Does the Financial Performance of Banks Change During the Global Financial Crisis? The Case of Palestine

Wesam Hamed and Alimshan Faizulayev

Abstract The main goal of this study is empirically evaluating the financial performance of Palestinian banks during the period 2005–2011. The main purpose of these selected periods is to the capture the global financial crisis time effect fully. Both bank-specific and macroeconomic variables are used to investigate the financial performance of banks during the global financial crisis. Fixed-effects and Random-effects methodologies are used to do empirical analysis. The study concluded that the macroeconomic factors have more impact on the profitability of the banks in Palestine, in contrast with bank-specific profitability determinants.

Keywords Banks · Inflation · Profitability · Global financial crisis

1 Introduction

Recently, the banking system plays an undeniable role in each country's economy. One of the main roles of banks is helping to develop the economy quickly, therefore, many of the financial activities are depending on them. Banks are the financial institutions that stand alongside with other investment banks and institutions that get profits from the investment of money. As financial intermediaries, banks are standing between borrowers who demand the capital and depositors who supply the capital.

In the last 20 years in Palestine, the banking system has begun to grow and form as a real financial institution. Therefore, the goal of this research is to evaluate the profitability and proficiency performance in Palestinian banks.

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Nowadays, Palestine banking system is on the stand of improvements. So, it is essential to control and improve this banking sector. Then, it is decided to consider this research.

The paper aims to analyze bank profitability determinants. As profitability indicators, we used return on equity (ROE) and return on Assets (ROA).

Additionally, by the last researches it is essential to check the effects of the squeezes on Palestine banking sector as well and here in the study there are numerous amounts of previous researches that have resulted in the same scope like the study of Dietrich and Wanzenried (2009), which investigated profitability of different commercial banks in Swiss during period of time from 1999 to 2006.

Athanasoglou et al. (2008), investigated profitability measurements of banks in Greece by depending on industry specific, bank specific and macroeconomic measurements during a period from 1985 to 2001.

2 Literature Review

Nowadays banks are contributing by a main role in the growth of each country's economy. Various studies found which focus on profitability of banks. Various researches employed various characteristics to analyze the bank system across countries. This research follows the last researches in evaluating the profitability of banks in different studies that focused on single countries. These are as follow: (Claessens and Laeven 2004; Gul et al. 2011; Dietrich and Wanzenried 2014), Albertazzi and Gambacorta (2008), Alper and Anbar (2011), Anwar and Herwanay (2006), Aysan and Ceyhan (2007), Bader and Malawi (2007), Dietrich and Wanzenried (2009), Lee and Hsieh (2012), Bapat (2018).

Different researchers have focused on the management of liabilities and assets in the financial banking system (Tektas et al. 2005), explaining the management of assets and liabilities in financial problems. Tektas and Gunay found that if any bank working on maximizing its profit and controlling the various risks that they face by decreasing them, so the bank's asset-liability management will be an efficient. Also their research showed how if the market perceptions changing, so it can create some crisis.

Smadi (2010) evaluated how the bank specific and macroeconomic measurements in 23 Jordanian banks over the period (1995–2008) are interrelated. He found that the strong capital and profit should be indicated by higher risk index level of the banking system. Smadi, showed also that during a high risk in 1997 and also the low economic performance, there will be low risk index of the sample.

Albertazzi and Gambacorta (2008), used the independent variables in their analysis such as the operating cost, non-interest income, net interest income, and profit before tax and another dependent variable as profitability of banking system. They found that the independent variables affected the bank profitability to become decreased during the period 1990–2001.

Alper and Anbar (2011), evaluated the bank-specific indicators to test the profitability performance of some commercial banks through a time from 2002 to

2010 for the case of Turkey. They found that the non interest income and the bank size have both a positive influence on the profitability of the banks. It means any bank having the largest size, will have the highest profitability. He also found that the bank's profitability is negatively affected by the size of the credit portfolio. In other words, increasing in the interest rate has a positive influence on the profitability and this result matches with our statistical analysis case study.

Another case for Indonesia, Anwar and Herwanay (2006), focused on Private Non-foreign Exchange banks and Provincial Government's banks during the period of 1993–2000. They used ROE and ROA as dependent indicators to evaluate the bank's profitability and they found that there is positive impact on the profitability from the CRTA and LIQ.

A study on the performance of Turkish banks is also been achieved by Aysan and Ceyhan (2007). They suggested that large size banks are less efficient than medium size banks. Also a significant positive relationship between loan ratio and the performance had existed. Also return on equity does not have statistical significant relationship with any factor of efficiency.

Another case for Jordan, Bader and Malawi (2007), investigated the influence of real interest rate in the Jordanian economy by using the co-integration analysis. They planned to explore the influence of the real interest rate on Jordanian investment during 1990–2005. Bader and Malawi concluded that there is a negative significant sign between the real interest rate and the level of investment.

Fungáčová et al. (2010), investigated the bank profitability during 2001–2006 in Russian banking system. They found that the Ukrainian banking system suffered on the loans quality and will not able to reconstruct the flow of money by depending on the increasing flow of deposits. Also there is a negative influence on profitability from liquidity, foreign ownership inflation, and credit risk. Also, he found in his study that there is a positive effect of capital, concentration rate, depreciation, exchange rate, and bank size.

Dietrich and Wanzenried (2009), investigated the determinants like industry-specific, macroeconomic, and bank-specific factors for 453 Swiss commercial Banks during the period 1999–2006. They found a positive influence on profitability from industry-specific and macroeconomic factors.

Lee and Hsieh (2012), investigated the macroeconomic and bank specific factors and how they affect the profitability in 42 countries during the period (1994–2008). They found a positive relationship between the risk of profit and the capital of the bank. Also Lee and Hsieh concluded that they should develop the Asian countries banking system by supporting the investing banks by the financial efficiency.

3 Data and Methodology

This section presents the banks specific and macroeconomic indicators that exert influence on Palestine banking sector financial performance during the period 2005–2011. The data for 7 commercial banks in Palestine were collected with

similar bank size from financial statements. Panel data employed to conduct analysis.

We used the standard model which used by Faizulayev and Bektas (2018), and Dietrich and Wanzenried (2009), to evaluate the determinants of profitability of banks in Palestine.

In this study, we used two dependent indicators, as proxy of financial performance, like, return on equity (ROE) and return on assets (ROA). Furthermore, FE/ RE effects approaches used to evaluate the bank's profitability.

To test the hypothesis, the regression analysis will be investigated to do the test of unit root to decide if our data can change or not change with time and also the panel data that determine the cross sectional data and time series data because it will be used to investigate the various years with the various banks. In the unit root test of our study, the null hypothesis is suggested to be non-stationary and the alternative is suggested to be stationary. Therefore, our results showed that all our variables are stationary.

Our model is specified as Eq. 1 describes as follow:

$$\prod\nolimits_{bct} = \alpha + \sum_{j=1}^{j} \beta_j X_{bct}^j + \sum_{m=1}^{m} \beta_m Z_{bct}^m + \varepsilon_{bct} \qquad \varepsilon_{bct} = v_t + u_t \qquad (1)$$

where Π_{bct} is proxied as measure of financial performance for Palestine banks, X_{bct}^j stand for bank specific and macroeconomic indicators are grouped into Z_{bct}^m. Moreover, α denotes a constant term ε_{bct} stands for error term, with v_t refers to the unobserved individual specific effect and u_t is disturbance component.

The variables consist of two categories as dependent variables, we will use (Return on Equity (ROE) and Return on Asset (ROA)) and the independent variables consisting of two groups as bank-specific based on CAMEL approach (Capital Adequacy Ratio (CAR), Asset Quality Ratio (ASQ), Management Quality Ratio (EFF) and liquidity Ratio (LQ)) and as macroeconomic measurements (Real interest rate and Inflation rate) (Table 1).

4 Empirical Results

Correlation analysis evaluates the linear relationship between the dependent and independent variables. The relationship between each independent variable with the dependent variable will be discussed according to the results that obtained from the e-views program (Table 2).

According to the table above it can be seen that the variables are negatively and positively correlated.

Table 1 Describes the study variables (https://www.investopedia.com/)

Variable	Measure	Notation	Impact
Dependent variables			
Profitability	Net income before taxes over total assets	ROA	
	Net income before taxes over total equity	ROE	
Independent variables			
Bank specific			
Capital adequacy	Total equity to total assets	CAR	+
Asset quality	Total loans to total assets	ASQ	−
Efficiency management	Cost to income ratio	EFF	−
Liquidity	Cash to total assets	LQR	±
Macroeconomic			
Inflation	GDP growth	INF	−
Interest rate	Deposit rate is used due to absence of total rate of interest	IR	+

Return on asset (ROA) has a positive correlation with CAR by 0.127 and which shows if the return on asset increase, the capital adequacy will increase. But then, Return on Equity (ROE) has a negative correlation with CAR by −0.627 and that shows capital adequacy will decline when the return on equity increase in the Palestinian banks.

Return on asset (ROA) has a positive correlation with ASQ by 0.189 and that means if the return on asset increase, the assets quality will increase. Also, Return on Equity (ROE) has a positive correlation with ASQ by 0.229 and that means when the return on equity increase, the asset quality will increase as a result in the Palestinian banks.

Return on asset (ROA) has a negative correlation with EFF by −0.349 and that means if the return on asset increase, the management efficiency will decrease. Also, Return on Equity (ROE) has a negative correlation with EFF by −0.101 and

Table 2 Describes the correlation of dependent and independent variables (https://www.investopedia.com/)

	LROA	LROE	LCAR	LASQ	LEFF	LLQR	LIR	LINF
LROA	1.000							
LROE	0.692	1.000						
LCAR	0.127	−0.627	1.000					
LASQ	0.189	0.229	−0.110	1.000				
LEFF	−0.349	−0.101	−0.236	−0.243	1.000			
LLQR	−0.103	0.017	−0.134	−0.472	0.339	1.000		
LIR	0.367	0.160	0.175	−0.100	−0.478	−0.244	1.000	
LINF	0.183	0.129	0.019	0.038	−0.146	0.001	−0.111	1.000

that means when the return on equity increase, the efficiency of management will decrease as a result in the Palestinian banks and it will be a lower decrease if the return on asset increases.

Return on asset (ROA) has a negative correlation with LQR by −0.103 and that means if the return on asset increase, the liquidity ratio will decrease. But then, Return on Equity (ROE) has a positive significant correlation with LQR by 0.017 and that means when the return on equity increase, the liquidity ratio will increase accordingly.

For the macroeconomic factors interest rate and inflation rate, it is found that Return on asset (ROA) has a positive correlation with the interest rate by 0.367 and also a positive significant correlation with the inflation rate by 0.183. However, Return on Equity (ROE) has a lower positive significant correlation with the interest rate by 0.160 and also a lower positive significant correlation with the inflation rate by 0.129.

Finally, if the correlation between the independent variables is high and more than 50%, so multicollinearity problem will occur. According to the analysis, this problem wasn't found in the independent variables; therefore, there is no multi-collinearity problem between the independent measurements of this research.

If the correlation between the independent variables is high and Durbin Watson (d) value is lower than rate of 1.50, so there will be autocorrelation problems in the data. According to the results, it can be observed that the Durbin Watson (d) value is 2.01; higher than rate of 1.50. Therefore, we don't have any autocorrelation problem in our study.

The coefficient of determination (r2), R-Squared is the proportion of the total variation in the regressand variable (ROE and ROA) that is accounted by the variation in the regressor variable (CAR, ASQ, EFF, and LQR). In the analysis, R-Squared is equal to 0.571212 in the simple regression result for LROA and it increased to 0.921331 in the simple regression result for LROE. It can be said that 57.1% of ROA variation is accounted by the variation in the independent variable (CAR, ASQ, EFF, and LQR). And 92.1% of ROE variation is accounted by the variation in the independent variable (CAR, ASQ, EFF, and LQR).

Tables 3 and 4 show the results of simple regression for LROA and LROE respectively and (L) means the logarithm and the logarithm was used because a better behaved distribution for the independent variables was aimed and also to reduce the effect of outliers.

According to the results above, our data is stationary and that shows the average, variance and covariance are moving in the same direction. Therefore, the formula of the simple regression will be tested by using the E-views program in order to explain the significant statistically relationship between our variables (dependent and independent).

Table 3 Results of simple regression for LROA

Variable	Coefficients	STD. error	T-statistic	Probability
C	−1.387116	0.598005	−2.319573	0.0257
LCAR	0.086919	0.040202	2.162071	0.0368
LASQ	0.028819	0.009927	2.903113	0.0061
LEFF	0.134471	0.087650	1.534174	0.1331
LLQR	0.208811	0.020347	10.26230	0.0000
LIR	0.267850	0.045450	5.893320	0.0000
LINF	0.361662	0.110054	3.286226	0.0022
R-squared	0.571212			
F-statistics	8.659012			0.000005
Durbin-Watson	**2.014070**			

Table 4 Results of simple regression for LROE

Variable	Coefficients	STD. error	T-statistic	Probability
C	−1.389623	0.598229	−2.322894	0.0255
LCAR	−0.913250	0.040116	−22.76534	0.0000
LASQ	0.028821	0.009926	2.903502	0.0060
LEFF	0.135535	0.087626	1.546743	0.1300
LLQR	0.208978	0.020314	10.28757	0.0000
LIR	0.267656	0.045464	5.887140	0.0000
LINF	0.361460	0.110031	3.285083	0.0022
R-squared	0.921331			
F-statistics	76.12488			0.000000
Durbin-Watson	**2.014915**			

According to the study, our hypothesis will be suggested to check if the intercept has a statistically significant influence or not.

H0: **Estimated Intercept (B0) is not statistically significant**
H1: **Estimated Intercept (B0) is statistically significant**

After the analysis was done and according to the results that were found, the probability value of the intercept ($\beta 0$) equals 0.0257, by using the P-value approach the null hypothesis was rejected when the level of significant equals to 5% and it means the estimated intercept is statistically significant with 95% level of confidence.

In any analysis, if the investor wants to measure the impact on the profitability ratio according to different years he will use the interest rate and according to this

study we found the coefficient IR probability value equal to 0.0000. By using the P-value approach the null hypothesis will be rejected when the level of significant equals to 1% and it means the coefficient IR is statistically significant with 99% level of confidence. This result agrees with the statistical result of Alper and Anbar (2011) study for the case of Turkey that was explained previously in the literature review.

According to the study, we found that coefficient INF probability value equal to 0.0022. By using the P-value approach the null hypothesis will be rejected when level of significant equals to 1% and it means the coefficient INF is statistically significant with 99% level of confidence.

Asset quality ratio was used to discuss the balance sheet left side that explained the performance of loans in financial institutions. Since t- computed value is larger than t-critical value at alpha = 0.01 level, so, H0 was rejected and H1 was accepted that the estimated coefficient of ASQ was statistically significant at 99% confidence interval. The same conclusion was reached by p-value approach where t-prob value (p = 0.0060) was less than alpha = 0.01 level.

Liquidity ratio was used to evaluate if the liquidity of the banks is able cover the short-term debts or not. Since t-computed value is greater than t-critical value at alpha = 0.01 level, therefore, H0 was rejected and H1 was accepted that the estimated coefficient of LQ is statistically significant at 99% confidence interval. The same conclusion was reached by p-value approach where t-prob value (p = 0.0000) is less than alpha = 0.01 level.

Management efficiency ratios were used to measure how banks use their liabilities and assets. Since t-computed value was less than t-critical value at alpha = 0.10 level, so, H0 could not be rejected and H1 was rejected that the estimated coefficient of EFF was not statistically significant. The researcher reached the same conclusion by p-value approach where t-prob value (p = 0.1331) was greater than alpha = 0.10 level.

Capital Adequacy is used to check if the banks are able to cover the financial obligation. Since t-computed value was greater than t-critical value at alpha = 0.05 level, therefore, the researcher rejected H0 and accepted H1 that the coefficient CAR is statistically significant at 95% confidence interval. We reach the same conclusion by p-value approach where t-prob value (p = 0.0368) was less than alpha = 0.05 level.

5   Conclusion and Recommendation

The banking system is connected to the economy's system. In short, a well-banking system is one of the main points behind the growth of any economy. So it was found that the Palestinian banks determinants of profitability can be done by an analysis of 7 commercial banks for the period 2005–2011.

Palestine banking system is on the stand of improvement. So, it is essentially to control and improve this banking sector. In this regard, the researcher decided to consider this theme.

Following the results that were obtained from the analysis and in the light of the interpreted results, one of the surprising results is the direct relationship between return on assets and capital adequacy ratio. Furthermore, return on equity has a negative relationship with capital adequacy ratio. We recommend that banks in Palestine should support the reserve accounts in order to rise up the capital adequacy ratio which will enhance more safety to the banking systems.

Moreover, the paper found a direct relationship between the ratio of liquidity and both return on equity and return on asset variables. By that result, we became sure that Palestinian banks are able to cover their short term obligations they are able to continue and grow more in the future.

According to the analysis results, it was found a positive significant relationship between both return on equity and return on asset and management efficiency ratio. This result proves that managements have been successful in controlling their assets and liabilities and this result encourages the Palestinian investors to invest more in the coming years even they know that Palestine banking sector and economy are under development.

Also, we found a positive significant relationship between return on equity and return on asset and our independent factor asset quality ratio. This result can prove that Palestinian banks financial managers are concentrating on the quality of the loans in order to gain more earnings for the bank.

One can understand the positive inflation rate might be good for the Palestinian economy under all circumstances because Palestine depends on three currencies, the Jordanian dinar, US dollar and Israeli shekel (JOD, USD and NIS).

A positive interest rate in this situation means that the nominal interest rate is close to zero and it makes the interest rate to be as high as the rate of deflation.

In short, the research concludes bank specific determinants have less impact on the banks profitability system in Palestine, in contrast with macroeconomic indicators and the reason behind that is the special structure of each bank.

In further research, we will try to expand the number of observations, banks, and independent indicators to get more accurate results.

Appendices

Appendix 1: Panel Unit Root Tests for Palestinian Banks

Variables		Levels		
		LLC	IPS	M-W
LROE	τ_T	−6.49*	0.069	33.68*
	τ_μ	−5.84*	−1.03	33.91*
	τ	−4.19*	–	44.99*
LROA	τ_T	−9.58*	−0.340	38.48*
	τ_μ	−8.25*	−3.01*	44.14*
	τ	−2.15	–	28.28
LCAR	τ_T	−9.59*	−0.547	38.56*
	τ_μ	−5.47*	−1.634**	37.34*
	τ	−0.313	–	9.34
LLQR	τ_T	−6.117*	−0.1434	22.04***
	τ_μ	−3.84*	−1.02	28.68*
	τ	−16.30*	–	20.68
LASQ	τ_T	−8.13*	−0.0894	24.23**
	τ_μ	−1.57***	0.6591	10.66
	τ	−2.369***	–	31.29*
LEFF	τ_T	−5.86*	−0.378	41.10*
	τ_μ	−3.25*	−1.73**	33.17*
	τ	−0.0612	–	12.35
LINF	τ_T	−8.65*	−0.7026	51.88*
	τ_μ	−5.41*	−3.32*	52.78*
	τ	−1.89**	–	26.89**
LIR	τ_T	−15.16*	−2.13**	87.62*
	τ_μ	−14.75*	−6.37*	87.41*
	τ	−14.82*	–	107.4*

Notes ROE represents the liquidity. τ_T represents the most general model with a drift and trend; τ_T is the model with a drift and without trend; τ is the most restricted model without a drift and trend. Optimum lag lengths are selected based on Schwartz Criterion. *, **, *** denote rejection of the null hypothesis at the 1, 5, 10% levels. Tests for unit roots have been carried out in E-VIEWS 6.0

Appendix 2: Panel Unit Root Tests for Palestinian Banks

Variables		1st differences		
		LLC	IPS	M-W
LROE	τ_T	−4.39*	0.538	13.59
	τ_μ	−5.91*	−1.204	34.51*
	τ	−6.801*	–	52.66*
LROA	τ_T	−6.39*	0.006	27.53*
	τ_μ	−7.65*	−2.104**	37.26*
	τ	−9.047*	–	76.42*
LCAR	τ_T	−12.24	−1.215	62.61*
	τ_μ	−9.56*	−3.21*	53.51*
	τ	−9.08*	–	74.47*
LLQR	τ_T	−33.012*	−4.71*	48.45*
	τ_μ	−11.55*	−3.37*	42.26*
	τ	−7.97*	–	65.64*
LASQ	τ_T	14.42*	−1.028	47.03*
	τ_μ	−12.06	−3.017*	43.26*
	τ	−7.28*	–	49.61*
LEFF	τ_T	−5.06*	0.368	30.93*
	τ_μ	−4.502*	−1.767	30.90***
	τ	−6.38*	–	66.13*
LINF	τ_T	−8.041*	−0.942	59.58*
	τ_μ	−10.02*	−4.74*	84.08*
	τ	14.59*	–	130.67*
LIR	τ_T	−18.34*	−1.97	87.62*
	τ_μ	−14.75*	−6.37*	83.07*
	τ	−21.22*	–	128.95*

Note ROE represents return on equity; CAR is a capital adequacy; EFF is a management quality; LQR represents the liquidity. τ_T represents the most general model with a drift and trend; τ_μ is the model with a drift and without trend; τ is the most restricted model without a drift and trend. Optimum lag lengths are selected based on Schwartz Criterion. *, **, *** denote rejection of the null hypothesis at the 1, 5, 10% levels. Tests for unit roots have been carried out in E-VIEWS 6.0

Appendix 3: Simple Regression Results for ROE

Dependent variable: LROE				
Method: panel EGLS (period SUR)				
Date: 12/10/13 Time: 21:12				
Sample: 2005 2011				
Periods included: 7				
Cross-sections included: 7				
Total panel (unbalanced) observations: 46				
Linear estimation after one-step weighting matrix				
White period standard errors and covariance (no d.f. correction)				
WARNING: estimated coefficient covariance matrix is of reduced rank				
Variable	Coefficient	Std. error	t-statistic	Prob.
C	−1.389623	0.598229	−2.322894	0.0255
LCAR	−0.913250	0.040116	−22.76534	0.0000
LASQ	0.028821	0.009926	2.903502	0.0060
LEFF	0.135535	0.087626	1.546743	0.1300
LLQR	0.208978	0.020314	10.28757	0.0000
LIR	0.267656	0.045464	5.887140	0.0000
LINF	0.361460	0.110031	3.285083	0.0022
Weighted statistics				
R-squared	0.921331	Mean dependent var		−2.181822
Adjusted R-squared	0.909228	S.D. dependent var		5.392973
S.E. of regression	0.831023	Sum squared resid		26.93338
F-statistic	76.12488	Durbin-Watson stat		**2.014915**
Prob (F-statistic)	0.000000			
Unweighted statistics				
R-squared	0.480311	Mean dependent var		−2.529507
Sum squared resid	17.61176	Durbin-Watson stat		0.970266

Appendix 4: Simple Regression Results for ROA

Dependent variable: LROA				
Method: panel EGLS (period SUR)				
Date: 12/10/13 Time: 21:10				
Sample: 2005 2011				
Periods included: 7				
Cross-sections included: 7				
Total panel (unbalanced) observations: 46				
Linear estimation after one-step weighting matrix				
White period standard errors and covariance (no d.f. correction)				
WARNING: estimated coefficient covariance matrix is of reduced rank				
Variable	Coefficient	Std. error	t-statistic	Prob.
C	−1.387116	0.598005	−2.319573	0.0257
LCAR	0.086919	0.040202	2.162071	0.0368
LASQ	0.028819	0.009927	2.903113	0.0061
LEFF	0.134471	0.087650	1.534174	0.1331
LLQR	0.208811	0.020347	10.26230	0.0000
LIR	0.267850	0.045450	5.893320	0.0000
LINF	0.361662	0.110054	3.286226	0.0022
Weighted statistics				
R-squared	0.571212	Mean dependent var		−3.802245
Adjusted R-squared	0.505245	S.D. dependent var		8.318261
S.E. of regression	0.831325	Sum squared resid		26.95297
F-statistic	8.659012	Durbin-Watson stat		**2.014070**
Prob (F-statistic)	0.000005			
Unweighted statistics				
R-squared	0.157817	Mean dependent var		−4.333463
Sum squared resid	17.58328	Durbin-Watson stat		0.970544

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