by widening the scope in explanatory variables, bank-specific variables, and other industry-specific factors using dynamic panel techniques models. Secondly, the MENA region is a suitable case to study because the banking sector is the main driver and financier of economic development and growth. Therefore, regulators need to ensure the existence of an effective, stable, and profitable sector.

## 2. Literature Review

Bank profitability is inversely proportional to economic activity. Slower economic forecasts might damage bank profits by reducing lending activity and potentially increasing credit impairments. Furthermore, variables such as political uncertainty, as well as the global COVID-19 pandemic, all have an impact on the bank's performance [35]. There is a variation of bank profitability between developing and emerging countries. Based on a study conducted for 20 years in Organization of Islamic Cooperation (OIC) states and over 50 banks, results indicated that off-balance-sheet (OBS) activities, real gross domestic product growth, and real interest rate were one of the factors influencing bank profitability in OIC countries [3].

In ideal circumstances, particularly from the perspective of a bank's shareholders, a bank's performance consists of generating revenue while decreasing costs. Multiple issues, however, can obstruct profit maximization. The elements that could explain the deviation from profit maximization can be divided into two categories: improper incentives on the one hand, and inefficiency on the other [7]. The following areas of risk in banking activities has been identified: credit, liquidity, bank capital, and market risk. The inability of a consumer to repay the interest on a loan on time is referred to as credit risk. The key predictor of bank failures, as measured by the proportion of nonperforming loans (NPLs), was formerly thought to be credit risk [2]. Liquidity risk is the possibility of losses as a result of a struggling to fulfill payment obligations when they become due promptly or at a sustainable cost. Liquidity risk has been one of the most critical challenges for policymakers and researchers since the global financial crisis of 2008 [3]. While bank capital risk refers to the likelihood of a company losing money on capital investment. Finally, losses induced by negative changes in interest rates, currency rates, market prices of fundamental and secondary financial instruments bank are operational portfolios are referred to as market risk [4].

### 2.1. Credit Risk and Bank Profitability

The literature that examined the relationship between credit risk and bank profitability provides mixed and indecisive results. There is a growing literature about the subject matter, particularly after the latest global credit crisis in 2007 because it had negative repercussions, threatening the financial system's stability. On the other hand, some empirical studies have confirmed the negative relationship, while other studies found a positive relationship [13, 18].

Li and Zou [23] examined the effect of credit risk on bank profitability measured by ROA and ROE in 47 European commercial banks. The study found that Credit risk has a significant positive impact on profitability. Ndoka and Islami, [26] investigated the relationship between profitability and credit risk in the Albanian banking sector using regression on data from 2005 to 2015. The study employed ROA and ROE as profitability measures with NPL ratio as a credit risk indicator. The study revealed a statistical significance at a 5%

level (0.0108) at the variable non-performing loan (NPLR) a significant NPLR indicates a negative correlation with profitability measures, therefore a lower profit. Also, Saeed and Zahid [32] analyzed the impact of credit risk on the profitability of five major commercial banks in the United Kingdom to measure profitability; two dependent variables were used, namely ROA and ROE and net charge off (or impairments), and nonperforming loans as independent variable to express credit risk. The study found that credit risk proxies had a positive impact on profitability. Finally, Ruziq [31] examined the effect of credit risk on banks' profitability in the Indonesian commercial banks between 2007-2011 using a regression model. The study found a significant inverse relationship between credit risk and ROA and ROE.

### 2.2. Liquidity and Bank Profitability

The issue of liquidity has increased in importance to banks due to changes in economic conditions and their impact on banks' solvency and survival in most countries [20]. In 2008 banks fell into the credit crunch despite all the strict controls and standards by Basel Accord and central banks on liquidity management.

Despite the various studies examining the relationship between liquidity and bank profitability, there is still no consensus about the nature of the relationship. Obim, Takon and Mgbado [28] investigated the effect of liquidity on Nigeria's banks' profitability using multiple regression analysis. The study found an insignificant yet negative impact of liquidity on the profitability of Nigerian banks as the P-0.05 of Liquidity assets independent variable was 0.1464.

Islam & Nishiyama [18] tested the impact of liquidity on banks' profitability using net interest margin as the dependent variable in 230 banks of four countries in South Asia between 1997-2012. Using a regression model. The study revealed that there was a significant relationship between liquidity ratio and net interest margin. Bordeleau & Graham [9] examined the relationship between liquid assets and profitability for a panel of Canadian and U.S. banks from 1997 to 2009. The study proposed that a nonlinear relationship exists, whereby holding fewer liquid assets increases profitability, and having more liquid assets reduces profitability. Karani [21] sought to identify the impact of liquidity management on the profitability of commercial banks in Kenya. Study results showed that liquid assets are less profitable compared to long-term assets. Finally, Mohanty and Mehrotra [24] aimed to show the impact of liquidity management on the profitability of public and private banks in India during the period 2011- 2016. The study found that liquidity is significant negatively associated with bank profitability variable ROA.

### 2.3. Bank Capital and Profitability

Despite a lot of controversy about the adequacy of the bank's capital and its impact on profitability, there is no consensus about the nature of this relationship [28].

However, divergent findings exist between capitalization and bank profitability, whether positive or negative impacts. Haris, Tan, Malik and Ain [15] argue that well-capitalized banks remain profitable, secure and can become resilient even in bad economic conditions, even relying more on internal resources. Almaqtari, Al-Homaidi, Tabash and Farhan [6] stated that banks could improve their ability to absorb the negative consequences of expanding loans during periods of booming economic conditions by increasing their equity. In a sample of 230 banks from four countries in South Asia between 1997–2012 and by using multiple regression analysis, Islam and Nishiyama [19] found a positive relationship between bank capital and profitability. While Hughes and Mester [16] using a sample of nearly 2000 banks from 39 OECD countries between 1999–2013, concluded a negative relationship between bank capital and profitability, where the adoption of higher bank capital will not mitigate risks in profitability. On the other hand, Berger and Bouwman [8] opine that the relationship between regulatory capital and bank profitability is unclear.

#### **2.4. Market Structure and Bank Profitability**

The relationship between market credit structure and financial stability has become a hot topic and grabs a global concern since the 2008 global financial crisis. The economic theory presented different suppositions about the relationship between market structure and the banking system's stability. Many studies have examined the effect of concentration on banking stability such Hughes and Mester [16]; Schaeck, Čihák and Wolfe [33]. However, these studies did not offer clear results or predictions about the relationship. Slavkin [34] found that the greater the concentration in the credit markets, the larger the profit margin generated by large banks. Other studies based on one "too big to fail" found that the greater the credit concentration, with some large banks in the market, the greater the destabilizing effect on the financial system [34]. Schaeck, Čihák and Wolfe [33] found that the lower the credit concentration in the banking sector, the lower the probability of failure and the longer it takes for a crisis to occur. Hence, they are more stable than monopolistic systems.

A lack of unified market structure relationships can be related to the concentration stability-fragility relationship, which states that higher market concentration improves the banking system's stability, while concentration fragility states that higher concentration erodes the banking system and makes it more highly susceptible [10]. According to a recent analysis by the World Bank Group, Using data from 68 countries between 1997 and 2015, it was discovered that at lower levels of concentration, increasing concentration improves banking system stability through profitability, while at higher concentration levels, increasing concentration ends up making the banking system more fragile due factors such as the cost of credit, diversification, and ease of monitoring. Calice and Leonida [10]. The findings of this study lead to the conclusion that there is widespread agreement that there is a positive relationship between concentration ratio and profitability at low concentration levels.

### **3. Methodology**

#### **3.1. Sample Population and Participants**

The sample of this study consists of the entire Palestinian banking sector, which consists of thirteen banks; ten conventional and three Islamic. One local Islamic bank was excluded from this study due to insufficient data. Data were extracted from each bank's annual audited financial statements and the Palestinian Monetary Authority's Annual Reports during the period of 2010–2020.

#### **3.2. Variables and Measurement**

##### **3.2.1. Dependent Variables**

The study used Return on Assets (ROA), Return on Equity (ROE) and Net Profitability Margin (NPM) as profitability indicators in the regression analysis. ROA is an indicator of banks' management efficiency in converting investments into net earnings [5]. While Return on Equity (ROE) which is also widely used as a profitability indicator, measures banks' ability to generate income for shareholders, which means the net benefits shareholders receive on their funds invested in the firm [1]. Many studies and researches have used these ratios as an indicator and measurement of the bank's profitability such as Khalil and Siddiqui [22]; Nguyen and Nguyen [27]; Naeem, Baloch and Khan [25] and Zampara, Giannopoulos and Koufopoulos [36]. NPM ratio is similar to ROA, but it measures a bank's ability to generate net income from its total operating income (interest income and noninterest income), meaning the bank's ability to control its expenses. Few studies have employed NPM as a profitability indicator such Golubeva, Duljic and Keminien [14].

##### **3.2.2. Independent Variables**

The study employs four independent variables that affect bank profitability: credit risk, liquidity, bank capital as bank-specific variables, and market structure as industry-specific variables. In addition, some control variables have also been used, which impact banks' profitability, namely operational cost efficiency, income diversification, and loans growth rate. These control variables were employed due to the availability of data.

The ratio of loan loss provisions to total loans (LLP) ratio is commonly used by researchers and scholars as credit risk indicator [11]. This study used the ratio as a proxy for credit risk. This provision covers various loan losses based on the bank's management's expectations of loans at risk of default for the period. It reflects the extent of management preparation for loan losses. Thus, the greater financial institutions' exposure to high-risk loans, the greater the accumulation of unpaid loans, negatively affecting profits. However, we expect a negative relationship between LLP and profitability. Liquid assets to assets ratio (LAT) employed in this study as a proxy to measure liquidity. Although the increase in this ratio reduces liquidity risk, at the same time, it works on reducing the number of funds available for investment which leads to forgoing higher returns that might be acquired. Thus, we expect that

liquidity and profitability have an inverse relationship. The equity to asset ratio (ETA) has been used to measure the explanatory variable of bank capital. This ratio indicates the financial strength of the bank to absorb expected and unexpected losses and handle risk exposure with shareholders. We expect that capital and profitability have a positive relationship.

The market structure was measured by the  $k$  bank concentration ratio (CR), where  $k$  represents the leading banks calculated as the sum of the market share percentage of credit held by three top banks in the Palestinian banking sector. It reflects the degree of competitiveness in the banking sector, meaning the degree of collusive behavior in which a bank can generate higher profits due to oligopolistic behavior.

The degree of concentration is expected to have a positive effect on profitability. Table 1 below presents the variables employed in this study.

**Table 1.** Summary of the variables employed in the study.

Variable	Measurement	Description
Dependent variable		
Return on Assets	Net income / Total Assets	ROA
Return on Equity	Net income / Total equity	ROE
Net Profit Margin	Net income / Total operating income	NPM
Independent variable		
Credit Risk	Loan loss provisions / Total loans	LLP
Liquidity	Liquid assets / Total assets	LAT
Bank Capital	Equity to Asset Ratio	ETA
Market Structure	Concentration ratio	MS
Control variables		
Cost Efficiency	Cost to Income ratio	CIR
Income	Noninterest Income to Total	NIR
Diversification	Revenue	
Loan Growth	Loans – Loans-1 / Loans-1	LG

### 3.3. Research Model

In light of the elements and dimensions of the problem, the study included three econometric models that examined the relationship between the independent variables expressed in terms of credit risk, liquidity, capital, and market structure on the one hand and the dependent variable (Bank's Profitability) on the other hand. Cost efficiency, income diversification, and loan growth have been used as control variables.

Therefore, this study has used balanced panel data of 12 banks from 2010 till 2020. This study also conducts a Hausman test to choose between fixed effects and random effects. The results of the Hausman test indicated a significant  $p$ -value of 0.009, which leads to the conclusion that the fixed effect model is more appropriate (Hausman, 1978). Thus the regression equations become:

$$y_{it} = \alpha + \beta_1 X_{it} + \beta_2 Z_{it} + \epsilon_{it}$$

where  $y$  represents the dependent variable (bank's profitability;  $i$  indicates an individual bank;  $t$  refers to the time period (year);  $\alpha$  represent the constant term;  $\beta_1, \beta_2$  the coefficient of the function;  $X$  represent the independent variables expressed in terms of credit risk, liquidity, capital, and market structure;  $Z$  represents the control variables (cost

efficiency, income diversification, and loan growth);  $\epsilon$  represent the error term, thus, the above equation could be restructured and expanded to reflect the variables considered in the study using the three proxies of profitability as follows:

*Model 1*

$$ROA_{it} = \alpha_i + \beta_1 LLP_{it} + \beta_2 LAT + \beta_3 ETA_{it} + \beta_4 MS_{it} + \beta_5 CIR_{it} + \beta_6 NIR_{it} + \beta_7 LG_{it} + \epsilon_{it}$$

*Model 2*

$$ROE_{it} = \alpha_i + \beta_1 LLP_{it} + \beta_2 LAT + \beta_3 ETA_{it} + \beta_4 MS_{it} + \beta_5 CIR_{it} + \beta_6 NIR_{it} + \beta_7 LG_{it} + \epsilon_{it} \quad (1)$$

*Model 3*

$$NPM_{it} = \alpha_i + \beta_1 LLP_{it} + \beta_2 LAT + \beta_3 ETA_{it} + \beta_4 MS_{it} + \beta_5 CIR_{it} + \beta_6 NIR_{it} + \beta_7 LG_{it} + \epsilon_{it} \quad (2)$$

Where  $Y$  indicates the value of the dependent variable measured by ROA, ROE, and NPM,  $i$  and  $t$  are, respectively, the individual bank and time in years, Alpha ( $\alpha$ ) represents the intercept,  $\beta_1$ :  $\beta_7$  are the coefficient of the function and  $\epsilon$  is the error term.

Following Abbas, Iqbal and Aziz [1]; Almaqtari, Al-Homaidi, Tabash and Farhan [6]; Dietrich and Wanzenried [12] the generalized method of moments (GMM) estimator was used to ensure efficiency and consistency and more robust results. Thus the regression equations become:

$$y_{it} = \alpha + \beta_1 y_{i,t-1} + \beta_2 X_{it} + \beta_3 Z_{it} + \epsilon_{it} \quad (3)$$

where  $y$  represents the dependent variable (bank's profitability;  $i$  indicates an individual bank;  $t$  refers to the period (year);  $\alpha$  represent the constant term;  $\beta_1, \beta_2, \beta_3$  the coefficient of the function;  $y_{i,t-1}$  represent the one period lag of dependent variable;  $X$  represents the independent variables expressed in terms of credit risk, liquidity, capital, and market structure;  $Z$  represents the control variables (cost efficiency, income diversification, and loan growth);  $\epsilon$  represents the error term.

### 3.4. Hypotheses

Based on the conceptual framework and the study objectives, the hypotheses were developed as follows:

H1: Credit risk has a negative impact on a bank's profitability.

H2: Liquidity has a negative impact on a bank's profitability.

H3: Bank capital has a positive impact on a bank's profitability.

H4: Market structure has a positive impact on a bank's profitability.

## 4. Results and Discussions

### 4.1. Descriptive Statistics

Table 2 provides descriptive statistics, including the mean and standard deviation, and minimum and maximum observations for outcome variables and predictors. The results indicate a variation between the mean values and

standard deviation of ROA, ROE, and NPM as profitability measures from 2010 till 2020 among Palestinian banks. These results are consistent with the real differences between banks' profitability in Palestine. The mean value of LLP as a credit risk indicator was .0998, which indicates that banks operating in Palestine are exposed to low levels of credit risk because they adopt conservative and strict lending policies. According to the values of LAT and ETA, each range between minimum values of 0.1 and 0.02 and maximum values of 70.64 and 39.71 with a mean of 41.80 and 14.78 respectively. This signifies those banks maintain high rates of liquidity and sufficient levels of capital in line with Basel regulations.

In contrast, MS's mean values that measure the market competition and concentration were .6118, signifying a

medium to high concentration industry, the study had a comparable mean of Islam and Nishiyama (2016), with a concentration mean of .5614. The results also reveal a considerable variation regarding CIR, NIR, and LG, each range between minimum values of 0.00, 0.00, -17.50 and maximum values of 99, 23, and 99 with a mean of 71.73, 13.56, and 18.86, respectively. This signifies a considerable variation among Palestinian banks' operating expenses considered on average is too high. According to the levels of noninterest income and loan growth, also there is a variation among banks in diversifying their income and loan growth. However, generally speaking, income diversification and loan growth have increased in recent years to improve their performance.

*Table 2. Descriptive statistics.*

Variable	N	Minimum	Maximum	Mean	Std. Deviation
ROA	132	-3.20	2.80	.8320	.77882
ROE	132	-10.30	37.80	7.4561	6.56478
NPM	132	-73.00	83.00	20.3159	14.95840
LLP	132	.01	4.50	.0938	.80582
LAT	132	.02	70.64	41.4870	10.10239
ETA	132	.04	39.71	14.6653	7.35020
MS	132	.51	.70	.6118	.05343
NIR	132	.00	23.00	13.5697	5.27684
CIR	132	.00	99.00	71.7379	14.79612
LG	132	-17.50	99.00	18.8864	22.79349
Valid N (listwise)	132				

#### 4.2. Correlation and Multicollinearity Diagnostics

Table 3 presents an initial overview of the correlation matrix and multicollinearity diagnostics for the dependent and explanatory variables employed in the study. The results indicate that LLP, ETA, CIR, and LAT negatively correlate with all profitability proxies, ROA, ROE and NPM. In comparison, NIR and LG positively correlate with ROA, ROE, and NPM. Concerning the market structure scales MS, the results

positively correlate with all profitability measures. For more reliable and accurate analysis, multicollinearity diagnostics was conducted using both VIF and tolerance tests have been conducted. The correlation between the variables appears quite good in the absence of a high correlation between the variables, and hence the lack of multicollinearity problem as shown in Table 3. Also, Durbin - Watson test had been done to test for autocorrelation. As seen in table 4, no autocorrelation was found since the value < 2, is common in time-series data.

*Table 3. Correlation matrix and multicollinearity diagnostics.*

Variable	ROA	ROE	NPM	LLP	LAT	ETA	MS	NIR	CIR	LG
ROA	1									
ROE	.523	1								
NPM	.489	.398	1							
LLP	-.531	-.423	-.416	1						
LAT	.065	-.142	.089	.160	1					
ETA	-.417	-.579	-.375	.244	.216	1				
MS	.021	-.058	-.041	.135	.014	-.026	1			
NIR	.473	.464	.394	-.298	.138	-.407	-.061	1		
CIR	-.709	-.707	-.711	.392	.146	.513	.065	-.302	1	
LG	.063	.044	.066	-.114	.039	-.116	-.033	.158	-.013	1
Diagnostics of multicollinearity										
VIF	-	-	-	1.29	1.16	1.62	1.02	1.39	1.53	1.04
Tolerance	-	-	-	0.77	0.86	0.61	0.97	0.71	0.65	0.95

#### 4.3. Multiple Regression Results

Table 4 presents and shows the empirical results of the panel data estimation methods for the three econometric models employed in this study. It includes the results of the

regression analysis describing the impact of credit risk (LLP), liquidity (LAT), capital (ETA), and market structure (MS) in addition to the control variables - cost efficiency (CIR); income diversification (NIR); and loan growth (LG) on banks profitability which measured by ROA; ROE; and NPM.

The results revealed that credit risk (LLP) had a statistically significant negative effect on ROA and NPM while it did not affect ROE. Moreover, this is a realistic result between profitability and poor asset quality since banks with high-risk-taking behaviour are exposed to higher levels of non-performing loans, negatively affecting their profits. In other words, when a bank increases exposure to credit risk, a decrease in bank profitability is expected. Therefore, H1 will be accepted.

One of the important factors affecting banks' profitability is liquidity levels (Chen et al., 2018). The study revealed that liquidity (LAT) had a highly significant positive impact on ROA and NPM but an insignificant negative relationship with ROE. Although empirical evidence supports the negative relationship between liquidity and profitability, meaning the more resources are tied up in liquid assets, the lower the expected profitability, still there is disagreement or uncertainty about the nature of the relationship. The positive relationship between LAT and ROA and NPM can be explained by the fact that Palestinian banks' liquidity ratio was 35% in 2020. This high ratio of liquid assets adds stability since liquid assets represent a cushion against liquidity shocks; this liquidity could be invested wisely. One more thing to add about this positive relationship is that banks with better liquidity positions could charge an extra margin on their extended credit. Therefore, H2 will be rejected.

Regarding capital, mixed results were revealed: while ETA has an insignificant positive effect on NPM and a negative effect on ROA, it has a significant negative impact on ROE. Although this result contradicts many studies, it is consistent with economic theory, which states that keeping a high capital volume is associated with lower risk-taking activities and hence lower profitability. These results can tell that capital is not significant in influencing banks' profitability

since most banks operating in Palestine are small in size and capital. Therefore, H3 will be rejected.

Regarding market structure (MS) which was measured by the concentration ratio (MS), the results revealed a significant positive effect on ROA while it had no impact on ROE and NPM. These results can be interpreted based on the higher the concentration market, the higher the profitability is. Therefore, a higher concentration can be formulated as banks with higher market power generate higher profits. This implies that the three biggest banks have acquired a higher market share. In this regard, an increase in the market shares of the three leading banks is followed by an increase in profitability.

Moreover, bigger banks tend to have a better economy of scale. By having a higher economy of scale, a bank can have a lower marginal positively affecting profitability. On the other hand, when the market structure parameters have high values, the market is concentrated, and hence has low completion, causing large banks to generate a higher profit margin. Therefore, H4 will be accepted.

The variable cost efficiency (CIR) results show that the cost to income ratio has a significant negative impact on all profitability measures ROA, ROE, and NPM. This result indicates that cost inefficiency declines banks' profitability. This implies that the higher the costs of collecting funds from the market accompanied by an increase in other operating expenses, the lower the bank profitability, which is inevitable. Furthermore, income diversification (NIR) measured by noninterest income to total revenue significantly impacts all profitability measures ROA, ROE, and NPM. Finally, for loan growth (LG) and its impact on profitability, the results revealed that LG has an insignificant positive effect on ROA and NPM. In contrast, it has a negative effect on ROE.

*Table 4. Regression results for all dependent variables ROA, ROE, and NPM.*

Variable	ROA		ROE		NPM	
	Coeff.	P-value	Coeff.	P-value	Coeff.	P-value
Constant	1.207**	.031	24.06***	.000	46.36***	.000
LLP	-.283***	.000	-.956*	-.067	-2.955**	.017
LAT	.013***	.003	-.021	.587	.277***	.003
ETA	-.002	.827	-.193***	.003	.018	.906
MS	1.544**	.047	-.602	.931	7.897	.630
NIR	.029***	.002	.254***	.002	.368**	.049
CIR	-.029***	.000	-.215***	.000	-.650***	.000
LG	.000	.799	-.009	.575	.009	.812
R-squared	.614		.593		.565	
Prob F-stat	.000		.000		.000	
Durbin-Watson	1.11		1.29		1.71	
No. Observations	132		132		132	

Note; \*, \*\*, \*\*\* = p-value < .10, .05, .01.

#### 4.4. GMM Estimation

Table 4 presents the results of the GMM estimation of the panel data for the three econometric models employed in this study. It includes the impact of credit risk (LLP); liquidity (LAT); capital (ETA); and market structure (MS) in addition

to the control variables - cost efficiency (CIR); income diversification (NIR); and loan growth (LG) on banks profitability which measured by ROA; ROE; and NPM. The results indicated that credit risk (LLP) had a significant negative effect on all profitability measures ROA, ROE, and NPM. This is a logical result, as non-performing loans and their provisions will reduce profitability. According to the

impact of liquidity (LAT), the results indicated that LAT had an insignificant positive effect on ROA and NPM while negatively impacting ROE. We can tell that it had no effect. However, it should be noted that Palestinian banks maintain high liquidity ratios compared to international standards, which add stability to the sector. This is could be due to the complex, risky, and changing political and economic environment in Palestine, the capital market weakness and limitation for providing the required funding. Concerning equity to asset ratio (ETA), the results revealed that ETA had a significant positive effect on ROA and NPM while it had a significant negative effect on ROE. The results concerning

the variable market structure measured by the concentration ratio (MS) indicated a significant positive relationship between ROA and ROE. At the same time, it had an insignificant positive effect on NPM. The impact of the noninterest income ratio measuring income diversification (NIR) showed significant positive effects on all bank profitability measures ROA, ROE, and NPM. Regarding the cost to income ratio (CIR), the results revealed a significant negative impact on all profitability measures ROA, ROE, and NPM. Finally, loan growth (LG) had an insignificant positive impact on ROA and NPM while an insignificant negative impact on ROE.

*Table 5. GMM estimation results summary.*

Variable	ROA		ROE		NPM	
	Coeff.	P-value	Coeff.	P-value	Coeff.	P-value
Constant	18.207**	.033	26.623***	.000	20.473*	.08
ROA-1	.128**	0.041				
ROE-1			0.103*	0.062		
NPM-1					0.073**	0.027
LLP	-.38***	.000	-.722	.232	-3.624***	.004
LAT	.001	.584	-.052	.291	.082	.473
ETA	.038***	.005	-.27***	.000	.853***	.004
MS	1.824***	.007	.152*	.051	16.933	.254
NIR	.037*	.065	.227**	.016	1.197***	.008
CIR	-.021***	.000	-.201***	.000	-.584***	.000
LG	.002	.295	-.012	.555	.036	.344
AR (1)	-2.73**	.019	-2.81***	.000	-3.31***	.004
AR (2)	-1.06	.813	.57	.926	-1.08	.786
Hansen test	1.28	0.37	7.99	.715	5.91	0.994
R-squared	.663		.615		.588	
No. Observations	132		132		132	

Note: \*, \*\*, \*\*\* = p-value < .10, .05, .01.

## 5. Conclusions

This study aimed to examine the effect of credit risk, liquidity, capital, and market structure on banks' profitability in a developing economy (Palestine). The results revealed that credit risk affects profitability negatively. It should be noted here that the percentage of non-performing loans and their provisions are low in the Palestinian banking sector compared to neighboring countries because banks follow conservative lending policies. They focus on profitable consumption loans, not on productive investments that lead to economic sustainability. Liquidity (LAT), market structure (MS), and income diversification (NIR) had a positive relationship with profitability. However, Palestinian banks keep high levels of liquidity compared to international standards, and accordingly, there are no concerns about liquidity risks. CIR ratio that measures cost efficiency had a significant negative impact on all profitability measures ROA, ROE, and NPM. It should be mentioned here that Palestinian banks suffer from high operational expenses compared to international healthy banks. it should find solutions to reduce costs and expenses by focusing more on digital channels. Finally, loan growth (LG) had a positive relationship but impacted profitability.

Our findings have significant implications for Palestinian researchers and policymakers. First, while our first hypothesis predicted a negative relationship between liquidity and bank profitability however our results indicated otherwise. The complex, uncertain, and changing political and economic situation in Palestine is regarded to be the cause of high liquidity in Palestinian banks, and they have restricted access to capital markets for short-term funding. Second, while testing the hypothesis regarding a capital risk having a positive effect, mixed outcomes were revealed. Equity to Asset Ratio, which is the determinant of bank capital had an insignificant effect on Return on Assets (ROA) and Net Profit Margin (NPM), but a significant effect on Return on Equity (ROE). While the study provided an insightful outcome, a certain limitation was seen. Although empirical evidence supports the negative relationship between liquidity and profitability, there is still a disagreement or uncertainty about the nature of the relationship. And because the majority of banks operating in Palestine are small, capital risk has little impact on bank profitability in Palestine. Future research on emerging economies like Palestine should further analyse and investigate the nature of high liquidity and the factors influencing it. Another area of investigation would be examining the capital risk in the emerging economy and

assessing whether it could be an applicable variable in measuring a bank's profitability.

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