Competitive conditions in Islamic and conventional banking: A global perspective

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ABSTRACT

I analyze the competitive conditions prevailing in Islamic and conventional global banking markets, and investigate the possible differences in profitability between these markets, using a sample of banks across 13 countries during 2000–2006. The results suggest that Islamic banks allocate a greater share of their assets to financing activities compared to conventional banks, and they are also better capitalized. Different computed measures of competition indicate that Islamic banking is less competitive compared to conventional banking. A second-stage analysis shows that profitability significantly increases with market power, but this does not warrant higher profitability levels for Islamic banks.

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1. Introduction

Competition in banking has intensified over the past decades and is putting increasing pressure on bank returns. Major financial institutions are strategically entering new markets and/or offering a diverse spectrum of products and services to consolidate their presence and boost their profitability. Among such developments is the expansion of Islamic banking since 1975, and its growing recognition as a viable mode of financing.

Islamic banks have proliferated in the Far East and the Arabian Gulf and a large number of banking firms have diverted some of their operations away from conventional practices by setting up Islamic windows or establishing full-fledged Islamic banks. Countries like Malaysia and Bahrain are striving to be regional hubs for Islamic financial services. There are now about 270 Islamic financial institutions worldwide, including banks, mutual funds, mortgage companies, and *Takaful* or insurance firms. However, Islamic finance is not limited to stakeholders with common religious backgrounds. Britain has announced plans to turn London into the world centre of Islamic finance (Kerr, 2007); and international banks such as Citigroup, BNP Paribas, HSBC, and others are also expanding into this new segment of the industry.

In this study, I investigate competitive conditions in Islamic and conventional banking on a global level, and assess the implications of prevailing structures on bank profitability. Competitive conditions in banking are relevant for at least two reasons. First, the degree of market power may bear serious implications for financial stability.

After the seminal article by Keeley (1990), many studies have shown that competition encourages moral hazard in banking (Hellmann, Murdock & Stiglitz, 2000; Jimenez, Lopez, & Saurina, 2007), although a counter trend provides theoretical predictions and empirical evidence that more market power might result in higher bank risk (Stiglitz & Weiss, 1981; Koskela & Stenbacka, 2000; Boyd & De Nicolo, 2005; Schaeck, Cihak, & Wolfe, 2009). Second, competitive conditions are likely to affect bank performance and efficiency (see Berger & Mester, 2003 for an updated review of the efficiency literature), in addition to equity capitalization levels (Schaeck & Cihak, 2007).

From a structural point of view, Islamic banks operate alongside of conventional banks in different countries and a parallel market for Islamic financial services has developed. Deficit and surplus units in the economy have the option to use the services provided by each mode of banking. If religious underpinnings for the provision of financial services do matter, then the bank clientele will choose to transact with full-fledged Islamic banks only. Even if one cannot rule out the possibility that customers might establish relationships with both types of financial institutions, Islamic banks' charter prohibits them from transacting with conventional banks unless no payment of a pre-determined rate of interest takes place in the process. In this light, it is reasonable to assume that the two segments of the banking market (Islamic and conventional) are separate and that inter-industry linkages are limited.

The segregation of these two markets is also valid from a regulatory perspective. Islamic banks operate under different principles compared to other financial institutions and they have unique risk profiles. Regulatory frameworks generally address their specificities in order to promote sound banking practices. In countries where both Islamic and conventional banks operate, central banks issue special circulars and promulgate new laws to cater for the regulation and supervision of Islamic banks. To illustrate, capital requirements to set up an Islamic

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bank are much higher compared to those needed for establishing a conventional bank. Another example of industry-specific regulation tailored for Islamic banks relates to taxation. Under Islamic finance, when a customer needs to finance the purchase of a physical asset, the bank has to first own it before it can sell it to the customer for a premium (cost-plus sales). Thus, the Islamic bank has to pay registration fees, but the end customer will also incur similar fees with the conclusion of transfer of ownership. To increase the efficiency of the sale transaction and improve the competitiveness of Islamic banks, several Arab states as well as the UK exempt Islamic banks from double taxation.

This paper differs from previous work on various fronts. First, I assume that there is a global market for Islamic financial services that is distinct from conventional banking and that is not geographically limited to one country. Islamic (conventional) banks compete among each other on a global level, but not with other conventional (Islamic) banks, because the market segregates them to a certain extent. In countries where capital markets are relatively underdeveloped and where the banking sector serves as the main conduit to finance the economy, two parallel banking markets have developed. I select countries where both types of banks operate, and form two distinct samples of banks, one is conventional and the other is Islamic, to be later aggregated across all countries considered. No previous study has explored competitive conditions in both banking segments of the industry.

Second, I assess competitive conditions in Islamic and conventional global markets using a variety of key indicators, including traditional concentration measures, the PR H-statistic, and the Lerner index. Previous research on market structure in related countries uses traditional measures of concentration and the Panzar and Rosse (1987) H-statistic either in a single country framework for Islamic banking or in a cross-country context for conventional banking. Abdul Majid and Sufian (2007) report that market conditions are monopolistically competitive in the Islamic financial industry in Malaysia using traditional measures of concentration and the PR method. Al-Muharrami, Matthews, and Khabari (2006) also use traditional concentration ratios and the H-statistic and find that competitive conditions in banking vary across the Gulf Cooperation Council countries. Turk Ariss (2009) similarly uses the PR model to evaluate competitive conditions in Middle Eastern and North African conventional banking. No prior study to my knowledge has investigated competitive conditions across both Islamic and conventional global banking markets using a spectrum of proxies for competition.

Third, unlike previous literature, the analysis extends beyond assessing competitive conditions to explain differences in bank profitability across the two market segments, both in absolute terms and on a risk-adjusted basis, in a multivariate framework. Prior research reports that Islamic banks achieve higher records of profitability compared to conventional banks using comparative ratio analysis (Samad, 1999; Samad & Hassan, 1999; Iqbal, 2001; Hassoune, 2002). Haron (1996) examines the performance of Islamic banks after classifying them in monopolistic or competitive markets and controlling for bank market share. Bashir (2003) and Hassan and Bashir (2003) consider a set of internal and external banking characteristics as possible determinants of Islamic banking profitability in a cross-country context, and they control for macro-level indicators of competitiveness in the industry. I propose to directly investigate the importance of competitive conditions on bank profitability using both the PR H-statistic and the Lerner index, distinguishing among Islamic and conventional banks. Compared to conventional banking, Islamic banking is relatively young in terms of development and it is likely that a higher degree of market power prevails in the industry. If market players in the Islamic finance industry do command a higher degree of market power compared to their peers, are profitability conditions also significantly different? Is the embryonic Islamic banking industry a more lucrative business compared to the more mature conventional banking industry? What are the implications of the prevailing structures on risk-adjusted performance?

I find that Islamic banks have significantly different asset and portfolio compositions compared to conventional banks. Financing activities tie up a large fraction of their assets, and their capitalization is significantly better compared to conventional banks, notwithstanding non-significant differences in profitability. All proxies for market structure indicate that Islamic banks command a higher degree of market power compared to conventional banks. This, however, does not warrant higher profitability levels for the infant Islamic banking industry.

The rest of the paper is structured as follows. Section 2 provides a background overview on Islamic finance. Section 3 presents the evaluation methods used, and Sections 4 and 5 discuss the data and the empirical findings, respectively. Section 6 concludes.

2. Background on Islamic finance

A commerce law known as *fiqh al-mu'amalat* is the basis for the Islamic financial system. This law considers issues of social justice, equity, and fairness in all business transactions, and rests on the promotion of entrepreneurship, the protection of property rights, and the transparency and sanctity of contractual obligations. Under the precepts of the Islamic legal code known as *Shari'a*, a commercial transaction is permissible as long as it is free from *Riba* (interest), *gharar* (uncertainty), *maisir* (gambling), and *non-halal* (prohibited) activities.[1] Because of its socially responsible and ethical underpinnings, the new class of Islamic investments is appealing to both Muslims and non-Muslims who seek to invest in socially responsible products.[2]

The prohibition of interest is not exclusive to Islam, but common to all three Abrahamic faiths. Although the Koran does not explicitly justify the prohibition of dealings based on a pre-determined rate of interest, it is believed that the primary reason for doing so is to remove any form of injustice in business transactions. While, on the surface, this might conflict with the foundations of conventional finance with regards to basic concepts such as the time value of money, Islamic finance mandates a return on capital. However, this return on capital depends greatly on the performance of the activity being financed. Risk-taking, and not the passage of time, justifies the return on capital. It is noteworthy that lending and financing activities belong to entirely different spheres in Islamic finance. The first falls within the realm of charity to support the needy in the form of benevolent loans, while the second is most common in financing business activities where the reward is in relation to the investment rate of return.

Islamic financing services are developing phenomenally around the world, although most countries do not generally support *riba*-free environments. Recent figures indicate that global *Shari'a*-compliant assets under management stand at about $500 billion (Kerr, 2007). Although the size of the Islamic financial industry is still at very low levels compared to the $1.5 trillion of pre-2007-crisis assets for some of the largest commercial banks (including Barclays Bank Plc, UBS A.G, HSBS, Citigroup, BNP Paribas, and others), its rate of growth is impressive, averaging around 15% over the past three decades (Aggarwal & Yousef, 2000).

The development of the Islamic finance industry coincides with progress in the legal, accounting and auditing, regulatory, and governance fronts. An architecture of institutions has developed to fuel the growth and development of the industry. In 1991, the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) mandated the preparation of accounting, auditing, governance, ethics, and *Shari'a* standards. In 2002, the Islamic Development Bank based in Jeddah took the lead in establishing the International Islamic Financial Market (IIFM) in April, the Liquidity Management

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[1] These include pork food, alcohol, and immoral activities such as prostitution and narcotics.
[2] London has become a major trading centre for Islamic funds and a quarter of all Islamic banking business in Malaysia is conducted by non-Muslims (Asokan, 2009).

Center (LMC) in July, and the Islamic Financial Services Board (IFSB) in November of the same year. The IIFM has the mandate to take part in the establishment, development, self-regulation, and promotion of Islamic capital and money markets. The purpose of LMC is to facilitate the liquidity mismatch of Islamic financial institutions through quality financial instruments structured in accordance with *Shari'a* principles. The IFSB is an active international standard-setting body with a mission to ensure soundness and stability in the Islamic financial services industry by developing prudent and transparent standards and codes. More recently in 2005, the International Islamic Rating Agency was set up to assist Islamic financial institutions and instruments in gaining recognition locally and internationally by adhering to greater standards of disclosure and transparency.

Early literature on Islamic finance focuses primarily on the conceptual viability and sustainability of interest-free financing and recent studies address various aspects of the Islamic financial industry. Zaher and Hassan (2001) provide a comprehensive comparative review of the literature on Islamic finance, giving a preliminary empirical assessment of the industry in a cross-country context and highlighting the challenges that lie ahead. Iqbal (2004) examines financial intermediation and the design of an Islamic financial system; Shahimi, Ismail, and Ahmed (2006) investigate Islamic banks' involvement in various fee income activities. The work by Samad (1999) compares the efficiency of conventional and Islamic banks and finds that Islamic banks become inefficient when operating within a dual banking environment. Using financial ratios, Samad and Hassan (1999) report that Islamic banks outperform conventional banks, and Iqbal (2001) finds that Islamic banks are doing fairly well compared to a benchmark sample of conventional banks. Hassoune (2002) similarly reports that Islamic banks are more profitable than conventional peers with the same balance sheet structure.

Different studies assess the determinants of profitability of Islamic banks. Haron (1996) divides Islamic banks into two groups according to the market in which they operate, and reports that Islamic banks in competitive markets are more profitable than those in a monopolistic market. Bashir (2003) analyzes performance indicators of Islamic banks and controls for different financial structures using the ratio of stock market capitalization to GDP and the ratio of total assets of the deposit money bank to GDP. Hassan and Bashir (2003) similarly consider a variety of internal and external banking characteristics as possible determinants of profitability of Islamic banks. They use an explicit measure of market structure, the three-bank concentration ratio, to show that banks in concentrated markets achieve higher records of profitability.

In the next sections, I examine differences in Islamic and conventional banking structures. An important assumption in classical industrial organization theory relates to profit maximization, and it can be argued that New Empirical Industrial Organization techniques such as the PR *H*-statistic and the Lerner index cannot be applied to Islamic banks. In principle, the objective of Islamic banks is to ensure social and economic justice rather than be primarily guided by the principle of profit maximization, and this can be mainly achieved through the promotion of risk-sharing financing techniques. However, a close look at Islamic banks' balance sheets shows that credit-based financing (*murabaha* or cost-plus sales) is the dominant form of uses for funds, while profit-and-loss (or risk-sharing) financing in the form of *mudaraba* and *musharaka* financing represent on average less than 10% of assets (Dar and Presley, 2000). This, in fact, might represent an Achilles' heel for Islamic banks, which have been criticized over the past three decades for not abiding by the social aspect of their mission, but rather seeking quicker and more secure profits through *murabaha* financing. Aggarwal and Yousef (2000) argue that Islamic banks' financial instruments are mostly not equity-based because debt-like financing is a rational response to the contracting environments. With this background and in line with other studies, I assume that Islamic banks behave as profit-maximizing firms, and derive the PR *H*-statistic

and Lerner index from the first-order condition of the bank's maximization problem.

3. Evaluation methods

I first evaluate competitive conditions across Islamic and conventional segments of the banking industry using different indicators of market power because the literature on market structure is inconclusive regarding the best measure of the degree of competition. In a second-stage analysis, I investigate differences in profitability levels across the two market segments in a multivariate context.

3.1. Traditional measures of concentration

Traditional measures of concentration include concentration ratios and the Herfindahl–Hirschman Index (HHI). I use the *n*-bank concentration ratio, in particular the C3 and C5 ratios (concentration ratios of the biggest three and five banks, respectively) according to their share of assets, deposits, and loans in the banking sector. Since concentration ratios do not consider information about the remaining banks, I also calculate the HHI by adding up the squares of the market shares of all banks, using total assets, deposits, and loans. However, such measures are ambiguous indicators of competitiveness (e.g. Berger, Demirguc-Kunt, Levine, & Haubrich, 2004; Beck, Demirguc-Kunt, & Levine, 2006). Some studies employ the PR *H*-statistic to assess the degree of competition in banking (e.g. Claessens & Laeven, 2004; Schaeck et al., 2009) and the Lerner index (Jimenez et al., 2007; Berger, Klapper, & Turk Ariss, 2009). In this paper, I compute traditional measures of market structure in addition to estimating the *H*-statistic and the Lerner index.

3.2. The H-statistic

The PR method rests on the estimation of the following reduced-form revenue equations on pooled samples for each country:

$$\ln(TR_{it}) = \alpha + \beta_1 \ln\left(W_{F,it}\right) + \beta_2 \ln\left(W_{F,it}\right) + \beta_3 \ln\left(W_{K,it}\right) \qquad (1)$$
$$+ \gamma_1 \ln\left(Y_{1,it}\right) + \gamma_2 \ln\left(Y_{2,it}\right) + \varepsilon_{it}$$

The dependent variable TR_{it} indicates total revenues measured by the ratio of interest and non-interest revenues to total assets, following Nathan and Neave (1989) and Casu and Girardone (2006).[3] Eq. (1) includes three input prices: $W_{L,it}$ as the cost of labor represented by the ratio of personnel expenses to total assets, $W_{F,it}$ as the cost of funds represented by the ratio of interest expenses to total deposits, and $W_{K,it}$ as the cost of fixed capital calculated as the ratio of other operating and administrative expenses to total assets. Consistent with Molyneux, Thornton, and Lloyd-Williams (1996), Gelos and Roldos (2004) and Claessens and Laeven (2004), the analysis includes other bank-specific control variables. The $Y_{1,it}$ and $Y_{2,it}$ represent the ratio of equity to total assets and net loans to total assets, respectively, and control for the business and portfolio mix of the bank. While there is no expectation about the sign on total assets, the results of this estimation provide information about whether banks face economies or diseconomies of scale. The subscripts *i* and *t* refer to bank *i* operating at time *t*.

The PR *H*-statistic is computed as the sum of the input price elasticities of total revenues. Panzar and Rosse (1987) show that the *H*-statistic can reflect the structure and conduct of the market to which the firm belongs and is interpreted as follows. Under long-run competitive equilibrium, an increase in input prices leads to an equivalent increase in total revenues, and firms that cannot cover the

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[3] For Islamic banks, the category of "loans" is substituted by "financing activities" and interest revenues are called financing revenues. Similarly, the "interest expense" item is labeled "financing expenses."

increase in input prices exit the market; therefore the H-statistic is equal to one. By if the firm is a monopoly, the H-statistic is negative because an upward shift in the marginal cost curve associates with a decrease in revenues. Also, if monopolistic competition characterizes market structure, then the H-statistic lies between zero and one.

The application of the PR framework to banking requires three assumptions. First, banks are single product firms that produce interest revenues using labor, capital, and deposits as inputs (De Bandt & Davis, 2000); second, higher factor prices do not correlate with higher revenues generated by higher quality services; and third, banks are profit-maximizing firms with normally shaped cost and revenue functions (Gelos & Roldos, 2004). More importantly, banks should be observed from a long-run equilibrium perspective, for which I test using the following model:

$$\ln\left(ROA_{it}\right) = \alpha + \beta_1 \ln\left(W_{L,it}\right) + \beta_2 \ln\left(W_{F,it}\right) + \beta_3 \ln\left(W_{K,it}\right) \quad (2)$$
$$+ \gamma_1 \ln\left(Y_{1,it}\right) + \gamma_2 \ln\left(Y_{2,it}\right) + \varepsilon_{it}$$

Where ROA is the bank's return on assets. The equilibrium statistic, E, is the sum of input price elasticities. A value for E significantly different from zero implies that the market is not in equilibrium. The reasoning is that, in the long-run, return on assets does not relate to input prices.

While the magnitude of the H-statistic is a direct indicator of the degree of competition, this proxy might not represent a continuous measure of the degree of competition. Panzar and Rosse (1987) show that the H-statistic is a decreasing function of market power in the case of a pure monopoly, but the interpretation of its value is less straight-forward because "the magnitude as well as the sign of the statistic may be of interest". Shaffer (2004a,b) also casts doubts on the use of the H-statistic as a continuous measure of competition and concurs that the interpretation of the specific value of H might be "ambiguous". Another shortcoming of the PR H-statistic is that it is calculated at the aggregate level and cannot be used to assess the decisions of a bank at the firm level. Competitive behavior might be better captured by the Lerner index, a bank-level estimate that has an additional attractive feature of time variability.

3.3. The Lerner index

The Lerner Index is a direct measure of competition because it focuses on the pricing power apparent in the difference between price and marginal cost thereby capturing the degree to which a firm can increase its marginal price beyond marginal cost (Jimenez, Lopez, & Saurina, 2007; Berger et al., 2009). The computation of the Lerner index requires the estimation of a translog cost function with bank fixed effects and time dummies as follows:

$$\ln Cost_{it} = \beta_0 + \beta_1 \ln Q_{it} + \frac{\beta_2}{2} \ln Q_{it}^2 + \sum_{k=1}^{3} \gamma_{kt} \ln W_{k,it} \quad (3)$$
$$+ \sum_{k=1}^{3} \phi_k \ln Q_{it} \ln W_{k,it} + \sum_{k=1}^{3} \sum_{j=1}^{3} \ln W_{k,it} \ln W_{j,it} + \varepsilon_{it}$$

Where Q_{it} represents a proxy for bank output or total assets for bank i at time t, and $W_{k,it}$ are the three input prices defined above.[4] Marginal cost is then derived as:

$$MC_{TA_{it}} = \frac{Cost_{it}}{Q_{it}}\left[\beta_1 + \beta_2 \ln Q_{it} + \sum_{k=1}^{3} \phi_k \ln W_{k,it}\right] \quad (4)$$

And the Lerner index is computed as: $Lerner_{it} = (P_{TA_{it}} - MC_{TA_{it}})/P_{TA_{it}}$

$P_{TA_{it}}$ is the price of total assets represented by the ratio of total revenues (interest and non-interest income) to total assets for bank i at time t, and $MC_{TA_{it}}$ is the marginal cost of total assets for bank i at time t. The Lerner index ranges between zero and one. When $P_{TA} = MC_{TA}$, the Lerner Index is zero and the firm has no pricing power. A Lerner index closer to one indicates the higher mark-up of price over marginal costs and hence market power for the firm.

3.4. Multivariate analysis

In a second-stage analysis, I combine the Islamic and conventional banking samples to examine differences in profitability. The baseline regression equation has the general form:

$$Prof_{it} = f(Comp_{it} + Z_{it} + Islamic_i + \ln(GDPpc)) \quad (5)$$

Where $Prof_{it}$ denotes both the return on assets (ROA_{it}) for bank i at time t and risk-adjusted return on assets ($RAROA_i$) for bank i.[5] Following Stiroh (2004a), Stiroh (2004b) and Mercieca, Schaeck and Wolfe (2007), $RAROA_i = \frac{ROA_i}{\sigma_{ROA_i}}$ is the risk-adjusted return on assets for each bank, where ROA_i and σ_{ROA_i} are the average and standard deviation of return on assets for each bank in the sample, respectively. The ROA_{it} regressions use bank fixed effects with time dummies. When the time-invariant $RAROA_i$ is used, cross-section regressions are run. Robustness checks include return on equity (ROE) and risk-adjusted ROE as dependent variables.

$Comp_{it}$ comprises two proxies for competition, the PR H-statistic and the Lerner index. Z_{it} denotes two bank control variables, bank market share and size. The dummy variable "Islamic" distinguishes between Islamic and conventional banks. It is set to one when the activities of the bank are Shari'a-compliant. Following Martinez-Miera and Repullo (2008) and Berger et al. (2009), a quadratic term is added to Eq. (3) to allow for a nonlinear relation between competition and profitability in banking. All regressions include the natural logarithm of GDP per capita to control for differences in economic development across countries.

4. Data

I take the bank-level financial data on Islamic banks for the years 2000–2006 from the BankScope database provided by Fitch-IBCA and match it with data on conventional commercial banks that operate in the same countries as Islamic banks. The resulting sample only considers full-fledged Islamic banks and countries where more than one Islamic bank operates.[6] The final sample includes 58 Islamic and 192 conventional banks operating in 13 different countries. Table 1 lists the number of banks and observations in each country.

The figures indicate that, except for the regional Islamic banking hub in Bahrain, the number of Islamic banks that operate in the sampled countries is very small compared to their peers, reflecting the embryonic stage of the Islamic banking industry.

Table 2 presents statistics on the average loans to assets, equity to assets, return on assets, and return on equity for Islamic (Panel A) and conventional (Panel B) banks in each of the 13 countries considered. Table 3 summarizes the data by year.

Despite growing interest in the Islamic financial services industry, conventional banks by far outnumber Islamic banks in the profiled countries, and their average size (in terms of total assets) is smaller

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[4] A potential problem with the Lerner index (a problem also present in the PR H-statistic), is that the cost of funds or ratio of interest expenses to deposits W_2, might itself embody market power in the deposit market.

[5] I acknowledge that, in general, bank performance over time is likely to be affected by de novo banks and entry via branching or establishing a subsidiary.

[6] Some conventional banks have established Islamic units of operation, known as "Islamic windows". The majority of Shari'a scholars contend that, in order for a bank to be classified as Islamic, all of its operations must be Shari'a-compliant. The exclusion of Islamic windows is also consistent with the assumption of segregated banking markets for the provision of conventional and Islamic financial services.

Table 1
Sample size of the Islamic and conventional banks data sets, 2000–2006.

Country	Islamic banks		Conventional banks	
	Nb of banks	Nb of obs	Nb of banks	Nb of obs
Bahrain	13	49	13	62
Brunei Darussalam	2	7	2	13
Iran	6	32	9	44
Jordan	2	12	10	63
Kuwait	3	12	7	38
Malaysia	7	13	35	185
Pakistan	4	7	27	103
Qatar	4	17	6	39
Saudi Arabia	2	13	9	63
Sudan	5	23	13	42
Turkey	3	12	40	160
United Arab Emirates	4	19	17	110
Yemen	3	15	4	20
Total	58	231	192	942

than their peers'. Over the sample period, the average loans to assets ratio of Islamic banks stands at 52.78% versus 43.96% for conventional banks and the equity to assets ratios for the two banking segments are 14.01 and 12.42%, respectively. The figures seem to indicate that Islamic banks engage more in financing economic activity compared to conventional banks, and that they are better capitalized. In terms of profitability measures, the average ROA and ROE of Islamic banks is

Table 2
The statistics on loans to assets (L/TA), equity to assets (E/TA), return on assets (ROA), and return on equity (ROE) by country.

Country	L/TA	E/TA	ROA	ROE	Statistic
Panel A: Islamic banks					
Bahrain	0.4860	0.1856	0.0548	0.1335	Mean
	0.0519	0.0777	0.0162	0.0343	Std dev
	0.4183	0.2721	0.0364	0.1021	Min
	0.5763	0.5037	0.0762	0.1900	Max
Brunei Darussalam	0.6605	0.1098	0.0101	0.1182	Mean
	0.1165	0.0379	0.0018	0.0270	Std dev
	0.4450	0.0645	0.0076	0.0725	Min
	0.7810	0.1753	0.0127	0.1653	Max
Iran	0.6264	0.0993	0.0110	0.2132	Mean
	0.0225	0.0252	0.0019	0.0811	Std dev
	0.5971	0.0327	0.0090	0.0961	Min
	0.6523	0.0922	0.0138	0.3103	Max
Jordan	0.3499	0.1123	0.0061	0.0600	Mean
	0.0427	0.0219	0.0023	0.0320	Std dev
	0.3122	0.0886	0.0033	0.0420	Min
	0.4210	0.1458	0.0092	0.1247	Max
Kuwait	0.4407	0.1745	0.0476	0.1992	Mean
	0.0982	0.2201	0.0339	0.0500	Std dev
	0.3015	0.0957	0.0161	0.1195	Min
	0.5454	0.6153	0.1010	0.2508	Max
Malaysia	0.4593	0.1156	0.0043	0.0612	Mean
	0.0874	0.0138	0.0062	0.0647	Std dev
	0.2821	0.0698	−0.0067	−0.0146	Min
	0.5897	0.1154	0.0160	0.2010	Max
Pakistan	0.5569	0.1746	0.0101	0.1439	Mean
	0.0949	0.1510	0.0201	0.0935	Std dev
	0.4196	0.0742	−0.0197	0.0054	Min
	0.6220	0.4060	0.0236	0.2105	Max
Qatar	0.6321	0.1568	0.0306	0.2292	Mean
	0.1659	0.1310	0.0197	0.0584	Std dev
	0.4446	0.0721	0.0127	0.1640	Min
	0.8608	0.4327	0.0637	0.3443	Max
Saudi Arabia	0.6745	0.1829	0.0340	0.1810	Mean
	0.1204	0.1469	0.0161	0.0804	Std dev
	0.4581	0.1918	0.0208	0.1127	Min
	0.8581	0.5515	0.0694	0.3619	Max
Sudan	0.2172	0.1319	0.0159	0.1199	Mean
	0.0713	0.0099	0.0120	0.1116	Std dev
	0.1043	0.1207	0.0001	−0.0406	Min
	0.3114	0.1477	0.0330	0.2604	Max

Table 2 (continued)

Country	L/TA	E/TA	ROA	ROE	Statistic
Turkey	0.6851	0.1123	0.0131	0.1382	Mean
	0.0849	0.0139	0.0111	0.1087	Std dev
	0.5085	0.0657	0.0009	0.0097	Min
	0.7655	0.1067	0.0288	0.2800	Max
United Arab Emirates	0.5948	0.1674	0.0171	0.1166	Mean
	0.2241	0.0467	0.0052	0.0608	Std dev
	0.2012	0.1340	0.0132	0.0498	Min
	0.7981	0.2702	0.0252	0.2210	Max
Yemen	0.4776	0.0987	0.0108	0.1299	Mean
	0.0611	0.0324	0.0042	0.0179	Std dev
	0.4037	0.0462	0.0057	0.1106	Min
	0.5667	0.1353	0.0174	0.1581	Max
Total	0.5278	0.1401	0.0204	0.1419	Mean
	0.1647	0.1493	0.0191	0.0814	Std dev
	0.1043	0.0327	−0.0197	−0.0406	Min
	0.8608	0.6153	0.1010	0.3619	Max
Panel B: Conventional banks					
Bahrain	0.4031	0.1635	0.0225	0.1248	Mean
	0.0278	0.0410	0.0115	0.0236	Std dev
	0.3652	0.1206	0.0070	0.0809	Min
	0.4362	0.2228	0.0382	0.1523	Max
Brunei Darussalam	0.4831	0.1264	0.0077	0.1033	Mean
	0.0533	0.0565	0.0023	0.0910	Std dev
	0.4165	0.0440	0.0058	0.0387	Min
	0.5467	0.2034	0.0126	0.2821	Max
Iran	0.5507	0.1376	0.0326	0.1426	Mean
	0.0795	0.1133	0.0113	0.0844	Std dev
	0.4545	0.0386	0.0144	0.1274	Min
	0.6448	0.3734	0.0433	0.3729	Max
Jordan	0.4168	0.1078	0.0136	0.1187	Mean
	0.0301	0.0210	0.0053	0.0348	Std dev
	0.3855	0.0842	0.0076	0.0692	Min
	0.4699	0.1432	0.0223	0.1746	Max
Kuwait	0.4634	0.1261	0.0225	0.1843	Mean
	0.0492	0.0195	0.0048	0.0258	Std dev
	0.4088	0.1069	0.0159	0.1472	Min
	0.5606	0.1665	0.0287	0.2223	Max
Malaysia	0.5029	0.1268	0.0130	0.1247	Mean
	0.0493	0.0131	0.0022	0.0191	Std dev
	0.4346	0.1030	0.0101	0.0906	Min
	0.5584	0.1390	0.0171	0.1548	Max
Pakistan	0.4688	0.0975	0.0092	0.1376	Mean
	0.0435	0.0235	0.0039	0.1126	Std dev
	0.4035	0.0516	0.0042	0.0909	Min
	0.5231	0.1119	0.0143	0.4444	Max
Qatar	0.4827	0.1399	0.0236	0.1367	Mean
	0.0577	0.0543	0.0074	0.0702	Std dev
	0.4174	0.1477	0.0059	−0.0295	Min
	0.6128	0.3160	0.0293	0.1926	Max
Saudi Arabia	0.4764	0.1176	0.0259	0.1823	Mean
	0.0684	0.0128	0.0101	0.0497	Std dev
	0.4004	0.1054	0.0169	0.1778	Min
	0.5640	0.1399	0.0464	0.3129	Max
Sudan	0.3197	0.1125	0.0142	0.1432	Mean
	0.0933	0.0364	0.0086	0.0430	Std dev
	0.1338	0.0715	0.0053	0.1119	Min
	0.4326	0.1737	0.0303	0.2226	Max
Turkey	0.3904	0.1308	0.0144	0.1021	Mean
	0.1395	0.0281	0.0190	0.0628	Std dev
	0.2006	0.1408	−0.0265	−0.0099	Min
	0.6627	0.2202	0.0287	0.1596	Max
United Arab Emirates	0.5877	0.1507	0.0263	0.1615	Mean
	0.0239	0.0140	0.0057	0.0312	Std dev
	0.5625	0.1424	0.0223	0.1339	Min
	0.6269	0.1928	0.0394	0.2145	Max
Yemen	0.1686	0.0776	0.0146	0.1768	Mean
	0.0571	0.0144	0.0024	0.0248	Std dev
	0.0338	0.0583	0.0116	0.1577	Min
	0.2224	0.1061	0.0193	0.2302	Max
Total	0.4396	0.1242	0.0185	0.1414	Mean
	0.1204	0.0610	0.0104	0.0686	Std dev
	0.0338	0.0386	−0.0265	−0.0295	Min
	0.6627	0.3734	0.0464	0.4444	Max

Table 3
Summary statistics by year, Islamic vs. conventional banks.

Year	Nb. of obs.		Av. TA ($ mil)		L/TA		E/TA		ROA		ROE	
	Isl.	Conv.	Isl.	Conv.	Isl.	Conv.	Isl.	Conv.	Isl.	Conv.	Isl.	Conv.
2000	27	85	4857	5422	0.5273	0.4503	0.1319	0.1122	0.0315	0.0129	0.1547	0.1090
2001	28	102	2586	4429	0.5119	0.4478	0.1325	0.1189	0.0170	0.0133	0.1202	0.1234
2002	30	120	3077	5419	0.5103	0.4332	0.1439	0.1287	0.0163	0.0167	0.1275	0.1368
2003	35	142	3846	5684	0.5070	0.4451	0.1442	0.1256	0.0176	0.0187	0.1280	0.1428
2004	37	159	4925	6146	0.5369	0.4714	0.1392	0.1349	0.0252	0.0188	0.1475	0.1490
2005	38	160	4772	7203	0.5238	0.4752	0.1421	0.1278	0.0312	0.0225	0.1631	0.1696
2006	36	174	3717	8764	0.4942	0.4835	0.1453	0.1329	0.0309	0.0205	0.1529	0.1520

2.04 and 14.19%, respectively, while the corresponding figures for conventional banks are 1.85 and 14.04%, respectively.

To determine whether asset composition, capitalization, and profitability are significantly different across Islamic and conventional banks, I conduct tests of differences in means across banks, years and countries, and report the results in Table 4.

Univariate statistics that appear in Table 4 indicate that Islamic banks allocate a significantly higher portion of their assets to loans compared to conventional banks, indicating higher exposure to credit risk. This allocation might suggest that an assessment of Islamic banks' risk exposure might need to account both for the asset and liability side of the balance sheet, since, in principle, Islamic banks apply risk-sharing both in raising and investing funds. However, the net risk effect on portfolio risk cannot be easily determined, and there is insufficient evidence to show that the risk-sharing practice is actually implemented in the industry. In parallel, they appear to be significantly better capitalized compared to their peers, maybe because regulators impose larger capital requirements for the establishment of an Islamic bank compared to those required of a conventional bank. The figures in Table 4 might suggest that Islamic banks balance the larger portfolio risk exposure (higher loans-to-assets) with lower financial risk (higher equity-to-assets) compared to their peers. However, the levels of profitability across the two market segments are not significantly different, unlike the results reported in previous studies. The next section provides a better picture for possible differences in profitability across Islamic and conventional banks in a multivariate context.

5. Empirical findings

Table 5 lists comparative traditional measures of concentration between Islamic and conventional banks. Panel A includes the three-bank and five-bank concentration ratios using deposits, loans, and assets, and Panel B shows the HHI using the same.

In Panel A, concentration ratios indicate that a few institutions dominate Islamic banking markets, and the HHI in Panel B also show that concentration in the Islamic global market is higher than for conventional banks. Table 5 figures show that concentration ratios are three times higher for Islamic banks than for conventional banks, and that all HHI are six times as large.

Table 4
Tests of means, Islamic vs. conventional banks.

	L/TA Islamic vs. L/TA Conventional			E/TA Islamic vs. E/TA Conventional		
	By bank	By year	By country	By bank	By year	By country
t value	(1.6093)**	(4.2767)***	(2.176)**	(4.0473)***	(3.4239)***	(1.6142)*
Pr (T<t)	0.0542	0.0018	0.023	0.0000	0.0055	0.0637
	ROA Islamic vs. ROA Conventional			ROE Islamic vs. ROE Conventional		
	By bank	By year	By country	By bank	By year	By country
t value	(1.7962)**	(2.707)**	0.2505	− 0.447	0.538	(− 1.6081)*
Pr (T<t)	0.0367	0.0152	0.4028	0.6724	0.303	0.0643

Significance levels denoted by ***, **, and * correspond to 1, 5 and 10%, respectively.

To gain a comprehensive understanding of competitive conditions across the two banking segments, I estimate the PR *H*-statistic and the Lerner index and report the results in Table 6.

The calculated *H*-statistics are in line with those reported by previous studies, and suggest that monopolistic competition best describes market structure in both the global Islamic and conventional banking segments. The results (not reported) of the model using ROA as a dependent variable following Eq. (2) indicate that observations are in long-run equilibrium.

The lower figures for conventional banks do not imply that the conventional banking market is less competitive than Islamic banking because the *H*-statistic is not a continuous measure of the degree of competition (Shaffer, 2004a, Shaffer, 2004b). The results using the time-varying bank-level Lerner index might provide more insight about the degree of competition. The reported Lerner indices for Islamic banks are higher than those of their peers, suggesting that a considerably higher degree of market power prevails in the Islamic banking segment.

To explain the differences in profitability levels among Islamic and conventional banks, I combine the two samples in a single panel data set of 1173 observations, run multivariate regressions following Eq. (3), and report the results in Table 7.[7]

The Panel A regressions uses ROA as the dependent variable, and the estimation uses bank fixed effects with time dummies. Panel B shows the results of cross-section analyzes using risk-adjusted ROA as a dependent variable. All regressions control for bank size, asset market share, type of activities (Islamic vs. conventional), and the country's natural logarithm of GDP per capita. For each model using the PR *H*-statistic and Lerner index, one specification assumes a linear relation between competition and bank profitability, and the other includes a quadratic term. The results indicate that the coefficient estimates for all quadratic terms are significant, and that the relation between market structure and bank profitability is U-shaped and not linear.

I calculate the inflection point of each quadratic equation and compare them to the empirical distribution of the data to establish the sign of the relation between bank competition and profitability across the profiled countries. In all regressions, the coefficients of the measure of competition are highly significant and can be interpreted in a consistent manner. The significant and negative sign of the PR *H*-statistic parameter indicates that a lower degree of competition associates with higher bank profitability, and the significant and positive association between the Lerner index and profitability suggests that bank returns increase with a rise in the degree of market power. The significance of the parameters maintains when measuring performance on a risk-adjusted basis in Panel B. This finding is in line with the general concept that a higher degree of market power allows market players to command pricing power that, in turn, translates into higher rates of return both in absolute terms and on a risk-adjusted basis. Thus, strategies to enter new market segments where the degree of competition is low are likely to be rewarding for banks. However, this finding does not provide sufficient grounds to conclude that Islamic banks are more profitable compared to their peers. Although, the

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[7] Similar findings (not reported) obtain when ROE is the proxy for bank profitability.

Table 5
Traditional concentration measures, Islamic vs. conventional banking markets.

Panel A: Three-bank (C_3) and five-bank (C_5) concentration ratios using deposits, loans and assets											
Year	C_3 (deposits)		C_5 (deposits)		C_3 (loans)		C_5 (loans)		C_3 (assets)		C_5 (assets)	
	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.
2000	0.5336	0.1783	0.7520	0.2702	0.5530	0.1835	0.7507	0.2698	0.4996	0.1878	0.7474	0.2646
2001	0.4796	0.1666	0.6454	0.2495	0.4498	0.1618	0.6190	0.2443	0.4728	0.1952	0.6264	0.2731
2002	0.4590	0.1329	0.6418	0.2027	0.4263	0.1330	0.6022	0.2038	0.4135	0.1490	0.5750	0.2117
2003	0.4170	0.1250	0.5771	0.1912	0.3956	0.1290	0.5723	0.1949	0.4199	0.1376	0.5737	0.1963
2004	0.3858	0.1252	0.5436	0.1772	0.3780	0.1200	0.5695	0.1856	0.3790	0.1251	0.5624	0.1814
2005	0.3950	0.1117	0.5574	0.1735	0.3839	0.1162	0.5705	0.1772	0.3999	0.1086	0.5747	0.1625
2006	0.5362	0.1131	0.6815	0.1714	0.5291	0.1162	0.6663	0.1751	0.6114	0.1109	0.7354	0.1694

Panel B: Hirschmann Herfindahl Index (HHI) using deposits, loans and assets						
Year	HHI deposits		HHI loans		HHI assets	
	Islamic	Conv.	Islamic	Conv.	Islamic	Conv.
2000	0.1335	0.0270	0.1344	0.0263	0.1401	0.0270
2001	0.1120	0.0256	0.1155	0.0287	0.1022	0.0247
2002	0.1028	0.0202	0.0951	0.0211	0.0934	0.0201
2003	0.0904	0.0185	0.0913	0.0185	0.0844	0.0188
2004	0.0820	0.0171	0.0854	0.0167	0.0824	0.0172
2005	0.0816	0.0163	0.0880	0.0157	0.0813	0.0164
2006	0.1153	0.0168	0.1499	0.0168	0.1123	0.0169

coefficient on the Islamic dummy variable is positive in most of the reported specifications, it is significant only when using the Lerner index in Panel A. The regression results do not provide evidence that Islamic banks generally achieve higher records of profitability compared to their peers. As a robustness check, I add an interactive term in all the regressions as the cross product of the dummy Islamic and each of the measures of competition used. This check supports the main result that the Islamic nature of bank operations does not associate with significantly higher returns, whether on a risk-adjusted basis or not. My finding is in sharp contrast with the result previously reported in the literature that Islamic banks are more profitable compared to conventional peers (Samad, 1999; Samad & Hassan, 1999; Iqbal, 2001; Hassoune, 2002).

Finally, the estimated parameters of bank size and market share are significantly positive when considering RAROA as a dependent variable. Bank size and market share appear to be a significant determinant of return on a risk-adjusted basis.

6. Summary and conclusions

Over the past three decades, the Islamic banking industry has developed into a viable mode of finance. The number of institutions that operate along the Islamic jurisprudence has multiplied and major international players like Citigroup, HSBC, and others have recognized the growth potential of this new segment of the industry, developing Shari'a-compliant products, windows, or subsidiaries.

In this paper, I analyze the banking structures of both Islamic and conventional global markets and investigate possible differences in profitability among the two segments of the industry. Over the period

Table 6
Measures of competition, Islamic vs. conventional banking markets.

Year	H-statistic		Lerner index	
	Islamic market	Conventional market	Islamic market	Conventional market
2000	0.7788	0.7346	0.4135	0.4200
2001	0.9501	0.8676	0.5102	0.4128
2002	0.8400	0.7285	0.4462	0.4508
2003	0.8227	0.6546	0.5554	0.4868
2004	1.1985	0.6859	0.5518	0.5125
2005	0.7709	0.6224	0.554	0.5168
2006	0.6269	0.5966	0.5527	0.4795

2000–2006, I build a sample of Islamic banks across 13 different countries and retrieve data on conventional banks that operate in the same countries. Univariate statistics and tests of means provide broad evidence on differences in asset and portfolio composition across Islamic and conventional banks. First, Islamic banks appear to allocate a significantly greater share of their assets to financing or loans compared to conventional banks, implying a greater exposure to credit risk. In turn, Islamic banks balance the higher portfolio risk with significantly lower financial risk through higher capitalization levels. However, there are no consistently significant differences in profitability levels across Islamic and conventional banks.

The examination of competitive conditions using different proxies of competition indicates that the global Islamic banking market exhibits more concentration and less competition compared to the conventional banking segment. The multivariate analysis shows that lower bank competition is significantly and positively related to higher profitability levels, even on a risk-adjusted basis, after controlling for bank and country differences. The findings confirm the reasoning that banks have a strong incentive to engage in market segments where the degree of competition is low in order to achieve higher rates of return. However, Islamic banks are not significantly more profitable compared to their peers. While the Islamic banking market is attracting a lot of attention, there is no evidence of significant higher returns for this infant industry. Notwithstanding the religious underpinnings of conducting Shari'a-compliant financial transactions, it could be that Islamic banks are proliferating in anticipation of earning future expected returns that are higher compared to their peers' expectations.

More importantly, the findings raise the question of why Western banks are paying increasing attention to the Islamic mode of financing and attempting to infiltrate this new segment of the industry. My explanation is that many foreign-owned banks have a follow-the-customer strategy, even if that means earning losses in a particular market. In the case of the Gulf Cooperation Countries, the region has witnessed an unprecedented growth over the last decade, and the petrodollar boom has attracted investors from all over the world. Therefore, international banks participate in the Islamic banking segment to better serve their customers in this region.

On another front, Western banks have benefitted from their expansion in this new line of business. Shari'a-compliant finance prohibits investing in complex financial derivatives, following the rule that "one cannot sell what one does not own", and Islamic banks have as a result shown greater resilience to the recent 2007 global financial crisis. By tying up bank resources in financing real assets rather than

Table 7

Competition and bank profitability. Based upon an unbalanced panel of 250 Islamic and conventional banks in 13 banking markets where both institutions operate during the years 2000–2006 (1173 observations). In Panel A, the dependent variable is ROA, and the regressions are run using bank fixed effects with time dummies. In Panel B, the dependent is risk-adjusted ROA, and regressions are for a cross-section of banks since risk-adjusted ROA is time-invariant. Competition measures include the *H*-statistic and the Lerner index. A larger *H*-statistic implies a more competitive market, and a larger value for Lerner indicates a higher degree of market power. I assume both a linear and a quadratic relation between profitability and market structure in banking. The market share calculation uses the bank's total assets. The natural logarithm of total assets is the measure for Bank Size. I control for Economic Development by using the natural logarithm of each country's GDP per capita. Robust standard errors appear in parentheses below estimated parameters.

	H-statistic		Lerner index	
Panel A: Dependent is ROA				
Competition	−0.0176	−0.0877	0.0467	0.0459
	(0.0055)***	(0.0362)**	(0.0093)***	(0.0072)***
Competition²		0.0415		0.0159
		(0.0199)**		(0.0059)***
Market share	0.0049	0.0266	−0.0051	−0.0156
	(0.0587)	(0.0624)	(0.0597)	(0.0566)
Bank size	−0.0029	−0.0035	0.0003	0.0006
	(0.0022)	(0.0023)	(0.0010)	(0.0010)
Islamic	0.006	0.0056	0.0064	0.0067
	(0.0071)	(0.0071)	(0.0033)*	(0.0032)**
Economic development	0.0077	0.0074	0.0012	0.0005
	(0.0017)***	(0.0017)***	(0.0008)	(0.0009)
Constant	−0.0095	0.0249	−0.0177	−0.0183
	(0.0169)	(0.0285)	(0.0066)***	(0.0062)***
Inflection point	n/a	1.0566	n/a	−1.4434
Sign of relation	−	−	+	+
Panel B: Dependent is risk-adjusted ROA				
Competition	−5.4459	−396.4229	4.1223	4.043
	(15.7884)	(166.5413)**	(1.4826)***	(1.0231)***
Competition²		248.5982		2.6667
		(110.1453)**		(1.2058)**
Market share	−34.4261	−41.2403	−46.4566	−52.1212
	(27.1021)	(23.8302)*	(25.3727)*	(24.8142)**
Bank size	0.3847	0.2506	0.39	0.4674
	(0.2239)*	(0.1740)	(0.2240)*	(0.2130)**
Islamic	1.8931	−1.6267	1.0491	1.2231
	(1.3698)	(2.2310)	(1.9946)	(1.9683)
Economic development	0.6422	0.7604	0.4905	0.3926
	(0.3134)**	(0.3209)**	(0.3864)	(0.3874)
Constant	−0.1711	149.4277	−4.5883	−5.0635
	(11.5434)	(60.5856)**	(2.7875)	(2.7632)*
Inflection point	n/a	0.7973	n/a	−0.7581
Sign of relation	−	−	+	+

Significance levels denoted by ***, **, and * correspond to 1, 5 and 10%, respectively.

investing in financial derivatives, Western banks that engaged in Islamic finance might have diversified their portfolio on a global basis and limited their exposure to systemic shocks similar to those experienced after the fall of Lehman Brothers.

Finally, it is left for future research to examine the implications of a higher degree of market power prevailing in the Islamic banking industry on overall stability and whether Islamic banks have a role to play in contributing to overall financial stability.

Acknowledgements

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