
Competition and Efficiency: Comparative Analysis between Islamic and Conventional Banks of MENA Region

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Abstract

In this research, we aim to explore the correlation between the efficiency and the competition of Islamic and conventional banks in the MENA region by modelling econometric panel data over the period 2004 to 2013 for a sample of 157 conventional banks and 66 Islamic banks. First, we will determine the level of competition on the MENA region banking by means of the Panzar and Rosse (1987) approach. Second, we estimate the level of efficiency of those banks by the method of stochastic frontier analysis (SFA). Finally, we predict the level of efficiency on the level of competition. Our main results suggest a positive effect between these two variables.

Key words: Banking competition, Banking efficiency, stochastic frontier, SFA.

1. INTRODUCTION

In recent decades, the banks of the MENA region had undergone many changes and restructuring programs and modernization. The objective was to strengthen their capital base, to clean up their portfolios of non-performing loans, and to increase their levels efficiency in order to align with the requirements of a financial landscape more liberalized. In fact, these changes have demonstrated differences between banks in their adjustment process, materializing in their levels of efficiency and productivity. To cope with the new banking landscape, banks are required to improve their efficiencies.

It should be noted that the principal function of conventional banks is to collect deposits from depositors at a low interest rate, and borrow these deposits to the borrowers at higher interest rate. So the spread of the banks is the difference between the interest rate received from borrowers and the interest rate remunerated to the depositors (Yudistira D. (2004)).

In addition, the Islamic finance develops the same function of intermediation but the difference resides in the interest rate, thus, the Islamic banks doesn't receive and doesn't pay anything and the spread of those banks come from the agreement of sharing benefits with depositors and borrowers (Said (2012); Obeid (2010,2011), Mostapha (2011)).

In this sense, we could say that the services offered by Islamic banks are identical to those offered by traditional banks and the ultimate goal of both banks is looking for the performance of its products, but it depends on several factors including: the size, region, age of the bank, competition, innovation, the regulatory, bank governance, customer numbers, numbers of agencies, political and economic environment... (SamadA. and M. K. Hassan, 1999).

Therefore, conventional banks has several advantages over its Islamic homologue namely a long history that began in the mid-fifteenth century, the conventional banking spread is greater than Islamic by the interest rate, the large number of traditional banks in the world (Abdull-Majid and al., 2008; Johnes and al., 2009; Abdul-Majid et and., 2011a).

Despite these advantages, some literature suggests that Islamic banks are more efficient than conventional banks (Hassan and Bashir, 2003; Sarker (1999); Bashir (1999); Samad and Hassan, 1999; Yudistira(2004); Hussien (2004); Al-Muharrami(2008)).

In this regard, several researchers have attempted to measure the impact of competition on efficiency in banking using different methods parametric and non-parametric. Nevertheless, there are few researches that focus on the relationship between competition and efficiency in the MENA banking sectors. So, one of the main objectives and contributions of the present work will be to study the impact of competition on the efficiency of Islamic and conventional banks subject to several interpretations. In other words, the principal objective of the current study seeks to answer to different inquiries. The most important of which is the following: What is the impact of competition on the efficiency of Islamic and conventional banks of MENA region?

The choice of the sample is justified by the fact that the MENA region presents a very important research field for many reasons. First, it represents a bridge between Europe and Asia. Second, MENA region includes oil rich countries and the high number of Islamic banks and conventional banks which allows us to draw a comparison between the two types of banks.

This paper uses bank level data to study the relation between competition and efficiency of the banking sectors in 13 MENA countries. Our analysis comes in three stages. In a first stage, we assume a

degree of competition between Islamic and conventional banking using the test of Panzar and Rosse (1987), in a second stage, we rely on the stochastic frontier analysis (SFA) based on the intermediation approach to compute the cost efficiency score of 66 Islamic banks with 157 conventional banks across 13 countries over the period 2004–2013. In the last step, we predict the level of efficiency on the level of competition.

The structure of the paper is organized as follows: Section 2 provides a brief survey on former literature. Section 3 presents the model specification. Section 4 describes the data sources and variables descriptions. Section 5 discusses the empirical results. Conclusions are discussed in section 6.

2. LITERATURE REVIEW

There are few works that analyze the relationship between competition and bank efficiency of conventional banks and Islamic banks, but several studies have been conducted to measure the degree of banking competition in the different banking markets. Beginning with the study of Cetorelli (1999) who was interested in banking sector of USA and showed that there is a negative relationship between concentration and competition, and this result is observed only within a framework of Cournot competition. In his article "Competition and efficiency in a Unified European Banking Market" Bikker (2004) reaches similar results as Cetorelli (1999).

Therefore, Levy Yeyati and Micco, 2007 revealed that concentration would not reduce competition among banks in Latin America. However, according to the theory of contestable markets (Baumol 1982), there could be both concentrated and competitive market if the market is contestable. In addition, Jean Figuet and Lapteacru, 2009 analysed the influence of market power and efficiency of banks in the transmission of monetary policy in the countries of Central and Eastern Europe. They concluded that banks with a higher market power offer more loans.

Ali Mirzaei and Tomoe Moore, 2014 had investigated the driving forces of competition in banking sectors by distinguishing banks located in 146 countries over the period 1999-2011, they found out that a more concentrated banking system seems to force greater competition for advanced economies.

Also, many researchers have been conducted to measure bank efficiency in different banking markets focused on conventional banking. (Miller and Naulas, 1996; Berger and Humphrey, 1997; Chaffai and Dietsh, 1998; Dietch and Lozano-Vivas, 2000; Goddard and al., 2001; Grigorian and Manole (2002); Tazarki; Karray and Homrani (2002); Fries and Taci, 2005; Okuda and al., 2006; Drake and al., 2006; Bos and Kool, 2006).

But few researchers have been conducted to measure bank efficiency of Islamic banking either in isolation or in comparison to conventional banks. For example, Hassan (2005, 2006); Sufian (2009); Yudistria (2004); Viverita and al., 2007; Brown (2003); Mostafa (2007); Kamaruddin and al., 2008, Hassan and Hussein, 2003, Saaid and al., 2003 and Saaid (2005) have analyzed the efficiency of Islamic banks in the MENA region and Malaysia, Bahamas, Bangladesh, Indonesia and Gambia.

Bader (2008) has analyzed the efficiency of 21 countries: Algeria; Bahrain; Bangladesh; Brunei; Egypt; Gambia; Indonesia; Jordan; Kuwait; Lebanon; Malaysia; Pakistan; Qatar; Saudi Arabia; Senegal; Tunisia; Turkey; Yemen; Sudan; Iran and United Arab Emirates. He found out that no significant difference in efficiency between Islamic and conventional banks. Al-Muharrami (2008) indicates that Islamic banks of MENA region are more efficient than conventional banks. Using the SFA method Srairi

(2010) shows that Islamic banks are significantly less efficient than conventional banks. The same result founded by Mokhtar and al., 2007, 2008 but with DEA method.

In a recent study of 2013, Nabilah Rozzani and Rashidah Abdul Rahman examined the bank efficiency Using CAMELS rating. Their study conducted on Malaysian banks, for the period 2008-2011. And the results indicated that the levels of composite performance achieved by both conventional and Islamic banks in Malaysia are very similar. In addition, it showed that the efficiency of conventional banks improved following the reduction of operational costs, while the performance of Islamic banks s improved following the banks of the reduction in seize and an increase in credit risk.

Kablan and Yousfi, 2013, found out that market power and profitability have a positive impact on Islamic banks efficiency and in general Islamic banks are efficient with an average efficiency score of 92%, but there are differences across regions and the most efficient region is Asia (Pakistani and Malaysian banks),(96%).MuhamedAzeemQureshi and al (2012) showed that Islamic banks of Pakistan are more cost efficient and less revenue efficient.

Eisazadeh and Shaeri (2012) proved that a stable macroeconomic environment, deeper financial development, higher degrees of market competition, and stronger institutions would help improve the bank efficiency levels.

3. MODEL SPECIFICATIONS

3.1 *The Determinants of bank competition: The Panzar-Rosse Model (1987)*

To measure banking competition many authors used the test Panzar and Rosse (1987) such as: Molyneux et al, 1994; Thierry Buchs and Johan Mathisen, 2003; Gelos Roldós (2002); Hempell (2002); Vesala (1995) and Barajas et al ,2000. In fact, Shaffer (1989) was the first to apply the H-statistic on U.S. banks over the period 1941 to 1975, concluding that the U.S. market is perfectly competitive. Following an approach of the new theory of industrial organization, the H-statistic of Panzar and Rosse (1987) allows appreciating the degree of competition in the banking market. In other words; it measures the market power of banks. The Panzar and Rosse test is based on an estimate of an equation that links total revenues to input prices; H equals the sum of revenue elasticities.

$$H = \sum_j \frac{\partial R / R}{\partial W_j / W_j} \quad (1)$$

With: W means the prices of the factors of production and R is the revenue function for any firm. Moreover the H-statistic can take different values depending on the competitive market equilibrium. It is equal to 1 if the market is perfectly competitive. It means that income varies in proportion to the input prices. That is to say, any increase of 1 % of the price of production factors causes a 1% increase in the average cost of production quantities. However, a negative value of H means a monopoly or collusive oligopoly. This market situation implies that any increase in the cost of factors of production stimulates a reduction in total revenue. Furthermore, a value between 0 and H 1 denotes a monopoly situation competition, it is a middle market. Indeed, any increase in production costs of inputs causes a less than proportionate increase in revenues.

Thereby, H-statistic of Panzar and Rosse (1987) is based on the following assumptions: "The adoption of intermediation approach to describe the bank production, (Gischer and Stiele, 2009." Besides,

banks offer various products and services. Lastly, they operate in long-term equilibrium. Thus, the function of income as it is described in the work of De Dandt and Davis, 2000 is written as follows:

$$\text{LnRT}_{it} = \sum_{j=1}^3 \alpha_j \text{LnF}_{it}^j + \sum_{k=1}^2 \beta_k \text{LnS}_{it}^k + \sum_{L=1}^3 \gamma_L \text{E}_{it}^L + \varepsilon_{it} \quad (2)$$

With RT means the total income (interest and non-interest), F is the price of various inputs, S is the scale measuring the ability of banks operating variables, E includes all the exogenous

$$H = \sum_{j=1}^3 \alpha_j \quad (3)$$

Variables that isolate and take into account the specificity of each bank, $t = 1, \dots, T$ with T the number of years considered, ε_{it} the error term. . And $i = 1, \dots, N$ where N is the number of banks taken into account.

The major advantage of this test is that it is robust and does not require the identification market. However, the disadvantage is that the results are influenced by the monopolistic competition. So, we keep the following test to measure the degree of banking competition of the MENA banking.

3.2 The determinants of bank efficiency: Parametric Frontier

In the economic literature, there are two approaches related to measuring bank efficiency: the non-parametric approach (mathematical programming) and the parametric approach (an econometric method). For our study we keep this last method to measure the efficiency scores of Islamic and conventional banks in the MENA region.

The SFA method is an econometric method based on the determination of a parametric frontier bringing together all the most efficient banks in the sample. Aigner and Chu, 1968 are the founders of this approach. The parametric approach differs from the DEA approach; it takes the error terms into account which makes the results more reliable. This approach will allow us to estimate not only the efficiency of cost but also efficiency of profit and interest income.

Indeed, the stochastic frontier cost function is written as follows:

$$\text{LnC} = f(w, y) + v_c - u_c \quad (4)$$

Where, C: the total cost, f is the chosen functional form of the cost function, w is the vector of input prices, y is the vector of outputs, v_c are independently distributed noises under the normal distribution $N(0, \sigma v^2)$, u_c : inefficiency defined positively with an asymmetric and independent of the distribution.

Moreover, the major advantage of this method of measuring bank efficiency is that it takes into account the error terms in the cost function and in the function of profit and interest income. It also offers the possibility to calculate the efficiency of profit and interest income. Furthermore, it can solve the problem of negative profit. However, since it is an econometric method, it requires a high number of observations. The choice between these two methods is very difficult, but its use is justified by the type of

market bank treated and the type of efficiency calculated. Generally, the method of DEA is used to measure cost efficiency and the parametric method is to measure the efficiency and profit interest income.

4. DATA SOURCES AND VARIABLES DESCRIPTIONS

Our sample consists of a panel of observations over a period of 10 years (2004-2013) of 223 commercial banks from 13 countries in MENA region. It was selected from the database bank scope and from the different website of banks with annual frequency. The data are expressed in millions of U.S. dollars. Three selection criteria were developed taking into account the objectives of the study and data availability constraints. The first criterion was to list only the countries in the MENA region (Middle East and North Africa) in order to have a sample that meets our problems. The second selection criterion was to select only commercial and Islamic banks. Finally, we excluded financial institutions specialized in leasing, and in mortgage lending. This selected criterion was to limit the size of the sample in 13 countries, 157 conventional banks and 66 Islamic banks. The study period was spread over an interval of ten years. This choice was based on data covering the period 2004-2013. The choice of the period was arbitrary.

4.1 The PR-H statistic

To estimate the level of banking competition, we will use the test of Panzar and Rosse (1987) in view of the advantage of this method, and the availability of data. In addition, most of the studies have used this test as a measure of banking competition, such as the study of Molyneux and al, 1994; Suominen (1994); Vesala (1995); Bikker and Groeneveld 1998; Barajas and al, 2000; Gelos and Roldos, 2002. Also we will use the banking intermediation approach to estimate the level of competition. So, we consider deposits as factors of production. That is to say, as an input that is used to finance the lending activity. Therefore, we regress the interest income on the prices of factors of production by adding control variables such as total assets and the share of the loan amount to total assets.

The regression equation can be written as follows:

$$\ln R_{it} = c_i + \mu_t + \alpha_1 \ln w_{1,it} + \alpha_2 \ln w_{2,it} + \alpha_3 \ln w_{3,it} + \alpha_4 \ln AT_{it} + \alpha_5 Cr_{it} + \varepsilon_{it} \quad (5)$$

R: total revenue = total interest revenue/ total assets; W1: labor costs = total personnel expenses / total assets; W 2: Cost of equity = total interest expenses / total deposits; W 3: Cost of capital = total other operating expenses/ total assets. α_1, α_2 and α_3 are the three entry price of the statistic H ($H = \alpha_1 + \alpha_2 + \alpha_3$). To check the specific behavior of the banks we have also added some exogenous variables, as AT total assets and Cr the share of credit amount on total assets. The first variable is a scale variable measuring the ability of functioning of the bank, since the financial result depends on the size of those banks. Second variable is an exogenous variable that measures the involvement of the bank on the local credit market and takes into account the fact that the interest obtained following the granting of Credits represents the essential component of the bank's interest income.

In this case, we will conduct an econometric study on panel data spanning the period 2004-2013 and on a sample of 223-owned banks in the MENA region.

4.2 Estimated level of efficiency

In this section, we will estimate the level of efficiency of banks in MENA region, using the parametric approach. We adopt, as to estimate the banking competition, the intermediation approach proposed by Sealey and Lindley (1977). It is supposed that the bank collects deposits to transform them, using labor and capital, into loans. Thus, for a sample of 223 banks, the cost efficient frontier is defined as follows: $LnC = f(w, y) + v_c - u_c$ Where: CT is the total cost of firm i, Y_i is the level of output, W_i is the input prices u_c : the inefficiency v_c : the random shock. F(.) Function takes the Cobb-Douglas functional form.

The logarithmic form of the stochastic frontier is written as follows:

$$\ln CT_{it} = \alpha_0 + \alpha_1 \ln y_{1it} + \alpha_2 \ln y_{2it} + \beta_l \ln(w_{Lit}) + \beta_k \ln(w_{kit}) + \beta_f \ln(w_{Fit}) + v_{it} + u_{it} \quad (6)$$

With $i = 1, \dots, X$ number of banks used in the study. w_L is the price of labor (L) and w_F represents the price of financial capital (F), w_k is the price of physical capital (C), y_1 indicates total loans, CT is the total banking cost, $\alpha_0, \alpha_1, \alpha_2, \beta_L, \beta_k, \beta_f$ are the coefficients to estimate, v_i represents the random error terms independently distributed according to the normal law $N(0, \sigma^2 v)$, u_i means the terms and measuring the inefficiency that are defined positively with a semi normal distribution $N(0, 2u)$. The table 1 summarizes the different variables used.

4.3 Correlation between competition and banking efficiency

In this section, we will test the relationship between efficiency and competition of Islamic banking in the MENA region. So, we will use levels of bank competition as explanatory variables and efficiency levels as variables to explain. We regress for the same period and the same sample with the following model:

$$EC_{ip} = c + \alpha_1 H_{ip} + \alpha_2 \text{islamic banks} + \alpha_3 \text{Assets}_{ip} + \alpha_4 \text{loans}_{ip} + \alpha_5 \text{deposits}_{ip} + \varepsilon_{ip} \quad (7)$$

With i and p are the indices of bank i and country p , H is the level of competition determined in section 1. We are also adding control variables to take into account the presence of conventional banks which takes the value 0 if it's a conventional bank, to take into account the size of the bank we add Assets which represent total assets of each bank to the total assets of all banks, loans denotes total loans in the structure to total assets of each bank, Finally, Dep indicates the deposits to total assets.

5. RESULTS

5.1 Estimate of the level of the banking competition for the MENA region

We present in table 2 and 9, the results stemming from the econometric analysis. The majority of variables are significant in 1%. The signs of the coefficients are the same for most part of the countries. Besides, by reference to the models of Panzar and Ross, the majority of the made estimations conclude the hypothesis of monopolistic competition. Consequently, any increase of the costs of the inputs leads to a less proportional increase of income. With the exception of Iraq and Kuwait which presents a competition of monopoly or collusive oligopoly, this situation of market involves that any increase in prices of the factors of production causes an increase of the production cost. These results coincide with

the current literature (Molyneux and al, 1994; De Bandt and Davies, 2000; Bikker and Haaf, 2002; Claessen and Laeven, 2004).

To complete our study we make a comparative analysis between conventional and Islamic banks. Most of the countries report an H -statistic between 0 and 1, which suggests that monopolistic competition is the level of competition in Islamic and conventional banks of MENA banks. We can notice from our results that the competition between Islamic banks is higher than his homologue conventional for some countries like: Bahrain, Egypt, Jordan, Lebanon, Palastine, Qata, Syrian Arab Republic, Tunisia, United Arab Emirates, and Saudi Arabia. This can be explained by the emergence of Islamic banks especially after the crisis of subprime and conversion of some conventional banks in Islamic banks. Also, the liberalization and deregulation have intensified competition between Islamic banks and conventional banks.

5.2 Estimation of the level of efficiency

The expected values for cost function parameters used to compute the distance of each observation from the efficient frontier. The score of efficiency ranges from 0 to 1. For instance, a score of 0.965 means that the unit can be considered efficient to 96.5% compared to the "best" of his group, which means that it could increase its productive performance of 3.5%. Table 4 shows the main efficiency scores by commercial and Islamic banks throughout the period (2004-2013). The results obtained on panel data suggest that banks in our sample announce quite different degrees of efficiency.

By reading table 4, we can conclude that for the majority of countries the Islamic banks are more efficient than the conventional banks. This result appears mostly after 2008 year of the banking crisis. In Algeria, for example, conventional banks are more efficient by contribution to Islamic banks; the same case is for Bahrain, Egypt, Kuwait, Qatar, and Palestine. This result is the same discussed on MENA region in the sense that, in this region, Islamic banks are more efficient than conventional institutions. These differences in efficiencies between banks in the MENA region are explained by the difference in cost control, management, and resource allocation. These fluctuations of efficiencies scores for each bank of the sample are due to the effect of financial liberalization and crisis in the banking sectors.

The results obtained on panel data suggest that banks of our sample, whatever conventional or Islamic, announce quite different degrees of efficiency. Over the period studied, the countries that have the highest scores efficiency are the Syria (90.4%; 2004 for conventional banks VS 95.7%; 2004 for Islamic banks), Tunisia (85.4% VS 94.3%. 2004) and Algeria (85.1% VS 71.1%; 2004)

This disparity in efficiency between the banks can be due to the problems caused by non-performing loans. Indeed large conventional banks are generally less efficient than Islamic banks that are characterized by a small percentage of non-performing loans.

By reading also the graphics 1, we can notice that before and after the crises of subprime, the conventional banks preserve a high cost efficiency than his homologue Islamic and this result is significant in all years of the article. These can be justified by the strong experience that conventional made and the diversified portfolios that have the conventional banks. These results coincides with conclusions from recent studies using SFA method (Abdul-Majid and al 2008 - 2011; Johnes and al 2009).

5.3 Correlation between competition and banking efficiency

The regression models are estimated using the fixed effect estimators and the R^2 adjusted for our regression is very low. In fact, there is a problem mentioned in the majority of work on the issue of the correlation between bank competition and bank efficiency.

As illustrated in table 5, bank competition has a positive impact on the efficiency determined by the approach of the stochastic frontier. Our results coincide with those of Fecher and Pestieau (1993), Lon Lapteacru NYS Emmanuelle (2011), and Laurent Weill (1998). In fact, in the MENA region, the behavior of banks is influenced by competition and the search for efficiency seems to be a priority especially after the crisis of subprime.

As for Conventional banks, the results confirm that they are more efficient in cost management. However, if they hold more deposits, they are less efficient in cost management. For assets, this variable, is statistically not significant, we conclude that our result is not coherent with a priori expectations that it is positively linked with bank's efficiency (Altunbas et al., 2000; Berger & DeYoung, 1997; Girardone et al., 2004). Thus, big banks are less efficient than small one and this due to risk enterprise by big one to raise her portfolio.

A very important result is the confirmation of the hypothesis of the negative effect of loans on the efficiency cost. The coefficient is economically important and statistically highly significant. This result coherent to the study of Mester (1996) and Girardone et al. (2004).

6. CONCLUSIONS

Throughout this paper we tried to study the relationships between competition and bank efficiency for the Middle East and North Africa conventional and Islamic banking industry. We focused on a sample of banks operating in 13 MENA countries over the period 2004-2013.

We made several regressions after capturing this relationship, the first regression allowed us the competitive conditions of MENA banking markets, and we employed the non-structural Panzar-Rosse statistic. The estimated H-statistic of the majority of MENA countries indicating monopolistic competition. Such results, confirmed by the country level estimations, are consistent with the current literature. Then, we estimated the level of efficiency of these banks by the method of stochastic frontier. The third regression concluded a negative causality between bank efficiency and competition. Thus, in accordance with the previous literature in banking, this supports the existence of a positive link between competition and efficiency in banking.

In addition, our study showed that bank efficiency is indeed explained by the total loans, the price of labor, the price of borrowed funds and the price of physical capital.

In fact, the study showed that commercial banks in the Middle East and North Africa region are efficient on average and that Islamic banks are more efficient than conventional banks. In conclusion, we found out; that the MENA region is composed mostly of banks moderately efficient which leads us to wonder about the effect of reforms and banking crises on the efficiency of those banks.

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Table1: Efficiency variables

Variable	Notation	Expression
Total costs	CT	The sums of total personnel expenses+ total interest expenses+ total other operating expenses.
The price of labour	w_L	As data on the number of employees are not available, the price of labor, w_L , is measured by the ratio of total personnel expenses on total assets
The price of borrowed funds	w_F	the ratio of total interest expenses on total deposits
The price of physical capital	w_k	the ratio of total other operating expenses on total assets
Total loans	y_1	total loans
Total OtherEarningAssets	y_2	Total OtherEarningAssets

Table 2: level of competition imposed by conventional banks

	ALG	BH	EGY	IRQ	JO	KW	LB	PL	QA	SA	SY	TN	UAE
Lw1	0.03	0.37 *	0.33 *	1.18 *	0.04	0.22 **	0.11	0.58	0.05	0.36 *	-0.8 **	0.28 **	0.29 *
Lw2	0.19 *	-0.08	-0.04	-0.28 *	-0.05	-0.04	0.01	0.04	-0.18 *	0.12 *	0.01	0.09 *	-0.10 *
Lw3	0.003	-0.11	0.23 *	-0.26 ***	0.02	-0.04 *	-0.08	-0.69 *	0.08	-0.05	-0.05	-0.22 **	0.12 **
Lat	-0.30 *	0.01	0.13 **	-0.03	0.19 *	0.10 *	-0.07 *	-0.104	0.144*	0.1 ***	0.37	-0.26 *	0.23
Cr	0.02 *	0.03 *	0.01 *	-0.23 *	0.02 *	-0.002	-0.01 *	0.01 ***	0.01 *	-0.002	0.03 *	0.13 *	0.01 *
Cons	-1.72 *	-3.43 *	-3.18	2.51 **	-6.27 *	-5.69	-2.8 *	-3.2 ***	-4.06 *	-4.43 *	-14.7 *	-2.11 *	-1.61 *
H	0.25	0.18	0.52	0.64	0.01	0.14	0.04	-0.07	-0.05	0.43	-0.84	0.15	0.31
Log lik	-48.76	-151.3	-75.39	-16.37	26.4	26.66	-30.07	8.79	7.43	45.02	-33.25	-20.39	-1.98
Nr obs	120	139	115	36	97	54	111	20	63	58	43	89	138

Note: Countries in the sample are: Algeria (ALG), Bahrain (BH), Egypt (EGY), Iraq (IRQ), ISLAMIC REPUBLIC OF IRAN (IRN), Jordan (JO), Kuwait (KW), LEBANON (LB), Morocco (MA), oman (OM), Palastine (PL), Qatar (QA), Saudi Arabia (SA), SYRIAN ARAB REPUBLIC (SY), Tunisia (TN), and United Arab Emirates (UAE). *, **, *** Denotes year estimate significantly different from zero at the 1%, 5% or 10% level.

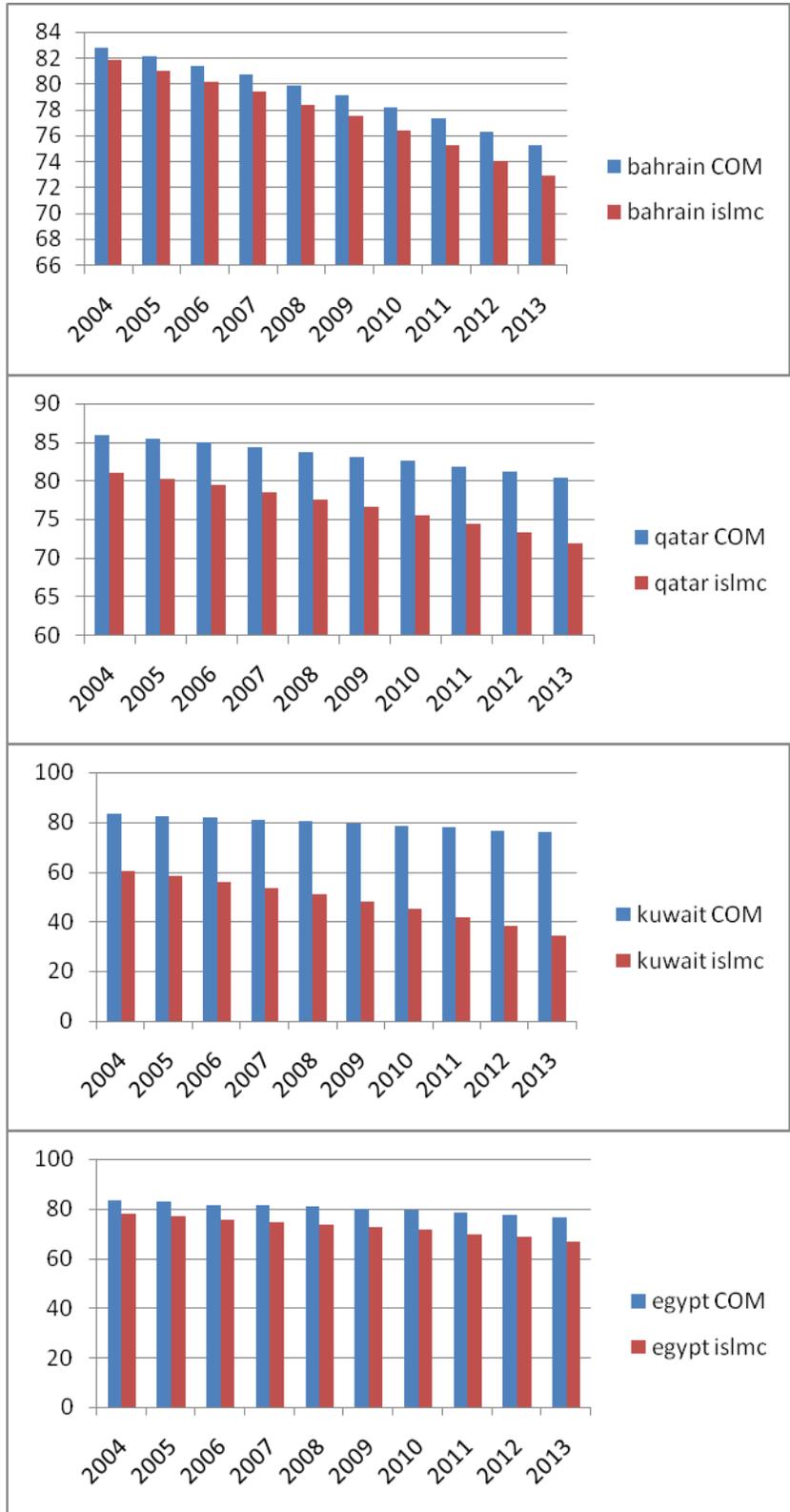
Table 3: level of competition imposed by Islamic banks

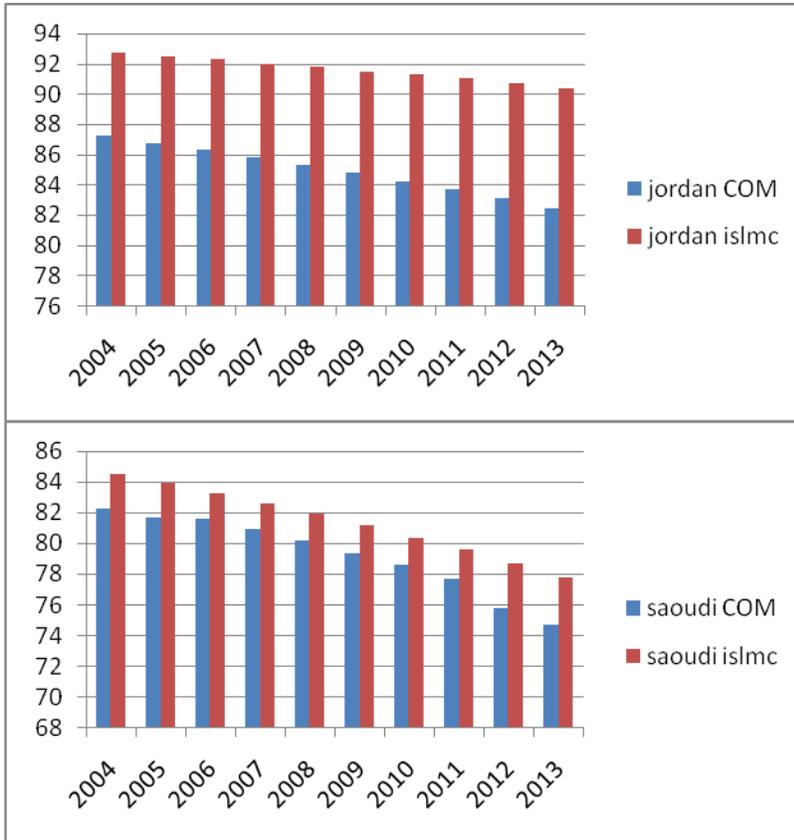
	ALG	BH	EGY	IRQ	IRN	JO	KW	LB	PL	QA	SA	SY	TN	UAE
Lw1	0.25	0.46 *	0.02	0.12	0.17 *	0.75 *	1.96 ***	0.49 *	0.40 *	1.63 *	0.76 *	0.86 *	0.13	0.83 *
Lw2	0.05	- 0.002	0.40 *	0.11 *	-0.02	-0.5 ***	-1.22 ***	-0.67* *	0.13 *	-0.94* *	0.14 *	-0.69 *	0.47 *	-0.01
Lw3	0.47 *	-0.25 ***	-0.11	-0.28	0.17 **	0.15	-0.8 **	0.23 *	0.24 **	-0.26	-0.41 *	0.001 ***	-0.004	-0.13
Lat	0.30	0.24	0.96 *	-0.05	-0.08 *	-0.44	0.99 *	-0.32 *	0.22 *	0.19 **	0.31 *	-0.56 ***	-1.19 *	0.28 **
Cr	0.12 **	0.14 *	0.02 ***	0.01	0.01 *	-0.03 ***	-0.001	-0.01	0.004 **	0.04 *	-0.01	0.023 *	-0.001	0.04 *
Cons	-5.41 *	-3.72 *	-23.7 *	-4.9 **	-1.45 *	12.5 *	-26.4 **	9.89 *	-4.75 *	9.30 *	-4.14 *	0.16	7.66 **	-6.91 *
H	0.77	0.208	0.31	-0.05	0.32	0.4	-0.01	0.05	0.77	0.43	0.49	0.171	0.596	0.69
Log lik	-11.02	- 303.5	-3.39	-22.29	-38.10	-37.31	-53.05	21.53	28.55	-2.85	-28.53	-12.57	10.41	-143.6
Nr Obs	30	177	40	38	74	24	30	13	18	34	54	23	17	99

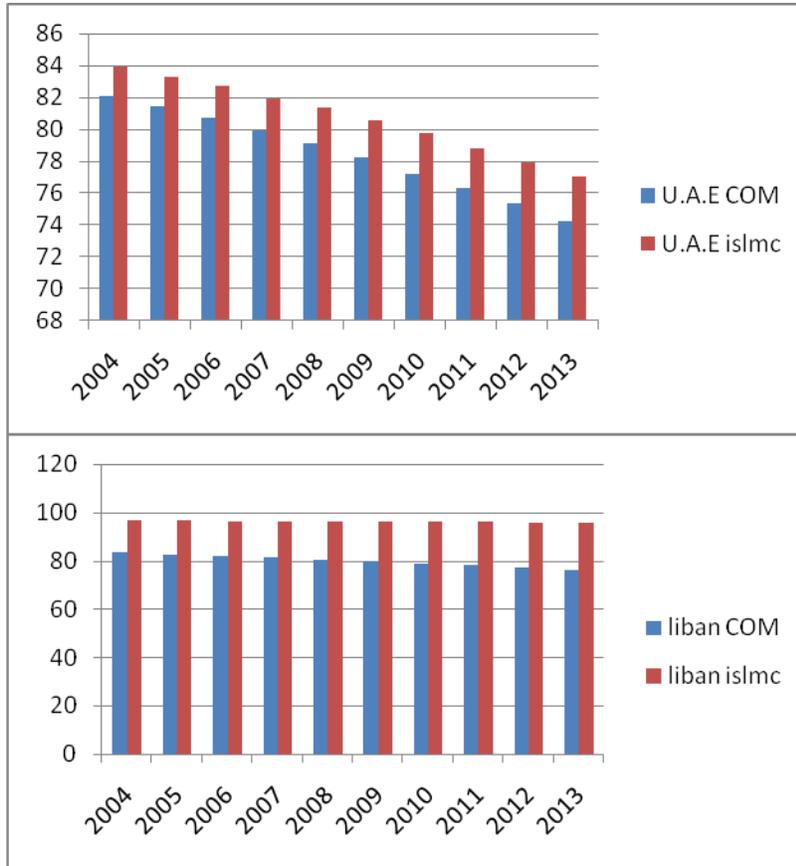
Note: Countries in the sample are: Algeria (ALG), Bahrain (BH), Egypt (EGY), Iraq (IRQ), ISLAMIC REPUBLIC OF IRAN (IRN), Jordan (JO), Kuwait (KW), LEBANON (LB), Palestine (PL), Qatar (QA), Saudi Arabia (SA), SYRIAN ARAB REPUBLIC (SY), Tunisia (TN), and United Arab Emirates (UAE). *, **, *** Denotes year estimate significantly different from zero at the 1%, 5% or 10% level.

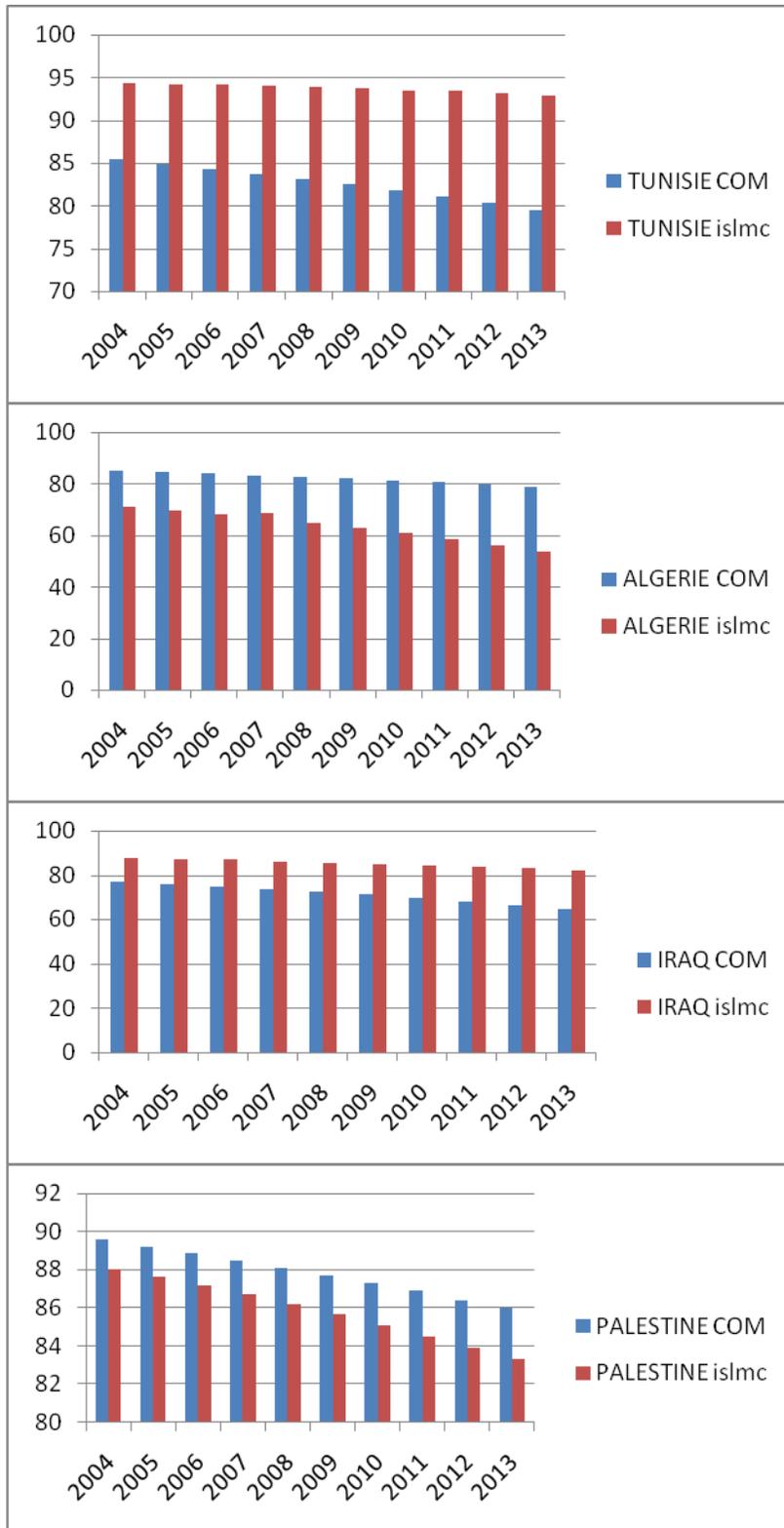
Table 4: Average cost efficiency according to the parametric method.

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
bahrain	COM	82,8	82,1	81,4	80,7	79,9	79,1	78,2	77,3	76,3	75,3
	islmc	81,8	81	80,2	79,4	78,4	77,5	76,4	75,3	74,1	72,9
egypt	COM	83,5	82,9	81,2	81,5	80,8	80	79,2	78,3	77,4	76,5
	islmc	77,7	76,8	75,7	74,7	73,6	72,4	71,4	69,8	68,4	66,8
qatar	COM	85,9	85,4	84,9	84,3	83,7	83,1	82,5	81,8	81,1	80,3
	islmc	81	80,2	79,4	78,5	77,6	76,6	75,5	74,4	73,2	71,9
kuwait	COM	83,1	82,4	81,7	81	80,2	79,4	78,6	77,7	76,7	75,8
	islmc	60,5	58,3	56	53,5	50,9	48	45	41,7	38,1	34,3
jordan	COM	87,2	86,7	86,3	85,8	85,3	84,8	84,2	83,7	83,1	82,4
	islmc	92,7	92,5	92,3	92	91,8	91,5	91,3	91	90,7	90,4
saoudi	COM	82,3	81,7	81,6	80,9	80,2	79,4	78,6	77,7	75,8	74,7
	islmc	84,5	83,9	83,3	82,6	81,9	81,2	80,4	79,6	78,7	77,8
U.A.E	COM	82,1	81,4	80,7	79,9	79,1	78,2	77,2	76,3	75,3	74,2
	islmc	83,9	83,3	82,7	81,9	81,3	80,5	79,7	78,8	77,9	77
liban	COM	83,3	82,7	82,1	81,3	80,6	79,8	78,9	78,1	77,2	76,2
	islmc	96,5	96,5	96,4	96,2	96,3	96,2	96,1	96	95,9	95,8
Syrie	COM	90,4	90,1	89,8	89,4	89,1	88,8	88,4	88	87,6	87,2
	islmc	95,7	95,6	95,5	95,4	95,3	95,2	95,1	95	94,9	94,8
TUNISIE	COM	85,4	84,9	84,3	83,7	83,1	82,5	81,8	81,1	80,3	79,5
	islmc	94,3	94,2	94,2	94	93,9	93,7	93,5	93,4	93,2	92,9
ALGERIE	COM	85,1	84,5	83,9	83,3	82,7	81,9	81,2	80,5	79,7	78,8
	islmc	71,1	69,7	68,1	68,4	64,6	62,7	60,7	58,5	56,2	53,7
IRAQ	COM	77,1	76,1	74,9	73,7	72,4	71,1	69,7	68,2	66,5	64,8
	islmc	87,8	87,3	86,8	86,2	85,6	85	84,4	83,7	83	82,2
PALESTINE	COM	89,6	89,2	88,9	88,5	88,1	87,7	87,3	86,9	86,4	86
	islmc	88	87,6	87,2	86,7	86,2	85,7	85,1	84,5	83,9	83,3









Graph1: Evolution of efficiency scores during the period 2004-2013

Table 5: Results of the relation between competition and efficiency

Variable	Efficiencycost			
	Coefficient	Std.dev.	T	P > t
H statistic	3.405759	1.215208	2.80	0.005*
islamicbank	-.1117019	1.060871	-0.11	0.916
Assets	-4.227491	20.05454	-0.21	0.833
Loans	-.0732178	.0242058	-3.02	0.003*
Deposit	-.0009951	.0111598	-0.09	0.929
Cons	83.48539	1.209005	69.05	0.000
R^2 . Adj = 0.0150 Nbre. D'obs =1651 Prob> F= 0.0003 Prob. Of haussman test = 0.0420				

* Denotes year estimate significantly different from zero at the 1% level.

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Amal Bakour received her master in finance from Business School of Tunis in 2012, and she is actually a PhD student at Business School of Tunis. Her research interests include prudential regulation, bank risk, Islamic and conventional finance.

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