Determinants of Islamic banks' profitability: international evidence

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Abstract

Purpose – The purpose of this paper was to investigate the determinants of Islamic banks' profitability using longitudinal data from 1992 to 2008 of almost all Islamic banks in the world.

Design/methodology/approach – An unbalanced panel data fixed-effects regression model was used.

Findings – The results of the study indicate that capital ratio, other operating income, GDP per capita, bank size, concentration and oil prices affected Islamic banks positively. Insurance schemes, foreign ownership and real GDP growth affected Islamic banks negatively.

Research limitations/implications – This study did not include data beyond 2008 (the financial crisis), which can be considered a limitation to this study. However, evidence suggests that including data beyond 2008 would not have changed the outcome of the study[1].

Originality/value – The paper adds to the literature on the determinants of Islamic banks' profitability for the reasons mentioned above. In addition, this study used a purified sample of Islamic banks (see the Data section for details). Furthermore, to the author's knowledge, this is the first time deposit insurance has been included in a study related to Islamic banks' profitability.

Keywords Islamic banks, Profitability, External variables, Internal variables

Paper type Research paper

1. Introduction

Islamic banks are financial institutions that operate like conventional banks but adhere to *Shariah* principles. Therefore, these banks do not engage in *riba* (usury) or in any financial transactions that contradict *Shariah* principles.

Islamic and conventional banks use financial resources to make a profit, taking into account liquidity and risk and a set of rules and regulations that govern these factors. However, Islamic banks accept deposits using a profit and loss sharing (PLS)[2] system and lend money on the same basis using *musharaka*, *mudaraba*, *ijarah*, *salam*, *murabaha* and other schemes.

The origin of Islamic finance dates back to the beginning of Islam, 1,400 years ago. Texts written in the early Islamic era indicate that, during the first century of Islam, some forms of banking activities were similar to those used in modern banking transactions. Further, they reveal that Al-Zubair Ibn Al-Awam, one of the most famous personalities in Islam, was accepting deposits as a loan and investing the money. Also, he had several branches across the Islamic Empire to return deposits to their owners, and this led some contemporary scholars to call the operation Al-Zubair Bank.[3] However, the collapse of the Ottoman Empire and several other factors paved the way for conventional banks to spread in Islamic countries.

The modern history of Islamic banks begun by Dr Al-Nagger founded the Local Savings Bank in Mit-Ghamr, Egypt, in 1963. In 1967, the bank merged with government banks and

ceased Islamic operations for political reasons, but Nasser Social Bank was established in Egypt in 1971, followed by Dubai Islamic Bank in 1975 (Nasser, 1996; Wilson 1983). Later, several Islamic banks emerged around the globe, and some conventional banks even opened Islamic windows. Also, Sudan and Iran Islamized their entire financial systems. This increase in Islamic financial assets was supported by high oil prices and growing Muslim populations.

Although Islamic finance is booming, empirical work on the industry is still limited, and the few studies that have been conducted suffer from data limitations[4]. The purpose of this paper is threefold. First, it extends the work on the determinants of Islamic banks' profitability. Second, the study develops a database of Islamic banks, which is particularly useful because no previous study has included such a wide of coverage of banks and countries. Finally, the analysis specifies the data to avoid the aforementioned limitations.

The rest of the paper is organized as follows. Section 2 overviews the literature on the determinants of Islamic banks' profitability. Section 3 describes the data, methodology and variables of the study. The results and discussion are presented in Section 4, and the final section presents the conclusion.

2. Literature review
In 1996, Haron was among the first researchers to empirically investigate Islamic banks' profitability in his thesis *Determinants of Islamic Banks Profitability*. He used a sample of 13 banks from nine countries spanning 1984 to 1994. The author found that profitability was highly correlated with liquidity, total expenditures, funds invested in Islamic securities, the percentage of the profit-sharing ratio between the bank and the borrower, interest rates, market share and bank size. Other determinants, such as funds deposited into current accounts, total capital and reserves, the percentage of profit-sharing between the bank and depositors and money supply, also play a major role in influencing the profitability of Islamic banks.

Later, Bashir (2003) examined the rate of return margins and the determinants of profitability of 14 Islamic banks located in the Middle East from 1993 to 1998. The study found that capital ratio, loans, deposits, short-term funding, market capitalization, GDP per capita and inflation contributed to the profitability of Islamic banks. Moreover, the study reported a negative effect of non-interest earning assets on return on equity (ROE), profit before tax to total assets and noninterest margin. Also, size affected return on assets (ROA) positively, and tax had a negative effect on Islamic banks.

Bashir (2003) investigated the profitability of 14 Islamic banks from eight Islamic countries from 1993 to 1998. The author used ROA, ROE, net noninterest revenue to total assets (net interest margin, NIM) and profit before tax over total assets (BTP/TA) as the dependent variables and controlled for macroeconomic, taxation, financial structure and bank characteristics. The results of this paper showed that equity and loan to assets ratio were the major determinants of Islamic banks' profitability. Consumer and short-term funding, noninterest earning assets and overhead had some influence on Islamic banks' profitability. GDP per capita and growth had a positive relationship with profitability. The stock market was positively associated with Islamic banks' profitability. In addition, tax and reserve factors affected profitability negatively. Finally, foreign ownership had some effect on Islamic banks' profitability.

In study using a similar methodology, Hassan and Bashir (2003) examined the relationship between profitability and banking characteristics after controlling for economic and financial structure indicators. This paper used cross-country bank-level data from 40 Islamic banks from 21 countries for each year in the 1994-2001 period. The authors used the

same dependent variables as Bashir (2003), although they adjusted the control variables. The study revealed that the profitability of Islamic banks was positively affected by equity, deposit and short-term funding, concentration, credit risk and overhead. Also, the macroeconomic environment seemed to stimulate higher profits. The size of the banking system had a negative impact on profitability, except for net noninterest margin. Moreover, they reported that non-interest earning assets, loans and explicit and implicit taxes negatively affected profitability. Finally, the ratio of a country's total bank deposits to its GDP had no significant correlation with profitability.

Ben Khediri and Ben Khediri (2009) investigated the profitability of 40 Islamic banks in the Middle East and North Africa (MENA) region using unbalanced panel data from 1999 to 2006. The authors used ROA as the dependent variable. The study revealed that equity to total assets, GDP growth and concentration all had a positive effect on profitability, whereas cost to income ratio had a negative impact on Islamic banks. Moreover, loans to total assets and stock market capitalization did not have an effect on Islamic banks' profitability. Ben Khediri et al. (2010) investigated the determinants of nine Islamic banks' profitability from 1999 to 2009. The authors used return on average assets (ROAA) as the dependent variable. The study revealed that equity (equity to assets) and size (log of total assets) positively affected Islamic banks' profitability, whereas loans to total assets and concentration (the three largest banks' assets to total banking sector assets) had a negative effect on profitability.

Smaoui and Salah (2011[4]) examined the profitability of 44 Islamic banks in the Gulf Cooperation Council (GCC)[5] region from 1995 to 2009. In their paper, they used ROA, ROE and NIM as the dependent variables. Their results showed that equity (equity to assets), assets quality (loan loss reserves to gross loans), GDP and size (log of total assets) positively affected profitability. In contrast, overhead (cost to income ratio) had a negative effect on profitability. The study also showed that net loans to total assets had positive and significant effects on NIM, but the opposite was found for ROA and ROE.

Masood and Ashraf (2012) inspected the factors affecting Islamic banks profitability for 25 Islamic banks from 12 countries for the period 2001-2010. The results of the study showed that size (positive), asset quality (negative), deposit (negative) and operating efficiency (negative) had a significant effect on profitability (ROA). In contrast, capital (positive) and GDP (negative) have no significant relation with profitability.

Mokni and Rachdi (2014) analyzed the factors affecting conventional and Islamic banks' profitability in the MENA region using a sample of 15 conventional and 15 Islamic banks from 2002 to 2009. Using a generalized method of moments analysis, they found that credit risk (negative), interest rate risk (positive), size (negative), cost to income ratio and GDP (positive) did not have a significant relation with profitability (ROA). On the other hand, off balance sheet activities (positive), capital (positive) and liquidity risk (positive) affected profitability significantly.

In a more recent study, Alharthi (2016) investigated the determinants of profitability of Islamic banks in MENA region and the UK using a sample of 43 banks from 2005 to 2012[6]. The study revealed that capital and credit risk affected profitability negatively and significantly (ROA and NIM, respectively). Size linked positively and significantly with profitability (ROA and NIM). On the other hand, loan intensity (negative in the case of NIM), deposit ratio (positive) and foreign ownership (negative) had no significant effects on profitability. The macroeconomic variable GDP negatively and significantly correlated with profitability (ROA and NIM). The same results were obtained for market capitalization, except that NIM was significant.

3. Data and methodology

3.1 Data

The data used in this study are cross-country bank-level data, extracted from the nonconsolidated and consolidated income statements and balance sheets of 110 Islamic banks in 25 countries that were members of the Organization of Islamic Cooperation (OIC) for each year in the 1992-2008 period. The data are extracted from BankScope database. In this study, the classification of the Islamic banks by the BankScope database was used as the starting point. But, in many cases, it has been found that BankScope misclassifies Islamic banks as commercial banks and vice versa. Furthermore, BankScope classifies some of the Islamic financial companies as Islamic banks. Also, the database classifies some investment banks as commercial banks. Moreover, several banks in different countries have converted from conventional to Islamic banking operations. These banks were classified as Islamic banks in many of the aforementioned sources without an indication that these banks had converted to Islamic banking[7].

This study uses panel, or longitudinal data. Panel data have several advantages, such as greater degrees of freedom, lower levels of collinearity and improved efficiency of estimates. In addition, panel data help overcome the inherent multicollinearity between the independent variables.

The data are estimated with a panel least squares fixed-effects (FE) model, which is represented by equation (1):

$$P_{ijt} = \alpha + \beta B_{ijt} + \gamma X_{jt} + \lambda O_t + \delta T_{ijt} + \zeta D_{jt} + \xi M_{jt} + C_j + C_t + \varepsilon_{ijt} \qquad (1)$$

where P_{ijt} is profitability (either ROAA or NIM) for bank i in country j at time t; B_{ijt} represents bank variables for bank i in country j at time t; X_{jt} represents country variables for country j at time t; O_t is the oil variable at time t; T_{ijt} represents the taxation variable for bank i in country j at time t; D_{jt} is the deposit-insurance status for country j at time t; M_{jt} represents the financial-structure variables in country j at time t; and α is a constant. β, γ, λ, ζ, δ and ξ are coefficients. ε_{ijt} is an error term, independent and identically distributed with a mean of zero and variance of $\sigma2$. The regression included C_j and C_t as country and time fixed effects, respectively.

The sample is not random and contains all the Islamic banks in the countries in the aforementioned data set. A Hausman test shows that the FE model fits the data best. However, FE models have flaws because they ignore between-unit variation, remove all time-constant effects and does not provide solutions to all sources of endogeneity bias (McManus, 2011).

Pearson product – moment correlation coefficient statistics and Durbin – Watson statistic results indicate that the serial correlation and multicollinearity in my model are not significant (see Tables AI-AIV). In addition, heteroscedasticity is not present in my sample based on a White test. The data were cleaned to remove outliers using an Excel function (extreme high and low values were removed).

3.3 External and internal determinants of banks' profitability

According to Bourke (1989), a bank's profitability is influenced by internal and external determinants. The internal determinants are variables that are under the control of the bank's management. The internal variables have two subcategories: financial statement variables (internal variables) and nonfinancial statement variables (external variables). Table AII displays the variables used to examine the determinants of bank profitability and the hypothesized signs.

3.3.1 Internal variables. Since Bourke's (1989) cross-country study on banks' profitability, many researchers have applied his approach of using internal variables to analyze banks' profitability in a single country or a group of countries. In line with these studies, the present paper uses several internal variables to investigate the profitability of Islamic banks.

Capital ratio (EQTA), which is measured by total equity to average assets, does not have a restrictive effect on Islamic banks' profitability. Berger (1995) and Molyneux and Forbes (1995) suggested that low capital ratios are associated with risk-taking and, therefore, a negative coefficient is expected for this variable. In contrast, equity will affect banks' profitability positively through the accumulation of earnings over time (Berger, 1995). Also, well-capitalized banks have access to cheaper and less risky fund sources, leading to an increase in profitability (Berger, 1995)[8].

Deposit and short-term funding over average assets ratio (DSTA) is used as a proxy of liquidity. This ratio effect on Islamic banks is unclear because investment deposits (general and special) are an important part of Islamic banks' capital structure. These deposits are based on PLS, and their holders require a return on their investments. However, the effects of deposits on Islamic banks might be positive because these banks will not pay remuneration on checking or savings deposits. In addition, Islamic banks do not guarantee a predetermined profit to investment deposits subjected to PLS contracts, except in the case of neglect.

Another important internal variable is other operating income over average assets (OOI), which is used as a proxy for off-balance sheet items[9]. This variable will show the ability of Islamic banks to generate profit from their investments using, for instance, *musharakah* and *istisna* contracts. Also, many Islamic banks add investment contracts to off-balance sheet items, depending on the accounting standards they use. In addition, this variable will serve as a risk indicator because the diversity of investments is associated with high risk. This variable is expected to influence profitability positively.

Asset composition (LOTA), measured by loans[10] over average assets, is expected to affect profitability positively because loans are the main source of income for banks (Bourke, 1989; Demirgüç-Kunt and Huizinga, 1999). However, the relationship between loans and profitability for Islamic banks depends on the changes in the economy (Hassan and Bashir, 2003). Therefore, during the downturn of the economic cycle, defaulted loans will increase and, consequently, generate losses for Islamic banks. In addition, Islamic banks' dependence on short-term loans is less risky because it will lead to modest profitability and, thus, a negative relationship with profitability (Asutay and Izhar, 2007). Also, the high risks taken by banks will accumulate the unpaid loans and, in turn, will affect profitability negatively (Miller and Noulas, 1997).

Foreign ownership (FRGN), a dummy variable, takes a value of one when foreign ownership is more than 50 per cent (otherwise zero). Foreign ownership could affect banks' profitability positively because foreign banks possess superior technology, have high governance standards, have better mitigation risk and benefit from tax breaks. Foreign ownership can affect banks' profitability negatively as well, though; in particular, foreign banks will not only be affected by the economic and financial conditions in their country of operation but also by the situation in their home country. Demirgüç-Kunt and Huizinga (1999) and Claessens *et al.* (2001) found a positive relationship between foreign ownership and profitability in developing countries and the opposite effect in developed countries. In the present study, the effect of foreign ownership is expected to be negative, as foreign-owned banks will not have technological or efficiency advantages and, therefore, will face the same conditions as local banks.

The loan loss provision over average loans ratio (LLSN) will serve as a credit risk indicator. Previous research has found ambiguous effects on Islamic banks. On the one hand, *ijarah* (lease) and various leaseback schemes used by Islamic banks are low risk and, therefore, require a low reserve (Olson and Zoubi, 2008), leading to a positive effect. Also, according to skimping theory, banks maximize profits by keeping a low reserve (1997), and this increases profitability. On the other hand, the increased exposure to credit risk will lower banks' profitability, as has been suggested in Miller and Noulas's (1997) study of US banks.

The final internal variable is operation costs (OHTA), as measured by overhead (personnel expenses plus other operating expenses) over average assets. The effect of this variable could be positive, as shown by Molyneux and Thornton (1992). On the other hand, many experts argue that Islamic banks encounter some expenses that are not experienced by conventional banks, such has having to maintain a *Shariah* board. Therefore, a negative relationship could be associated with operation costs and profitability.

3.3.2 External variables. The regulatory and economic environments and the changes in the financial structure landscape will impact banks' profitability positively or negatively. Therefore, to capture these environmental effects, this study uses five macroeconomic variables, eight financial structure variables and three variables[11].

Some factors, such as level of corruption and quality of regulation, are not included because these factors are highly similar across OIC countries[12].

3.3.2.1 Macroeconomic variables. Real GDP growth is used as a proxy for the effect of business cycles. During periods of low GDP growth, borrower defaults increase, and this affects banks' profitability negatively, and vice versa.

Economic development (wealth) is measured by the log of GDP per capita (2005 prices, in thousands, USD)[13]. This variable captures the effect of any omitted factors that influence banks' profitability, such as the supply and demand of loans and deposits, and is a proxy for economic development. According to Hassan and Bashir (2003), this variable should affect profitability positively, as banks in the developing countries operate in a less competitive environment and are expected to generate higher profit margins. Therefore, it is expected that LOGGDP will have a positive effect here because the countries in the present sample are developing ones. Literature has also reported a negative relationship between GDP per capita and profitability (Dietrich and Wanzenried, 2014).

Real interest rate (RI) has an ambiguous effect on conventional banks' profitability. In times of distress, high interest rates will increase defaulted loans, and this will negatively affect profitability. However, high interest rates can also lead to higher loan rates and, consequently, to higher income. In general, it can be said that RI has a positive impact on conventional banks' profitability. The same effect is expected for Islamic banks because the majority of Islamic banks are using London interbank offered rate (LIBOR) as a benchmark to fix their charges in PLS schemes (Nienhaus, 1983). On the other hand, some of the financial instruments in Islamic banks are based on fixed markup, such as *murabaha* contracts. Therefore, in countries that have a dual banking system, an increase in interest rates, especially if not anticipated by Islamic banks, will affect Islamic banks negatively. Also, many studies (Bourke, 1989) have used interest rates as a proxy of scarcity of capital in the economy, and this will affect Islamic banks indirectly (and negatively) by influencing the total capital available in the market (Haron, 1996b).

The oil shock variable (OIL) is an important determinant of profitability for the banks in this study because most banks operate in oil-producing countries[14]. Therefore, oil shocks are expected to affect the banks in these countries directly or indirectly[15]. Poghosyan and Hesse (2009) found an indirect relationship between oil shocks and commercial banks'

profitability for major oil producers in the MENA region, as this effect channeled through macroeconomic and institutional variables. Conversely, Imam and Kpaodar (2010) found a positive relationship between Islamic banks' profitability and oil prices.

3.3.2.2 Regulation variables. Regulation effects on profitability are captured by three variables. The first variable, taxation (TAX), is measured by dividing taxes over average profit before tax of each bank; this variable serves as an explicit tax indicator and is expected to have a negative impact on Islamic banks' profitability. The second variable is the reserve of the banking system (RESDA), as measured by the reserves of the banking system over deposits multiplied by customer and short-term funding over average assets for each bank. This variable proxies financial regulation and serves as an implicit tax indicator.

Islamic banks require different supervision and regulation than is typically applied to conventional banks. Many scholars argue that Islamic bank reserves should not be subjected to reserve requirements, except for checking accounts. However, many Islamic banks operate in a dual banking system – except in Iran and Sudan – and many of those financial systems do not have specific laws or regulations for Islamic banks[16]. Therefore, RESDA is expected to impact Islamic banks' profitability negatively. Demirgüç-Kunt and Huizinga's (1999) study revealed that implicit and explicit taxes affected profitability and NIM negatively. In contrast, Dietrich and Wanzenriedb (2014) showed that taxes affected ROAA negatively and NIM positively.

The final regulation variable to be discussed is deposit insurance schemes (INR). The expected direction of the deposit insurance coefficient is unclear for several reasons. Theoretically, this security should lead banks to take more risks to increase profits. Nier and Baumann's (2006) study revealed that a lack of deposit insurance and a high amount of uninsured deposits will not reduce risk-taking and that government support lowers the capital buffer. On the other hand, Islamic banks and their investment-account holders share profits and losses, which makes Islamic banks responsible for losses only in cases of misconduct. This situation gives the mangers of Islamic banks less incentive to take risks, as they are not obligated to pay fixed returns on deposits, and the presence of insurance scheme exacerbates the problem (Bashir, 1999). In line with this finding, Gropp and Vesala (2001) found that the presence of an explicit insurance scheme decreased risk-taking by European banks. Still, many countries with an explicit insurance scheme have restricted coverage to deposits, which limits the scheme's impact[17].

3.3.2.3 Financial structure variables. The financial environment plays a pivotal role in determining banks' profitability. Market capitalization to GDP (MACP) is an important variable. High stock market capitalization indicates a strong financial base that could work as an alternative financial source to banks, and the availability of this resource will affect banks' profitability negatively. This negative relationship has been confirmed by Dietrich and Wanzenriedb (2014) and Alharthi (2016). On the other hand, the growth of stock market capitalization could affect banks' profitability positively because market enlargement increases information availability and, consequently, the potential number of customers for banks; this situation should facilitate the identification and monitoring of borrowers (Naceur, 2003). In addition, the growth of stock markets will encourage people to obtain loans from banks to speculate in the stock market, and this eventually will increase banks' profits. Also, banks benefit from the fees coming from the management of its customers' portfolios, which mainly consist of stocks. Furthermore, Islamic banks began to establish stock market portfolios in *Shariah*-compliant companies due to the increased demand for such specialized products, and these new investors will generate profits for banks. The effect of market capitalization on Islamic banks or the banking systems in the countries

included in this study is expected to be positive, even though some of the countries suffered huge market crashes during the study period. Also, the positive effect here should not be due to the developing of these markets, as has been argued by Demirgüç-Kunt and Huizinga (1999) and Pasiouras and Kosmidou (2007); rather, many of those markets are inflated (due to high risk speculations) and do not reflect the true prices of the listed companies.

Concentration is measured using the C3 ratio. The C3 measure originated from the structure-conduct-performance (SCP) theory, which indicates that high concentration is positively related to profitability. However, the efficient market or efficient structure hypothesis contradicts SCP theory because it suggests that firms with superior efficiency will obtain a large market share and, consequently, that the market will become more concentrated. Therefore, higher concentration does not necessarily imply market power and, consequently, the relationship between concentration and profitability does not have to be positive. This controversy has been debated in the literature because studies have found mixed results.

Size (LNASS), measured here by banks' total assets in millions (2005 prices, USD), will capture the effect of the economies of scale on the profitability of Islamic banks. The economics of scale theory suggests that the bigger the size of a firm, the lower its cost, thereby leading to high profit. The literature has also reported a negative effect of size on banks' profitability (Hassan and Bashir, 2003). Other studies, such as Eichengreen and Gibson (2001), have argued that the effect of bank size on profitability is positive up to a certain point but then reverses for several reasons. The present study assumes that the increase in Islamic banks' size will affect its profitability positively.

3.3.3 Measures of profitability. In this study, two measures of profitability are used: ROAA and profit rate spread (NIM). NIM is defined as the net profit revenue income over average earning assets (see Table AII)[18].

4. Empirical results
This section provides empirical evidence on and analysis of profitability of Islamic banks. Tables AIII and AIV present the regression results for ROAA and NIM, respectively.

The first variable to be discussed is capital ratio (EQTA). This ratio as expected had a positive and significant impact on ROAA in all specifications and on NIM in all columns except the first. This result is consistent with findings from Bashir (2000, 2003), Ben Khediri and Ben Khediri (2009), Ben Khediri *et al.* (2010), Hassan and Bashir (2003), Asutay and Izhar (2007) and Smaoui and Salah (2011)[19]. However, the results contradict Alharthi's (2016) findings. This shows that well-capitalized banks are safer than banks with a low capital ratio because they have access to cheaper and less risky fund sources, leading to an increase in profitability.

In addition, an association was lacking between ROAA and DSTA. However, this variable affected NIM positively and significantly in the last column ($p < 0.05$). Several studies on Islamic banks (Bashir, 2000; Hassan and Bashir, 2003; Sufian, 2010) have found a positive relationship between the short-term funding ratio and bank profitability. These previous findings, as well as the present study, indicate that Islamic banks manage their liquidity efficiently, despite being obligated by regulating authorities to maintain more liquid assets due to their nature (i.e. no *Shariah*-compliant interbank market)[20]. Next, a statistically positive relationship was found between OOI and ROAA (1 per cent). This result is consistent with Mokni and Rachdi's (2014) findings. Furthermore, OOI had a significant impact on NIM in all regression model and, as expected, the effect was negative. These two findings imply that, in the long

run, off-balance sheet activities will contribute positively to the profitability of Islamic banks because, as argued by Mokni and Rachdi (2014), they allow banks to expand their investments while increasing their risk exposure.

The present findings revealed negative coefficients for the effect of LOTA on ROAA, but these coefficients were only significant in the last column (10 per cent). The effect of loan ratio on NIM is negative but not significant. The findings are consistent with Hassan and Bashir's (2003) study. Also, Alharthi (2016) did not find a significant correlation between banks' profitability and loan ratio. This indicates that loans are not the major source of income for Islamic banks (see the OOI results) and that Islamic banks operate in risky environments, including weak economies and underdeveloped financial and legal systems (see the OOI, LLSN and GDP results).

Moreover, LLSN had a negative and significant effect on ROAA in all specifications, whereas it had no effect on NIM. This shows that Islamic banks have high level of risky loans. Other studies, such Alharthi (2016) and Mokni and Rachdi (2014), found a negative relationship between Islamic banks profitability and credit risk. Ownership status appears to affect ROAA negatively and significantly in Models 4 to 6, which supports a hypothesis of home-field advantage. The findings of this study contradict the results of Bashir (2000, 2001, 2003) and Hassan and Bashir (2003) but support the findings of Sufian (2010). Furthermore, the empirical findings of this study imply that foreign-owned banks do not have sufficient technology or proper knowledge of the domestic market[21]. The last internal variable considered here is OHTA, which had a negative and significant effect on ROAA. On the other hand, OHTA affected NIM positively and significantly. These results show that increases in management costs contribute to increases in NIM; however, this effect is offset in the long run, causing profitability to decline. It is worth mentioning that Islamic banks incur more costs than conventional banks due to the presence of a *Shariah* board and because they do not charge interest.

The effects of macroeconomic variables are discussed next. Real GDP growth, contrary to my expectation, affected ROAA and NIM negatively; however, this effect was significant on NIM only in the last column. The findings here are consistent with the results from Bashir (2000) and Smaoui and Salah (2011). When the regression was carried out using lagged real GDP growth for Islamic banks, the coefficient became positive for ROAA and NIM for the entire regression, but only NIM was significant (and only moderately so). These results indicate that Islamic banks are more sensitive to changes in GDP, which could be related to the outcomes of the projects that Islamic banks invested in through *musharakah*, *ijarh* or *mudarabah* contracts because those projects are related to the real economy. GDP per capita had a positive and significant coefficient on NIM but did not have any effect on ROAA. These results are harmonious with Hassan and Bashir's (2003) findings. This indicates that economic development contributes to Islamic banks profitability.

RI's correlation with ROAA and NIM was negative but significant in the case of NIM. These results contradict findings from Haron (1996b), Ahmad and Haron (1998) and Mokni and Rachdi (2014). The Islamic banking industry is still in the early stages of development and, therefore, Islamic banks are forced to use interest rates as a benchmark to determine returns on their loans. Thus, during periods of high interest rates, Islamic banks are not able to increase the rate of return on some of their investments that are based on fixed incomes (e.g. *murabaha* contracts). Also, the yield of Islamic banks' investments (*ijarah*, *mudarabah* and *musharakah*) might be lower than that of the market interest rate, which leads to lower profitability[22]. As

predicted, the oil shock variable had a positive correlation with ROAA and NIM. This finding supports the argument that oil prices play a pivotal role in the thriving Islamic banking industry[23].

The results of the regulation variables are discussed next. The findings reveal that the explicit tax variable, TAX, had no meaningful relationship with ROAA or NIM. This contradicts the findings of Demirgüç-Kunt and Huizinga (1999) and Dietrich and Wanzenried (2014). However, the implicit tax variable, RESDA, showed mixed results. The relationship was positive for ROAA and NIM but was only significant for ROAA; additionally, the last column for the dependent variables shows that the effect became negative and significant for NIM. The NIM results are in line with Demirgüç-Kunt and Huizinga (1999). These results suggest that Islamic banks managed to pass on part of the reserve costs to their consumers. The other regulation variable, deposit insurance, had a negative correlation with ROAA and NIM. However, the effect was significant only for NIM (last column). This implies that Islamic banks take higher risks to generate profit.

The financial-structure variables – market capitalization, size and concentration – exhibited positive effects on Islamic banks' profitability. In detail, the ratio of stock-market capitalization to GDP impacted ROAA and NIM positively, and the results are significant in the case of ROAA. This is consistent with findings by Srairi (2009) but contradicts Dietrich and Wanzenriedb (2014) and Alharthi (2016). These findings suggest that the development of stock markets in the countries examined in this paper contributes to banks' profitability.

The effect of bank size on Islamic banks' profitability (ROAA and NIM) was positive but weak, as it was only significant for ROAA and only at the 10 per cent level. This positive effect of size on Islamic banks' profitability has been documented by Alharthi (2016), Bashir (2003), Ben Khediri et al. (2010), Haron (1996a, 1996b), Čihák and Hesse (2010) and Smaoui and Salah (2011). The weak impact of bank size on profitability for Islamic banks can be explained by the tendency of small banks to try to grow quickly and increase their market share instead of improving profitability in their first years of operation (Athanasoglou et al., 2008). It is possible that the profitability of Islamic banks increases along with their size. The regression, to confirm my assumption, was conducted by introducing the square of LNASS into the analysis for Islamic banks. In this specification, the results became positive for ROAA and negative but not significant for NIM. This indicates that the relationship between profitability and bank size is nonlinear for Islamic banks.

The effect of concentration on profitability (ROAA and NIM) was meaningful, but the effect was only significant for NIM ($p < 0.05$), this supports SCP theory. These results are in line with Ben Khediri et al. (2010), Hassan and Bashir (2003) and Ben Khediri and Ben Khediri (2009).

5. Conclusion and recommendations
This paper adds significantly to the previous empirical studies on the determinants of Islamic banks' profitability.

The study showed that Islamic banks do not depend on loans as a major source of revenue. Consequently, they rely on off-balance sheet activities to generate revenue, and, therefore, prudent authorities must regulate them. Additionally, OIC countries must reform their financial and legal systems and their regulatory bodies to reduce financial risk. Along the same lines, attention must be paid to risk management in Islamic banks by bank management and supervisory bodies because their credit risk is

high. Furthermore, public policies need to be revised because foreign ownership affects Islamic banks' profitability negatively. Moreover, Islamic bank managers must control costs to improve profitability.

In addition, the findings showed that oil prices and interest rate had a direct and significant effect on Islamic banks' profitability. RIs had a negative impact on Islamic banks, which suggests that Islamic banks must rely more on PLS modes of financing and minimize their dependence on markup products to lessen the risk of interest movement. Also, the Islamic financing industry, as well as its regulators, could create an Islamic benchmark to price its products instead of using the LIBOR[24]. The decline in oil prices will weaken Islamic banks profitability; thus, as suggested by Poghosyan and Hesse (2009), regulators could tie Islamic banks' capitalization to oil prices, which would allow them to use the capital cushions created during boom periods for lending purposes during downturns.

This study's findings on the effect of taxes on Islamic banks refutes the notion that Islamic banks' prices are higher than those of conventional banks. In addition, the present study shows that the deposit insurance scheme (explicit and implicit) contributed negatively to the profitability of Islamic banks. This issue needs to be addressed by the regulatory bodies to ensure healthy operations in the financial systems in the countries analyzed in this study. Furthermore, this paper supports the argument for economies of scale in banks; that is, small Islamic banks need to increase in size through either mergers or acquisitions so they can be more profitable.

The results of market capitalization indicate that capital markets and banks have a complementary relationship in developing countries. The concentration findings support the SCP hypothesis. Finally, economic development plays an important role in increasing Islamic banks' profitability.

Notes

1. In his paper, "The Impact of the Financial Crisis on the Islamic Banks' Profitability: Evidence from GCC", Almanaseer (2014) studied the effect of financial crisis on Islamic banks in GCC countries; his results suggested that increases in capital and size, along with decreasing overhead and liquidity, have eased the effect of the financial crisis on Islamic banks' profitability, which coincides with our findings.

2. PLS refers to the sharing of profit and risk between the parties involved in a financial transaction.

3. This form of banking transactions preceded, by five centuries, the transactions that took place in Italy that many researchers consider the origin of modern banking (Nasser, 1996).

4. They used four models/specifications.

5. Alharthi (2016) used two models: OLS and FEM. I am referring to the FEM results.

6. Alharthi (2016) used two models: OLS and FEM. I am referring to the FEM results.

7. Mokni and Rachdi (2014) included SAMAB as an Islamic bank even though the bank is a hybrid. In addition, they included the whole period of existence for Kuwait International bank, but the bank had not converted until 2007.

8. Following Berger's (1995) argument, this ratio could have no effect on ROEA given that many of the Islamic banks in this study had been operating for only a few years.

9. In this analysis, other operating income is used instead of non-interest earning assets because other studies have not consistently defined what constitutes non-interest earning assets for

Islamic banks. Some researchers, especially those who use BankScope data, utilize the accounting term *earning assets* to define non-interest earning assets, arguing that all assets of Islamic banks are non-interest earning assets. This ratio should exhibit a positive relationship with ROAA but an adverse effect on NIM.

10. Loans here are investments.

11. For the regulation variables, this study uses two explicit (direct tax) factors – deposit insurance scheme and taxation – and one implicit factor (bank reserves). Additionally, the oil shock variable is introduced to highlight its effects on Islamic banks' profitability.

12. The percentage of the Muslim population is not included as a factor because the majority of Islamic banks are located in the MENA region, where the Muslim population exceeds 90 percent.

13. A logarithm used to control for the different levels of economic development.

14. Except for Jordan, Turkey and Senegal, and some are major producers, such as the MENA countries, Yemen, Egypt, Syria, Sudan and Mauretania are small producers, and the last two countries started to export oil recently.

15. The nature of the effect will be ambiguous because, during the study period, there have been sharp fluctuations in oil prices.

16. Sharia law prohibits Islamic banks from receiving any interest on the reserves from central banks.

17. Islamic banks that operate within a conventional system must adhere to the same regulations for deposit insurance schemes followed by conventional banks (Ahmad, 2000). This presents a challenge for Islamic banks, as they must also adhere to *Shariah* principles. As an example of a bank in this situation, Jordan Islamic Bank protected its investment accounts without breaking *Shariah* principles (Ahmad, 2000). In the Sudan, which has had a dual banking system since 2005 and prior to that had a totally Islamic system, the government established a deposit insurance scheme that operates according to *Sharia* principles in 1996 (Ahmad, 2000).

18. Given that the income for most Islamic banks comes from noninterest-based operations and that their deposits are contingent on the outcome of the project financed, the NIM variable captures not only the banks' ability to reduce risk and insolvency but also their ability to generate returns on their deposits (Hassan and Bashir, 2003).

19. The finding supports the argument that banks that have a great deal of capital can charge more for loans, pay less on deposits and pursue more business opportunities because they face a lower risk of bankruptcy (Srairi, 2009).

20. This indicates that Basel III's impact on Islamic banks will be minimal.

21. Most foreign banks come from developing countries, and this suggests that those banks do not have the technical or regulatory advantages that would allow them to compete successfully at the international level.

22. In 2011, Thomson Reuters launched world's first Islamic interbank rate but this benchmark rate is based LIBOR. Consequently, this will not help the Islamic banking industry overcome the effects of interest rates.

23. The countries that are located in the MENA region and are net oil importers experience positive influences on GDP and higher profitability in their banking systems due to increases in deposits and financial activities. Many of these deposits come indirectly via trade with net oil-exporting countries and money transfers from expats working in those countries (Abeysinghe, 2001; Berument and Ceylan, 2005). On the other hand, low oil prices could make banks more risk averse, which generally can lead to lower profits for banks located in oil-exporting countries, and the opposite could occur in net importing countries. In addition,

Islamic banks in GCC countries have shares in the Islamic banks that operates in non-oil producing countries.

24. This pricing procedure will depend on real economy activities; scholars have suggested some techniques to achieve this alternative pricing model, with the most discussed ones being the rate of return on investment and cost of capital.

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Appendix

Determinants
of Islamic
banks'
profitability

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Variables	EQTA	DSTA	OOI	LOTA	LLSN	OHTA	FRGN	RGDPG	LNGDP	RI	OIL	TAX	INR	RESDA	MCAP	LNASS	C3
EQTA	—																
DSTA	−0.46	—															
OOI	0.23	−0.07	—														
LOTA	−0.16	0.47	0.03	—													
LLSN	−0.18	0.16	−0.02	0.01	—												
OHTA	0.16	0.10	0.10	0.15	0.14	—											
FRGN	0.09	−0.01	−0.15	−0.21	−0.08	−0.05	—										
RGDPG	0.02	−0.04	0.11	−0.04	−0.06	−0.03	−0.05	—									
LNGDP	0.24	0.03	−0.21	0.04	−0.01	−0.04	−0.25	0.18	—								
RI	−0.02	0.25	−0.06	0.32	−0.01	−0.01	−0.04	−0.21	0.12	—							
OIL	0.04	−0.08	0.04	−0.03	−0.03	−0.12	−0.12	0.22	−0.08	0.06	—						
TAX	−0.01	−0.09	0.15	0.15	0.01	0.04	0.05	−0.05	−0.08	0.22	0.01	—					
INR	−0.26	0.31	0.08	0.2617	−0.04	0.17	−0.03	−0.05	−0.16	0.01	0.01	−0.07	—				
RESDA	−0.21	−0.18	−0.28	−0.05	0.21	−0.12	0.17	0.10	0.01	0.36	0.06	0.16	−0.03	—			
MCAP	0.04	0.19	−0.04	−0.16	0.10	−0.40	−0.12	0.14	0.38	0.10	−0.01	0.01	−0.21	0.35	—		
LNASS	−0.17	0.36	−0.28	0.33	0.15	−0.36	−0.40	−0.01	0.44	0.01	−0.01	−0.13	0.20	−0.22	0.14	—	
C3	0.03	−0.08	0.00	−0.01	−0.02	0.32	0.32	0.09	0.34	−0.12	−0.13	0.10	0.07	0.34	−0.02	−0.07	—

Note: Pearson's correlation statistics

Table AI.
Correlation
coefficients matrix

Variables	Description	Expected direction of effect
Dependent variables		
ROAA	Net income divided by average total assets	
NIM	Non-interest income divided by average earning assets	
Independent variables		
Bank characteristics		
EQTA	Equity divided by average total assets	+
DSTA	Consumer and short-term funds divided by average assets	+
OOI	Other operating income divided by average assets	+
LOTA	Loans divided by average assets	+
LLSN	Loan loss provision divided by average loans	−
OHTA	Overhead divided by average assets	−
FRGN	Dummy, equal one if a bank has at least 50% foreign ownership otherwise zero	−
Macroeconomic		
RGDPG	Real GDP growth	+
LNGDP	Log GDP per capita (constant 2005 USD prices)	+
RI	Real interest rate (Interest rate adjusted for inflation)	−
Oil shock		
OIL	Annual change on oil prices (constant 2005 USD prices)	+
Taxation		
TAX	Tax divided by average before tax profit	−
RESDA	Reserve of the banking system over deposit of the banking system multiplied by customer and short-term funding over average assets for each bank	−
Deposit insurance		
INR	Dummy, equal one if the country has explicit deposit insurance and zero otherwise	−
Financial structure		
MACP	Market capitalization over GDP	+
LNASS	Log of bank's assets (constant 2005 USD prices)	−
C3	The assets of the largest three banks divided by the assets of the banking system	+

Table AII.
Study variables and hypothesized effect directions

Variables	1	2	3	4	5	6
EQTA	0.051 (2.135)**	0.076 (4.263)***	0.077 (4.310)***	0.081 (3.574)***	0.082 (3.573)***	0.069 (2.174)**
DSTA	0.002 (0.612)	0.003 (0.735)	0.003 (0.857)	0.001 (0.307)	0.002 (0.559)	0.01 (1.339)
OOI	0.156 (1.467)	0.274 (4.389)***	0.273 (4.331)***	0.249 (3.412)***	0.246 (3.338)***	0.264 (3.547)***
LOTA	−0.004 (−1.067)	−0.009 (−1.400)	−0.009 (−1.444)	−0.009 (−1.029)	−0.009 (−1.097)	−0.017 (−1.831)*
LLSN	−0.314 (−3.429)***	−0.345 (−8.680)***	−0.348 (−9.024)***	−0.369 (−7.495)***	−0.366 (−7.306)***	−0.456 (−6.838)***
OHTA	−0.466 (−2.944)***	−0.513 (−2.913)***	−0.514 (−2.945)***	−0.442 (−2.344)**	−0.443 (−2.357)**	−0.237 (−1.169)
FRGN	−0.228 (−1.038)	−0.404 (−1.605)	−0.413 (−1.561)	−0.623 (−3.406)***	−0.59 (−3.081)***	−1.412 (−5.481)***
RGDPG		−0.015 (−1.096)	−0.017 (−1.139)	−0.022 (−1.261)	−0.025 (−1.435)	−0.005 (−0.308)
LNGDP		1.369 (1.588)	1.246 (1.514)	0.891 (1.216)	1.049 (1.445)	−0.462 (−0.469)
RI		−0.016 (−0.902)	−0.017 (−1.040)	−0.017 (−1.144)	−0.018 (−1.213)	−0.019 (−1.060)
OIL			0.004 (1.244)	0.006 (2.081)**	0.006 (2.12)**	0.002 (0.757)
TAX				−0.001 (−0.668)	−0.001 (−0.659)	−0.001 (−0.386)
RESDA				0.042 (3.002)***	0.036 (2.977)***	−0.016 (−0.514)
INR					−0.379 (−1.616)	−0.215 (−0.341)
MCAP						0.006 (2.135)**
LNASS						0.252 (1.826)*
C3						0.004 (0.413)
Constant	1.677 (3.539)***	−9.676 (−1.379)	−8.724 (−1.290)	−5.984 (−1.019)	−7.067 (−1.216)	2.967 (0.404)
ADJ. R^2	0.663	0.744	0.745	0.790	0.789	0.822
F–STA	7	11.629	11.568	12.383	12.181	13.625
DW	1.572	1.790	1.80	1.94	1.94	2.07

Notes: Panel Least Squares FE model; t statistics are in parentheses; ***$p < 0.01$; **$p < 0.05$; *$p < 0.10$

Table AIII.
Determinants of
ROAA

Variables	1	2	3	4	5	6
EQTA	0.022 (0.867)	0.049 (3.112)***	0.050 (3.133)***	0.06 (3.909)***	0.057 (3.885)***	0.0537 (2.231)**
DSTA	−0.003 (−0.551)	−0.001 (−0.167)	0.000 (0.062)	0.003 (0.397)	0.004 (0.635)	0.015 (2.030)**
OOI	−0.401 (−3.002)***	−0.229 (−3.726)***	−0.231 (−3.737)***	−0.267 (−3.485)***	−0.270 (−3.523)***	−0.272 (−3.346)***
LOTA	0.003 (0.443)	0.000 (0.015)	−0.000 (−0.037)	−0.001 (−0.063)	−0.001 (−0.123)	−0.009 (−0.835)
LLSN	0.099 (0.832)	0.059 (1.592)	0.057 (1.477)	−0.007 (−0.205)	−0.003 (−0.096)	0.024 (0.448)
OHTA	0.642 (3.940)***	0.646 (3.794)***	0.643 (3.899)***	0.862 (5.262)***	0.861 (5.305)***	0.866 (4.241)***
FRGN	0.711 (1.594)	0.502 (0.876)	0.494 (0.846)	0.262 (0.520)	0.305 (0.595)	−0.718 (−1.112)
RGDPG		−0.016 (−0.921)	−0.018 (−1.021)	−0.031 (−1.442)	−0.034 (−1.612)	−0.032 (−1.946)*
LNGDP		1.545 (1.675)*	1.404 (1.610)	1.647 (2.553)**	1.853 (2.841)***	0.989 (0.650)
RI		−0.022 (−0.893)	−0.024 (−1.007)	−0.048 (−2.297)**	−0.049 (−2.326)**	−0.045 (−2.377)**
OIL			0.004 (1.782)*	0.006 (1.999)**	0.006 (2.081)**	0.004 (1.351)
TAX				−0.002 (−0.851)	−0.002 (−0.865)	−0.001 (−0.686)
RESDA				0.015 (0.645)	0.006 (0.326)	−0.072 (−2.353)**
INR					−0.497 (−1.392)	−1.230 (−2.411)**
MCAP						0.002 (0.669)
LNASS						0.188 (0.903)
C3						0.021 (2.057)**
Constant	2.144 (4.314)***	−10.993 (−1.461)	−9.895 (−1.388)	−12.141 (−2.428)**	−13.544 (−2.678)***	−8.896 (−0.739)
ADJ. R^2	0.784	0.785	0.846	0.852	0.851	0.689
F-STA	12.774	14.076	13.978	17.940	17.663	6.934
DW	1.6	1.71	1.71	1.96	1.97	1.98

Notes: Panel Least Squares FE model; t statistics are in parentheses; ***$p < 0.01$; **$p < 0.05$; *$p < 0.10$

Table AIV.
Determinants of NIM