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ISLAMIC BANKING DURING THE FINANCIAL CRISIS OF 2007

Abdelkader Derbali

University of Sousse, Higher Institute of Management of Sousse, Sreet Abdlaaziz il Behi. Bp 763. 4000 Sousse, Tunisia

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Abstract

The purpose of this paper is to initially contribute to the literature linking the global financial crisis and performance of Islamic banks. Thus, it is important for everyone's future to study the current crisis in order to develop sustainable financial practices and in quest of a new business model based on sharing the profit and loss. This sustainable financial practice is based on non-interest-based transactions but profit and loss sharing, which should be in practice at the financial system. In this paper, the performance of the Islamic banks in a period of crisis, were tested. The sample of 29 Islamic banks from 7 countries and from a period of study of 7 years (2006-2012), was used. According to the empirical results, it was concluded that the Islamic banks are not affected by the financial crisis of 2007.

Keywords: financial crisis, islamic finance, conventional finance, performance, panel data

1. INTRODUCTION

Islamic finance was practiced predominantly in the Muslim world throughout the middle Ages, fostering trade and business activities with the development of credit. In Spain and the Mediterranean and Baltic states, Islamic merchants became indispensable middlemen for trading activities. In fact, many concepts, techniques, and instruments of Islamic finance were later adopted by European financiers and businessmen (Alasrag, 2010).

According to Alasrag (2010), the term "Islamic financial system" is relatively new, appearing only in the mid-1980s. In fact, all the earlier references to commercial or mercantile activities conforming to Islamic principles were made under the umbrella of either "interest free" or "Islamic" banking. However, describing the Islamic financial system simply as "interest-free" does not

* *Corresponding author: derbaliabdelkader@outlook.fr*

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provide a true picture of the system as a whole. Undoubtedly, prohibiting the receipt and payment of interest is the nucleus of the system, but it is supported by other principles of Islamic doctrine advocating risk sharing, individuals' rights and duties, property rights, and the sanctity of contracts (Iqbal & Abbas, 2007).

With most explosive growth in capitalization and estimated at nearly 1 trillion USD funds management, the branch begins to gain followers and renowned global scale: some authority as in Germany, British Prime Minister, the Japanese monetary authorities and even the French monetary authorities begin to show interest in Islamic finance.

In our research, the question relative to study the situation of Islamic banks following during of the financial crisis of 2007 was answered.

This paper will focus on the answer to this question. In addition, a literature review on the study of the performance of the Islamic and the difference between Islamic banks and conventional banks in the second section, was developed. The third section was devoted to present the research methodology and empirical model used in our paper. In the third section, empirical results were interpreted. Finally, we concluded in the last section.

2. LITERATURE REVIEW: ISLAMIC FINANCE IN CRISIS PERIOD

The study by Chia and Wang (2008) and Dar and Presley (1999) showed how a cyclical fluctuation come from the application of interest rates in the conventional banks, unlike the paradigm of Islamic economics as it prohibits the application of interest rates which in turn contribute less to the economy.

Kaminsky and Reinhart (1996) studied the relationship from the point of macro-economic perspective. They are choosing the inflation rate and the GDP rate in their study.

According to Demirguc-Kunt et al, (2006), Chapra (2000), El-Gamal (2000) and Demirguc-Kunt and Detragiache (1998), it was conclude that the presence of economic instability transactions based on interest charged by commercial banks should be replaced by the system of profit and loss applied by Islamic banks.

According to Hasan and Dridi (2010), the onset of the global crisis of 2007 has renewed interest, specifically, the resilience of the Islamic banking industry during crises. Their empirical work is based on the study of the relationship between Islamic finance and financial stability. The nature of Islamic finance and their bases regulation protect the Islamic bank to the impact of the financial crisis.

Aisyah (2009) and De Nicolò et al. (2006) studied the relationship between bank sizes, prime of risk and insolvency risk for a sample of listed banks in 21 industrialized countries. The results showed that banks operating in the most developed countries have a higher risk of insolvency. The various methods used by researchers to study the stability of banks based approaches using the Z-score model. The Z-score has been widely used in the empirical literature regarding the extent and determinants of the safety and soundness of financial institutions specifically Islamic banks. Among the studies using Z-score model in their analysis are Hasan and Dridi (2010), Karwowski (2009), Laeven and Levine (2009), Čihák and Hesse (2008), Demirguc-Kunt et al. (2006), Boyd and Nicolo (2006), Hesse and

Čihák (2006) and Boyd and David (1993).

There is a vast theoretical and empirical literature on Islamic finance in general and specifically Islamic banks.

The test of Čihák and Hesse (2010) was made to study the stability of Islamic banks compared to conventional banks. Errico and Farahbaksh (1998) and Sole (2007) conducted a discussion on regulatory issues related to Islamic finance. This general lack of academic work on Islamic finance is in contrast with the growing importance of Islamic banks in many Muslim countries in Asia and Africa.

Comparing indicators of profitability, asset quality and stability of conventional and Islamic banks, we see few significant differences between the two groups of banks. While it was find that Islamic banks are more profitable in the case of several countries. Therefore, conventional banks are more profitable than Islamic banks in the countries that contain the two types of banks (Beck et al., 2010).

The difference between the activities of Islamic banks and conventional banks in Islamic countries can be translated in Table 1.

3. DATA AND METHODOLOGY

This section was devoted to the presentation of the sampling methodology, on the one hand, and the presentation of the model used on the other.

3.1. Data

The objective of this research is to test our hypothesis research focuses on determining the impact of the financial crisis on Islamic banks.

In other words, it was tested whether Islamic banks can be considered as a solution to the failure of the conventional financial system.

Indeed, a sample of 29 Islamic banks (Appendix 1) spread over 7 countries (United Arab of Emirates (UAE), Bahrain, Jordan, Kuwait, Malaysia, Saudi Arabia, Turkey) during the period of 7 years (2006-2012), was chosen. Thus, these banks are choosed in our study because they are the most banks in term of capitalization. It was choosen to use the data from the 7 countries in this paper because they are Islamic countries and they are not affected directly by the financial crisis of 2007. For the

Table 1. Functioning of Islamic banks and Conventional banks

	Market share in 2008 (%)	Growth rate of assets of Islamic banks (%)	Growth rate of the assets of Islamic banks and conventional banks (%)	Period
Saudi Arabia	35	33.4	19	2003-2008
Bahrain	29.9	37.6	9.6	2000-2008
Kuwait	29	28.3	19	2002-2008
UAE	13.5	59.8	38.1	2001-2008
Qatar	11.5	65.8	38.1	2002-2008
Jordan	10.3	20.6	11.2	2001-2008
Turkey	3.5	41	19	2001-2008
Malaysia	17.4	20	14	2000-2008

Source: Islamic banks and Conventional banks (annual reports)

context of crisis, it was choosen to study a period post and during financial crisis of 2007.

In fact, our empirical test is to measure the position of Islamic banks after the outbreak of the financial crisis. Therefore, two categories of variables related to the specific characteristics of banks and the macro-economic indicators, were used.

3.2. Model

Islamic finance is one of the fastest growing segments in the global financial sector. Several factors have contributed to the growth of Islamic finance, including (i) the high demand in many Islamic countries for products compliant with the Shariah, (ii) the progress made in the regulation framework the Islamic finance, (iii) the increasing demand of conventional investors including for the purpose of diversification, and (iv) the ability of the industry to develop a number of financial instruments that meet most of the needs of investors institutional and individual. The size of Islamic banking in the global industry was estimated at 820 billion $ in 2008.

In our research, we will refer to the model developed by Hasan and Dridi (2010), in which they studied the impact of the financial crisis on conventional banks and Islamic banks. Their study focuses on a group of 120 banks for a period of 3 years (2007-2009). They were used for the 4 models performance measurement; profitability, changes in net assets, changes in appropriations and external ratings. The sample is composed of 90 conventional banks and 30 Islamic banks.

However, the model developed by the two authors to test the impact of the financial crisis on the performance of Islamic banking model was used. Then, in our paper a sample composed only by Islamic banks and for a period of 7 years was used. Thus, it was choosen to analyze the Islamic banks which existed in Islamic countries.

The model used is in the following form:

$$DependentVariable_{ijt} = f\ (Bankspecifics_{ijt}, Macrovariables_{jt})$$

Three measures of the performance of Islamic banks, were used, which are presented as follows:

$Profitability_{ijt}$: is the relationship between profits at time t and profits at the time (t-1) for bank i belong to country j.

$CreditGrowth_{ijt}$: is the ratio between loans at time t and credits at the time (t-1) for bank i belong to country j.

$AssetGrowth_{ijt}$: is the ratio between the assets at time t and assets at time (t-1) for bank i belong to country j.

The explanatory variables used in the models to be estimated are grouped into two categories:

- The specific characteristics of banks:

$Invest_{ijt}$: is the ratio between the amount of investment and total assets of bank i belonging to country j at time t.

$Leverage_{ijt}$: is the ratio between the amount of capital and total assets of bank i belonging to country j at time t.

ROA_{ijt}: is the ratio between the net income and total assets of bank i belonging to country j at time t (ROA: Return on Assets).

- Macroeconomic variables:

GDP_{jt}: is the growth rate of GDP of country j at time t.

INF_{jt}: is the inflation in country j at time t rate.

UAE_{it}: is a dummy variable for bank i at time t. It takes the value 1 if bank i belong to the UAE and 0 if not.

$Bahrain_{it}$: is a dummy variable of bank i at time t. It takes the value 1 if bank i belong to Bahrain and 0 if not.

$Jordan_{it}$: is a dummy variable of bank i at time t. It takes the value 1 if the bank i belongs Jordan and 0 if not.

$Kuwait_{it}$: is a dummy variable of bank i at time t. It takes the value 1 if bank i belongs to Kuwait and 0 if not.

$Malaysia_{it}$: is a dummy variable of bank i at time t. It takes the value 1 if bank i belongs to Malaysia and 0 if not.

$Saudi_{it}$: is a dummy variable of bank i at time t. It takes the value 1 if the bank i belong to Saudi Arabia and 0 if not.

$Turkey_{it}$: is a dummy variable of bank i at time t. It takes the value 1 if bank i belong to Turkey and 0 if not.

The estimated models are threefold and are presented in the following text:

Model 1:

$$Profitability_{ijt} = \alpha_0 + \alpha_{1t}Invest_{ijt} + \alpha_{2t}Leverage_{ijt} + \alpha_{3t}ROA_{ijt} + \alpha_{4t}GDP_{jt} + \alpha_{5t}INF_{jt} + \alpha_{6t}UAE_{it} + \alpha_{7t}Bahrain_{it} + \alpha_{8t}Jordan_{it} + \alpha_{9t}Kuwait_{it} + \alpha_{10t}Malaysia_{it} + \alpha_{11t}Saudi_{it} + \alpha_{12t}Turkey_{it} + \varepsilon_{ijt}$$

Where:

α_{pt}: are the coefficients of the explanatory variables (p = 1, ..., 12) and (t = 1, ..., 7).

α_0 : is a constant.

i: the index for each bank (i = 1, ..., 29).

j: the index for each country (j = 1, ..., 7)

ε_{ijt}: the error term.

Model 2:

$$CreditGrowth_{ijt} = \beta_0 + \beta_{1t}Invest_{ijt} + \beta_{2t}Leverage_{ijt} + \beta_{3t}ROA_{ijt} + \beta_{4t}GDP_{jt} + \beta_{5t}INF_{jt} + \beta_{6t}UAE_{it} + \beta_{7t}Bahrain_{it} + \beta_{8t}Jordan_{it} + \beta_{9t}Kuwait_{it} + \beta_{10t}Malaysia_{it} + \beta_{11t}saudi_{it} + \beta_{12t}Turkey_{it} + \omega_{ijt}$$

Where:

β_{qt} : are the coefficients of the explanatory variables (q = 1, ..., 12) and (t = 1, ..., 7).

β_0: is a constant.

i: the relative index to each bank (i = 1, ..., 29).

j: the index for each country (j = 1, ..., 7)

ω_{ijt}: the error term.

Model 3:

$$AssetGrowth_{ijt} = \lambda_0 + \lambda_{1t}Invest_{ijt} + \lambda_{2t}Leverage_{ijt} + \lambda_{3t}ROA_{ijt} + \lambda_{4t}GDP_{jt} + \lambda_{5t}INF_{jt} + \lambda_{6t}UAE_{it} + \lambda_{7t}Bahrain_{it} + \lambda_{8t}Jordan_{it} + \lambda_{9t}Kuwait_{it} + \lambda_{10t}Malaysia_{it} + \lambda_{11t}Saudi_{it} + \lambda_{12t}Turkey_{it} + \varphi_{ijt}$$

Where:

λ_{st} : are the coefficients of the explanatory variables (s = 1, ..., 12) and (t = 1, ..., 7).

λ_0: is a constant.

i: the relative index to each bank (i = 1, ..., 29).

j: the index for each country (j = 1, ..., 7)

φ_{ijt}: the error term.

4. RESULTS

Throughout this section, the different empirical results are presented. First, it was decided to present the various descriptive statistics. Then, the correlation matrix was

presented. Finally, the different estimation results of the three models were interpreted.

4.1. Descriptive statistics

Throughout this section it was tried to analyze and interpret the different results obtained from the estimates made on the three variables Profitability, CreditGrowth and AssetGrowth.

Therefore, the models used in our paper will be estimated by a regression with Panel Data. The choice of this type of regression is justified by the presence of the two dimensions in the data used; the first dimension is time (a period of 7 years) and the second is individual (29 Islamic banks used in this study).

The Table 2 summarizes the descriptive statistics for each variable used in the estimation of the three models.

The Profitability variable, which expresses the level of profit of each Islamic bank throughout the study period, can reach a maximum value of 11.33624, as its minimum value is (-8.836468). The volatility of the variable profitability, which is measured by the standard deviation, is 1.325935.

Thus, the variable CreditGrowth measuring the growth rate of loans to clients (individual or company) has a maximum value of 96.76 and a minimum value of (-290.02). Level of risk is 27.14795.

In addition, the variable AssetGrowth measuring the rate of asset growth has a maximum value of 88.77 and a minimum value of (-16.8). Thus, the level of risk is 16.2307.

Other statistics on other variables were presented in Table 3.

In continuation of the analysis of the empirical resultsa test of correlation between the variables used was conducted. Table 3 summarizes the results. Furthermore, the results show that all of Pearson correlation coefficients do not exceed the tolerance limit (0.7), which does not cause problems with the estimation of the three models. According to the correlation matrix, it was remarked that some coefficients are insignificant. This implies that the dependence is low between the variables for which the coefficient is insignificant and low.

All banks used as the investigation sample are presented in the Appendix 1. In addition, by observing the Appendix 2 it was

Table 2. Descriptive statistics

Variables	Obs	Mean	Max	min	Sd	Skewness	Kurtosis
Profitability	203	1.251428	11.33624	-8.836468	1.325935	0.4856196	35.55534
CreditGrowth	203	0.7394545	96.76	-290.02	27.14795	-7.080719	75.65617
AssetGrowth	203	5.91398	88.77	-16.8	16.2307	2.710782	9.942799
Invest	203	11.69879	83.52	-74.04904	21.34164	-0.982927	9.323587
Leverage	203	36.94221	150.01	5.15996	28.29768	1.40097	4.514935
ROA	203	4.183039	24.05	6836	5.106131	1.645721	5.542105
GDP	203	4.730833	14.92782	-0.678178	3.403835	0.8210707	3.088822
INF	203	4.477235	9.906192	-5.15	3.281139	-1.068317	4.278852
UAE	203	0.1724138	1	0	0.3786735	1.734455	4.008333
Bahrain	203	0.1724138	1	0	0.3786735	1.734455	4.008333
Jordan	203	0.1034483	1	0	0.3052964	2.604237	7.782051
Kuwait	203	0.1724138	1	0	0.3786735	1.734455	4.008333
Malaysia	203	0.137931	1	0	0.3456801	2.1	5.41
Saudi	203	0.1034483	1	0	0.3052964	2.604237	7.782051
Turkev	203	0.137931	1	0	0.3456801	2.1	5.41

Table 3. Correlation matrix

	Profitability	CreditGrowth	AssetGrowth	Invest	Leverage	ROA	GDP	INF	UAE	Bahrain	Jordan	Kuwait	Malaysia	Saudi	Turkey
Profitability	1.0000														
CreditGrowth	-0.0817 (0.246)	1.0000													
AssetGrowth	0.1656 (0.018) **	-0.2061 (0.003) *	1.0000												
Invest	0.0290 (0.681)	-0.1830 (0.009) *	0.0916 (0.193)	1.0000											
Leverage	-0.0717 (0.309)	-0.2455 (0.000) *	0.4027 (0.000) *	0.1304 (0.063) ***	1.0000										
ROA	0.1244 (0.077) ***	0.0487 (0.490)	-0.1753 (0.012) **	0.0833 (0.237)	0.4419 (0.000) *	1.0000									
GDP	0.0387 (0.583)	0.1841 (0.008) *	0.0135 (0.848)	-0.0008 (0.991)	0.0381 (0.589)	0.0232 (0.742)	1.0000								
INF	0.0632 (0.370)	-0.0383 (0.587)	-0.0554 (0.432)	0.0027 (0.969)	-0.0520 (0.461)	-0.0160 (0.820)	0.0735 (0.297)	1.0000							
UAE	-0.0416 (0.555)	-0.1852 (0.008) *	0.0807 (0.252)	-0.1404 (0.045) **	0.1237 (0.078) ***	-0.0896 (0.203)	0.0099 (0.888)	-0.0992 (0.159)	1.0000						
Bahrain	-0.0452 (0.521)	0.0109 (0.877)	-0.0452 (0.522)	-0.0622 (0.378)	-0.0689 (0.328)	0.0280 (0.691)	- 0.3397 (0.000) *	0.1750 (0.012) **	-0.2083 (0.002) *	1.0000					
Jordan	-0.0246 (0.727)	-0.0054 (0.939)	0.3498 (0.000) *	-0.1347 (0.055) ***	-0.0212 (0.764)	-0.1613 (0.021) **	0.0995 (0.157)	0.0793 (0.260)	-0.1550 (0.027) **	-0.1550 (0.027) **	1.0000				
Kuwait	0.0761 (0.280)	0.0102 (0.885)	-0.1563 (0.026) **	0.1058 (0.132)	0.4948 (0.000) *	0.6171 (0.000) *	0.0320 (0.650)	-0.0643 (0.362)	-0.2083 (0.002) *	-0.2083 (0.002) *	-0.1550 (0.027) **	1.0000			
Malaysia	0.0918 (0.192)	0.0291 (0.680)	-0.1410 (0.044) **	0.0920 (0.192)	-0.2741 (0.000) *	-0.2793 (0.000) *	- 0.2506 (0.000) *	0.0299 (0.672)	-0.1826 (0.009) *	-0.1826 (0.009) *	-0.1359 (0.053) ***	-0.1826 (0.009) *	1.0000		
Saudi	-0.0011 (0.987)	-0.0056 (0.937)	-0.1193 (0.090) ***	0.1999 (0.004) *	-0.2123 (0.002) *	-0.0299 (0.672)	0.0433 (0.539)	-0.0528 (0.454)	-0.1550 (0.027) **	-0.1550 (0.027) **	-0.1154 (0.101)	-0.1550 (0.027) **	-0.1359 (0.053) ***	1.0000	
Turkey	-0.0573 (0.417)	0.1603 (0.022) **	0.0697 (0.323)	-0.0435 (0.537)	-0.1218 (0.083) ***	-0.1603 (0.022) **	0.4506 (0.000) *	-0.0659 (0.350)	-0.1826 (0.009) *	-0.1826 (0.009) *	-0.1359 (0.053) **	-0.1826 (0.009) *	-0100 (0.022) **	-0.1359 (0.0532) ***	1.0000

Significant at a threshold value (*) 1%; (**) 5% and (***) 10%

concluded that all Islamic banks in our sample have a positive level of profitability. Similarly, Appendix 3 and Appendix 4, which respectively represent the rate of credit growth and the rate of asset growth of Islamic banks during the period of study (2006- 2012). In fact, the resources collected from agents with financing capacity are adequate to meet the demands of credit agents to financing needs.

4.2. Estimation results

The results of the unit root, for the modeling procedure. are presented in Table 4. The results of the estimation of the variable Profitability, CreditGrowth and AssetGrowth are presented respectively in the three tables 5, 6 and 7. These tables include several specifications. The dependent variables were estimated by using the explanatory variables on the specific characteristics of Islamic banks and variables that represent macro-economic indicators.

Note here that the panel structure is homogeneous. In this case, the method of ordinary least squares, was applied, that allows a better fit by minimizing the sum of squared residuals.

Therefore, three models in which three variables were addopted were estimated: Profitability, CreditGrowth and AssetGrowth as depended variables. The estimation results of the three OLS models are presented in the tables 5, 6 and 7.

A test of the unit root panel data was conducted. Thus, it was decided to use the test of Levin Lin Chu. The null hypothesis of this test is H0: all series are non-stationary and the alternative hypothesis is H1: all series are stationary. The reject of the null hypothesis is based on the value of the p-value. This value is compared to a threshold of 10%. If the value of the p-value is less than 10%, then we reject H0 and if the value of the p-value is greater than 10%, then we reject the alternative hypothesis H1.

In our case, it was noticed that the values of p-values on different variables are less than 10%. In this case, one rejects H0 and thereafter all these variables are stationary.

The dummy variables (Dummy) are considered stationary from the beginning. Subsequently, a test of stationary for these variables was not done.

The problem that arises when estimating is the choice of the estimation method; estimating a fixed effects model or the estimation of a random effects model. Thus, approached this problem solution is the Hausman test which allows you to choose between the estimation of a fixed effects model and the estimation of a random effects model.

In the model 1 (Profitability), it was chosen to use the random effects model as an estimation method in both estimations. This choice is justified by the probability of the Hausman test which is equal to 0.5459 in the first estimate and 0.6269 in the second estimate. Thus, this probability is greater than 10%, therefore, it was chosen the random effects model.

Next, the tests of autocorrelation of the first order of each estimated model were

Table 4. Testing the unit root

Variables	Statistic	p-value
Profitability	6.5E +03	0.0032
CreditGrowth	14.1554	0.0837
AssetGrowth	-60.1605	0.0000
Invest	5.8018	0.0061
Leverage	-29.1843	0.0000
ROA	2.2928	0.0037
GDP	-10.8020	0.0000
INF	-12.9533	0.0000

In this test, the p-value is compared to 10%. If p-value <10% and therefore it was reject H0 if p-value> 10% then it was accept H0. With H0: all series are non-stationary.

conducted. This test is based on the interpretation of the probability value (Prob> F). This value is compared to a threshold of 5%. If the probability is less than 5%, reject H0 therefore, that is to say it rejects the hypothesis of absence of the self-correlation of the first order. In this case, we will correct this problem in the presence of autocorrelation.

In the model 1 (Profitability), the probability value (Prob> F = 0.0002) is less than 5% in the two estimates of this model

Table 5. Estimation of the Model 1

Dependent variable: Profitability		
	Estimation 1 Random effects	**Estimation 2 Random effects**
Explanatory variables	**2006-2012 Coefficients (T-Student)**	**2006-2012 Coefficients (T-Student)**
Invest	0.0029031	0.002071
	(0.56)	(0.38)
Leverage	**-0.0084464**	**-0.008253**
	(-1.94) **	**(-1.66) *****
ROA	**0.0551662**	**0.0572047**
	(2.31) *	**(1.99) ****
GDP		0.0227625
		(0.66)
INF		0.0197359
		(0.66)
UAE		0.2326279
		(0.53)
Bahrain		0.0973128
		(0.20)
Jordan		0.1871034
		(0.38)
Kuwait		0.2715368
		(0.51)
Malaysia		0.6523116
		(1.33)
Saudi		0.0831755
		(0.17)
Cons	**1.302722**	**0.877696**
	(6.81) *	**(1.98) ****
Number of Obs	203	203
Fisher probability	Prob> F = 0.0072	Prob> F = 0.0043
The value of Fisher	F (3.171) = 11.62	F (5.169) = 14.24
The probability of chi2 ()[a]	Prob> chi2 = 0.0064	Prob> chi2 = 0.0007
The value of Wald chi2	Wald chi2 (3) = 13.55	Wald chi2 (12) = 22.19
R^2	0.7190	0.6269
Probability of Hausman test	Prob> chi2 = 0.5459	Prob> chi2 = 0.6269
The Model chosen in the estimation	**The random effects model**	
Auto-correlation test (P> F)[b]	0.0002	
Assumption	**H0 is rejected: absence of autocorrelation**	

- ✓ Values in parentheses represent the t-Student.
- ✓ Significant at a threshold value (*) 1%; (**) 5% and (***) 10%.
- ✓ [a]Wall test is used to test the correlation between the explanatory variables and residuals. It was comparing the probability (Prob> chi2) with a threshold of 5% and it was deciding with the null hypothesis H0: no correlation between the variables used and residuals. If (Prob> chi2) >5%, then we reject H0.
- ✓ [b]For the autocorrelation test, comparing the probability of a Fisher 5% threshold with H0: absence of autocorrelation of the first order. If (P> F) <5%, then we reject H0.

and it was correct this problem, which is presented in Table 5. Within this framework, there is no a problem of correlation between the explanatory variables and residuals.

It was also decided to conduct additional tests to show the validity of the estimated models and justify the significance of the estimates. It was used to test the correlation between the explanatory variables and the residuals. This type of test is based on the value (Prob> chi2). If this probability is less than 5%, so it was accept H0 that verifies the absence of correlation between the residuals and the explanatory variables. If this probability is greater than 5% in this case there is a problem of correlation between the residuals and the explanatory variables that must be corrected.

In both estimates of the model (1), the probability values (Prob> chi2) are all less than 5%. So there are no problems of correlation between the explanatory variables and residuals.

The test of significance of the model is based on the probability of Fisher. It was noticed that all the probability value Fisher is less than 5% in all estimates first model. So we can deny that the estimated model 1 (Profitability) is generally significant.

Thus, it was found that the coefficient of determination R^2 is equal to 0.7190 and 0.6269 in the two estimates made, so the model (1) is characterized by a good linear fit.

From Table 5, it was remarked that there are two significant variables e.g., the variable Leverage and ROA variable.

However, the variable Leverage is negatively statistically significant at a threshold of 10% with a value of t-student who is (-1.94) in the first estimation and a 10% threshold with a value of t-student is equal to (-1.66) in the second estimation. So the variable, which measures the ratio between capital and total assets of Islamic banks, negatively influences the dependent variable Profitability, measures the rate of growth in profitability of Islamic banks. In this case, the more this ratio increases as the level of profit of Islamic banks decreases.

The second variable ROA has a positive impact on the variable Profitability. The ROA ratio is statistically significant at the 5% level with a t-student value which is equal to (2.31) in the first estimate and a threshold of 5% with a value of t-student which is equal to (1.99) in the second estimate. In this case, the increase in the level of economic efficiency has a positive impact on the profitability of Islamic banks.

Macroeconomic variables have a positive impact on the dependent variable, but it is insignificant who justifies that volatility of the economic indicators did not affect the profitability of Islamic banks.

In this case, and for the first model, it was accepted that the second hypothesis has no impact of the 2007 financial crisis on Islamic banks. Therefore, Islamic banks can be considered as a solution for conventional financial model.

And note that the dummy variable $Turkey_{it}$ was not retained in the two estimates, which is a problem because of co-linearity with other variables.

The estimation of the model (2) is presented in Table 6.

In the Model 2 (CreditGrowth), it was chosen to use the fixed effects model for the first estimation and the random effects model for the second estimation. This choice is justified by the probability of the Hausman test which is equal to 0.0330 in the first estimation and 0.1438 in the second estimate. Thus, the probability is less than 10% in the first estimation and is more than

10% in the second estimation. Then, it was chosen to use the fixed effects model in the first estimation and the random effects model in the second estimation.

Next, it was decided to conduct tests of autocorrelation of the first order of each estimated model. This test is based on the interpretation of the probability value (Prob> F). This value is compared to a threshold of 5%. If the probability is less than 5%, reject H0 therefore, that is to say it rejects the hypothesis of absence of the self-correlation

Table 6. Estimation of the model 2

Dependent Variable: CreditGrowth		
	Estimation 1 Fixed effects	**Estimation 2 Random effects**
Explanatory variables	**2006-2012 Coefficients (T-Student)**	**2006-2012 Coefficients (T-Student)**
Invest	0.1825689	-0.1167519
	(0.84)	(-1.11)
Leverage	**0.0625453**	**-0.2325711**
	(2.97) *	**(-2.35) ****
ROA	0.3223808	0.6483425
	(0.33)	(1.17)
GDP		0.8474066
		(1.52)
INF		-0.7256817
		(-1.48)
UAE		-13.35272
		(-1.45)
Bahrain		-3.302188
		(-0.34)
Jordan		-6.045429
		(-0.59)
Kuwait		-1.479109
		(-0.14)
Malaysia		-3.195593
		(-0.32)
Saudi		-8.754833
		(-0.84)
Cons	**-6.192676**	12.59778
	(-2.93) *	(1.50)
Number of obs	203	203
Fisher probability	Prob> F = 0.0006	Prob> F = 0.0000
The value of Fisher	F (3.171) = 13.31	F (5.169) = 6.14
The probability of chi2 ()[a]	Prob> chi2 = 0.0000	Prob> chi2 = 0.0064
The value of Wald chi2	Wald chi2 (3) = 22.56	Wald chi2 (12) = 26.82
R^2	0.7639	0.6236
Probability of Hausman test	Prob> chi2 = 0.0330	Prob> chi2 = 0.1438
Chosen in the estimation model	**The fixed effects model**	**The random effects model**
Auto-correlation test (P> F)[b]	0.0000	
Assumption	**H0 is rejected: absence of autocorrelation**	

- ✓ Values in parentheses represent the t-Student.
- ✓ Significant at a threshold value (*) 1%; (**) 5% and (***) 10%.
- ✓ [a]Wall test is used to test the correlation between the explanatory variables and residuals. It was comparing the probability (Prob> chi2) with a threshold of 5% and it was deciding with the null hypothesis H0: no correlation between the variables used and residuals. If (Prob> chi2) >5%, then we reject H0.
- ✓ [b]For the autocorrelation test, comparing the probability of a Fisher 5% threshold with H0: absence of autocorrelation of the first order. If (P> F) <5%, then we reject H0.

of the first order. In this case, it was correct this problem in the presence of autocorrelation.

In the Model 2 (CreditGrowth), the probability value (Prob> F = 0.0000) is less than 5% in the two estimates of this model and it was corrected this problem, which is presented in Table 7. Within this framework, there is not a problem of correlation between the explanatory variables and residuals.

It was also decided that additional tests should be conducted to show the validity of the estimated models and justify the significance of the estimates. The correlation between the explanatory variables and the residuals was tested. This type of test is based on the value (Prob>chi2). If this probability is less than 5%, so it was accept H0 that verifies the absence of correlation between the residuals and the explanatory variables. If this probability is greater than 5% in this case there is a problem of correlation between the residuals and the explanatory variables that must be corrected.

In both estimates of the model (2), the probability values (Prob>chi2) are all less than 5%. So there are not problems of correlation between the explanatory variables and residuals.

The test of significance of the model is based on the probability of Fisher. It was noticed that all the probability value Fisher is less than 5% in all estimates first model. So it was deny that the estimated model 2 (CreditGrowth) is generally significant.

Thus, it was found that the coefficient of determination R^2 is equal to 0.7639 and 0.6236 respectively in estimation 1 and 2 in the estimate, so the model (2) is characterized by a good linear fit.

From Table 6, it was remarked that there is only one significant variable as Leverage.

However, the variable is statistically significant if Leverage is positive to a threshold of 1% with a value of t-student that is equal to (2.97) in the first estimation; while it is statistically significant to a negative threshold of 5% with a value of t-student which is equal to (-2.35) in the second estimate. So the variable, which measures the ratio between capital and total assets of Islamic banks, positively influences the level of loans to customers in the absence of macro-economic indicators. While this variable have a negative impact on the dependent variable which measures the rate of growth of credit extended by Islamic banks.

Macroeconomic variables have a negative impact on the dependent variable except for the growth rate of GDP which has a positive impact, but it is not significant, that justifies the fact that the financial crisis of 2007 has no impact on profitability of Islamic banks. In this case, and the second model, it was chosen to accept the first hypothesis of the presence of impact of the financial crisis of 2007 on Islamic banks. Therefore, Islamic banks can be considered as a solution for conventional financial model under the condition that the state of the economy is expanding.

And note that the dummy variable $Turkey_{it}$ was not retained in the two estimates of a problem because of co-linearity with other variables.

The estimation of the model (3) is presented in the Table 7.

For the model 3 (AssetGrowth), we chosed the fixed effects model for the first estimation and the random effects model for the second estimation. This choice is justified by the probability of the Hausman test which is equal to 0.0001 in the first estimate and 0.2204 in the second estimation. Thus, the probability is less than

10% in the first estimation and is more than 10% in the second estimation. Because of this; it was chosen to use the fixed effects model in the first estimation and the random effects model in the second estimation.

Next, it was decided to conduct tests of autocorrelation again.

For model 3 (AssetGrowth), the

Table 7. Estimation of the model 3

Dependent Variable: AssetGrowth		
	Estimation 1 Fixed effects	**Estimation 2 Random effects**
Explanatory variables	**2006-2012 Coefficients (T-Student)**	**2006-2012 Coefficients (T-Student)**
Invest	0.0730913	**0.092883**
	(1.02)	**(1.90) *** **
Leverage	**0.3457591**	**0.3496769**
	(3.99) *	**(7.10) ***
ROA	0.2194281	-0.201818
	(0.65)	(-0.79)
GDP		-0.1032784
		(-0.48)
INF		-0.18071
		(-0.96)
UAE		-4.968523
		(-0.95)
Bahrain		-6.856779
		(-1.28)
Jordan		**11.62646**
		**(1.99) ** **
Kuwait		**-21.72045**
		(-3.64) *
Malaysia		-6.314863
		(-1.14)
Saudi		-6.996962
		(-1.18)
Cons	**-7.370584**	0.43085
	(-4.49) *	(0.10)
Number of Obs	203	203
Fisher probability	Prob> F = 0.0000	Prob> F = 0.0000
The value of Fisher	F (3.171) = 10.71	F (5.169) = 7.85
The probability of chi2 ()[a]	Prob> chi2 = 0.0000	Prob> chi2 = 0.0000
The value of Wald chi2	Wald chi2 (3) = 40.71	Wald chi2 (12) = 79.70
R^2	0.6707	0.6611
Probability of Hausman test	Prob> chi2 = 0.0001	Prob> chi2 = 0.2204
Model chosen in the estimation	**The fixed effects model**	**The random effects model**
Auto-correlation test (P> F)[b]	0.0001	
Assumption	**H0 is rejected: absence of autocorrelation**	

- ✓ Values in parentheses represent the t-Student.
- ✓ Significant at a threshold value (*) 1%; (**) 5% and (***) 10%.
- ✓ [a]Wall test is used to test the correlation between the explanatory variables and residuals. It was comparing the probability (Prob> chi2) with a threshold of 5% and it was deciding with the null hypothesis H0: no correlation between the variables used and residuals. If (Prob> chi2) >5%, then we reject H0.
- ✓ [b]For the autocorrelation test, comparing the probability of a Fisher 5% threshold with H0: absence of autocorrelation of the first order. If (P> F) <5%, then we reject H0.

probability value (Prob>F = 0.0001) is less than 5% in the two estimates of this model and it was corrected for this problem, which is presented in Table 9. Within this framework, there is no problem of correlation between the explanatory variables and residuals.

It was also decided to conduct additional tests to show the validity of the estimated models and justify the significance of the estimates. It was based on test of the correlation between the explanatory variables and the residuals, as described in previous text.

In both estimates of the model (3), the probability values (Prob> chi2) are all less than 5%. So there are no problems of correlation between the explanatory variables and residuals.

The test of significance of the model was based on the probability of Fisher. It was noticed that all the probability values of Fisher are less than 5% in all estimates of the first model. So we can deny that the estimated model 3 (AssetGrowth) is generally significant.

Thus, it was found that the coefficient of determination R^2 is equal to 0.6707 and 0.6611 in the two estimates made, so the model (3) is characterized by a good linear fit.

From Table 7, it was showed that there are four significant variables Leverage, Leverage variable, the dummy variable (Jordan) and the dummy variable (Kuwait).

Invest, as the first variable has a positive impact on the variable AssetGrowth. This variable is statistically significant at the 10% level with a t-student value which is equal to (1.90) in the second estimate. In this case, the increase in the value of investments of Islamic banks can have a positive impact on the growth rate of assets of Islamic banks. However, if the investments are increasing, they allow Islamic banks to increase the value of their assets.

However, the variable Leverage is statistically significant positively to a threshold of 1% with a value of t-student that is equal to (3.99) in the first estimate and is statistically significant at a threshold of positive 1% with a value of t student-which is equal to (7.10) in the second estimate. So the variable, which measures the ratio between capital and total assets of Islamic banks, positively influences the growth rate of assets. More this ratio is increasing the value of assets in turn increases.

The two dummy variables Jordan and Kuwait have an impact on the growth rate of assets in Islamic banks. In this case, the growth in the value of assets is determined by the state of the economies of Jordan (positive impact) and Kuwait (negative impact).

Other macroeconomic variables have a negative impact on the dependent variable, but it is not significant to justifie that the financial crisis of 2007 has an impact on the profitability of Islamic banks. In this case, of the third model, we accepted the first hypothesis of the presence of impact of the financial crisis of 2007 on Islamic banks. Therefore, again, Islamic banks can be considered as a solution for conventional financial model under the condition that the state of the economy is expanding. While this impact does not make sense since the profitability of Islamic banks is still increasing.

It should be noted again that the dummy variable $Turkey_{it}$ was not retained in the two estimates of a problem because of co-linearity with other variables.

5. CONCLUSION

Islam is a comprehensive way of life, which strikes the balance between the spiritual and the material need of human being. One of the important aspects in human life is the need for a comprehensive system in order to govern the life and to ensure all the needs are catered adequately including the material needs such as the financial management. This aspect of life is closely related to the fast growing industry in the world nowadays, which is the Islamic financial services industry.

In this study, it was answered to a fundamental question that leads us to determine the impact of the financial crisis of 2007 on the functioning of Islamic banks.

This paper is answering that question. In addition, a second section was developed, in which it was tried to present a literature review on the study of the performance of the Islamic banks and the difference between Islamic banks and conventional banks.

Third section was dedicated to present the research methodology and the models which will be estimated. For this section, the STATA 12 software was used to get different results that allow us to respond all objectives of our paper.

Following our study, which was developed on the situation of Islamic banks after the outbreak of the financial crisis of 2007, we can assume that Islamic banks are not affected by the international turbulence.

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ИСЛАМСКО БАНКАРСТВО ТОКОМ ФИНАНСИЈСКЕ КРИЗЕ ОД 2007

Abdelkader Derbali

Извод

Сврха овог рада је да иницијално допринесе литературном повезивању светске економске кризе и перформанси Исламских банака. Од глобалног је значаја проучавати тренутну светску кризу са циљем развоја одрживих финансијских пракси, у циљу потраге за новим пословним моделима, заснованим на заједничком учешћу у профиту и губицима.По мишљењу аутора, одржива финансијска пракса се треба да заснива на трансакцијама без провизије и на примени заједничког удела у профиту и губицима у финансијском систему. У овом раду, тестиране су перформансе исламских банака у периоду кризе. Коришћен је узорак од 29 Исламских банака из 7 земаља у периоду од 7 година (2006-2012). На основу емпиријских резултата, закључено је да Исламске банке нису погођене финансијском кризом.

Кључне речи: финансијска криза, исламско финансирање, конвенционално финансирање, перформансе, панел подаци

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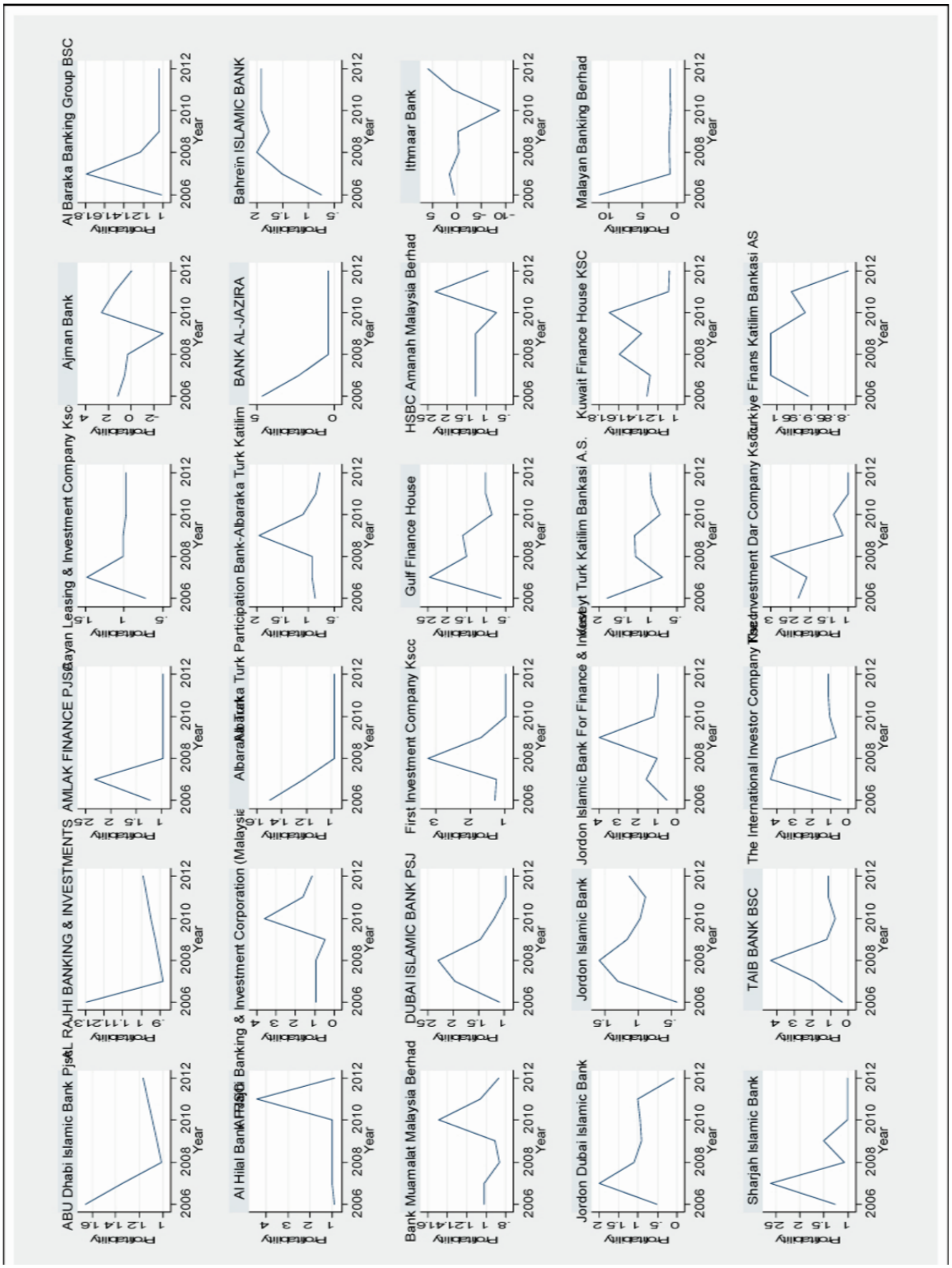
APPENDIX 1.

List of banks used in sample

Bank	Country	Bank	Country
Aayan Leasing & Investment Company Kscc	Kuwait	TAIB BANK BSC	Bahrain
ABU Dhabi Islamic Bank Pjsc	United Arab of Emirates	The International Investor Company Kscc	Kuwait
Al Baraka Banking Group BSC	Bahrain	The Investment Dar Company Kscc	Kuwait
AL RAJHI BANKING & INVESTMENTS	Saudi Arabia	Ajman Bank	United Arab of Emirates
Albaraka Turk	Turkey	Ithmaar Bank	Bahrain
AMLAK FINANCE PJSC	United Arab of Emirates	Al Hilal Bank PJSC	Saudi Arabia
Bahreïn ISLAMIC BANK	Bahrain	TurkiyeFinansKatilimBankasi AS	Turkey
BANK AL-JAZIRA	Saudi Arabia	Kuveyt Turk Katilim Bankasi A.S.	Turkey
DUBAI ISLAMIC BANK PSJ	United Arab of Emirates	Bank Muamalat Malaysia Berhad	Malaysia
First Investment Company Kscc	Kuwait	Albaraka Turk Participation Bank-Albaraka Turk KatilimBankasi AS	Turkey
Gulf Finance House	Bahrain	Jordon Islamic Bank	Jordon
Jordon Islamic Bank For Finance & Invest	Jordon	HSBC Amanah Malaysia Berhad	Malaysia
Kuwait Finance House KSC	Kuwait	Al Rajhi Banking & Investment Corporation (Malaysia) Berhad	Malaysia
Malayan Banking Berhad	Malaysia	Jordon Dubai Islamic Bank	Jordon
Sharjah Islamic Bank	United Arab of Emirates		

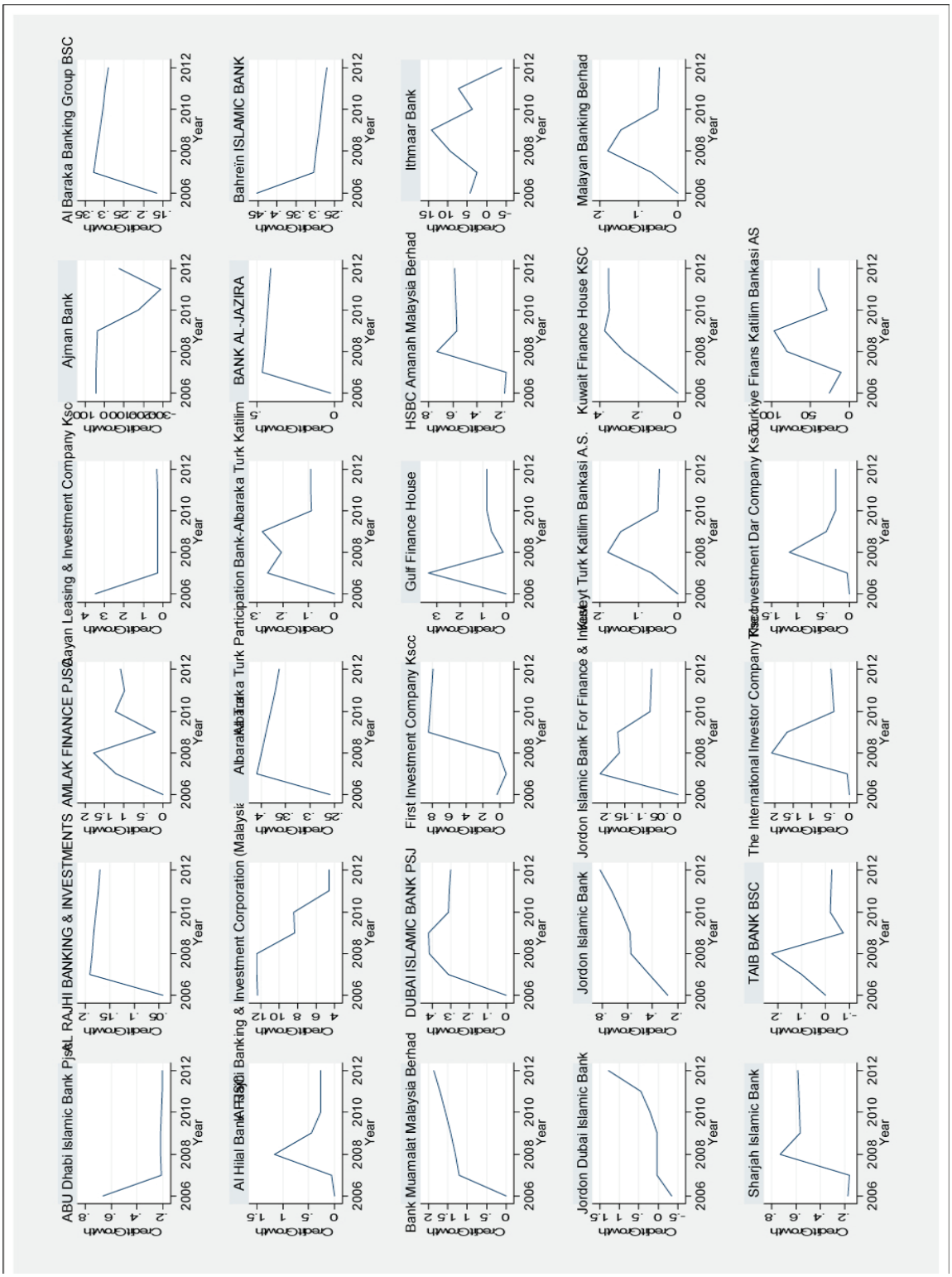
APPENDIX 2.

The profitability of Islamic banks



APPENDIX 3.

Credit Growth in Islamic banks



APPENDIX 4.

Assets Growth in Islamic banks