

# Using Static Panel Models to Assess the Experience of Islamic Banks in Algeria

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## Abstract

Banking Islamic process in Algeria still subject to the regulatory which characterizes by stagnation laws of the Central Bank. giving negatively affected in their ability to create value. Summered in there's profitability indicators. So, the study aimed to focused on its evaluation for the period between 2010 and 2015 using panel models, which found a positive relationship between the return on assets ROA and the net result, and associated with a negative coefficient with the return on equity ROE, revealing an accompanying reverse for the value generated by each monetary unit invested in those banks, which exposes its balance of confidence to depreciation.

**Keywords:** Islamic banks, profitability, static panel, return on assets, return on equity.

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## 1. Introduction

The evaluating of banks and financial institutions performance are based on the significance of the financial ratios of the static profitability indicators does not explain the long-term relationship in Algeria. Whereas Islamic banks are considered relatively recent institutions compared to traditional banks. The static measurement of its performance lacks many data and information that will make its results separated in time from its reality, just as if we add to this the effect of the determinants of success for those banks that offer different theoretical formulas for monetary circulation that leads to value creation, it will be necessary to adopt more evaluation mechanisms Effectiveness in analyzing the relationship between the result and the various financial indicators that incorporate greater levels of interaction to measure the long-term relationship, as they are quantitative parameters that explain the strength of their investment options and their ability to achieve differentiation between projects with those banks and financial institutions.

### 1.1. problem

Quantitative measurement are the most appropriate tools for identifying the profitability of banks and financial institutions. Its adoption within purely time-based or cross-sectional models will make them tools with limited results. Therefore, the main question of the study aims to know the ability of panel models to estimate the long-term relationship between profitability indicators with the net result. You have Islamic children.

To what extent is the use of static panel models an adequate estimate of the relationship of profitability indicators to the long-term performance of Islamic banks in Algeria?

### 1.2. Sub-problems:

- ✓ What are the theoretical determinants in the work of Islamic banks?
- ✓ What is the nature of the effects of the central bank's relationship with the Islamic book?
- ✓ What is the standard addition in using panel models to analyze the quantitative relationship between the result and profitability indicators?

### 1.3. Hypotheses of the research:

The study hypotheses are related on two essential values. one of theme explain the evaluation of the relationship between the achieved result of Islamic banks in Algeria and profitability indicators, while the second hypothesis is concerned with analyzing the ability of the panel models to treat that relationship.

H1: Islamic banks have absolute ability in their investment options and the comparison between projects, which are reflected in the positive indicators of profitability.

H1: The fixed effect model is best suited to test the relationship of profitability indicators with performance.

### 1.4. objectives of the research

The international experience of Islamic banks in the world had a positive impact of their relative steadfastness

during the mortgage crisis in 2008, as their adoption became a requirement to ensure diversification of investment in the banking sector under a roof of stability, and as a consequence we can assign the following points:

- ✓ Recognizing the legislative requirements for the safest employment of cash circulation within a mediation that does not confiscate the psychological function of the financial product
- ✓ Comparing the experience of the major banks in the study within a time trace, taking into account the relatively short experience of Al Salam Bank
- ✓ Analyzing the experience of Islamic banks in the light of the conceptual frameworks of the indicators adopted in the static and dynamic study,

### 1.5. Previous studies:

- The study of Houhou,; and others) entitled (Evaluating the efficiency of Algerian Islamic banks using financial performance indicators), Journal of Economic and Financial Studies, 2017, where the study aimed to assess the financial performance of Islamic banks operating in Algeria, and concluded that the performance of the Algerian Khaleeji Bank is better than that of the Algerian Al Khaleeji Bank. Al-Baraka, however, the performance of both banks was characterized by fluctuation, which the head attributed to the nature of the unstable economy, which was affected by the nature of inflexible and typical laws that did not give importance to the considerations required by the work of non-traditional peaceful banks
- Jafar's study entitled (Reliable Contracts in Islamic Banks, Study of Characteristics and Effects), Journal of Law and Human Sciences, Economic Studies), undated, the study aimed to determine the different nature of Islamic bank contracts, which differ fundamentally on the interest rate mechanism applicable in conventional banks. And it concluded that Islamic banks will remain in a state of faltering if they are not supported by a legislative tributary of monetary authorities and the Central Bank recognizes their specificity, and allows them to trade within their philosophical frameworks.

## 2. Islamic Banks Experience and Controls

The beginnings of the idea of establishing Islamic banks go back to the forties of the twentieth century, in the Pakistani countryside, when the first institution was established to receive surplus deposits and then invest them by offering them without interest to farmers. As the idea soon developed and was attracted in many countries, Egypt, Malaysia and others, in 1963 the first Islamic bank was established in Egypt under the auspices of Mr. Ahmed Al-Najjar, President of the World Federation of Islamic Banks (Mahmoud and Hussein, 2012, pp.: 38-39) and the experiment continued for three Years followed by the establishment of Nasser Social Bank in 1971. Then, and with the recommendations of the International Conference of Foreign Ministries of Islamic Countries held in Jeddah in 1973, a recommendation was made to establish an international Islamic bank that includes all Islamic countries, resulting in the first Islamic bank that refused to deal according to the foundations of commercial banks and the interest rate in 1975, which is Dubai Bank. After him, the Islamic experiences followed around the world (Bourguiba, 2013, pp.: 89-90).

### 2.1. Concept of Islamic banks:

Islamic banks is that they are: "A financial institution that works to collect and use funds in accordance with the provisions of Islamic Sharia in a manner that serves the community and the right to a fair distribution with the obligation not to deal in interest and to avoid everything that contradicts the provisions of Islamic Sharia in the bank's transactions (Qasim, 2011, pp. 84-85), It has also been defined as: "A financial institution that plays the role of financial intermediary between the categories of financial surplus and deficit in accordance with the profit and loss sharing mechanism based on the provisions of the Shariah contract of speculation and the rule of sheep in debt" (Mustafa Ibrahim, 2006, p.: 34).

### 2.2. Islamic banking rules

Islamic banking regulations are related on its goals and seek to highlight its specificity, which contradicts trading based on the interest rate mechanism. However, the challenge in reality appears to be more than that, as it presents an integrated alternative to the liberal economy, which was known for its brutality and lack of consideration for the most vulnerable circles in society. Where he mentioned (Fleih, 2006, p.: 92) that Islamic banks were dissolved to take into account several requirements:

- ✓ Developing and nurturing the economy among the different classes of society by dedicating more just levels,
- ✓ Liberating banking transactions from transactions that contradict the values of the Islamic society,

These goals require the inclusion of unconventional methods in banking. Where justice requires that all parties contributing to the project be at the same distance from profit and loss. It is an authentic rule in Islamic economics that refuses to bear the money borrower alone for the consequences if it befalls the loss after the

stability of his failure, and it is the rule of sheep in debt. As for the procedural level, the Islamic banks presented the idea, a set of formulas for trading based on participation aimed at transforming the relationship of banks and financial institutions as development stations, where the objectives of the two sides of liquidity meet at two points, achieving investment goals and complying with Islamic values.

### 2.3. Financial performance indicators, their nature and nature

Profitability indicators are used to measure the performance of banks, so is one of the most important indicators. Shareholders, managers and other stakeholders are concerned with knowing the path of performance indicators, as they reflect the nature of the options and their efficacy, as the adoption of financial performance indicators to classify and rank banks and financial institutions within what is known as the CAMELS system, which depends on the rate of return on assets (ROA) and the rate of return on Equity (ROE) and the Economic Value Added (EVA) indicator. Where the rate of return on assets is a measure of the profitability of all multiple investments, the rate of return on assets is a measure between net income to total assets related to the volume of investments, and its coefficient reveals the ability of managers to optimally use assets and resources Which it owns due to its association with two secondary indicators, the profit margin AM, and the asset benefit PM, which measures the ability of the bank's management to manage the costs associated with investments, and the comparison between investments (Houhou, Issawi, and Zahouani, 2017, pp. 264-265).

### 3. Panel Models

Panel models are considered to employ data within their time dimension, as they provide a study of the phenomenon within two dimensions (individual behavior / temporal behavior). It is the same duality that (Marisa & Tera, 2011, p:02), talked about as being among the advantages of the model that will enable the analysis of the complex relationship between variables for more than one period of time) (Miller, 2007, p: 572. This type of model is available Estimation has several advantages such as employing a large number of observations, the possibility of controlling the heterogeneity of variance that may appear in the case of cross-sectional or temporal data that leads to biased results, as it deals with a broader information content. The goal is always to reach an accurate estimate of the parameters. It will allow a more comprehensive identification if they are compared with models that use cross-sectional data alone or those that use time-series models alone, (Al-Aqoon, 2020, p.: 204). The static panel models are divided into three basic models, namely, the aggregate regression model, the fixed effects model. And the random effects model within N number of cross-sectional observations at the period T, the construction of the model will be as follows (Rati'a, 2014, p.: 151).

$$y_{it} = \beta_{0(i)} + \sum_{j=1}^k \beta_j x_{j(it)} + \varepsilon_{it} \quad i=1,2,\dots,N \quad t=1,2,\dots,T \quad (1)$$

where:

$y_{it}$ : represents the value of the response variable in observation i at time t

$\beta_{0(i)}$ : represents the value of the point of intersection in the observation i

$\beta_j$  represents the slope of the regression line

$X_{j(it)}$ : is the value of the interpreted variable j in the observation i at interval t. The  $\varepsilon_{it}$  is the error value of the observation i at time t.

#### 3.1. Pooled Regression Model (PME)

It is also called the total smoothing model and is considered one of the simplest long data models that assumes the cancellation of the effect of time, given that the values  $\beta_0$  and  $\beta_j$  are constant for all periods, which means that there is no difference between the sections. As for estimating its parameters, it is done using the Ordinary Least Squares (OLS) method (Rati'a, 2014, p. 151). Its mathematical equation is given in the following aggregate form:

$$y_{it} = \beta_0 + \sum_{j=1}^k \beta_j x_{j(it)} + \varepsilon_{it} \quad , i=1,2,\dots,N \quad t=1,2,\dots,T \dots \dots \dots (2)$$

$$E(\varepsilon_{it})=0 \quad Var(\varepsilon_{it}) = \delta^2$$

#### 3.2. Fixed Effects Model (FEM.)

The fixed effects model aims to detect the behavior of each cross-sectional data set separately, by working to change the value of the cut-off parameter and make it vary from one group to another while keeping the slope constant for each cross-sectional data set under study. (That is, we are dealing with a case of lack of heterogeneity between cross-sectional groups). As the change in this model includes cross-sectional data sets for the purpose of estimating the relationship and model parameters. Which takes into account the differences or individual effects of individual effects for each segment (bank, institution, or country), and the estimates according to the fixed model are known by the inter-estimates (Bin Abed, undated, p.: 20-22). As for the mathematical formula of the model, it is written as follows (Andreas, 2009, p:16).

$$y_{it} = \beta_{0(i)} + \sum_{j=1}^k \beta_j x_{j(it)} + \varepsilon_{it} \quad , i=1,2,\dots,N \quad t=1,2,\dots,T \dots (3)$$

$$E(\varepsilon_{it}) = 0 \quad \text{Var}(\varepsilon_{it}) = \delta^2.$$

It's also called the least squares model for dummy variables, it is so named because it works to include dummy variables as much as N-1 in order to avoid the problem of multilinearity.

$$y_{it} = \sum_{d=2}^N \alpha_d D_d + \sum_{j=1}^k \beta_j X_{j(i)} + \varepsilon \quad ; i=1,2,\dots,N ; t=1,2,\dots,T \dots\dots\dots (4)$$

### 3.3. Random Effect Model (REM)

Random effect model is a regression model in which the fixed term is considered a random variable, since it deals with cross-sectional effects and time effects as random variables and not fixed parameters. The random effects model is appropriate in the event that there is a defect in the structure of the hypotheses related to the fixed effects model (Robert Yaffcc, 2003, p;06). Where the error term has a normal distribution),  $N(\mu=0)$ , and with reference to the assumptions of the fixed effect model, the parameter estimates in the fixed model will be unbiased with the hypothesis n that the variance of error for all cross-sectional data is constant (homogeneous), that is, there is no autocorrelation between cross-sectional groups It is related to time, as the weakness in the previous conditions - related to the fixed limit model - calls for reliance on a different model known as the random effects model, in which cross-sectional and temporal effects are dealt with as independent random features with a mean equal to zero and a specific variance. Substitute equation (4) into equation (3) of the model as follows (Zaghba, 2015, p. 270):

$$\beta_{0(i)} = \mu + v_i \quad , i=1,2,\dots,N \dots\dots\dots (5)$$

$$y_{it} = \mu + \sum_{j=1}^k \beta_j x_{j(it)} + v_i + \varepsilon_{it} \quad , i=1,2,\dots,N \quad t=1,2,\dots,T \dots (6)$$

where  $v_i$  is the error term for the cross-sectional data set  $i$ . It should also be noted that the random effects model is called the error-component model as well, since it contains two components of error, and the estimation of its parameters by the least square's method fails because it gives inefficient estimates because the common variance of errors is not equal to zero.

$$\begin{aligned} \text{Var}(w_{it}) &= \delta_v^2 + \delta_\varepsilon^2 \\ \text{Cov}(w_{it}, w_{is}) &= \delta_v^2 \neq 0, t \neq s \end{aligned}$$

### 3.4. Determining the most appropriate model

After identifying the various static panel models, the most appropriate model is determined, starting with checking the presence or absence of homogeneity in the data within two levels, a standard level that assumes equal determinants of the studied model (banks as a whole), that is, equal independent variables and equal fixed limit, and an economic interpretation that gives the possibility of generalizing the results Obtained from all banks involved in the study. The method of determining the most appropriate model requires relying on two methods that differentiate between the cumulative regression model and the effects model (Al-Aqoon, 2020, p. 235) .

#### 3.4.1. Method 1

It begins by ascertaining the presence or absence of those unobserved heterogeneity effects, meaning are there really differences between the banks under study in or across time periods? This allows the application of the (FEM) model or the (REM) model. Where the study requires testing the total model with a secant for each bank (assuming a case of heterogeneity), against a model with a common secant for all banks (assuming a case of homogeneity).

( $h_0$ ): , while the time effects test is through the ( $h_0$ ): test by its F statistic.

$$F = \frac{(R_{FEM}^2 - R_{PM}^2)/(N-1)}{(1 - R_{FEM}^2)/(NT - N - K)} \sim F(N-1, NT-N, N-K)$$

$R_{PM}^2$  : Refers to the coefficient of determination of the fixed effect model

#### 3.4.2. The second method

In the event that the fixed effect model FEM is significant as an appropriate model, the next step requires its comparison with the random effect model REM to determine the most appropriate final model by adopting the Hussam test, which uses its Ch2 statistic with a degree of freedom of K through the following hypothesis construction:

$h_0$  : random effects model is best suited

$h_1$  : fixed effects model is best suited

And the fixed effects model FEM is the most appropriate if it is greater than the calculated value of the test (Hussam's teste) is greater than the tabular value, which explains the significance of the difference between the two estimates and thus rejecting the null hypothesis that the random effects are consistent. And vice versa, that is, if the calculated value is small, this means that the difference between the two estimated values is not significant, and therefore the random effect is more appropriate. Some other statistical parameters also allow the possibility of comparison, such as the value of the interpreted parameters and their significance, as well as the weighted determination factor and the criteria for comparison AIC or others.

#### 4. Static panel and dynamic panel

The difference between static and dynamic panel models is the fact latter deals with the dependent variable within integrated slow periods, where the dependent variable is related to its previous state in time according to the following fairness (MarisaTeresa,García, Pablo Brañas, 2014, p:02 ),

$$y_{it} = \gamma y_{i,t-1} + x_{it} \beta + \alpha_i + v_u, \quad i = 1, \dots, N, \quad t = 1, \dots, T \text{ (time)},$$

The model parameters will be estimated using the generalized moment method GMM (Generalized Method of Moments) . Instead of the usual least square’s method. The study also indicated that the use of static models aims to detect the behavior of cross-sectional data within the recurring mean hypothesis. Although the dynamic panel model is considered a more in-depth analysis method, there are those who believe that it includes some defects, such as, the estimate may not be fixed, as these levels of estimate may be related to the characteristics of the sample, in addition to resorting to taking the unnecessary time differences of the series may create a problem for the correlation self (Torrecillas Romilio,2018,p:32& )

Table (01): the steps for testing the panel models

models Panel	aggregate regression model	Fixed Impact Model FEM	random effect model REM
Constant $\beta_0$	Fixed	varies from group to group	considered a random variable
$\beta_j$	Fixed	fixed	
homogeneity hypothesis	perfect homogeneity	heterogeneity	Heterogeneity
Objective		assumed that each section is different in the fixed term, and the aim is to know the behavior of each section group separately	Each segment is assumed to be different in error term, (Hausman test )
Formula	$y_{it} = \beta_0 + \sum_{j=1}^k \beta_j x_{j(it)} + \varepsilon_{it}$	$y_{it} = \beta_{0i} + \sum_{j=1}^k \beta_j x_{j(it)} + \varepsilon_{it}$	$y_{it} = \mu + \sum_{j=1}^k \beta_j x_{j(it)} + v_i + \varepsilon_{it}$
Comments	values $\beta_0, \beta_j$ are fixed for all periods	Changing the value of the constant parameter $\beta_{0i}$ while keeping the slope constant $\beta_j$	The error term has no normal distribution
estimating parameters	OLS method <sup>l</sup>	OLS method	OLS method
Hypotheses	H0: a constant common to all groups	To determine whether a fixed-effect model is more appropriate or a random-effect model (. Hausman_test)	
	H1: fixed for each group	H0: random effects model is best suited Acceptance of the null hypothesis is determined if p_value is less than the significance level	H1: Fixed effects model is best suited Acceptance of the alternative hypothesis is determined if p_value is greater than the level of significance

Source: Prepared by the researcher based on previous concepts

#### 5. Applied study:

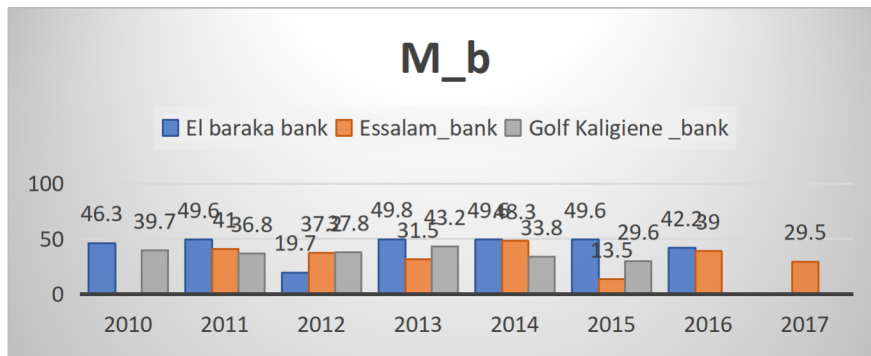
Identifying the performance of Islamic banks operating in Algeria requires tracking the significance of the most important quantitative indicators for them.

##### 5.1. Descriptive study: `

###### ▪ Total Revenue and Net Result

Total revenue explain the non-qualified income that the bank obtains as a result of practicing the banking business.

Figure (01): Total Revenues and Net Result of Islamic Banks in Algeria

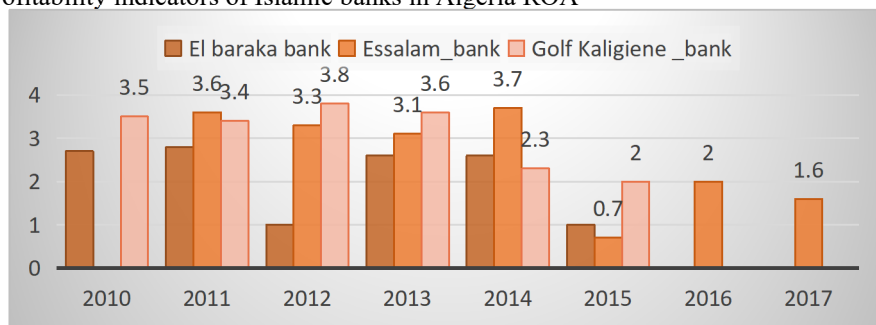


Source: Prepared by the researcher based on Excel

Al Baraka Bank and Algerian Gulf Bank had a greater ability to create assets and achieve positive results. As Algerian Gulf Bank recorded a total revenue of 11848 million dinars for the year 2014 and a net result of 5035 million dinars in 2013. As for Al Baraka Bank, it recorded a total revenue of 9745 million dinars in 2015 and net result of 4307 million dinars. While the comparison puts us in front of much lower values for Al Salam Bank, where its total revenues did not exceed only 4022 million dinars as its highest value in the year 2013, while the highest value of its net result amounted to 1383 million dinars in the year 2014.

▪ ROA indicator

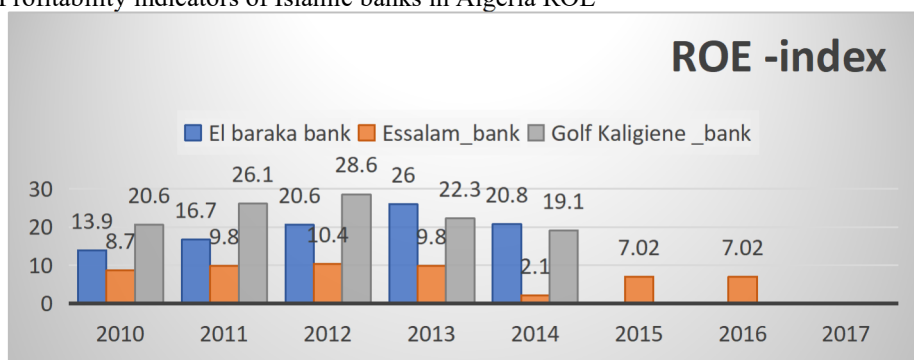
Figure (02): Profitability indicators of Islamic banks in Algeria ROA



Source: Prepared by the researcher based on Excel

ROA indicator is the most important probability index adopted in comparison of the performance of financier institutes. It is considered one of the most important measures that express net income to total assets, that is, the percentage of total investment income compared to total investment. Where the description justified the circumstances of the time difference between the approved experiments. And as we see the ROA of El-baraka and Algerian Gulf Bank are upper then Essalam bank which can due to the experiment of these bank.

Figure (02): Profitability indicators of Islamic banks in Algeria ROE



Source: Prepared by the researcher based on Excel

ROA index expand the relationship between profitability and risks related to liquidity, credit risks, interest rate risks and operational risks. So, it be taken as a quotative indicator which explains the ability of the banks to gain probability.so in our case that showed the largest level difference between the three banks .

5.2. Standard Study

5.2.1. Estimating the relationship of within the static panel models:

Panel models are concerned with measuring the short- and long-term dynamic relationship between variables, and it should be noted that their results may conflict with economic theory, since the set of assumptions they



adopt may not be fully realized, such as the stability of the model slope between cross-sectional data, which prompted the emergence of other models known dynamic panel patterns MGE (mean group estimation) and PMGE (pooled mean group).

▪ **Sample and period of the study:**

The sample included three Islamic banks, namely Al Baraka Bank, Al Khaleeji Bank of Algeria, and Al Salam Bank, which raises the title of banking according to Sharia operating in Algeria for the period of time (2010-2015). It should be noted that Al Salam Bank is excluded from the study in 2010 because it did not start Cash circulation officially until 2011, and it should be noted that the monthly data of these banks was relied upon, allowing a number of observations to reach 68 N = views.

▪ **Profitability Indicators:**

Based on the theoretical literature of the subject of the study, the most important profitability indicators in determining the net financial result of banks and financial institutions are:

✓ **Rate of Return on Assets (ROA):**

It is an index composed of two partial indices, the MP and the AU, and reflects the ratio of net to total assets.

✓ **Return on Equity (ROE):**

It is an integrated indicator that measures the interrelationship between return and risk, which consists of three types, credit risk, interest rate risk, capital risk and operational risk. It measures the ratio of the bank's assets to equity, that is, how many times the equity has increased, which means shareholders in the first place. On this basis, the parameters of the model will be estimated on the basis that NETR is a dependent variable (with the endogenous variable), while the indicators of profitability, return on assets ROA and return on equity, ROE will be estimated and explained variables (external variables). The results will be presented within the following three stages:

- ✓ Pooled Regression Model (REM)
- ✓ Fixed Effects Model (FEM)
- ✓ Random Effects Model (REM)

**5.2.2. Estimation of the appropriate panel model:**

Within this part of the study, models will be measured and evaluated to choose the most capable of representing the relationship between the study variables.

**Cumulative Effects Model Estimation:**

Table (02): Estimating the relationship through the (Pooled) model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1058.384	704.5832	1.502142	0.1379
ROA	35263.88	19818.72	1.779322	0.0799
ROE	3374.383	1287.747	2.620378	0.0109
R-squared	0.107029	Mean dependent var		2726.853
Adjusted R-squared	0.079553	S.D. dependent var		1440.344
S.E. of regression	1381.865	Akaike info criterion		17.34337
Sum squared resid	1.24E+08	Schwarz criterion		17.44129
Log likelihood	-586.6746	Hannan-Quinn criter.		17.38217
F-statistic	3.895376	Durbin-Watson stat		0.236460
Prob(F-statistic)	0.025247			

Source: Prepared by the researcher based on EViews 10

- ✓ It is evident from the results of the estimation by aggregation effects that there is a significant presence of Fisher's statistics at the significance level of 5%.
- ✓ Also, both explanatory variables were important at the level of significance without the significance of the categorical being revealed.

### Fixed Effects Model Estimation:

Table (03): Estimating the relationship through a fixed effect model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2446.971	449.1087	5.448505	0.0000
ROA	28213.44	12531.89	2.251332	0.0279
ROE	-2462.777	935.5602	-2.632409	0.0107

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.693788	Mean dependent var	2726.853
Adjusted R-squared	0.674346	S.D. dependent var	1440.344
S.E. of regression	821.9479	Akaike info criterion	16.33192
Sum squared resid	42562698	Schwarz criterion	16.49512
Log likelihood	-550.2852	Hannan-Quinn criter.	16.39658
F-statistic	35.68501	Durbin-Watson stat	0.205519
Prob(F-statistic)	0.000000		

Source: Prepared by the researcher based on Eviews 10

- ✓ It is clear from the results of the estimation by the fixed effect model that there is a significant presence of Fisher's statistics at the significance level of 5%.
- ✓ Both explanatory variables showed their importance in explaining the relationship with the net result in addition to the definite at the significance level of 5%.

### Random effects model Estimation:

Table (04): Estimation of the relationship using the Random effect model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1058.384	419.0936	2.525413	0.0140
ROA	35263.88	11788.38	2.991410	0.0039
ROE	3374.383	765.9653	4.405399	0.0000

Effects Specification			
		S.D.	Rho
Cross-section random		0.000112	0.0000
Idiosyncratic random		821.9479	1.0000

Weighted Statistics			
R-squared	0.107029	Mean dependent var	2726.853
Adjusted R-squared	0.079553	S.D. dependent var	1440.344
S.E. of regression	1381.865	Sum squared resid	1.24E+08
F-statistic	3.895376	Durbin-Watson stat	0.236460
Prob(F-statistic)	0.025247		

Source: Prepared by the researcher based on Eviews 10

- ✓ It is evident from the results of the estimation by random effects that there is a significant presence of Fisher's statistics at the significance level of 5%.
- ✓ Also, both the explanatory variables in addition to the categorical showed their importance in estimating and explaining the relationship between the variables at the 5% level of significance.

### 5.2.3. Comparison between estimation by fixed effect and random effect

To find out the most appropriate model in estimating the relationship of the net result to the explanatory variables, the profitability indicators in the panel models, we have to compare between the fixed effects model and the random effect model based on what was referred to by adopting the homogeneity test (Hausman) according to the following hypothesis:

$H_0$  :Random Effects Model is Appropriate

$H_1$  :Fixed Effects Model is Appropriate

Where the most appropriate model is determined based on the significance of the p-value, if it is less than the level of significance, we accept the null hypothesis that the most appropriate model is the random effects model, greater than the level of significance, we reject the null hypothesis and accept the alternative hypothesis that the fixed effects model is the most appropriate model for the estimation.



Table (05): The result of Hausman test

**Correlated Random Effects - Hausman Test**  
 Equation: Untitled  
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	120.719814	2	0.0000

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
ROA	28213.43...	35263.883...	18082284....	0.0973
ROE	-2462.776...	3374.382628	288570.07...	0.0000

Source: Prepared by the researcher based on Eviews 10

- The result of the (Hausman) test indicated that the null hypothesis was rejected and the alternative hypothesis accepted, that is, the most appropriate model for estimating and interpreting the relationship of the net result to profitability indicators is the fixed model.

Table (06): summarizes the results of the previous study

Method of Estimation			Independed variables
Random Effects Model (REM random effects method	Fixed Effects Model (FEM ) Fixed Effects Method	Pooled OLS additive regression method	
1058.384 2.55413( P=0.0140**	2446.971 5.448505( P=0.0000***	1058.384 (1.502142 0.1379 P=	Constant t_statistic
35263.88 2.991410( P=0.0039**	28213.44 2.251332( P=0.0279**	35263.88 (1.779322 0.0799	ROA _statistic t
3374.383 4.405399( P=0.0000***	-2462.777 -2.632409( P=0.0107**	3374.383 2.62037( P=0.0109**	ROE t_statistic
Ch <sup>2</sup> =120.7198 p=0.0000 h0: Random Effects Model is Appropriate if p_value greater then 0.05 h1: Fixed Effects Model is Appropriate If p_value less than 0.05 result of Hausman test requires that the null hypothesis be accepted, where the fixed effects model is the most appropriate			teste Hausman
0.107029	0.693788	0.107029	R-squared
0.079553	0.674346	0.079553	Add R-squared
1381.865	821.9479	1381.865	S.E.of regression
3.8953	35.68501	3.895376	F
0.0252*	0.00000***	0.02524*	Pro(f)
0.2364	0.205519	0.23640	DW
16.3319	16.33192	17.34337	AK
16.3965	16.49512	17.44129	SC
68	68	68	N°. Of .Obs

Source: Prepared by the researcher based on EViews 10

### Correlation matrix between study variables

Table (07): Correlation matrix between study variables

	NETR	ROA	ROE
NETR	1	0.11268	0.252
ROA	0.1126	1	-0.333
ROE	0.252	-0.333	1

Source: Prepared by the researcher based on Eviews 10

the correlation between the net result and the rate of return on assets and the rate of return on equity, a weak modulus coefficient was recorded (0.1126), while the correlation of the ratio of return on assets and return on equity was negative (-0.333).

### Estimating of the net result to the profitability indicators using the fixed effect model

Estimation Command:

LS(CX=F) NETR C ROA ROE

Estimation Equation:

$$\text{NETR} = C(1) + C(2)*\text{ROA} + C(3)*\text{ROE} + [\text{CX}=\text{F}]$$

Substituted Coefficients:

$$\text{NETR} = 2446.9712317 + 28213.4386138*\text{ROA} - 2462.77672512*\text{ROE} + [\text{CX}=\text{F}]$$

$$\text{NETR} = 2446 + 28213 * \text{ROA} - 2462 * \text{ROE} + [\text{CX}=\text{F}]$$

Source: Prepared by the researcher based on EViews 10

### Presentation of the results:

Based on the result of analysis related to estimating the most appropriate model, the following appears:

- ✓ Including the study's transactions within their complete formulas without making any mathematical transformations on them, reflecting the direct impact in estimating the relationship of the net result to profitability indicators,
- ✓ The random effects were not consistent in the most appropriate model, and therefore the ability of the fixed effects is the most appropriate to estimate the relationship of the net result to the profitability indicators of Islamic banks operating in Algeria,
- ✓ The fact that the static effects model is the most appropriate indicates the importance of including cross-sectional effects and time effects in the model, which means the stability of the parameter for each cross-sectional data set and that the change only includes other data sets.
- ✓ The improvement in some standard statistics, such as the Dw statistic, for the coefficient of determination (0.205519) 0.693788), the weighted coefficient of determination (0.674346) related to the fixed effects model indicates the importance of the static model in estimating the relationship of the net result with profitability indicators.
- ✓ The positive correlation between the net result and the rate of return on assets and the rate of return on equity is the opposite of the type of correlation, as the net result is determined by a relatively weak coefficient of the rate of return on assets, which indicates the ability of banks to make optimal use of investment opportunities, whether related to the comparison between them or What is related to its ability to control its investment costs, as for the relationship of the net result with the rate of return on equity, it reflects an average relationship to the value of the index in controlling the profitability levels of banks in the face of various expected risks, while the result of the correlation indicated a negative relationship between the rate of return on assets and the rate of return on equity Ownership with a coefficient of (-0.33308).

## 7 .Results and discussion

### ✓ ROA:

It is considered one of the most important measures that express net income to total assets, that is, the percentage of total investment income compared to total investment costs related to the total assets invested in banks, which in turn is determined by two indicators, namely, the profit margin (PM) and asset benefit (AU), which measures the profitability of investments in banks in the two terms. As for what the three banks recorded in the ROE rate, it was very similar, except for the year 2015, where it is noted that Al Salam Bank recorded a very low value of 0.7% compared to Al Baraka Bank and the Algerian Gulf Bank. Net, which means that the Islamic banks under study have a relative ability to manage their assets, related to value creation through their investment options, as well as managing costs.

✓ **ROE:**

ROA index expand the relationship between profitability and risks related to liquidity, credit risks, interest rate risks and operational risks, and its ratio can be affected by the effect of financial leverage or good asset management or both. It measures the percentage of return on each monetary unit of equity, and its height means that the bank can distribute a larger percentage of profits to shareholders, and increase the percentage of retained profits. As what Al Baraka Bank recorded in the year 2012 with 68% is an exception, as it is noted that both Al Baraka Bank and the Algerian Khaleeji Bank were much better in the rates they recorded compared to Al Salam Bank, which recorded only 10% of its maximum in 2013. It also revealed a type of relationship between The net result with the return on equity within a negative coefficient, that is, the achieved net result does not reflect the real value in the percentage return on each monetary unit of equity due to the indicator's association with several types of risks, which anticipates an adverse effect on banks related to the dividend policy, i.e. Al Salam Bank - if it does not overcome this problem - will seek to reserve the realized profits, which will negatively affect its reputation with shareholders. This result can be attributed in some respects to:

- ✓ The continuous decline in the value of the dinar, which records declines in its value year after year,
- ✓ The economic downturn and the closing of the investment banking horizon in Algeria,
- ✓ The absence of all kinds of strategic modernization in the banking work of those in charge of managing and controlling monetary practice in Algeria,
- ✓ The confinement of the exchange practice of banks and financial institutions to excessive trading in money,
- ✓ The typicality of banking work devoted to interest rate mechanics and its rejection of investment approaches.

## 8. Conclusion

The study aimed to know the relationship of the net result of the Islamic banks operating in Algeria (Al Baraka Bank, the Algerian Gulf Bank and Al Salam Bank) for the period (2010 to 2015) with profitability indicators (assets rate of return and rate of return on equity). Being quantitative parameters reveal levels of coordination and ability to balance costs. investment. Where the return on assets for the period indicated the ability of banks to compare between investments, as well as the ability of banks to manage costs, and the rate of return on equity was linked to profitability with different degrees of risk associated with external factors, such as liquidity risks, operational risks. Where the results of the study came to highlight the importance of multi-dimensional analysis to estimate the weighted long relationship model of static effects of the relationship of the net result to that with profitability indicators within medium levels of correlation, as explained by the presence of heterogeneity between the cross-sectional groups at the standard level, that is, the absence of an open business strategy that ensures the expansion of those banks within open economic options and the absence of unified financial investment bases and framing the banking work. And since the net result is linked to a positive coefficient of the rate of return on assets, this reflects expected levels of how value is created, linked to the limited interest rate mechanics and not to the existence of other options. It partially reflects the level of regulatory stagnation at the level of monetary authorities and the Central Bank. As for the negative coefficient that appeared between the net result and the rate of return on equity, it highlights the declining effect of the return on each monetary unit that is invested, affected by the decline in the value of the dinar due to the fragile nature of the Algerian economy, which depends entirely on rent as a source of value and wealth. Referring to comparative studies, this article pointed to the same structural defect in the structure of the Algerian banking system through its preference for the same traditional tools and its rejection of structural and organizational change.

## 9. Recommendations:

- ✓ **Opening the investment field for public banks and Islamic banks due to their private investment nature.**
- ✓ Adopting new approaches far from the formula of trading in religion as the only means of value creation,
- ✓ s the generated value was directly linked to the value of the currency and not within more comprehensive economic options, which would be a deterrent factor for foreign investment in the banking field.
- ✓ The strength of profitability indicators is related to the strength of the economy, as there is no strong currency without being based on a strong economy.
- ✓ Working to find a unified 'legislative and regulatory synthesis that frames the banking work, as well as allowing the experience of Islamic banks a broader scope for action,'

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▪ **Appendices:**

Table n°: the data that was relied upon and related to the three banks

<b>Banks</b>	<b>years</b>	<b>Total revenue</b>	<b>net result</b>	<b>ROA</b>	<b>ROE</b>
Baraka Bank	2010	7009	2343	0,027	0,184
Baraka Bank	2011	7623	3778	0,028	0,206
Baraka Bank	2012	7515	1483	0,01	0,686
Baraka Bank	2013	8218	4092	0,026	0,223
Baraka Bank	2014	8624	4307	0,026	0,191
Baraka Bank	2015	9745	4108	0,021	0,225
Algerian Gulf Bank	2010	5115,3	2013	0,035	0,184
Algerian Gulf Bank	2011	7041,5	2591	0,034	0,206
Algerian Gulf Bank	2012	10572,6	3999	0,038	0,261
Algerian Gulf Bank	2013	11642	5035	0,036	0,286
Algerian Gulf Bank	2014	11848	4010	0,023	0,223
Algerian Gulf Bank	2015	12252	3628,5	0,02	0,19
Al Salam Bank	2010	/	/	/	/
Al Salam Bank	2011	2189	898	0,0362	0,0878
Al Salam Bank	2012	3004	1120	0,0342	0,0986
Al Salam Bank	2013	4022	1267	0,032	0,104
Al Salam Bank	2014	2859	1383	0,0381	0,0988
Al Salam Bank	2015	2214	301	0,0074	0,0211

Source: Al Salam Bank financial reports, Al Baraka Bank of Algeria financial reports - Al Khaleeji Bank of Algeria financial reports for the years (2010-2015)