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**Do Islamic Banks Have Greater Market Power ?**

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# **Do Islamic Banks Have Greater Market Power ?**

**This version: February 2009**

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## **Do Islamic Banks Have Greater Market Power ?**

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### **Abstract**

The aim of this paper is to investigate whether Islamic banks have greater market power than conventional banks. Indeed Islamic banks may benefit from a captive clientele, owing to religious principles, which would be charged greater prices. To measure market power, we compute Lerner indices on a sample of banks from 17 countries in which Islamic and conventional banks coexist over the period 2000-2007. Comparison of Lerner indices shows no significant difference between Islamic banks and conventional banks. When including control variables, regression of Lerner indices even suggests that Islamic banks have a lower market power than conventional banks. A robustness check with the Rosse-Panzar model confirms that Islamic banks are not less competitive than conventional banks. The lower market power of Islamic banks can be explained by their different norms and their different incentives.

**JEL Codes:** G21, D43, D82.

**Keywords:** Islamic banks, Lerner index, Bank Competition.

## **I. Introduction**

There is a wide expansion of Islamic banks in the recent decades. Since the creation of the first modern Islamic bank in 1975, the number of these institutions has increased to over 300 operating in more than 75 countries. Total assets of Islamic banks worldwide are estimated at about 300 billion USD with an annual growth rate of more than 15% over the last decade (Chong and Liu, 2009).<sup>2</sup>

Despite this considerable development, the academic literature - though increasing - remains scarce on the economic implications of Islamic banking in comparison with conventional banking. Indeed it is of utmost interest to know whether Islamic banks may differ than conventional banks for economic issues, and may therefore foster or hamper economic development in comparison to conventional banks.

In this area, a key question concerns the market power of Islamic banks. Market power is the ability of a firm to influence the price of products and is therefore directly linked to competition, as greater competition reduces market power. Islamic banks may have a greater market power than conventional banks. Indeed they can benefit from a clientele with a more inelastic demand, coming from religious principles. Most countries with Islamic banks have the ongoing presence of few Islamic banks with conventional banks. Therefore, religious clients may be more captive to Islamic banks following their will to respect the Shariah, than non-religious clients to all categories of banks. El Gamal (2007) mentions that some providers and observers of the Islamic banking industry refer to these additional charges and rates for clients of Islamic banks as “the cost of being Muslim”, and stresses the possibility of such overpricing.<sup>3</sup> Kuran (2004) supports this view by observing that Turkish banks managed to attract quickly one percent of total deposits in a few months, in spite of a small number of branches.

The comparative analysis of market power between Islamic and conventional banks is a fundamental issue for economic development, as several studies have shown the importance of market power for economic development (Petersen and Rajan, 1995; Jayaratne and Strahan, 1996; Cetorelli and Gambera, 2001). In a nutshell, the argument is that greater bank competition enhances access to credit at lower cost that leads to more borrowing for firms, which promotes growth. More generally, an enhancement of bank competition can favor financial development by increasing access to financial products and, as literature has shown

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<sup>2</sup> For a complete reference on Islamic banking, see Iqbal and Mirakhor (2007).

<sup>3</sup> In an interview, El-Gamal indeed argues that he worries about the possibility that “some sectors of the Muslim American population might be willing to pay \$500 more to buy peace of mind”. (<http://www.universityislamicfinancial.com/file/News/Voiceof%20AmericaArticle%2004.09.2007l.pdf>)

a positive link between financial development and economic development (Levine, 2005), then contributes to foster economic development.

The aim of this research is therefore to measure and compare the market power of Islamic banks and conventional banks. To do so, we compute Lerner indices on a wide cross-country sample of banks from 17 MENA and Southeastern Asian countries, in which Islamic banks and conventional banks coexist, over the period 2000-2007. The Lerner index equals the price minus the marginal cost, divided by the price. It has been widely used in recent studies focusing on market power in banking (Fernandez de Guevara, Maudos and Perez, 2005; Fernandez de Guevara and Maudos, 2007; Solis and Maudos, 2008).

To our knowledge, no empirical work has ever investigated this issue. Nevertheless, a couple of papers can be loosely related to our work, as they also provide elements of comparison between Islamic and conventional banks through empirical works at the bank level. In their analysis of efficiency of Turkish banks for the period 1990-2000, El-Gamal and Inanoglu (2005) notably compare efficiency between banks from different types, including a few Islamic banks (the so-called “special finance houses”). They find no significant difference in efficiency between Islamic banks and other banks. Cihak and Hesse (2008) perform a comparative analysis of Islamic and conventional banks in terms of financial stability. They compare the Z-score, which is an inverse measure of the bank’s probability of failure, for a sample of banks from 18 countries. They find that small Islamic banks are financially stronger than small conventional banks, but large conventional banks are financially stronger than large Islamic banks. Finally, Olson and Zoubi (2008) compare the accounting ratios of Islamic and conventional banks for the Gulf Cooperation Council countries. They notably conclude in favor of a greater profitability for Islamic banks.

The rest of the paper is organized as follows. Methodology is reported in section 2. Section 3 describes the data. The empirical results are shown in Section 4. We finally provide some concluding remarks in section 5.

## **II. Methodology**

Empirical research on the measurement of bank competition provides several tools, which can be divided into the traditional Industrial Organization (IO) and the new empirical IO approaches. The traditional IO approach proposes tests of market structure to assess bank competition based on the Structure Conduct Performance (SCP) model. The SCP hypothesis

argues that greater concentration causes less competitive bank conduct and leads to greater profitability of the bank. According to this, competition can be measured by concentration indices such as the market share of the largest banks, or by the Herfindahl index. These tools were widely applied until the 1990s.

The new empirical IO approach provides non-structural tests to circumvent the problems of the measures of competition provided by the traditional IO approach. These latter measures suffer from the fact that they infer the degree of competition from indirect proxies such as market structure or market shares. In comparison, non-structural measures do not infer the competitive conduct of banks through the analysis of market structure, but rather measure banks' conduct directly. The measures from the new empirical IO include the Rosse-Panzar model, which provide an aggregate measure of competition, and the Lerner index, an individual measure of market power.

In our work, we compute the Lerner index as we want to measure market power of each bank of our sample. The Lerner index has been computed in several recent studies on bank competition (e.g. Maudos and Fernandez de Guevara, 2004, 2007; Carbo et al., 2009). It is defined as the difference between the price and the marginal cost, divided by the price.

The price is computed by estimating the average price of bank production (proxied by total assets) as the ratio of total revenues to total assets, following Fernandez de Guevara, Maudos and Perez (2005) and Carbo et al. (2009) among others. The marginal cost is estimated on the basis of a translog cost function with one output (total assets) and three input prices (price of labor, price of physical capital, and price of borrowed funds). One cost function is estimated for each year to allow technology to change over time. Symmetry and linear homogeneity restrictions in input prices are imposed. The cost function is specified as follows:

$$\ln TC = \alpha_0 + \alpha_1 \ln y + \frac{1}{2} \alpha_2 (\ln y)^2 + \sum_{j=1}^3 \beta_j \ln w_j + \sum_{j=1}^3 \sum_{k=1}^3 \beta_{jk} \ln w_j \ln w_k + \sum_{j=1}^3 \gamma_j \ln y \ln w_j + \varepsilon$$

where  $TC$  denotes total costs,  $y$  total assets,  $w_1$  the price of labor (the ratio of personnel expenses to total assets)<sup>4</sup>,  $w_2$  the price of physical capital (the ratio of other non-interest expenses to fixed assets),  $w_3$  the price of borrowed funds (the ratio of interest expenses to all funding). Total costs are the sum of personnel expenses, other non-interest expenses and interest expenses. The indices for each bank have been dropped from the presentation for the

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<sup>4</sup> As the Bankscope database does not provide information on the number of employees, we use this proxy variable for the price of labor following Maudos and Fernandez de Guevara (2004, 2007).

sake of simplicity. The estimated coefficients of the cost function are then used to compute the marginal cost (MC) as follows:

$$MC = \frac{TC}{y} \left( \alpha_1 + \alpha_2 \ln y + \sum_{j=1}^3 \gamma_j \ln w_j \right)$$

Once marginal cost has been estimated and price of output computed it is able to calculate the Lerner index for each bank and obtain a direct measure of bank competition.

### III. Data

The sample used in this study includes the commercial, cooperative and savings banks of 17 countries (Bahrain, Bangladesh, Brunei, Indonesia, Iran, Jordan, Kuwait, Malaysia, Mauritania, Qatar, Saudi Arabia, Sudan, Tunisia, Turkey, United Arab Emirates, Yemen), in which Islamic banks and conventional banks coexist, over the period 2000-2007.

We use the Bankscope database to collect data from financial statements of the banks, in line with former cross-country studies including Islamic banks (Al-Muharrami, Matthews and Khabari, 2006; Viverita, Brown and Skully, 2007; Cihak and Hesse, 2008). We use unconsolidated accounting data of banks.

We adopt the Tukey box-plot, based on the use of interquartile range to clean data: banks with observations out of the range defined by the first and third quartiles that are greater or less than twice the interquartile range were dropped for each input price. We also perform some truncations for the Lerner indices. All outliers were dropped. These criteria produce a sample of 1301 observations for 264 banks, with 135 observations for 34 Islamic banks and 1166 observations for 230 conventional banks. The sample is described by country and by type of banks in table 1.

Table 2 displays summary statistics for the variables adopted in the estimations. A striking observation is the similarities of both types of banks. No significant difference in bank size can be observed. The mean Islamic bank has 3.27 million USD of total assets to be compared to 3.78 million USD for the mean conventional bank. We also observe very similar mean input prices for labor and physical capital. The only difference concerns the price of borrowed funds which is greater for conventional banks (4.93% vs. 3.50% for Islamic banks). This dissimilarity can be relied to the observation of a greater equity to assets ratio for Islamic banks (14.72% vs. 10.95% for conventional banks). Indeed, as Islamic banks rely more on

equity, they may have lower charges on borrowed funds. Finally, we observe a major difference for activities with the analysis of the ratio of loans to investment assets, which is by far greater for conventional banks. This is in line with the different activities practiced by Islamic banks and conventional banks. Both these latter points suggest including the ratios of equity to assets and of loans to investment assets in the estimations explaining market power, as they constitute key differences between both types of banks.

## **IV. Results**

This section presents our results for the differences in market power between Islamic and conventional banks. We start with the Lerner indices for each type of bank. Next, we perform regressions of the Lerner index on a set of variables to take control variables into account. Finally, we perform a robustness check with an alternative measure of competition.

### **IV.1 The market power measures**

We present the means of Lerner indices in table 3 for each type of bank and for each year. The average Lerner index for the period is 23.71% with yearly means ranging from 18.80% to 27.13%. These figures are comparable to what is found in other studies. For instance, Fernandez de Guevara and Maudos (2007) find yearly mean Lerner indices between 16.9% and 24.9% for Spanish banks, while Carbo and al. (2009) observe mean Lerner indices at the country level ranging from 11% to 22% for EU countries with a EU mean of 16%. In dynamic terms, the evolution of the Lerner index shows a strong increase between 2000 and 2005, followed by a reduction in market power between 2005 and 2007.

However the key issue concerns the comparison of market power between Islamic and conventional banks. The mean Lerner indices over the period are respectively 24.37% and 23.64% for Islamic and conventional banks. But this difference in favor of Islamic banks is not systematic, as the analysis year-by-year shows that Islamic banks outperform conventional banks only for 4 years of our analysis while the opposite is observed for the 4 other years. Nonetheless the main finding is that the difference in market power is not significant either for each year considered separately or for the full period.

Thus, our major conclusion is the absence of significant difference in market power between Islamic banks and conventional banks. We do not support the arguments according to which Islamic banks would have greater market power.

However this analysis has not considered the possible role of other characteristics of banks that differ between both types of banks. Furthermore, the fact that banks come from different countries should be taken into account. We therefore perform a regression of Lerner indices on a set of variables including the type of bank and several control variables.

## **IV.2 Regression**

We perform a random effects GLS regression of the Lerner indices. This specification is motivated by the use of panel data, and the fact that the key explanatory variable, the fact that a bank is Islamic or not, is constant over time. The set of explanatory variables includes a dummy variable equal to one whether the bank is Islamic and zero else (*Islam*). We include three control variables in the regression: the ratio of loans to investment assets (*Loans to Investment Assets*) to take the mix of assets into account, the ratio of equity to total assets (*Equity to Total Assets*) to control for risk aversion, and size measured by the logarithm of total assets (*Bank Size*). We also include dummy variables for countries and years in the regression.

We now turn to the analysis of control variables. We observe a significantly positive sign for the size of the bank, which is in line with the fact that greater banks benefit from stronger market power. The ratio of loans to investment assets is not significant, meaning that the structure of assets between loans and investment assets does not exert an impact on market power. Finally, the ratio of equity to assets is significantly positive, according to which banks with greater solvency benefit from market power. This finding may be explained by the fact that better solvency allows the banks to charge greater prices to their services. Several papers have indeed shown the existence of market discipline among depositors, in particular in developing or transition countries in which the risk of bank failure is considered as important (e.g. Karas, Pyle and Schoors, 2009). This discipline means that depositors adapt their deposits to their perception of the probability of bank failure. Consequently, better solvency favors confidence of depositors in the bank's financial situation which can accept to pay more for this safety.

Therefore, our main finding is that Islamic banks do not have a greater market power than conventional banks. Our results from the regression even tend to show that Islamic banks have a lower market power.

Thus, we do not support the view that Islamic banks may benefit from a captive clientele owing to religious principles, which would be charged greater prices. How to explain

the lower market power of Islamic banks? Several explanations can be advanced which focus either on the different religious or economic incentives of Islamic banks.

A first explanation may be the different objectives of Islamic banks in line with the distinguished values promoted in Islamic economics. Islamic finance is a part of a more global paradigm, Islamic economics, which can be defined as the economics in line with the principles of the Qur'an and the Sunna. While Islamic finance is the most well-known feature of Islamic economics, this discipline also includes other features as notably the promotion of Islamic norms of economic behavior.

Therefore, according to Hasan (2004), Islamic banks have different objectives than conventional banks in line with Islamic economics. Profit is also an objective for Islamic banks, as it is a survival requirement. Nevertheless these banks have other priorities, as Islam aims at establishing a distinct social order. The prohibition of interest is indeed not in itself the objective of Islamic banks, but rather an intermediary target through which Islamic banks contribute to establish a world in line with Islamic economics principles. A fundamental value to favor is the promotion of mutual help and cooperation. As a consequence, Kuran (2004) explains that a producer or a trader is free to seek personal profit, but he must avoid harming others. Therefore, he must charge fair prices to his customers. Thus, Islamic banks have the obligation to charge fair prices, which may limit their ability to charge the maximal price permitted by their degree of market power.

A big debate however exists in the literature about the practice of these specific norms in Islamic banks. Kuran (1995) observes similar returns on savings deposits for Islamic and conventional banks in Turkey, while El-Gamal (2007) provides examples of an Islamic bank explicitly mentioning that its loan rates are similar to those of conventional banks.

Some explanations can also be suggested which are based on the economic incentives for an Islamic bank to charge lower prices than other banks. Islamic banks may have greater incentives to avoid moral hazard behavior of borrowers, which gives them incentives to charge lower loan rates than conventional banks. The reasoning is based on the argument from Boyd and De Nicolo (2005). They pointed out the fact that lower loan rates make easier the repayment of loans, and consequently reduced the moral hazard behavior of borrowers to shift into riskier projects, which leads to lower default risk of borrowers. As a consequence, the more the bank suffers from moral hazard behavior of borrowers, the more the bank is inclined to charge lower rates. As Islamic banks follow the profit and loss sharing paradigm in opposition to conventional banks which charge fixed repayments, Islamic banks are more

affected by moral hazard behavior as their return is riskier. They consequently have more incentives to avoid moral hazard behavior and then to charge lower rates.

Furthermore, we can also point out the fact that, on the deposit side, the depositors of Islamic banks are similar to shareholders as they do not have a fixed interest rate and share profits and losses of the bank. Consequently, greater profits from depositor services also mean higher prices charged for depositors for them. Thus, they may have incentives to refrain prices of financial services for depositors.

Finally, a last argument can also be advanced which is not guided by specific features of Islamic banking. As Islamic banking is a relatively recent industry, Islamic banks may be younger than conventional banks. However literature has shown the existence of switching costs in the banking industry. These costs notably derive from the time and effort to close an account or to become comfortable with a new bank (Kim, Kliger and Vale, 2003), or can also endogenously result from the better information of the bank on their clients than competitors (Sharpe, 1990; Rajan, 1992). As a consequence, as their establishment is more recent on average, Islamic banks may have a clientele less captive, which prevents them to have a similar market power than other banks.

### **IV.3 A robustness check**

To further address the validity of the results, we use an alternative measure for bank competition in our estimations. We therefore estimate the Rosse-Panzar model (Rosse and Panzar, 1977), which has been widely applied in banking (e.g. Claessens and Laeven, 2004, for 50 countries; Al-Muharrami, Matthews and Khabari, 2006, for the six member countries of the Gulf Cooperation Council). It is a non-structural test, meaning that it takes into account the actual behavior of banks without using information on the structure of the banking market. The H-statistic aggregates the elasticities of total revenues to the input prices. It determines the nature of market structure: it is equal to 0 in monopoly, between 0 and 1 in monopolistic competition, and 1 in perfect competition.

Several recent studies aiming to explain banking competition have used the H-statistic as a measure of competition in regressions (Bikker and Haaf, 2002; Claessens and Laeven, 2004). We follow their approach by considering the H-statistic as a measure of competition, and aims to check the difference in the H-statistic between both types of banks.

Our aim is to have a measure of competition for each type of banks and each year. We therefore run the Rosse-Panzar model for year to obtain estimates of input prices which are specific to each year. Furthermore, as we need to have estimates of the coefficients of input

prices specific to each type of banks, we include interactive terms for each input price, jointing the variable with a dummy variable for each type of bank. Consequently, we estimate the following equation for each year :

$$\begin{aligned} \ln REVENUES = & \alpha_0 + [ \alpha_1 (\ln w_1) + \alpha_2 (\ln w_2) + \alpha_3 (\ln w_3) ] ISLAM \\ & + [ \alpha_4 (\ln w_1) + \alpha_5 (\ln w_2) + \alpha_6 (\ln w_3) ] CONVENTIONAL \\ & + \alpha_7 \ln ASSETS + \alpha_8 \ln EQUITY TO ASSETS \\ & + COUNTRY DUMMIES \end{aligned}$$

where *REVENUES* total revenues,  $w_1$ ,  $w_2$  and  $w_3$  prices of labor, physical capital, and borrowed funds respectively which are defined below, *ASSETS* total assets, *EQASS* the ratio of equity to total assets,  $k$  country, *ISLAM* dummy variable equal to one whether the bank is Islamic, *CONVENTIONAL* dummy variable equal to one whether the bank is conventional. The variables *ASSETS* and *EQUITY TO ASSETS* take into account differences in size and risk respectively, akin to Bikker and Haaf (2002). Indices for each bank have been dropped in the presentation for simplicity. Therefore the H-statistic is equal to  $\alpha_1 + \alpha_2 + \alpha_3$  for Islamic banks and to  $\alpha_4 + \alpha_5 + \alpha_6$  for conventional banks.

The results of the Rosse-Panzar model are shown in table 5. We observe values between 0.3512 and 0.6233 for all types of banks and all years, meaning a monopolistic competition structure. This result is in accordance with most former studies estimating the Rosse-Panzar model (e.g. Bikker and Haaf, 2002). Al-Muharrami, Matthews and Khabari (2006) found a H-statistic for the six countries of the Gulf Cooperation Council (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates) for 0.47 with country fixed effects and for 0.24 in a pooled model for the period 1993-2002. As a consequence, while our results are in line with the conclusion of monopolistic competition of this paper, we observe a greater competition level, which may result from the different sample of countries and also from a more recent period, suggesting an increase of competition.

However the key result is the fact that the H-statistic is greater for Islamic banks than for conventional banks for all years. This difference is only significant in 2005 and 2007. Therefore, the estimations of the Rosse-Panzar model tend to corroborate our main finding that Islamic banks are not less competitive than conventional banks.

## **V. Concluding remarks**

In this paper, we compare the market power of Islamic and conventional banks by computing Lerner indices for a large sample of banks from countries in which both types of banks coexist. Our hypothesis is that market power is greater for Islamic banks, in line with the view that these institutions benefit from clients with a more inelastic demand. This issue is of fundamental interest to understand the normative implications of the expansion of Islamic banks. It has indeed been shown that lower bank competition may be detrimental to growth.

Our findings clearly reject this hypothesis. The comparison of Lerner indices shows not significant difference in market power between Islamic and conventional banks. Furthermore, the regression of market power indices even suggests a lower market power for Islamic banks.

We explain the lower market power of Islamic banks by their different religious and economic incentives. Indeed Islamic banks are supposed to respect some “Islamic” norms of behavior, such as the obligation to charge fair prices. This might consequently limit their ability to charge high prices. Furthermore, Islamic banks have incentives to charge lower loan rates than conventional banks, as they suffer more from the moral hazard behavior of borrowers which can be favored through high rates.

Thus, our conclusions do not provide support on some detrimental effects of the expansion of Islamic banks in terms of market power. Nevertheless the results of this study should be considered with care. Indeed this is the first contribution on this issue. Further work is therefore needed to confirm the findings and also to deepen the relevance of our interpretations.

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**Table 1**  
**Overview of the sample**

This table gives the number of observations for each type of banks and for each country.

Country	All banks	Conventional banks	Islamic banks
Bahrain	38	24	14
Bangladesh	222	218	4
Brunei	16	10	6
Indonesia	249	244	5
Iran	39	26	13
Jordan	45	30	15
Kuwait	39	32	7
Malaysia	170	158	12
Mauritania	26	19	7
Pakistan	158	148	10
Qatar	31	23	8
Saudi Arabia	28	24	4
Sudan	37	34	3
Tunisia	107	100	7
Turkey	38	32	6
United Arab Emirates	46	42	4
Yemen	12	2	10
All	1301	1166	135

**Table 2**  
**Summary Statistics**

This table displays the means for variables used in subsequent estimations for each type of banks. Standard deviations are reported in brackets.

	All banks	Conventional banks	Islamic banks
Total assets (thd USD)	3,719.65 (7,785.72)	3,771.21 (7,930.48)	3,274.30 (6,408.39)
Loans (thd USD)	1,946.81 (3,992.48)	1,936.93 (3,937.88)	2,032.10 (4,451.36)
Price of labor (in %)	1.10 (0.56)	1.11 (0.57)	1.10 (0.42)
Price of physical capital (in %)	104.04 (77.78)	104.36 (77.89)	101.26 (77.11)
Price of borrowed funds (in %)	4.78 (2.71)	4.93 (2.74)	3.50 (2.06)
Loans to investment assets	5.31 (71.23)	2.42 (4.59)	30.32 (219.88)
Equity to assets (in %)	11.34 (8.71)	10.95 (8.47)	14.72 (9.96)

**Table 3**  
**Lerner indices**

This table presents the Lerner index for each year and for each type of banks. Lerner indices are presented in percentage. Standard deviations are displayed in brackets.

	All banks	Conventional banks	Islamic banks	Difference	p-value
2000	18.80 (13.28)	18.70 (13.49)	20.21 (10.56)	-1.51	0.73
2001	19.66 (14.05)	19.65 (14.39)	19.79 (9.83)	-0.14	0.97
2002	21.62 (14.77)	21.65 (15.09)	21.29 (11.02)	0.36	0.93
2003	24.83 (16.34)	25.35 (16.49)	19.99 (14.47)	5.36	0.20
2004	26.87 (17.03)	27.53 (16.80)	22.10 (18.34)	5.43	0.17
2005	27.13 (16.65)	26.78 (16.60)	30.07 (17.28)	-3.28	0.43
2006	25.38 (15.68)	24.64 (14.78)	30.07 (20.28)	-5.43	0.12
2007	23.78 (15.40)	23.55 (14.62)	25.35 (20.28)	-1.79	0.63
All	23.71 (15.76)	23.64 (15.63)	24.37 (16.91)	-0.74	0.61

**Table 4**  
**Regression**

Random effects GLS regression. The dependent variable is the Lerner index. \*, \*\*, \*\*\* denote an estimate significantly different from 0 at the 10%, 5% or 1% level. Dummy variables for countries and for years are included in the regression but are not reported.

Explanatory variables	Coefficient	Standard error
Intercept	-11.342	7.511
Islamic Dummy	-4.504*	2.547
Bank Size	2.515***	0.414
Loans to Investment Assets	0.002	0.006
Equity to Assets	71.133***	5.752
R <sup>2</sup>	0.3333	
Number of banks	264	
Number of observations	1301	

**Table 5**  
**Robustness check: The Rosse-Panzar Model**

This table displays the H-statistic estimated by the Rosse-Panzar model for each year and each type of banks. We compute the Wald test (F-statistic) to test whether the H-statistic is significantly different for Islamic and for conventional banks. \*, \*\*, \*\*\* denote a F-statistic significantly different from 0 at the 10%, 5% or 1% level.

	Conventional banks	Islamic banks	Wald test (F statistic)
2000	0.5145	0.5991	0.91
2001	0.5473	0.6233	1.08
2002	0.4755	0.5526	0.80
2003	0.4003	0.4431	0.26
2004	0.3512	0.4084	1.08
2005	0.3573	0.4629	3.95**
2006	0.5271	0.5320	0.01
2007	0.4008	0.5801	6.08**

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