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Effects of bank-specific factors on the net interest margin of working banks in Palestine

Abstract

Aim/purpose – The main purpose of the study is to investigate the bank-specific factors that influence the net interest margin of banks in Palestine.

Design/methodology/approach – An econometric model using random effect panel regression was used to estimate data for all 17 working banks from 2006 to 2016.

Findings – Result indicates that several factors, including credit risk, risk aversion, bank orientation, and foreign banks, have statistically significant effects on the net interest margin. However, results also show that such factors as operating expenses, management efficiency, Islamic bank, and time trend are not statistically significant.

Research implications/limitations – The main policy lesson drawn from this study is that the net interest margin of working banks in Palestine could be further enhanced by formulating regulatory policies regarding bank-specific factors, such as credit risk, risk aversion, bank orientation, and foreign banks. The most significant limitation of the study was the availability of data. Despite the fact that several bank-specific factors were identified in the literature as a determinant of the net interest margin, only the factors that have an available data were used in the study.

Originality/value/contribution – The results of research introduced in the study make theoretical and practical contributions to the body of knowledge. It fills the gap related to the bank-specific factors that influence the net interest margin of banks in Palestine, which have specific conditions and atypical situation.

Keywords: net interest margin, financial intermediation, banking sector, panel regression analysis, Palestine.
JEL Classification: G21, G32.

1. Introduction

Banks as a financial intermediary are crucial for sustaining development growth in an economy. Several studies (Levine & Zervos, 1998; Beck & Levine, 2004) have provided evidence that banks positively influence economic growth. Banks pay interest on deposits collected from surplus spending units and charge an interest on loans giving to deficit spending units. The differences between interest paid on deposits and interest charged on loans generate spread or interest margin. This interest margin covers the intermediary bank expenses and earns profit. Therefore, banks pay low interest on deposits and charge high interest on loans to maximize profit. However, Claeys & Vander Vennet (2008) argued that high margins are often associated with a low degree of efficiency and non-competitive market conditions. Furthermore, high margins may be due to inadequate regulation of the banking environment and a high degree of information asymmetry. High interest margins also indicate that high intermediation costs have negative effects on the growth of savings, investment, employment, and, consequently, the economic growth of a country (Maudos & Solís, 2009). Therefore, limited interest margins imply a considerably efficient banking intermediation.

In the last four decades, numerous models have been developed in the literature on the banking sector to explain the factors that affect the interest margin. The early study of Ho & Saunders (1981) provided a framework to determine the bank interest margins. This model assumes that banks are an intermediary between the suppliers of deposit and demanders of loan. In this situation, a bank must hold an inventory, thereby facing an interest-rate risk given that demand and supply are stochastic and asynchronous (Srdjan & Ognjen, 2010). In contrast to the model of Ho and Saunders, several studies (Wong, 1997; Zarruk, 1989) considered banks in a static situation where the suppliers of deposit and demanders of loan simultaneously clear both markets by utilizing the bank micro-model. Several studies have extended the Ho and Saunders model (Allen, 1988; Angbazo, 1997; Demirgüç-Kunt & Huizinga, 1999; Mendes & Abreu, 2003; Saunders & Schumacher, 2000; Maudos & de Guevara, 2004) by investigating important factors that determine bank interest margins, such as default risk, implicit interest payments, opportunity cost, capital-to--assets ratio, equity-to-assets ratio, inflation, market power, and volatility of interest. These studies indicate that the net interest margin of a bank is a function of interest rate risk and institutional factors that affect the prices of bank products as well as the macroeconomic factors.

Previous theoretical and empirical studies have considered bank interest margins in the developed markets of Western Europe and the US, emerging mar-

kets of Central and Eastern Europe, and transition markets of Latin America and Asia. However, the banking sectors in Arab markets, particularly the West Bank and Gaza Strip in Palestine, have been considered to a limited extent. Palestine is forced to be part of the larger Israeli economy as it is being in predominant political environment (Abdelkarim & Burbar, 2007). The financial system in Palestine is unique and has a specific condition and exclusive challenges due to political circumstances that do not exist in any country. The financial system in Palestine is generally dominated by banks.

The main purpose of the current study is to investigate the bank-specific factors that influence the net interest margin of banks in Palestine. The variables used in the current study are that suggested by previous empirical studies and include credit risk, operating expenses, risk aversion, management efficiency, bank orientation, and bank types characteristics (i.e., local (foreign) and commercial (Islamic) banks).

The current study contributes to the literature on the determinants of net interest margins by studying banks in Palestine, which have specific conditions and atypical situation. To the author's best knowledge, this study is the first that comprehensively investigates the bank-specific determinants of net interest margins in Palestine. This study used data for the 17 working banks[1] from 2006 to 2016 and used a variable commonly identified in the literature as bank-related determinants excluding the industry and macroeconomic variables[2]. The findings reveal that the impact of certain bank-specific factors, such as credit risk, risk aversion, bank orientation, and foreign banks have statistical significant effects on the net interest rate margin. Bank interest margin is important because it is a central policy tool in a market-oriented banking system. Thus, the regulatory parties in Palestine can further improve the net interest rate margin by considering these factors in their rules and regulations.

The rest of this paper is structured as follows. Section 2 provides a brief background of the banking system in Palestine. Section 3 reviews previous theoretical and empirical studies that deal with interest margin and its determinants. Section 4 provides the research methodology, including the data, variables, and empirical models used to complete this study. Section 5 provides the analysis, results, and implications for the determinants of bank interest margin in Palestine. Lastly, section 6 concludes this study and provides policy guidelines and proposals for further research.

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[1] Until the end of 2014, Palestine had 17 working banks. The Bank of Palestine merged with Palestine Commercial Bank in 2016. HSBC Bank Middle East Limited closed its operations in Palestine effective on 31 December 2015. The National Bank acquired Bank al Etihad in Palestine in 2014. Safa Bank, which was a new Islamic bank, began its operations in Palestine in 2016.

[2] The variables are limited to the availability of the data. The industry and macroeconomic variables are excluded because they are identical for all the banks in Palestine.

2. Background of the banking system in Palestine

Before the occupation of the West Bank and Gaza in 1967 by Israel, there were 11 commercial banks in Palestine (8 in the West Bank and 3 in Gaza) with 30 branches of which 26 were the West Bank and only 4 in Gaza (Abbadi & Karsh, 2013). Because of the specific circumstances of the Palestinian economy in the West Bank and Gaza Strip, the banking sectors was virtually absent for a quarter of a century during the 1970s, 1980s and until mid- 1990s due to the imposed restrictions on the sector by the Israeli occupying authorities (*Quarterly Economic and Social Monitor*, 2008).

The recent history of the banking industry in this territory began in 1994 after the signing of the Paris Protocol on economic relations between the Palestinian National Authority and Israel[3]. This agreement led to the establishment of the Palestinian Monetary Authority (PMA) to implement and regulate monetary policies in Palestine. Even though PMA generally acts as a central bank, it cannot issue a Palestinian currency; hence, a multi-currency financial system currently exists in Palestine (Arafeh, 2015). At present, Palestinians typically use Israeli currency (NIS) for daily and commercial exchanges, and US Dollars ($), Jordanian Dinars (JD), and, to a certain extent, Euro (€) for savings and long-term investments.

The banking industry in Palestine is an important sector. By the end of 2016, the number of working banks in this territory was 15 (i.e., 4 local conventional[4], 3 local Islamic[5], and 8 foreign conventional[6] banks) with 271 branches and 6,528 employees (Palestine Monetary Authority, 2017). Despite the political conditions in Palestine, the banking sector is a solid market and maintains significant growth rates. Accordingly, this sector has experienced steady increasing trend in the last five years. Figure 1 shows that the net interest and commission income increased from $376 million in 2012 to $492 million in 2016; the total assets of these banks increased from $9.663 million in 2012 to $13,765 million in 2016 (Association of Banks in Palestine, 2016).

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[3] A review of the financial sector in Palestine is available in World Bank (2008) and in *Quarterly Economic and Social Monitor* (2008). A review of the development of the banking sector in Palestine is provided in Abbadi & Karsh (2013).

[4] Bank of Palestine, Palestine Investment Bank, Al Quds Bank and The National Bank.

[5] Arab Islamic Bank, Palestine Islamic Bank and Safa Bank.

[6] Cairo Amman Bank, Arab Bank, Jordan Kuwait Bank, Jordan Ahli Bank, Bank of Jordan, Egyptian Arab Land Bank, The Housing Bank for Trade & Finance and Jordan Commercial Bank.

Figure 1. Net interest and commission income; and total assets of all banks
            in Palestine from 2012 to 2016 (in million US $)
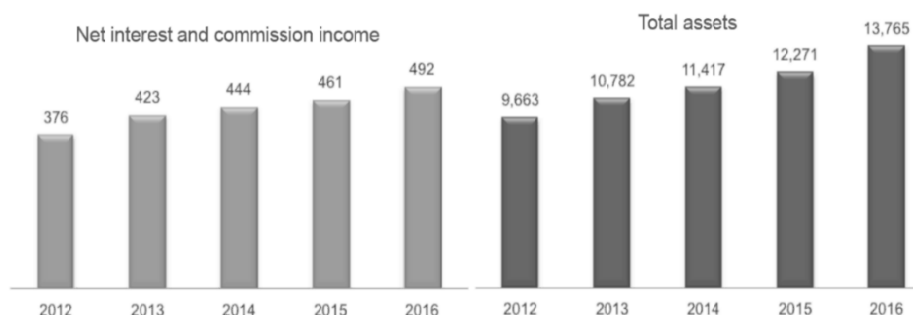
Source: Association of Banks in Palestine (2016).

3. Literature review

   The Ho & Saunders (1981) dealership model of banking firm is the earliest
theoretical model that analyzed the determinants of the net interest margin of
banks. This model was followed by several studies that investigated the determi-
nants of bank interest margin. McShane & Sharpe (1985) used the hedging the-
ory of interest margin determination as basis to provide a theoretical model of
the determination of bank interest margins. Moreover, they used panel data from
Australian banks and determined that a stable non-linear relationship exists be-
tween net interest margins and the measures of market power, degree of absolute
risk aversion, and interest rate uncertainty. Moreover, they determined that the
shift from business to personal loan is related to the high net interest margins of
banks. Allen (1988) extended the Ho and Saunders dealership model to consider
the case of loan heterogeneity by including different types of credits and deposits
to this model. They argued that the interest margin would be reduced when con-
sidering the quantity demanded for a bank product to a change in the price of
another bank products. Entrop, Memmel, Ruprecht, & Wilkens (2015) also ex-
tended the Ho and Saunders model to include the interest rate risk and expected
returns from maturity transformation in Germany. They used the individual ex-
posure of banks as basis to separately price interest risk in loan and deposit in-
termediation fees. However, an increase (reduction) in these charges for deposits
(loans) when positive returns of the excess holding period from long-term expo-
sures are expected.
   Angbazo (1997) provided an empirical explanation of the relationship be-
tween bank net interest margins and interest rate risk, default risk, and off-

-balance sheet banking activities. Saunders & Schumacher (2000) detected the determinants of bank interest margin in six European countries and the US and analyzed the impact of bank capital structure and interest rate volatility on interest margins. They determined that the bank capital assets ratio and interest rate volatility have positive significant relationship with the spread ratio. Kasman, Tunc, Vardar, & Okan (2010) analyzed the effect of financial reforms and deregulation on the determination of interest margin in the banking system of the European Union (EU) members and candidate countries. They determined that operating cost, credit risk, default risk, capital adequacy, deposit-equity ratio, and inflation have positive relationship with the interest rate spread. However, bank size, managerial efficiency, and economic growth have negative relationship with interest rate spread. Georgievska, Kabashi, Manova-Trajkovska, Mitreska, & Vaskov (2011) attempted to determine the effects of bank size, bank profitability, and domestic policy and foreign interest rates on the lending interest rate and interest rate spread in Greece. Their results revealed that an increase in bank size will cause a decrease in lending rate and narrowing of the interest rate spread. However, the other variables, such as bank profitability, domestic policy rate, and foreign interest rate, have a positive relationship with lending interest rate and interest rate spread.

Williams (2007) investigated the effects of default risk, interest rate volatility, bank capital adequacy, bank market power, and bank size on the interest rate margin for domestic and foreign banks in Australia. They determined that default risk, interest rate volatility, and bank capital adequacy have positive influence on the interest rate spread. However, bank market power and bank size have a negative relationship with spread interest rate. Maudos & de Guevara (2004) studied the determinants of interest margin in a few EU countries. They considered the effect of several factors on bank interest margin, including market structure, unit operating cost, bank degree of risk aversion, volatility of market interest rate, credit risk, interaction between credit risk and market risk, and volume of loans. They determined that the operating costs, volatility of market interest rate, and credit risk have positive significant relationship with interest margin. However, the market structure, volume of loans, and degree of risk aversion have inverse relationships.

Hutapea & Kasri (2010) conducted a comparative study between Islamic banks and traditional banks in Indonesia to identify the determinants of interest margin. They compared the effects of interest rate volatility, liquidity risk, solvency ratio, implicit cost, management quality, and opportunity cost of bank reserves on the interest margin of banks. They determined that interest rate volatility has negative relationship in Islamic banks, but a positive relationship in

commercial banks. In addition, other variables had the same effect on Islamic and commercial banks. Doyran (2013) investigated the determinants of interest margin spread in Argentina. They analyzed the impact of operating costs, profitability, liquidity, leverage, return on assets, and inflation on interest margin spread. Their results indicated that these variables have positive significant relationship with interest margin. Bennaceur & Goaied (2008) analyzed the impact of macroeconomic indicators, profitability, and bank size on the interest rate margin of Tunisian banks. They determined that inflation has a positive impact on interest rate margin, whereas economic growth has no impact. Profitability has a positive impact on interest rate margin, but bank size generally has negative significance on interest margin. Beck & Hesse (2009) assessed the factors that lead to high interest rate margins in Uganda. They investigated several factors, including institutional deficiencies, macroeconomic factors, market size, cost of doing business, loan portfolio, foreign bank entry, and privatization and determined that these factors mater in explaining large proportions of high interest rate margins. Trinugroho, Agusman, & Tarazi (2014) studied the determinants of the net interest margins of banks in Indonesia. Their findings indicated that operating costs, market power, risk aversion, and liquidity risk have positive effects on interest margins, while credit risk and cost to income ratio are negatively related with margins. In addition, they determined that the structure of loan portfolios matters in the determination of interest margins.

Islam & Nishiyama (2016) investigated the determinants of the net interest margins of banks in South Asian countries. They extended the Ho and Saunders model by adding a new variable (i.e., relative size of banks) and classifying the determinants of interest margins as bank-, industry-, and macroeconomic-specific variables. Their results indicated that liquidity and equity positions, required reserve, and operating expenses-to-total asset ratios positively impact the net interest margins, despite the inverse impact of the relative size of banks, market power, and economic growth on the net interest margins. Sun, Mohamad, & Ariff (2017) analyzed several determinants of net interest margins of conventional banks and net profit margins of Islamic banks in the member countries of the Organization of Islamic Cooperation (OIC). These determinants include bank-specific management, diversification, and specialization variables. Their findings led to the perception that Islamic banks are not different in behavior or dynamics from conventional banks in a dual banking system, thereby appearing to be the benchmark for Islamic banks. Valverde & Fernández (2007) studied European banks to investigate the relationship between bank margins and specialization. Their results revealed that market power and risk parameters alter bank margins when financial innovations are introduced.

4. Methodology

4.1. Data

The data of this study includes a panel (cross-sectional/time series) annual data of 17 banks in Palestine from 2006 to 2016. The data covers all working banks in Palestine from 2006 to 2016 which includes 5 local conventional banks, 2 local Islamic banks, and 10 foreign conventional banks. The data were extracted from the annual reports of these banks. The financial statements of foreign banks in Palestine exclude the statements of the head office. Thus, only the operations of the banks in Palestine are represented.

The data were balanced with limited missing data because the majority of the observation was available every time period. However, only a few banks reported missing values for 2015 and 2016 due to acquisition and closing of operations. This study will explain the net interest margin (NIM) variable, which is defined as the difference between the interest income and interest expenses divided by the total assets of a bank[7]. The explanatory variables considered in this study include credit risk, operating expenses, risk aversion, management efficiency, bank orientation, and bank type characteristics (i.e., local (foreign) and commercial (Islamic) banks). Other variables in the literature were excluded due to the unavailability of the related data or high correlation with other variables, thereby leading to multi-collinearity problems[8].

4.2. Empirical variables

The variables used in this study and their effects on the net interest margin are described as follows.

4.2.1. Credit risk

Credit risk is measured as the total loans divided by total assets of a bank (Islam & Nishiyama, 2016). Credit risk is expected to positively affect the net

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[7] Sun, Mohamad, & Ariff (2017) explained that NIM is measured for conventional banks as the interest income minus the interest expenses to total assets of the bank. For Islamic banks, NIM is measured as the financing revenues minus interest expenses to the total assets of the bank.

[8] The pairwise correlation between the number of branches of the bank, operating expenses, size of bank, and loan volume given by the bank is high (above 0.65). Therefore, the number of branches of the bank remained, while other variables ware dropped from the analysis to mitigate the multi-collinearity problem.

interest margin of banks. Accordingly, the increasing exposure to the expected and unexpected credit risk forces banks to demand a high net interest margin (Maudos & de Guevara, 2004).

4.2.2. Operating costs

Operating costs measured as the operating expenses divided by the total assets of the bank (Beck & Hesse, 2009). The operating cost is expected to have a positive effect on the net interest margin given that the high interest charged by banks would cover the high operating costs (Tarus, Chekol, & Mutwol, 2012).

4.2.3. Risk aversion

Risk aversion is measured as the total equity divided by the total assets of a bank (Poghosyan, 2010). The high degree of risk aversion due to large bank transactions and considerable variance of interest rate are suggested to be related to high bank net interest margin (Erwin & Rahmatina, 2010).

4.2.4. Management efficiency

Management efficiency is measured as the total expenses divided by the total assets of a bank (Valverde & Fernández, 2007). High management efficiency may negatively affect the net interest margin. Management would combine assets and liabilities, thereby optimally ensuing high income earned and minimum costs (Kasman et al., 2010).

4.2.5. Bank orientation

Bank orientation is measured as the natural logarithm of the number of branches of a bank (Beck, Cull, & Jerome, 2005). Banks with many branches will likely have a retail orientation, thereby affecting the performance of such banks. However, whether such impact would be positive or negative is difficult to predict (Beck et al., 2005).

4.2.6. Foreign bank

Foreign bank is measured as a dummy variable to categorize the banks in Palestine as local or branches for foreign banks (Hadad, Agusman, Monroe, Gasbarro, & Zumwalt, 2011). The foreign bank dummy assigns a value of 1 for foreign banks and 0 for local banks. Foreign banks are expected to negatively affect the net interest margin. Accordingly, foreign banks charge a lower interest margin than domestic banks do and the former has better information and technology, thereby leading them to perform more efficiently than the latter (Hadad et al., 2011).

4.2.7. Islamic bank

Islamic bank is measured as a dummy variable to categorize the banks in Palestine as conventional or Islamic banks. The Islamic bank dummy assigns a value of 1 for Islamic bank and 0 for conventional bank. The evidence from prior empirical studies of Islamic and conventional banking is mixed with regards to the efficiency of banks (Johnes, Izzeldin, & Pappas, 2014). Therefore, predicting the net interest margin of Islamic banks is difficult. Sun et al. (2017) showed that conventional and Islamic banks in a dual banking system are not significantly different from each other.

4.2.8. Time trend

Time trend is included in the regression to prevent the time effect. Table 1 defines the variables that measure the net interest margin, its determinants, and expected effects on the net interest margin. In this study as shown in Table 1 it is hypothesized that credit risk, operating expenses, risk aversion, management efficiency, bank orientation, and bank types characteristics factors determinants of the net interest margin.

4.3. Empirical model

This study uses panel regression to estimate the impact of several determinants on the net interest margin of banks in Palestine. This model specifies the net interest margin as a function of bank-specific variables, such as credit risk, operating expenses, risk aversion, management efficiency, bank orientation, and

bank type characteristics (i.e., local (foreign) and commercial (Islamic) banks). The empirical specification takes the following form:

$$\text{NIM}_{it} = \alpha_i + \beta_1 \text{CR}_{it} + \beta_2 \text{OE}_{it} + \beta_3 \text{RA}_{it} + \beta_4 \text{ME}_{it} + \beta_5 \text{LBN}_{it} + \beta_6 \text{FB}_{it} + \beta_7 \text{IB}_{it} + \beta_8 \text{T} + e_{it}, \quad (1)$$

where i represents the bank and t represents time. Table 1 defines NIM, CR, OE, RA, ME, LBN, FB, IB, and T. *e* is the error term.

The Hausman test is used to give preference to the fixed or random effect model of the panel data estimation approach. In addition, the Hausman specification tests of endogeneity show that the endogeneity problem is not an issue in this study, which suggests that ordinary least squares (OLS) should be an efficient estimator (Barry, Lepetit, & Tarazi, 2011). However, the explanatory variables might not be strictly exogenous, thus, for robustness a panel Generalized Method of Moments (GMM) model is estimated to assess the effect of bank-specific variables on net interest margin of banks in Palestine. The GMM model is estimated using lagged differences of the predictor variables as instruments. To test the validity of the instruments Hansen test of over-identifying restrictions is used. To check for any second-order autocorrelation, Arellano–Bond (AR) test is used. The diagnostic tests of the model are satisfactory.

Table 1. Variables, its measurement, and expected effects on the net interest margin

Variable	Acronyms	Measurement	Expected Sign
Net interest margin	NIM	The difference between the interest income and interest expenses divided by the total assets of a bank	Positive
Credit risk	CR	The total loans divided by total assets of a bank	Positive
Operating Expenses	OE	The operating expenses divided by the total assets of the bank	Positive
Risk aversion	RA	The total equity divided by the total assets of a bank	Positive
Management Efficiency	ME	The total expenses divided by the total assets of a bank	Negative
Bank Orientation	LBN	The natural logarithm of the number of branches (NB) of a bank	Positive/Negative
Foreign Bank	FB	Dummy variable to categorize the banks in Palestine as local or branches for foreign banks	Negative
Islamic Bank	IB	Dummy variable to categorize the banks in Palestine as conventional or Islamic banks	Positive/Negative
Time	T	Time trend is included in the regression to prevent the time effect	Positive/Negative

5. Empirical results

Table 2 provides the descriptive statistics of the variables used in this study from 2006 to 2016 for the 17 banks in Palestine. Throughout the study period, the annual net interest margin of a typical bank in Palestine ranges from 0.005 to 0.385 with a mean (median) of 0.033 (0.028) and standard deviation (SD) of 0.042. The credit risk (CR) of a typical bank in Palestine ranges from 0.014 to 0.667 with a mean (median) of 0.325 (0.028) and SD of 0.145. The operating expenses (OE) of a typical bank in Palestine range from 0.006 to 0.326 with a mean (median) of 0.022 (0.019) and SD of 0.178. The risk aversion (RA) of a typical bank in Palestine ranges between 0.055 to 1.837 and a mean (median) of 0.215 (0.155) with 0.178 standard deviation. The management efficiency (ME) of a typical bank in Palestine ranges from 0.134 to 2.819 with a mean (median) of 0.528 (0.473) and SD of 0.346. The number of branches (LBN) of a typical bank in Palestine ranges from 1 to 58 with a mean (median) of 11.84 (10) and SD of 11.08.

Table 2. Descriptive statistics of the variable used in this study

Variable	CR	OE	RA	ME	LBN	FB	IB	NIM
Mean	0.325	0.022	0.215	0.528	11.840	0.582	0.121	0.033
Median	0.319	0.019	0.155	0.473	10.000	1.000	0.000	0.028
Maximum	0.667	0.326	1.837	2.819	58.000	1.000	1.000	0.385
Minimum	0.014	0.006	0.055	0.134	1.000	0.000	0.000	0.005
Std. Dev.	0.145	0.025	0.178	0.346	11.080	0.495	0.327	0.042
Observations	182.000	182.000	182.000	182.000	182.000	182.000	182.000	182.000

Note: The table reports descriptive statistics of the variables used in the analyses of this study over the period from 2006 to 2016 for all 17 banks working in Palestine.

Table 3 provides the correlations between the net interest margin and the explanatory variables. NIM is determined to be positively correlated with OE, RA, ME and foreign banks (FB). By contrast, CR, bank orientation (LBN), Islamic banks (IB), and time trend (T) are determined to be negatively correlated with NIM.

The results show that the null hypothesis that the individual effect and the explanatory variables are uncorrelated is statistically rejected high correlation[9]. Thus, the generalized least squares model as formed by Eq. (1) is estimated (Table 4). The estimations are performed using the random effects specification, which is superior to the fixed effects specification based on the Hausman Test.

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[9]   The Hausman test chi-squared statistics was 6.00 and p-value 1.00.

Table 3. Pairwise correlation matrix between the independent variables

	CR	OE	RA	ME	LBN	FB	IB	T	NIM
CR	1								
OE	−0.091	1							
RA	−0.295	0.628	1						
ME	−0.313	0.346	0.253	1					
LBN	0.519	−0.218	−0.633	−0.459	1				
FB	−0.401	0.039	0.251	0.091	−0.405	1			
IB	0.254	0.006	−0.173	0.036	0.172	−0.438	1		
T	0.489	−0.314	−0.117	−0.396	0.282	−0.016	0.015	1	
NIM	−0.028	0.619	0.564	0.321	−0.140	0.078	−0.038	−0.172	1

Note: The table reports pairwise correlation matrix between the independent variables used in the analyses of this study over the period from 2006 to 2016 for all 17 banks working in Palestine.

Table 4 presents the results of the baseline model of the random effect panel regression. Accordingly, most of the explanatory variables present the expected signs and are statistically significant, particularly CR, RA, LBN, and FB. However, the results show that the explanatory variables, including OE, ME, IB, and T, are not statistically significant. The R^2 in the estimated model is 0.54, thereby suggesting that the bank-specific factors are important determinants of NIM.

Table 4. Estimations of the panel regression results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	−0.073	0.040	−1.827*	0.069
CR	0.042	0.021	1.943*	0.053
OE	0.254	0.448	0.567	0.571
RA	0.161	0.083	1.926*	0.055
ME	0.035	0.038	0.929	0.353
LBN	0.018	0.010	1.782*	0.076
FB	0.010	0.004	2.434**	0.015
IB	0.001	0.004	0.211	0.833
T	−0.001	0.001	−1.445	0.150
R-squared	0.541	Prob (F−statistic)	0.000	
F-statistic	25.510**			

* Indicate statistical significance at the 10% level.
** Indicate statistical significance at the 5% level.

Note: The dependent variable is NIM, the sample cove the period from 2006 to 2016 for 17 banks working in Palestine with 182 observations.

Table 5 presents the results of the panel GMM model. Comparing with the results obtained from random effect panel regression presented in Table 4, most of the explanatory variables present the same signs and significant level, except for the RA which is not significant in the panel GMM model and for the T which

is negatively significant at 0.05% probability level in the panel GMM model, indicates that the NIM decline over time. In addition, the coefficients on the lagged of NIM is significant at 0.05% probability level in the panel GMM model, indicate that the past NIM has an important impact on the NIM of banks in the current year.

Table 5. Estimations of the panel GMM model results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NIM(-1)	0.232	0.125	1.861*	0.064
CR	0.074	0.043	1.712*	0.088
OE	−1.863	1.223	−1.523	0.129
RA	0.019	0.035	0.566	0.572
ME	0.057	0.048	1.198	0.232
LBN	0.008	0.002	3.795**	0.000
FB	0.008	0.004	1.857*	0.065
IB	0.000	0.005	0.023	0.981
T	−0.003	0.001	−2.801**	0.005
R-squared	0.378			
J-statistic	14.287**	Prob(J−statistic)		0.000

* Indicate statistical significance at the 10% level.
** Indicate statistical significance at the 5% level.

Note: The dependent variable is NIM, the sample cove the period from 2006 to 2016 for 17 banks working in Palestine with 182 observations.

6. Discussion

The results of this study show that increases in CR as measured by the ratio of the total loans to total assets have a positive and statistical significance on NIM. This result indicates that banks in Palestine impose high NIM due to increasing exposure to the expected and unexpected CR. This result is similar to the findings of several previous studies (Maudos & de Guevara, 2004; Kasman et al., 2010), thereby confirming that CR has a positive impact on NIM.

The results of this study also revealed that OE measured by the ratio of the operating expenses to total assets of the bank is positively but statistically insignificant in relation to NIM. This result indicates that banks in Palestine do not depend on high NIM but on commissions and other non-interest fees to cover their operating costs. This result is consistent with those of prior studies (Beck & Hesse, 2009; Sun et al., 2017), in which an insignificant relationship exists between the operating costs and NIM. Moreover, RA, which is measured as the total equity to the total assets of a bank has a positive and statistical significance on NIM. This result suggests that banks that incurring high RA should have

a high NIM to compensate for bearing high risk. This result is consistent with those of previous studies (Poghosyan, 2010; Trinugroho et al., 2014), in which bank management in Palestine is risk averse and faces transaction uncertainties. Thus, they enlarge NIM.

The result of this study points out that ME which is measured as the total expenses divided by the total assets of a bank, is positively but statistically insignificant related to NIM. This result suggests that a high managerial efficiency does not affect NIM. However, this result contradicts the findings of previous studies (Hawtrey & Liang, 2008; Kasman et al., 2010; Sun et al., 2017), in which ME is negatively associated with NIM. This result is due to the fact that banks in Palestine operate in identical situations, thereby forcing the management behavior of all banks to be the same. Bank orientation, which is measured as the natural logarithm of the number of branches of a bank, is positively and statistically significant in relation to NIM. This result indicates that retail banks that have many branches in Palestine maintain a high NIM to cover its distribution costs compared with the banks with only a few branches.

This study has unexpectedly shown that foreign banks have a significant positive influence on NIM, thereby contradicting the expectation and previous findings (Peria & Mody, 2004; Hadad et al., 2011). This result suggests that foreign participation facilitates the increase in NIM. The rational justification of this finding may be that most foreign banks in Palestine are Jordanian bank branches. Consequently, these banks mainly seek funds, particularly in Jordanian Dinar, for their parent banks rather than providing financial intermediation in Palestine. This result is consistent with that of Schwaiger & Liebeg (2008), which reported that foreign banks have a positive impact on NIM. The results of this study reveal that IB does not have a significant influence on NIM. This result is consistent with that of Sun et al. (2017), which indicated that Islamic and conventional banks in a dual banking system are not significantly different from each other despite the minor institutional differences. This result could be attributed to the fact that the Islamic banks in Palestine are few and their effects on NIM are limited. Lastly, our finding revealed that the time trend *t* is negative but not significant, thereby indicating that NIM does not change over time.

7. Conclusions

This study analyzes the impact of bank-specific variables on the net interest margins of working banks in Palestine based on the theoretical framework of the dealership model introduced by Ho & Saunders (1981) and subsequent studies

(Allen, 1988; Angbazo, 1997; Maudos & de Guevara, 2004). To estimate a panel data regression, a detailed and unique bank-level data set from 17 working banks from 2006 to 2016 was used.

The main conclusion from the analysis is that net interest margin in the banks in Palestine over the study period is affected by several bank-specific factors, mainly credit risk, risk aversion, bank orientation, and foreign banks. In particular, the results of this study show that foreign banks are the most important driver of net interest margins in Palestine. However, our findings reveal that foreign bank ownership has a positive effect on interest margins. This result suggests that the net interest margin in Palestine is expand due to the existence of several foreign banks. This finding should be carefully considered by regulators and policy-makers in Palestine. The next most important drivers of net interest margins in Palestine are credit risk and risk aversion. This result indicates that an increase in the credit risk and risk aversion will likely increase the net interest margin of banks in Palestine. The positive relationship would reflect the conservative management style of working banks in Palestine. The last important driver of net interest margins in Palestine is bank orientation. The results of this study show that retail banks, which have many branches in Palestine, have limited efficiency in terms of the net interest margin. However, this conclusion may also be related to other factors, which are highly correlated with the number of bank branches such as bank size.

Overall, this study recommends that regulator and policy-makers need to focus on foreign banks and set policies that will reduce the credit risk of the banking sector in Palestine. In addition, bank managers should consider the effects of bank expansion by opening new branches on the costs of intermediation that they provide. However, the subject of net interest margin determinants should still be discussed. Further research in the context of the Palestinian banking sector should investigate the structure of the banking system and industry- and macroeconomics-specific factors on the cost of banking services, including the non-interest costs.

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