

Impact of the Financial Crisis on Islamic Banks

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Abstract

This study aims to elaborate a new vision of financial stability, which is a leader in all the current debates among the institutions concerned in the global financial field. Thus, the subprime crisis has shaken the foundations of the financial system, hence the existence of new norms of financial globalization. Also, the crisis is a phenomenon of reversal of the economic cycle at its highest point. This fact interrupts the period of expansion and accelerates the depression of the economy. For this reason, our study is mainly based on the financial stability of Islamic banks compared to commercial ones. In other words, we try to clarify the impact of the subprime crisis on the economic and financial profitability of Islamic banks on the basis of actual data from a sample of Islamic banks in the Al Baraka group. The empirical study is based on the estimation of the model, the stability test of Chow and CUSUM for the period 2003-2009. The results show that the level of performance of the banks of our case is more or less dispersed and particularly to the level of economic profitability. For the tests of the comparisons of the averages and the variances that, for our case, only the economic profitability appeared to have a significant change at the level of average and volatility.

Keywords: Financial Stability, Islamic Banks, Subprime Crisis, Chow Stability Test, CUSUM Stability Test

Introduction

Since the fall down of the Bretton Woods system, the frequency of financial crises has increased extremely. And consequently, the fragility of the banking sector appears as one of the first symptoms. This bank weakness in emerging countries may have increased the degree of risk aversion of international investors. As a result, an increase in the volatility of international capital movements was noticed.

The subprime crisis that arose in 2007 is the combination of these three forms. First of all, a speculative real estate bubbles, for the most part in the United States, the United Kingdom and Spain. Secondly, a credit crisis owing to a dangerous rise in the household debt ratio in these countries and a very high leverage of investment banks. And finally, markets for securitization products and interbank refinancing.

Moreover, a branch of global finance is in contradiction with the current evolutions: it is Islamic finance. The principles of Islamic finance derive directly from the rules of Islamic "Shari'a" such as: the apply and financing of only lawful activities, the practice and financing of activities submitted to fair and common market rules, financing activities related to real property and not speculative activities based on financial securities, the exercise and financing of activities in respect of Islamic, ethical and human morality. In practice, the Islamic banking system differs from the conventional banking system by prohibiting interest-rate loans, speculation, illegal activities, obligation to share risk and profit and to finance only activities involving a real asset. Besides, Islamic finance today recognizes an important development throughout the world and is increasingly becoming a competitor of so-called "conventional" finance.

Therefore, a main question arises: Is Islamic finance undergoing the subprime crisis and its horrible consequences?

To reply this issue, it is basic to approach the following plan: first of all a literature concerning the illustration of the global financial crisis and then an empirical study of "Al Baraka group".

I. Literature review

1. Representation of the global financial crisis

The US central bank and the Fed have introduced extraordinary volatility in interest rates. Thus, during the period of low interest rates (2001-2004), there was considerable growth in the United States. In addition, the expansion of loans and money supply has been used for purchases of financial assets and for home purchases. Therefore, a real estate and financial bubble has been created. This process has been aggravated by two phenomena which also involve state intervention and the role of public opinion. First, there has been very strong pressure on credit institutions in the United States to accept loans to households that do not provide sufficient credit guarantees. The Fed itself issued a handbook for banks that rejected the use of "old" criteria, such as the ratio of the amount of the refund / income or the history of the applicant's previous credits.

This crisis generates a series of paradigms, both at the macroeconomic and microeconomic levels. At the macroeconomic level, this crisis makes us realize that the equilibrium point of global savings has shifted over the last ten years. And at the microeconomic level, some recent developments in the financial economy are deeply affected by the current crisis.

This double paradigm shift presents to Islamic finance news that it did not have a few months. The capital managed, or able to manage, according to the principles of Islamic finance will have a rapid and sustainable growth. Thus, Islamic finance can contribute, at the microeconomic and macroeconomic level, to the rebalancing of global finance. It remains to be seen exactly what Islamic finance is.

2. Would the application of Islamic principles have avoided such a crisis?

Technically, the strict application of the five principles of Islamic finance would not have resulted in the subprime crisis. This is mostly based on the granting of real estate loans to risky population in terms of their income in relation to their repayment costs and then on the repackaging of these basic credits in very complex and dangerous financial structures. Hazardous mortgages, subprime mortgages and their derivatives are based on interest rates. As these are forbidden in Islam, then indeed one would not have met such an explosive cocktail in the Muslim world. Risky mortgages, subprime mortgages, and their derivatives extracted from the securitization structure are based on interest rates. As these are forbidden in Islam, then essentially such a similar case is not seen in the Muslim world.

There are about fifteen types of investments in Islamic banking, which are difficult to regulate. However, there are two main categories of Islamic products: participatory (Mudaraba, Musharaka) and asset-based (Murabaha, Ijarah and Ijarah and Iktina).

The Islamic finance sector has developed very rapidly in recent years. Nevertheless, the rapid improvement of the industry and its influence on the financial market in general are now usually recognized. The explosion of Islamic financial institutions around the world, as well as the growing number of conventional banking institutions that offer financing solutions compatible with Chariaa, confirm the rise of the Islamic finance sector.

II. research methodology

A question that arises here: Is Islamic banks safe from the global financial crisis?

To answer this question, we will study the case of the Albaraka group.

1. Presentation of the sample

Our sample consists of nine banks of the Albaraka group which are: Albaraka Sudan, Albaraka Lebanon, Albaraka Pakistan, Albaraka Tunisia, Albaraka Algeria, Albaraka Egypt, Albaraka South Africa, Albaraka Turkey, Albaraka Bahrain.

2. Presentation of variables

Variables to explain: these are variables indicative of economic and financial profitability: ROA: This is the profitability of the bank's total assets. This ratio is an indicator of the bank's performance and profitability.

ROE: is used as an alternative measure of profitability and it is called to reflect the result in relation to the owners' investment.

Explanatory variables: are the six most important ratios in determining economic and financial profitability:

R1=Equity / Total Assets. This ratio measures the share of the bank's own financing relative to the total financing. A ratio that has a level of 20 to 25% is considered satisfactory.

R2: Deposit collection ratio= Total deposits / total balance sheet. This variable is a proportion of liquidity. The coefficient of this variable is expected to be low because holding liquidity is an expense to the bank.

R3: credit distribution ratio= Loan / Total Assets. This is an accounting effect which means that an increase or decrease in the value of credit ratios relative to total assets leads to an increase or decrease in the value of expenses. Alternatively, an increase (decrease) in the value of the ratio of credits to total assets leads to an increase (decrease) in the value of expenses.

R4: Ratio of off-balance sheet commitments. This variable is obtained by dividing the total off-balance sheet operations of the bank by its total assets. This variable is included to examine income effects in the bank's profitability.

R5=the overhead/total assets ratio. It gives the ability of the banking firm to pay its expenses and to frame its expenses. The purpose of using a ratio of total expenses to total assets is to exclude the mix between absolute decreases in expenses and efficiency gains. Therefore, a pure reduction of expenses does not reflect an efficiency gain when assets are relatively reduced.

R6: The solvency ratio (or Cooke)

Macroeconomic variables: inflation, Muslim population and GDP growth

3. Presentation of the model

To make an empirical investigation of performance, we will try to assess the relationship between economic and financial profitability (as performance indices) and a set of ratios characterizing the Islamic Banks plus some macroeconomic indicators. Consequently, our model to be estimated is of the following linear form:

$$Y_{it} = \alpha_i + \beta.X_{it} + \delta.Z_{it} + \varepsilon_{it}$$

With:

i = 1... 9

t = 2003 ... 2009.

Y_{it} : Index of profitability of bank i in year t.

$\mathcal{E}_{it}$: Identical and Independently Distributed Error Terms

$X_{it} = [R3_{it}; R4_{it}; R5_{it}; R6_{it}; R7_{it}; R8_{it}]$: Vector of the six ratios.

$\beta_{it} = [\beta_1; \beta_2; \beta_3; \beta_4; \beta_5; \beta_6]$: Coefficient vector associated with the explanatory variables.

Zit: vectors of macroeconomic variables.

$\Delta = [\delta_1, \delta_2, \delta_3]$: vector of coefficients associated with macroeconomic variables.

The approach of model estimation is that of Panel data under the assumption of total homogeneity. This assumption is made due to the unavailability of data on the financial ratios of an extended bank over a sufficient period of time.

III. Empirical validation

1. Equal Variance Tests (F-Test)

Table 1: statistic F-Test

	ROA	ROE	R1	R2	R3	R4	R5	R6
F calculated	1,98**	1,695*	0,675	1,699*	0,949	1,311	1,068	1,110
P (F<=f)	0,037	0,082	0,138	0,082	0,437	0,238	0,435	0,395
Critical value (5%)	1,874	1,874	0,550	1,874	0,550	1,874	1,874	1,874

(*) (**) and (***) indicate that Fisher's calculated value is significant at a threshold of 10%, 5% and 1%, respectively.

- ROA: the value of F (1.98) is greater than the critical value for F (1.874). We can conclude the inequality of the variances of the two samples at the risk of 5% to deceive us. Similarly, the probability P (F <= f) (0.037) which is lower than the usual threshold of 0.05 (5%), therefore H0 is rejected for equality of variances. This means there are changes in volatility in this ratio. This indicates that the financial crisis has an impact on the economic profitability of banks.
- ROE: by looking at the probability P (F <= f) (0.082) with the usual threshold of 0.05 (5%), we cannot reject the 5% wrong. So, no change is in volatility in this ratio.
- R1, R2, R3, R4, R5 and R6: H0 is accepted for equality of variances and therefore the volatility in this ratio is not changed.

2. Test of equality of expectations

The Student test: indicates the comparison of the averages of the two samples before and after the start of the crisis (2007).

We know that the statistic $t = \frac{\bar{x}_2 - \bar{x}_1}{S_d / \sqrt{n-1}}$ of expression follows the Student's law at (n-2) degree of freedom.

With:

N the total number of observations

$\bar{x}_1$ And $\bar{x}_2$ are the means of the ratio x for the two periods.

The null hypothesis H0 of this test is that which assumes the equality of the two means, which is to say that there is no difference of mean between the two periods.

H0 is accepted if the calculated value of t Student is less than the bilateral critical value or if the significance probability associated with the calculated value is less than the significance level (usually 5%). Otherwise, rejection of H0, the calculated Student value is greater than the critical value. The acceptance of H0 is interpreted as the non-change of the financial situation of the bank after the crisis according to a given indicator. However, the rejection of this hypothesis is a sign of importance of the effect of the crisis on the financial condition of this bank.

The result of this test for the different variables of our study is summarized in the following table:

Table 2: Test of equality of expectations

	ROA	ROE	R1	R2	R3	R4	R5	R6
Difference of averages	0,958	2,857	3,449	12,537	-0,297	10,635	2,588	2,291
T calculated	-3,457***	1,322	1,384	-1,659	0,317	1,594	1,484	0,317
Prob. Of meaning	0,0009	0,1908	0,1713	0,1021	0,7517	0,116	0,142	0,751
Critical Value	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999

(*) (**) and (***) indicate that Fisher's calculated value is significant at a threshold of 10%, 5% and 1%, respectively.

- ROA: The t-test confirms that these two means are significantly different from each other ($t = -3.45$, $p = 0.0009 < 1\%$).
- ROE: The t-test confirms that these two means are significantly equal ($t = 1,322$, $p = 0,1908 > 10\%$).
- R, R2, R3, R4, R5 and R6: The t-test confirms that these two means are significantly equal ($p > 10\%$).

3. Estimation of ROE

Table 3: ROE model

R-squared	0.289162	F-statistic	2.395546
Durbin-Watson stat	1.261277	Prob(F-statistic)	0.023301

$$\text{ROE} = 24.59 + 0.047\text{EQUITY} - 0.038\text{DEPOSIT} - 0.732\text{LOAN} + 0.157\text{OFFBALANCE}$$

$$(4.20^{**}) \quad (0.28) \quad (-0.21) \quad (-1.87) \quad (0.87)$$

$$-0.396\text{OVERHD} - 0.120\text{SOLVABILITE} + 0.764\text{INF} - 10.024\text{PMUS} + 0.420\text{CPIB}$$

$$(-1.77) \quad (-1.32) \quad (2.92)^{**} \quad (-2.34)^{*} \quad (1.02)$$

The values in brackets are the Student statistics, under the estimated coefficients, which reflect the degree of significance of these coefficients. The asterisks (*) and (**) indicate that this coefficient is significant at the 5% or 1% threshold respectively.

The explanatory power of the model is relatively low ($R^2 = 0.29$), although the overall model is globally significant according to the Fisher test ($F = 2.39$, $p = 0.02 < 5\%$). Concerning the significance of the effects of the explanatory variables on ROE, it can be seen that the macroeconomic variables are the only ones that have this effect in a significant way; particularly inflation and the percentage of Muslims in the country.

As for the signs of the coefficients, it should be noted that the coefficient of the ratio of equity and that of the off balance sheet are positive, however the other coefficients (those of overhead, loan, solvency and deposit) are negative. It should be noted that these different coefficients are not significant.

Chow test:

Table 4: Chow test

Chow Break point Test: 37

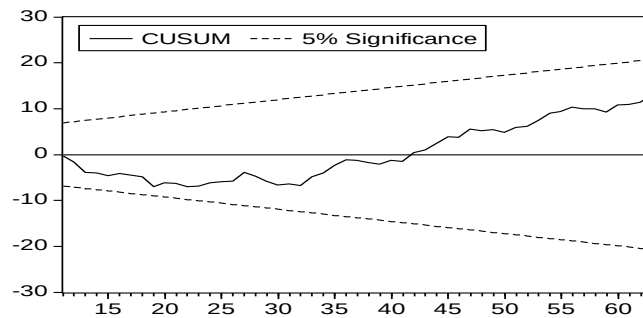
F-statistic	1.362758	Probability	0.229876
Log Likelihood ratio	17.34366	Probability	0.067097

For the Chow test, the breakpoint corresponding to the date of triggering the crisis was chosen: observation No. 36 associated with the fourth year for bank number 9 increased by one point.

Consequently, the break point corresponds to the value 37 (the first bank in 2007). This test tells us that the stability of the ROE equation is guaranteed if we take a significance level of 5%. Indeed, the two probabilities (of F and LLR) are greater than this threshold.

CUSUM Test: the result of the CUSUM test is presented as follows:

Graphic 1: CUSUM of ROE



This test is based on the residual behavior of the estimated equation. If the curve exceeds the bilateral interval at the 5% threshold, the equation is said to be unstable. It can be seen from the result of this test that throughout the period and in accordance with the result of the preceding test, the behavior of the equation ROE is stable. The period of crisis integrated in our study has no chance to disrupt the behavior of the financial performance of Islamic banks. This conclusion is made on the assumption that the ROE is explained by the variables of equation (1) presented above.

4. Estimation of ROA

Table 5: ROA model

R-squared	0.343272	F-statistic	3.078131
Durbin-Watson stat	2.019761	Prob (F-statistic)	0.004833

$$ROA = 1.870 + 0.004 EQUITY + 0.039DEPOSIT - 0.015LOAN - 0.012OFFBALANCE$$

$$(2.30)^* \quad (0.18) \quad (1.60) \quad (-0.28) \quad (-0.51)$$

$$+0.016OVERHEAD - 0.020SOLVABILITE + 0.030INF - 1.34PMUS - 0.02CPIB$$

$$(0.53) \quad (-0.51) \quad (0.83) \quad (-2.26)^* \quad (-0.37)$$

From this estimate, we can see that our model has no significant explanatory power ($R^2 = 0.34$ is low), although F is significant. The coefficients associated with the different ratios are not significant. Only the variable measuring the percentage of Muslim population in the country has a significant negative effect. Furthermore, the model constant is significant indicating some specification or omission error of the other

variables that can be integrated to explain the ROA. Other variables that reflect productivity or resource allocation may be proposed such as the number of employees and market share.

Chow test:

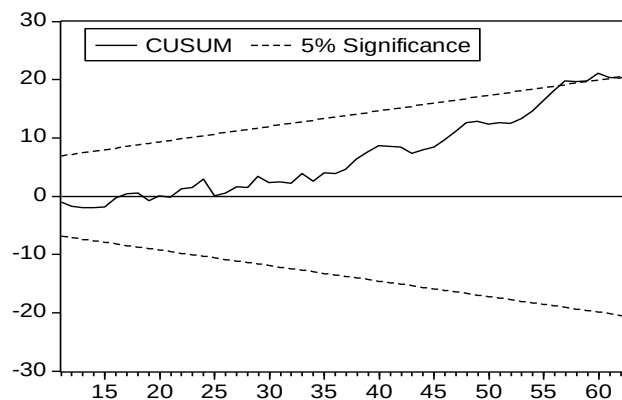
Table 6: CHOW test

Chow Break point Test: 37			
F-statistic	2.541541	Probability	0.016622
Log Likelihood ratio	29.25708	Probability	0.001132

The economic profitability estimated according to our equation is not stable from the period before and after the crisis. This conclusion is confirmed by the CUSUM test, which reveals apparent instability at the end of the study period (see graphic 2).

CUSUM test:

Graphic 2: CUSUM of ROA



In conclusion, we can say that the crisis did not affect the profitability function of the banks of our chosen case, if this profitability is taken in its financial form. This informs us that the structure of the capital has not changed between the periods of pre and post financial crisis. However, profitability in its economic form experienced some instability between the two periods. This interpretation is closely linked to the ratios proposed as explanatory of ROA, which are not significant. The weakness of the explanatory power of the ROA model indicates that this conclusion must be taken with prudence.

IV. Conclusion

We have tried to show first the descriptive characteristics of different components of banking performance for our chosen case. Then, the significance of the difference in the behavior of the ratios

between the pre- and post-financial crisis periods was tested, from the point of view of average and dispersion. Then, an attempt was made to estimate the functions of economic and financial profitability and to know the magnitude of the effect of the different explanatory ratios. Finally, the stability of these functions obtained during the study period which contains the date of the onset of the crisis was tested.

The results show that the level of performance of the banks of our case is more or less dispersed and particularly to the level of economic profitability. For the tests of the comparisons of the averages and the variances that, for our case, only the economic profitability appeared to have a significant change at the level of average and volatility. This allows us to say that, generally speaking, the balance sheet structure of the Islamic banks, represented here by a sample of the Al Baraka group, has not generally undergone a relative change and therefore their performance. Stability tests also confirmed this remark that only economic profitability has undergone some change, or instability, at the end of the study period.

Our study was to measure the impact of the global financial crisis on Islamic banks. In order to make an empirical investigation of performance, an attempt has been made to highlight the relationship between economic and financial profitability and a set of ratios, such as Equity / Total Assets, Deposit Collection Ratio, Credit Distribution Ratio, Ratio of off-balance sheet commitments, the overhead-to-total assets ratio, and solvency ratio, in addition some macroeconomic indicators namely Inflation, Muslim Population, GDP Growth. Then, a descriptive analysis of our and a comparative study before and after the crisis was carried out using a test of equality of variances (Fisher's test). The results are:

- There are changes in volatility in the economic return ratio (ROA). This indicates that the financial crisis has an impact on the economic profitability of banks.
- There is no change in volatility in all other ratios, indicating that the financial crisis does not impact the financial profitability and other ratios of the banks in our sample.

We can say that from this illustration, Islamic banks have more or less succeeded in maintaining their financial stability during the crisis period. However, some nuances have been identified when dealing with the economic profitability that generates some noise.

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