

Determinants of Islamic Banking Profitability

M. Kabir Hassan, Ph.D.
Professor of Finance
Department of Economics and Finance
University of New Orleans
New Orleans, LA 70148
Phone: 504-280-6163
Fax: 504-280-6397
Email: mhassan@uno.edu

Abdel-Hameed M. Bashir, Ph.D.
Senior Economist
Economic Policy and Strategic Planning Division
Islamic Development Bank
P.O. Box 9201, Jeddah 21413, Saudi Arabia
Phone: 966-2-646-7468
Email: ambashir@isdb.org

ERF Paper

Determinants of Islamic Banking Profitability

Abstract

The paper analyzes how bank characteristics and the overall financial environment affect the performance of Islamic banks. Utilizing bank level data, the study examines the performance indicators of Islamic banks' worldwide during 1994-2001. A variety of internal and external banking characteristics were used to predict profitability and efficiency. In general, our analysis of determinants of Islamic bank profitability confirms previous findings. Controlling for macroeconomic environment, financial market structure, and taxation, the results indicate that high capital and loan-to-asset ratios lead to higher profitability. Everything remaining equal, the regression results show that implicit and explicit taxes affect the bank performance measures negatively while favorable macroeconomic conditions impact performance measures positively. Surprisingly, the results indicate a strong positive correlation between profitability and overhead.

Determinants of Islamic Banking Profitability

1. Introduction

The steady expansion of Islamic banks has been the hallmark of the Muslim world financial landscape in the 1980s and 1990s. With a network that spans more than 60 countries and an asset base of more than \$166 billion, Islamic banks are now playing an increasingly significant role in their respective economies. Based on their charters, Islamic banks have the flexibility of becoming shareholders and creditors of firms, as well as the advantage of providing investment-banking services. In this respect, Islamic banks are rapidly gaining market shares in their domestic economies¹. In retrospect, the presence of Islamic banks exemplifies the empirical success and the viability of eliminating fixed interest payments from financial transactions.

Indeed, consolidation among banks, rising competition and continuous innovation to provide financial services, all contribute to a growing interest in a detailed critical evaluation of Islamic banks. In fact, evaluating the performance of Islamic banks is essential for managerial as well as regulatory purposes. While managers are keen to determine the outcomes of previous management decisions, bank regulators concerned about the safety and soundness of the banking system and with preserving public confidence, monitor banks' performance to identify banks that are experiencing severe problems. Without persistent monitoring of performance, existing problems can remain unnoticed and could lead to financial failure in the future. Depositors may also be interested in characterizing the performance of their bank(s) since they are not entitled to fixed returns and the nominal values of their deposits are not guaranteed. Most importantly, performance evaluation is needed to provide answers to key policy questions such as: should Islamic banks be held to the same set of regulations as conventional banks? Are they relics of a bygone era, propped up by subsidies and distorting financial-sector competition? Or, are they efficient and focused financial institutions that could, if unleashed, eventually dominate the retail financial landscape?

Previous attempts to study Islamic Banks (Ahmed 1981, Karsen 1982) focused primarily on the conceptual issues underlying interest-free financing. The issues of viability of Islamic banks and their ability to mobilize saving, pool risks and facilitate transactions did not get enough coverage in the existing literature. Fewer studies, however, have focused on the policy implications of eliminating interest payments [Khan (1986), Khan and Mirakhor (1987), and Bashir (1996)]. In fact, the lack of complete data impeded any comprehensive analysis of the

¹ Their market share has grown from around two percent in the 1970s to around fifteen percent in the 1990s, see Aggarwal and Yousef (2000).

experience of the last three decades. For example, the empirical work done so far has yielded inconclusive results [see, Bashir, Darrat and Suliman (1993), Bashir (1999), Zaher and Hassan (2001) and Hassan (1999)]. Meanwhile, the recent trends of financial liberalization and deregulation have created new challenges and new realities for Islamic banks. The integration of global financial markets has put Islamic banks in a fierce competition with traditional banks. To compete in local and global deposit markets, Islamic banks have to design and innovate Islamically acceptable instruments that can cope with the continuous innovations in financial markets. In addition, Islamic banks should find investment opportunities (for fund mobilization and utilization) that offer competitive rates of return at acceptable degrees of risk. Equally, banks' management must carefully consider interactions between different performance measures in order to maximize the value of the bank.

This paper intends to characterize some financial and policy indicators that impact the overall performance of Islamic banks. Specifically, the purpose of the study is to closely examine the relationship between profitability and the banking characteristics, after controlling for economic and financial structure indicators. The intention is to decide which, among the potential determinants of performance, appears to be important. By studying the connection between Islamic banks' performance and the efficiency indicators, this paper contributes to the on going discussion on the effects of deregulation and liberalization on the performance of the banking sector. In the meantime, the paper also attempts to add to the existing literature in several ways. First, utilizing bank level data, the paper provides summary statistics pertaining to Islamic banks' sizes and profitability. Second, the paper uses regression analysis to determine the underlying determinants of Islamic bank's performance². To this end, a comprehensive set of internal characteristics is examined as determinants of banks' net margins and profitability³. These internal characteristics include bank size, leverage, loans, short term funding, and overhead. Third, while studying the relationship between banks' internal characteristics and performance, the paper controls the impact of external factors, such as macroeconomic, regulatory and financial market environment. Among the external factors controlled, reserve taxes, and the market capitalization were not included in previous studies of Islamic banks. Moreover, some of the determinants were also interacted with the country's GDP per capita to check whether their impacts on bank performance differ with levels of income. Finally, the results show that it is

² Since both shareholders and depositors in Islamic banks are the residual claimants to the bank's profits, bank profitability is the designated measure of bank performance.

³ The literature divides bank profitability determinants to internal and external measures. Internal factors are areas of bank management that the officers and staff of the bank have under their immediate control. By contrast, external factors are environmental aspects of the bank's market over which management has no direct control (Bourke, 1989, Molyneux and Thornton, 1992, Fraser, Gup and Kolari, 2001).

possible to conduct a meaningful analysis in spite of the substantial differences in regulations and financial development between the countries in the sample. The rest of the paper is organized in four sections. Section 2 identifies the data sources, defines and highlights the variables benchmarking Islamic banking performances. In section 3, we formulate the predicted model and discuss the possible links between bank performance and the set of internal and external indicators. Section 4 represents the empirical results while the conclusions are stated in section 5.

2. The Data and Variables

The data used in this study are cross-country bank-level data, compiled from income statements and balance sheets of Islamic banks in 21 countries for each year in the 1994-2001 period. Table 1 gives the country-wise and year-wise breakdown of these Islamic banks. The main data source is BankScope database compiled by IBCA. In so far as possible, the BankScope database converts the data to common international standards to facilitate comparisons. Other data sources include International Monetary Fund's International Financial Statistics (IFS), World Development Indicators (2001), and Global Development Finance (2001).

Let us begin our review with an initial assessment of the banking sector of the selected Islamic countries by analyzing some accounting ratios as given in Table 2 without controlling for the other variables that are also important. We will move into deeper analysis gradually.

In column 1 through 4 of Table 2, presents the averages of four macro-economic variables, which are Gdp/Cap, Growth, Inflation and Real Interest. Per capita GDP measured in 1995 USD is highest in Qatar (19,907 USD in 1995 dollars) followed by UA Emirates (19,988) and then by Brunei (17,657). Sudan has the lowest per capita GDP (284). Bangladesh, Gambia and Yemen all have per capita GDP within the range of 300 to 350. Growth rates of GDP vary within the sample countries from a highest of 5.77 percent per year in Sudan and a lowest of .98 percent in Indonesia. Inflation is highest in Sudan (49.44 percent per year) followed by Indonesia (24.40) and Iran (23.15). It is lowest in Jordan at 1.82 followed by 1.98 in UA Emirates. Real interest is highest in Gambia (20.80) and lowest in Algeria (-1.66). Therefore, the Islamic Banks that we are about the study operate different countries around the world at different levels of development. Economic structure, historical backgrounds, social norms and cultural values of these countries are also diverse in many ways.

Column 5 to 7 of Table 2 shows reserve to deposit ratios, bank to GDP ratios, and tax ratios. These ratios are indicators of financial market structure. Reserve to deposit ratio is highest in Jordan 46.69 percent followed by Iran at 31.64 and then by Sudan at 26.03. The ratio is lowest in Algeria (1.97). Bank to GDP ratios, which is the ratio of the deposit money bank divided by

GDP, is highest in Lebanon (127.40) followed by Malaysia (117.47) and then by Kuwait (100). Sudan has the lowest bank to GDP ratio of .01 and is preceded by Yemen (8.82) and then Mauritania (11.35). Tax ratio is highest in Iran (75 percent). It is followed by Sudan and Malaysia, both just over 68.00. It is lowest in Bahrain -7.87 percent.

In column 8 of Table 2 we present the Deposit Insurance dummy variable. It takes a value of 1 if such an insurance scheme is present otherwise it takes 0. We can observe that only Bahrain, Bangladesh and Lebanon have such schemes. In column 9, we present the concentration ratios defined as the ratio of the three largest banks' asset to total banking sector assets. We can see that the concentration ratio is very high in Mauritania (97 percent) followed by Bahrain (84 percent) and then by Qatar (79). It is lowest in Bangladesh (9.13). For other countries included in the sample this ratio ranges from 66 to 26 percent. This is high indeed. This indicated lack of competition within the banking sector. The last column of Table 2, presents the credit variables which are defined as the domestic credit of the private sector over total assets of the banking system. Mauritania has the highest credit ratio of 88 percent followed by Saudi Arabia (83) and then by Tunisia (73).

Financial institutions in general and banks in particular are exposed to a variety of risks, whereby the extent of these risks depends on the portfolio characteristics of individual banks (IMF, 2001). The variety of risks to which banks are exposed justifies looking at aspects of bank operations that can be categorized under the CAMEL framework⁴. Recent studies have attempted to deepen our understanding of the financial soundness indicators that are more relevant for the analysis of financial stability. The recent studies have focused on the contemporaneous indicators of financial health. No consensus has yet emerged, however, on a set of indicators that is more relevant to assessing financial soundness or to building effective early warning systems. Nonetheless, the literature provides some empirical justifications for the use of most of the variables that have been identified as prudential indicators of financial soundness (IMF, 2000).

Table 3 presents comparative performance indicators of Islamic Banks and commercial banks operating in the same market in countries where Islamic Banks operate side by side with conventional banks. The importance of the indicators listed in Table 3 stems from the fact that they help bank regulators assess bank performance. To facilitate comparison, the commercial banks and Islamic Banks selected are similar in size, where size is measured in terms of total assets. Specifically, we select all commercial banks that are in the third quartile, in terms of size, in each country. Table 3 also summarizes the time averages of some important ratios. The value

⁴ The variety of risks to which banks are exposed justifies looking at certain aspects of bank operations. Most bank supervisors have broadly adopted the U.S. CAMEL method of assessing bank performance: capital adequacy, asset quality, management quality, earnings, and liquidity.

of each ratio represents the average **over** the period 1994-2001. All ratio definitions are given in the appendix.

To analyze the performance measures presented in Table 3, we start with assets quality **ratios**. Monitoring asset quality indicators is important since risks to the solvency of financial institutions often derive from impairment of assets. The most useful asset quality indicator is the financial leverage ratio (measured by the ratio of asset to capital). Poor asset quality is perceived to cause capital erosion and increase credit and capital risks. Asset quality depends on the quality of credit evaluation, monitoring and collection within each bank, and could be improved by collateralizing the loans, having adequate provisions against potential losses, or avoiding asset concentration on one geographical or economic sector⁵. Meanwhile, any analysis of asset quality needs to take into account indicators of the likelihood of borrowers to repay their loans. It is particularly important to monitor whether the increase in indebtedness in the economy is concentrated in sectors that are vulnerable to shifts in economic activity. Loan concentration in a specific economic sector or activity (measured as a share of total loans) makes banks vulnerable to adverse developments in that sector or activity. Hence, the quality of financial institutions, loan portfolios is closely related to the financial health and profitability of the institutions' borrowers, especially the nonfinancial enterprise sector (IMF, 2001). In this context, monitoring the level of household and corporate indebtedness is useful.

In comparing the asset quality ratios for equal-sized commercial and Islamic Banks, we observe a significant difference in the ratio of loan-loss reserve to gross loans. Commercial banks in our sample tend to have more loan loss reserve – relative to the total loans – than Islamic Banks. Since high-performing banks tend to restrain their credit risk, they tend to have lower loan loss provision ratio. The comparison between the two groups of banks indicates that Islamic Bank have a better quality of the loan portfolio. Another significant difference exists when comparing the ratio of impaired loan over total loans. As in the previous case, Islamic banks have better assets quality compared to commercial banks. Finally, a significant difference exists when comparing the percentage of net charge-off (NCO) to gross loans. The net noncharge-off indicates the percentage of loans written off the books. With a zero percent, Islamic Banks are out-performing their peers in the sample. In summary, when compared to commercial banks with similar size, Islamic banks seems to have better asset quality than their counterparts.

⁵ A large concentration of aggregate credit in a specific economic sector or activity, especially commercial property, may signal an important vulnerability of the financial system to developments in the sector or activity. Many financial crises in the past (including the Asian crises) have been caused or amplified by downturns in particular sectors of the economy spilling over into the financial system via concentrated loan books of financial institutions (IMF, OP 192, April 2000).

The second entry in Table 3 includes the capital adequacy ratios. Capital adequacy and availability ratios indicate the robustness of financial institutions to shocks to their balance sheets. Usually actual capital adequacy ratios are lagged indicators (historic) of the already existing banking problems. Yet, an adverse trend in these ratios may signal increased risk exposure and possible capital adequacy problems. According to the Basle Committee on Banking Supervision, the most commonly used indicator in this group is the risk-based capital ratio (measured as the ratio of capital to risk-adjusted assets). Simple leverage ratios (ratio of assets to capital) usually complement this ratio⁶. In addition to capital adequacy, it is important also to monitor other capital quality indicators, which may reflect the bank's capability of absorbing losses.

When capital ratios are compared for the banks in our sample, several systematic variations between Islamic Banks and commercial banks were observed. One noticeable difference is the variation in capital-asset ratios. Although both type of banks (on average) maintain the Basle Committee's uniform standard of capital adequacy of 8 percent, Islamic Banks tend to maintain much higher capital-asset ratios than their commercial peers. Except for one ratio (subordinated debt over capital funds), Islamic Banks seem to be better capitalized than commercial banks with similar size. The subordinated debt ratio indicates the percentage of total capital provided in the form of subordinated debt. The lower this ratio is the better. In summary, Islamic banks have better capital adequacy ratios than Commercial banks with similar size.

The third group of ratios presented in Table 3 is operation ratios. Generally, banks are increasingly involved in diversified operations that involve some aspect of market risks. The most important components of market risk, which significantly impact assets and liabilities of financial institutions are interest and exchange rate risks⁷. Virtually, all financial institutions are subject to interest rate risk and, therefore, it is considered as a market indicator.

Most of the operation ratios presented in Table 3 are significantly bigger for the commercial banks compared to those of Islamic Banks in our sample. These include, net interest income or revenue over total (average) assets, other operating income over total assets, non-operating item and tax over total assets, non-operating items over net income and recurring earning power. Usually, better performing banks have larger operations ratios. In our case, commercial banks have significantly bigger operations ratios.

The last group of indicators in Table 3, are the liquidity ratios. Liquidity is generally not a major problem for sound banks in a reasonably competitive banking system. However, liquidity

⁶ Financial institutions' leverage increases when bank assets grow at a faster rate than capital, and is particularly useful as an indicator for institutions that are primarily involved in lending.

⁷ Large open foreign exchange positions (including foreign exchange maturity mismatches) and a high reliance on foreign borrowing (particularly short-term maturity) may signal a high vulnerability of financial institutions to exchange rate swings and capital flow reversals (IMF, OP#192, April 2000).

can change rapidly, requiring frequent updating of relevant indicators. The recent banking crises suggest that in many cases, liquidity crises have their roots in solvency problems. It is, therefore, extremely important to monitor liquidity indicators because poor management of short-term liquidity may force solvent banks toward closure⁸. An important indicator of liquidity is interbank credit, whereby a high dispersion in interbank rate signals high risk. Banks may control their interbank positions by using quantitative controls.

In comparing the liquidity ratios for our sample banks, the two ratios that are significantly different between commercial banks and Islamic Banks are net loan over customer and short term funding, and liquid assets over customer's short term funding. These ratios tend to be higher for high-performing banks. The liquidity ratios show that commercial banks are more liquid than Islamic banks.

We find almost similar results when we compare the Islamic Bank performance ratios with those of conventional commercial banks according to deposit base. These results are reported in Table 4.

3. Determinants of Islamic Banks Profitability and Spread

In this section, we formulate the model used to examine the relationship between the performance of Islamic banks and the set of internal and external banking characteristics. Since the ultimate objective of management is to maximize the value of the shareholder's equity, an optimal mix of returns and risk exposure should be pursued in order to increase the profitability of the bank. Hence, a comprehensive plan to identify objectives, goals, budgets, and strategies should be developed. The planning should encompass both internal and external performance dimensions. Because of increasing innovation and deregulation in the financial service industry, internal and external competitiveness is becoming a critical factor in evaluating performance. While internal performance is evaluated by analyzing financial ratios, external performance is best measured by evaluating the bank's market share, regulatory compliance, and public confidence.

The operating efficiency and profitability measures used as criterion for performance are specified below. Whereas capital, leverage, overhead, loan and liquidity ratios were used as proxies for the bank's internal measures, macroeconomic indicators, taxation, financial structure, and country dummies were used to represent the external measures. A linear equation, relating

⁸ Acute liquidity problems could potentially lead to widespread solvency problems if banks are forced to liquidate their assets at a significant loss. These effects would have grave consequences to borrowers, lenders and the economy at large.

the performance measures to a variety of financial indicators is specified⁹. The subsequent regression analysis starts from estimating the following basic equation:

$$I_{ijt} = \alpha_0 + \alpha_i B_{it} + \beta_j X_{jt} + \gamma_t M_{jt} + \delta_j C_j + \varepsilon_{ijt} \quad (1)$$

where, I_{ijt} = is the measure of performance (either non-interest margin or before tax profit margin) for bank i in country j at time t ; B_{it} are bank variables for bank i at time t ; X_{jt} are country variables for country j at time t ; M_{jt} are the financial structure variables in country j at time t , and C_j are country dummy variables¹⁰. α_0 is a constant, and $\alpha_i, \beta_j, \gamma_t$ and δ_j are coefficients, while ε_{ijt} is an error term. Although the primary focus of this paper is the relationship between performance and bank internal variables, the inclusion of macroeconomic variables, financial structure variables, and the country dummies is meant to control for cyclical factors that might affect bank performance. Several specifications of equation (1) are estimated.

3.1. Measures of Performance

Evaluating bank performance is a complex process that involves assessing interaction between the environment, internal operations and external activities. In general, a number of financial ratios are usually used to assess the performance of financial intermediaries. The primary method of evaluating internal performance is by analyzing accounting data. Financial ratios usually provide a broader understanding of the bank's financial condition since they are constructed from accounting data contained on the bank's balance sheet and financial statement. Another key management element that many studies have found to be a primary factor in assessing bank performance is operating efficiency. In measuring efficiency, both ex ante and ex post spreads can be used to provide information on cost control. Generally speaking, ex ante spreads are calculated from the contractual rates charged on loans and rates paid on deposits. In contrast, however, the spread for the Islamic banks can be calculated from the rates of return generated from various non-interest banking activities, including participation in direct investment. As an efficiency indicator, we use the ex post spreads consisting of revenues generated from Islamic banking operations such as mark-up (*Murabaha*), rent-to-own (*Ijara*),

⁹ No specification test is used here to support using the linear function. However, the linear functional form is widely used in the literature and produces good results (see Short, 1979, and Bourke, 1989).

¹⁰ We run Hausman specification tests for both fixed and random coefficient effect within pooled cross-section time-series model. We report the correctly specified panel data model.

deferred sale (*Bai Mu'jal*), and service charges, minus the expenses of carrying such activities¹¹. Accounting values from the bank's financial statement were used to compute the ex post spread and profitability measures employed in this study.

Four measures of performance are used in this study: the net non-interest margin (NIM), profit margin (*BTP/TA*), returns on assets (ROA), and returns on equity (ROE). The NIM is defined as the net income accruing to the bank from non-interest activities (including fees, service charges, foreign exchange, and direct investment) divided by total assets. Non-interest income is growing in importance as a source of revenue for conventional banks in the 1990s. Some of the fastest growing non-interest income items include ATM surcharges, credit-card fees, and fees from the sale of mutual funds and annuities (see Kidwell, Peterson and Blackwell, 2000). For Islamic banks, non-interest income, NIM, makes up the lion's share of total operating income and captures the bank's ability to reduce the risk of insolvency. Moreover, since the returns on Islamic banks' deposits are contingent on the outcomes of the projects that banks finance, then NIM reflects the management's ability to generate positive returns on deposits. If banks were able to engage in successful non-loan activities and offer new services, non-interest income will increase overtime (Madura, 2000). Goldberg and Rai (1996) used the net non-interest return as a rough proxy of bank efficiency¹².

The bank's before-tax profit over total assets (*BTP/TA*) is used as a measure of the bank's profit margin. This measure is computed from the bank's income statement as the sum of non-interest income over total assets minus overhead over total assets minus loan loss provision over total assets minus other operating income. *BTP/TA* reflects the banks' ability to generate higher profits by diversifying their portfolios. Since large size (scale) enables banks to offer a large menu of financial services at lower costs, then positive relationships between *BTP/TA* and the explanatory variables in equation (1) will give support to the efficient-structure hypothesis (Smirlock, 1985).

Other alternative measures of overall performance are ROA and ROE. Both measures are closely tied to the key item in the income statement; net income. ROA and ROE have been used in most structure-performance studies and are included here to reflect the bank's ability to generate income from nontraditional services. ROA shows the profit earned per dollar of assets and most importantly, reflects the management ability to utilize the bank's financial and real investment resources to generate profits. For any bank, ROA depends on the bank's policy

¹¹ The ex post spreads on conventional banks consist of the difference between banks' interest revenues and their actual interest expenses.

¹² Since the operations of Islamic banks are generally risky, any change in the perceived risks faced by the bank will necessarily be reflected on this margin.

decisions as well as uncontrollable factors relating to the economy and government regulations. Many regulators believe return on assets is the best measure of bank efficiency. ROE, on the other hand, reflects how effectively a bank management is using shareholders funds. A bank's ROE is affected by its ROA as well as by the bank's degree of financial leverage (equity/ asset). Since returns on assets tend to be lower for financial intermediaries, most banks utilize financial leverage heavily to increase return on equity to a competitive level.

3.2. Bank Characteristics

To assess the relationship between performance and internal bank characteristics, our analysis utilizes several bank ratios. These supplemental measures are particularly useful for comprehensive understanding of the factors underlying a bank's net margins and the quality of bank management. The set of ratios used comprises fund source management (CSTFTA), funds use management (OVRHD/TA and NIEATA), leverage and liquidity ratios (EQTA and LOANTA). Each one of these determinants was also interacted with per capita GDP to capture the effects of GDP on bank performance. The capital ratios have long been a valuable tool for assessing safety and soundness of banks. Bank supervisors use capital ratios as rules of thumb to gauge the adequacy of an institution's level of capital. Since capital management is related to dividend policy, banks generally prefer to hold the amount of capital that is just sufficient to support bank operations. Starting 1988, the Basel Accord has imposed uniform capital ratio standards on banks internationally.

Previous studies of the determinants of bank profitability in the United States found a strong and statistically significant positive relationship between EQTA and profitability. This supports the view that profitable banks remain well capitalized; or the view that well capitalized banks enjoy access to cheaper (less risky) sources of funds with subsequent improvement in profit rates (see Bourke, 1989). A positive relationship between the ratio of bank loans to total assets, LOANTA, and profitability was also found from using international database (Demirguc-Kunt and Huizinga, 1997). Bank loans are expected to be the main source of revenue, and are expected to impact profits positively. However, since most of the Islamic banks' loans are on the form of profit and loss sharing (loans with equity features), the loan-performance relationship depends significantly on the expected change of the economy. During a strong economy, only a small percentage of the PLS loans will default, and the bank's profit will rise. On the other hand, the bank could be severely damaged during a weak economy, because several borrowers are likely to default on their loans. Ideally, banks should capitalize on favorable economic conditions and insulate themselves during adverse conditions.

Since the bulk of the earnings of Islamic banks come from non-interest activities, the ratio of non-interest earning assets to total assets, NIEATA, is expected to impact profitability positively. The ratio of consumer and short-term funding to total assets, CSTFTA, is a liquidity ratio that comes from the liability side. It consists of current deposits, saving deposits and investment deposits. Since liquidity holding represents an expense to the bank, the coefficient of this variable is expected to be negative.

The ratio of overhead to total assets, OVRHD, is used to provide information on variation in operation costs across the banking system. It reflects employment, total amount of wages and salaries as well as the cost of running branch office facilities. A high OVRHD ratio is expected to impact performance negatively because efficient banks are expected to operate at lower costs. On the other hand, the usage of new electronic technology, like ATMs and other automated means of delivering services, has caused the wage expenses to fall (as capital is substituted for labor). Therefore, a lower OVRHD ratio may impact performance positively. Meanwhile, the interaction variable OVRGDP captures the effects of both overhead and GDP on the performance measures. The sign of the coefficient of this variable is not restricted.

3.3. The Control Variables

To isolate the effects of bank characteristics on performance, it is necessary to control for other factors that have been proposed in the literature as possible determinants of profitability. Four sets of variables are expected to be external to the bank: the macroeconomic environment, the financial market structure, and the taxation indicator variables. The economic conditions and the specific market environment would obviously affect the bank's mixture of assets and liabilities. We introduce these indicators in order to see how they interact with each other and how they affect bank performance. Three indicators are used as proxies for macroeconomic conditions: GDP per capita, GDPPC, the real interest rate (RI) and real interest rate*GDPPC. The GDP per capita variable, GDPPC, is expected to have an effect on numerous factors related to the supply and demand for loans and deposits. It is hypothesized in this paper that GDPPC affects performance measures positively. Since most of the countries in the sample are characterized as low or middle income, banks in these countries are expected to operate less competitively and are, therefore, expected to generate higher profit margins.

Previous studies have also revealed a positive relationship between real interest rate (RI) and bank profitability (Bourke, 1989). For conventional banks, high real interest rate generally leads to higher loan rates, and hence higher revenues. However, in the case of Islamic banks, real interest rate may impact performance positively if a larger portion of Islamic banks' profits

accrues from direct investment, shareholding and/or other trading activities (*Murabaha*). Yet, real interest rate may have a negative effect on bank profitability if higher real interest rates lower the demand for loan.

One of the most important industry characteristics that can affect a commercial bank's profitability is regulation. If regulators reduce the constraints imposed on banks, banks may take on more risk. If banks taking on the higher degree of risk are profitable, then depositors and shareholders gain. If, on the other hand, the banks fail, depositors lose. To incorporate the impact of prudential surveillance and supervision, we used the required reserves of the banking system (RES), and its interactions with GDP, RESGDP, as proxies for financial regulation. Although prudential supervision of Islamic bank is just as necessary and desirable as it is in conventional banks, the traditional regulatory measures are not always applicable to Islamic banks. Many Islamic economists argue that Islamic banks should not be subject to reserve requirements because required reserves do not generate any income to the bank. Nonetheless, we use reserve requirements as proxies for regulation because almost all Islamic banks operate in an environment where these traditional supervisory measures are used. Both implicit and explicit taxes are expected to impact profits negatively¹³.

Studies of financial structure for the banking industry relate bank performance to several market constraints. Competition from other providers of financial services and from the stock market may influence bank's operations (Fraser et al, 2000). In this study, we use the ratio of total bank deposits to GDP (BNK) to measure the influence of the financial market, despite the fact that financial and capital markets are still at the initial stages of development in the countries in our sample. The size of the banking system (BNK), comprising the ratio of total assets of the deposit money bank to GDP, is used to measure the importance of other financial competitors in the economy. Both variables are expected to impact performance negatively. Furthermore, BNK is also interacted with GDP and with each other. Moreover, the number of banks (BANKS) is used to show the impact of competition on Islamic bank profitability. Finally, the total assets (ASST), is used to control for cost differences related to bank size and for the greater ability of larger banks to diversify. The first factor may lead to positive effects if there are significant economies of scale while the second may have negative effects, if increased diversification leads to higher risks and lower returns.

¹³ Theoretically, Islamic banks' deposits are not supposed to be subject to reserve requirement. Therefore, the direction of effect of RES on profitability is unclear.

4. Empirical Results

This section analyzes and presents the regression results. The data from the sample of 43 Islamic banks are pooled for all eight years (1994-2001) and used to replicate and extend earlier research. Different specifications of equation (1) were estimated. As stated above, in addition to bank-level variables, the explanatory variables used include control variables like financial structure variables, taxation variables, and macroeconomic indicators. The estimation technique used is panel data methods and the White (1980) procedure is used to ensure that the coefficients are heteroskedastic¹⁴.

Tables 5 through 8 report the estimated coefficients of the panel regressions for ROA, ROE, Net Profit before Taxes (NPBT) and Net non-Interest Margin, respectively. The results reported are for two sets of models: the fixed effects (FE) model and/or the random effect (RE) model, depending on the result of the Hausman specification test at the 5 percent level. The tables show the estimated coefficients for bank characteristics, macroeconomic indicators, taxation and financial structure. Four possible econometric specifications (for each performance measure) were estimated. We denote them specification 1, 2, 3, and 4, respectively. The first regression in each table is a benchmark, including the bank characteristics indicators only and excluding all other explanatory variables. In the second regression we add the macroeconomic indicators while the third regression adds the taxation variables. Finally, the fourth specification includes all the above variables plus the financial structure variables. The estimation technique is robust-covariance matrix in generalized least squares (GLS).

The first bank characteristic variable is book-to-value equity divided by total assets lagged one period (Equity/TA (t-1)). As with Demirguc-Kunt (1997) and Berger (1995), we find a statistically significant positive relationship between Equity/TA (t-1) and Net non-Interest Margin. Unlike the above-mentioned studies, we find a statistically significant inverse relationship between the equity variable and ROE, indicating that high capital ratio reduces the returns on equity of Islamic Banks. Further, our results show an almost lack of correspondence between the capital ratio variable and the return on assets (ROA). However, when controlling for macro variable, taxation and finance variables, we find a significant negative relation when the dependent variable is profitability (Table 7, specification 4).

In the regressions, the Equity/TA (t-1) variable is also interacted with per capita GDP (measured in thousand of dollars of 1995) to see the effect of the capital ratios on bank performance in countries with different levels of income. The results indicate that the interaction

¹⁴ The use of panel data has a number of advantages. First, it provides an increased number of data points and generates additional degrees of freedom. Second, incorporating information relating to both cross-section and time-series variables can substantially diminish the problems that arise from omitted variables.

variable has negative and statistically significant effects on net interest margin alone, indicating that the Equity/TA (t-1) variable does not have a strong impact on bank performances in countries with different levels of income. The effect of the interaction variable on profit before tax, ROE and ROA are all statistically insignificant.

Next, there is an inverse and statistically significant relationship between Non-interest earning assets variable (NIETA) and the performance measures. Note that the coefficient of non-interest earning variable interacted with GDP is positive and statistically significant in the NIM (specification 1), PBT (specification 1 and 3), all columns of both ROA and ROE specifications. The coefficient of Loan/TA variable is negative and statistically significant for ROE, ROA and profitability and negative, but insignificant, for non-Net Interest Margin only. When the Loan/TA is interacted with GDP per capita, we find significant positive impact in specification 1 for NIM; and specification 2 and 3 in ROA and ROE.

Our results also show that the coefficients of Customer & Short-Term Funding over total assets (CSTFTA) on Net Interest Margin (all specifications) and profitability (specification 2 and 4 only) are negative and significantly different from zero. It does not have any impact on ROE and ROA. The interaction of CSTFTA with GDP has no meaningful relationship with bank's performance measures. The next characteristic variable considered in these regressions is overhead. Our results show that overhead (OVRHD) is directly and significantly related to non-Interest Margin. But it does not have any significant coefficients in ROA, ROE and profitability specifications. When Overhead is interacted with GDP per capita, the results show a significant positive relationship in only specification 3 and 4 of profit before taxes. Therefore, conclusion remains ambiguous.

The final bank characteristics variable, the total liabilities over total assets (LATA) has significant positive correlation on NIM and specification 1 of ROE and ROA. However, its impact on the other performance variables and other specifications are not significant. Its interaction term with GDP enters the NIM equations significantly and negatively. It does not have other significant variables.

We now discuss the effects of macroeconomic variables. Per capita GDP has significant positive coefficient in NIM (specification 2 and 3). It does not have significant coefficient in profitability, ROE and ROA. Next we discuss the growth rate of GDP (GDPGR) variable. It has significant positive relation with NIM (specification 3 and 4), in all specification of profitability, ROA and specification 1 or ROE. As regards inflation rate (INF) and its interaction term with GDP the only significant variable is observed in specification 3 of ROA. Therefore, the impact of these variables on the profitability measures is not conclusive.

Next we present the effect of taxation variables. We observe that reserve variable (RES) and its interaction term with per capita GDP (RESGDP) have no significant relation with any of the performance measures. Our results also show that taxation (TAX) has meaningful positive impact on all the specifications of NIM. Its coefficient is significant only in specification 4 of profitability and ROA. In the rest of the specifications the impact is not statistically significant. We can cautiously conclude that, there is some statistically meaningful relationship between taxation and profitability in Islamic Banks.

For the Financial Structure variables, our results indicate that the total assets of the deposit money bank divided by GDP, its interaction term with GDP and number of banks does not have a significant coefficient in any of the specifications. Concentration has significant impact on profitability, ROE and ROA. Credit has significant and negative correlation on profitability, ROE and ROA. Banks total assets (ASST) has negative and significant and non-zero correlation on profitability and ROA. This implies a negative association. This negative correlation imply that – to some extent – big size tends to be associated with less profitability in Islamic Banks. Although it affects the other two profitability measures (ROA and Before Tax Profit) positively, the impact is not significantly different from zero.

5. Conclusion

The preceding empirical analysis allows us to shed some light on the relationship between banking characteristics and performance measures in Islamic Banks. First, the Islamic banks' profitability measures respond positively to the increases in capital and negatively to loan ratios. The results revealed that larger equity to total asset ratio leads to more profit margins. This finding is intuitive and consistent with previous studies. It indicates that adequate capital ratios play an weak empirical role in explaining the performance of Islamic banks. Islamic Banks' loan portfolio is heavily biased towards short-term trade financing. As such, their loans are low risk and only contribute modestly to the bank profits. Bank regulators may use this as an evidence for prompt supervisory action. Second, the results also indicate the importance of consumer and short-term funding, non-interest earning assets, and overhead in promoting banks' profits. A high CSTF to total asset ratio is shown to lead to low non-interest margins. The counter intuitive finding about the association between NNIM (net not interest margin) and overhead suggests that high profits earned by banks may be appropriated in terms of higher wages and salaries. It appears that the expense preference behavior appears to be holding in the Islamic banking market. Third, the results suggest that the regulatory tax factors are important in the determination of bank

performance. However, our findings seem to suggest that reserve requirement does not have a strong impact on the profitability measures. Fourth, favorable macroeconomic environment seems to stimulate higher profits. Higher growth rate of GDP seem to have a strong positive impact on the performance measures. However, per capita GDP seem to have limited effect on performance. Inflation rate and its interaction term with GDP do not seem to have a significant impact on performance. Finally, the size of the banking system has negative impact on the profitability except net non interest margin.

References

- Aggarwal, R., and T. Yousef (2000), "Islamic banks and investment financing," *Journal of Money, Credit, and Banking*, vol. 32, No.1, pp. 93-120.
- Ahmad, Khurshid. 1981. *Studies in Islamic Economics*. Leicester, United Kingdom: Islamic Foundation
- Ahmed, Zizuddin, M. Iqbal, and M. Fahim Khan. 1983. *Fiscal Policy and Resource Allocation in Islam*. Islamabad, Pakistan: Institute of Policy Studies.
- Bartholdy, J., G. Boyle, and R. Stover. 1997. "Deposit Insurance, Bank Regulation and Interest Rates: Some International Evidence." *Memo*, University of Otago, New Zealand.
- Bashir, A., A. Darrat, and O. Suliman (1993), "Equity Capital, Profit Sharing Contracts And Investment: Theory and Evidence." *Journal of Business Finance and Accounting* Vol. 20, NO. 5: 639-651.
- Bashir, A. 1999. "Risk and Profitability Measures in Islamic Banks: The Case of Two Sudanese Banks." *Islamic Economic Studies*, Vol. 6, No. 2: 1-24.
- Bashir, A. (2000), "Determinants of profitability and rates of return margins in Islamic banks: some evidence from the Middle East" Grambling State University Mimeo.
- Berger, A. 1995. "The Relationship between Capital and Earnings in Banking." *Journal of Money, Credit and Banking* Vol. 27: 432-456.
- Bourke, P. 1989. "Concentration and other determinants of bank profitability in Europe, North America and Australia." *Journal of Banking and Finance* 13: 65-79.
- Boyd, J., and D. Runkle, 1993. "Size and performance of banking firms: Testing the Prediction of the theory." *Journal of Monetary Economics*, Vol. 31:47-67.
- Demirguc-Kunt, A. and E. Detragiache (1998b), "The determinants of banking crises in developing and developed countries," *IMF Staff Papers*, Vol. 45, No. 1, pp. 81-109.
- Demirguc-Kunt, A., R. Levine, and H. G. Min (1998), "Opening to foreign banks: issues of stability, efficiency, and growth," in *The Implications of Globalization of World Financial Markets* (Conference Proceedings: The Bank of Korea, Seoul).
- Demirguc-Kunt, A., and H. Huizinga. 1997. "Determinants of commercial bank interest margins and profitability: some international evidence." *Working Paper*, Development Research Group, World Bank, Washington, D.C.
- _____, and V. Maksimovic. 1996. "Stock Market Development and Financing Choices of Firms." *The World Bank Economic Review* Vol. 10, No. 2: 341-369.
- Goldberg, L., and A. Rai. 1996. "The Structure-Performance Relationship for European Banking." *Journal of Banking and Finance* Vol. 20: 745-771.

Hassan, M. Kabir. "Islamic Banking in Theory and Practice: The Experience of Bangladesh," Managerial Finance . (Published from the U.K) Volume 25, Number 5, 1999: 60-113.

IBCA. 2002. BankScope Database, CD-ROM. Bureau Van Dyck, New York, N.Y.

IFC. 2002. Emerging Market Database. Washington, D.C. CD-ROM

IMF, 2001, "Macroproductual Analysis: Selected Aspects", Background Paper

IMF, "Macroproductual Indicators of Financial System Soundness." Occasional Paper #192, April 2000.

IMF. 2002. International Financial Statistics Yearbook, Washington, D.C. CD-ROM

Karsen, I. 1982. "Islam and Financial Intermediation." *IMF Staff Papers*.

Khan, M. 1986. Islamic Interest Free Banking: A Theoretical Analysis." *IMF Staff Papers*.

_____ and A. Mirakhor. 1987. *Theoretical Studies in Islamic Banking and Finance*: Houston: IRIS Books.

Kim, S. B., and R. Moreno. 1994. "Stock Prices and Bank Lending Behavior in Japan." *Economic Review*: Federal Reserve Bank of San Francisco, No. 1: 31-42.

Levine, Ross (1996), "Foreign banks, financial development, and economic growth," in *International Financial Markets* (Washington DC: The American Enterprise Institute, Claude Barfield, editor)

Molyneux, P., and J. Thornton. 1992. "Determinants of European bank Profitability: A Note." *Journal of Banking and Finance* 16: 1173-1178.

Schranz, M. 1993. "Takeovers Improve Firm Performance: Evidence from the Banking Industry." *Journal of Political Economy*. Vol. 101, No. 2: 299-326.

Wilson, R., *Islamic Financial Markets*,. London: Routledge (1990).

Zaher, Tarek and M. Kabir Hassan. "A Comparative Literature Survey of Islamic Finance and Banking," Financial Markets, Institutions and Instruments, Volume 10, Number 4, 2001: 155-199.

Table 1 Number of Banks by Country and By Year

Country \ Year	1994	1995	1996	1997	1998	1999	2000	2001
ALGERIA		1	1	1	1	1	1	1
BAHAMAS					1	1	1	1
BAHRAIN	3	3	3	4	5	5	4	4
BANGLADESH	1	1	1	1	1	1	1	2
BRUNEI DARUSSALAM	2	2	2	3	3	3	3	
EGYPT	1	2	2	2	2	2	2	1
GAMBIA				1	1	1	1	
INDONESIA			1	1	1	1	1	
IRAN	1	1		3	3	3	3	
JORDAN	1	1	1	1	2	2	2	2
KUWAIT	1	1	1	1	1	1	1	1
LEBANON	1	1	1	1	1	1		
MALAYSIA		2	2	2	3	3	3	3
MAURITANIA					1	1	1	
QATAR	1	2	2	2	2	2	2	2
SAUDI ARABIA	1	1	1	1	1	1	1	
SUDAN	2	2	3	3	3	3	1	1
TUNISIA	1	1	1	1	1	1	1	
UNITED ARAB EMIRATES	1	1	1	1	2	2	2	2
UNITED KINGDOM	1	1	1	1	1	1	1	
YEMEN			1	1	2	2	2	2
Total	18	23	25	31	39	39	34	22

Source: Bank Scope (2002)

Table 2. Economics and Institutional Indicators (Countries where there are Islamic Banks)

All variables, but deposit insurance, are averaged over the period 1994-2001 (or the most available years). The deposit insurance variable takes value 1 if the country has explicit insurance deposit coverage (as of 2001) and zero otherwise. Number of banks is the number of bank with at least three years of complete information in a given country.

Country	Gdp /Cap (US \$ 1995)	Growth	Inflation	Real interest	Reserves /deposit	Bank /GDP	tax	Deposit Insurance	Concentration	Number of banks ^(a)	Credit ^(b)
ALGERIA	1,536	2.69	16.88	-1.66	1.97	29.48	14.12	0	65.92	4.86	10.84
BAHRAIN	10,175	3.57	0.36	11.62	7.58	54.97	-7.87	1	83.84	13.71	2.69
BANGLADESH	344	5.03	3.98	10.16	12.21	30.48	57.23	1	9.13	21.25	64.90
BRUNEI	17,675	n.a.	n.a.	n.a.	n.a.	n.a.	35.17	0	n.a.	3.00	n.a.
EGYPT	1,134	4.96	5.63	8.18	19.72	77.61	3.65	0	47.77	30.07	59.95
GAMBIA	357	5.45	3.27	20.80	16.44	22.63	3.27	0	40.14	2.25	49.02
INDONESIA	1,034	0.98	24.40	2.31	15.88	56.71	45.28	0	38.36	69.20	63.02
IRAN	1,574	3.20	23.15	n.a.	31.64	20.91	75.81	0	49.23	6.94	56.71
JORDAN	1,613	3.75	1.82	9.74	46.69	78.43	44.74	0	75.41	11.00	17.60
KUWAIT	15,056	1.55	6.49	4.09	1.76	100.52	0.27	0	26.25	9.57	18.44
LEBANON	2,840	4.42	6.67	14.84	16.38	127.40	14.72	1	31.92	63.33	29.68
MALAYSIA	4,600	4.94	3.04	5.09	16.79	117.47	68.17	0	27.58	45.43	34.58
MAURITANIA	489	4.27	7.42	n.a.	11.73	11.35	n.a.	0	96.68	3.67	87.63
QATAR	19,907	n.a.	n.a.	n.a.	4.93	72.14	n.a.	0	79.44	6.71	37.28
SAUDI ARABIA	6,836	1.55	5.15	5.35	6.05	46.37	n.a.	0	50.26	13.86	82.95
SUDAN	284	5.77	49.44	n.a.	26.03	0.01	68.19	0	59.83	6.05	45.20
TUNISIA	2,254	4.88	3.76	n.a.	6.22	57.09	5.04	0	38.98	16.13	73.02
UA Emirates	17,988	1.95	1.98	n.a.	16.25	61.69	n.a.	0	43.29	20.16	52.68
YEMEN	306	4.47	13.95	6.79	25.40	8.72	n.a.	0	60.44	6.40	44.20

(a) Number of banks includes Commercial Banks, Islamic Banks and Non-banking credit institutions

(b) Credit is Domestic Credit to Privates Sector / Total Assets Banking System

Table 3: Benchmark Performance Measures of Islamic Banks vis-à-vis Conventional Banks

Average of Commercial Banks with similar asset size in the countries where Islamic Banks are present. Commercial banks are selected in a way they are similar to Islamic Banks in size, measured in total assets. All commercial banks are selected the third quartile by size in each country in 2001. The value of each ratio represents the average in the period 1994-2001. All ratio definitions are given in the appendix.

	Mean			
Assets Quality	Commercial	Islamic	Difference	P-value
Loan Loss Res / Gross Loans	5.31	2.19	3.12	0.02
Loan Loss Prov / Net Int Rev	58.44	16.44	42.00	0.13
Loan Loss Res / Impaired Loans	236.48	379.65	-143.17	0.25
Impaired Loans / Gross Loans	4.84	0.76	4.08	0.03
NCO / Average Gross Loans	0.96	0.00	0.96	0.03
NCO / Net Inc Bef Ln Lss Prov	54.44	0.30	54.15	0.16
Capital				
Equity / Tot Assets	7.89	12.22	-4.33	0.03
Equity / Net Loans	15.13	25.13	-10.00	0.04
Equity / Cust & ST Funding	9.83	19.79	-9.96	0.01
Equity / Liabilities	8.62	14.20	-5.58	0.04
Cap Funds / Tot Assets	8.18	12.23	-4.05	0.04
Cap Funds / Net Loans	15.68	25.16	-9.48	0.05
Cap Funds / Cust & ST Funding	10.20	19.81	-9.61	0.02
Cap Funds / Liabilities	8.94	14.21	-5.28	0.05
Subord Debt / Cap Funds	3.65	0.17	3.48	0.00
Operations				
Net Interest Margin	3.31	2.51	0.80	0.14
Net Int Rev / Avg Assets	2.92	2.00	0.92	0.06
Oth Op Inc / Avg Assets	1.93	0.88	1.04	0.01
Non Int Exp / Avg Assets	4.11	2.00	2.10	0.01
Pre-Tax Op Inc / Avg Assets	0.96	0.60	0.36	0.64
Non Op Items & Taxes / Avg Ast	0.38	-0.02	0.40	0.00
Return On Avg Assets (ROAA)	0.58	0.62	-0.04	0.95
Return On Avg Equity (ROAE)	5.93	5.26	0.68	0.95
Dividend Pay-Out	29.61	32.65	-3.04	0.84
Inc Net Of Dist / Avg Equity	-3.30	3.76	-7.06	0.42
Non Op Items / Net Income	7.53	-34.45	41.97	0.03
Cost To Income Ratio	56.87	56.39	0.48	0.93
Recurring Earning Power	2.40	0.93	1.47	0.02
Liquidity				
Interbank Ratio	191.96	426.72	-234.76	0.15
Net Loans / Tot Assets	53.24	49.91	3.33	0.29
Net Loans / Cust & ST Funding	66.25	79.13	-12.89	0.01
Net Loans / Tot Dep & Bor	62.91	66.42	-3.51	0.35
Liquid Assets / Cust & ST Funding	30.61	41.45	-10.85	0.01
Liquid Assets / Tot Dep & Bor	29.07	34.53	-5.46	0.10

Table 4: Benchmark Performance Measures of Islamic Banks vis-à-vis Conventional Banks

Average of Commercial Banks with similar level of deposits in the countries where Islamic Banks are present. Commercial banks are selected in a way they are similar to Islamic Banks in deposits. All commercial banks are selected by the third quartile by deposit in each country in 2001. The value of each ratio represents the average in the period 1994-2001. All ratio definitions are given in the appendix.

	Mean			
	Commercial	Islamic	Difference	P-value
Assets Quality				
Loan Loss Res / Gross Loans	7.53	2.19	5.34	0.03
Loan Loss Prov / Net Int Rev	71.63	16.44	55.19	0.25
Loan Loss Res / Impaired Loans	215.38	379.65	-164.27	0.09
Impaired Loans / Gross Loans	5.59	0.76	4.83	0.02
NCO / Average Gross Loans	1.20	0.00	1.20	0.08
NCO / Net Inc Bef Ln Lss Prov	15.74	0.30	15.45	0.01
Capital				
Equity / Tot Assets	6.39	12.22	-5.83	0.02
Equity / Net Loans	12.76	25.13	-12.37	0.03
Equity / Cust & ST Funding	7.79	19.79	-12.00	0.01
Equity / Liabilities	7.03	14.20	-7.17	0.02
Cap Funds / Tot Assets	6.71	12.23	-5.52	0.03
Cap Funds / Net Loans	13.38	25.16	-11.78	0.04
Cap Funds / Cust & ST Funding	8.18	19.81	-11.64	0.01
Cap Funds / Liabilities	7.38	14.21	-6.84	0.02
Subord Debt / Cap Funds	2.51	0.17	2.34	0.06
Operations				
Net Interest Margin	2.77	2.51	0.26	0.75
Net Int Rev / Avg Assets	2.52	2.00	0.52	0.48
Oth Op Inc / Avg Assets	1.57	0.88	0.69	0.00
Non Int Exp / Avg Assets	4.69	2.00	2.69	0.05
Pre-Tax Op Inc / Avg Assets	-0.43	0.60	-1.03	0.55
Non Op Items & Taxes / Avg Ast	0.31	-0.02	0.33	0.09
Return On Avg Assets (ROAA)	-0.75	0.62	-1.36	0.39
Return On Avg Equity (ROAE)	-85.65	5.26	-90.90	0.21
Dividend Pay-Out	23.87	32.65	-8.78	0.41
Inc Net Of Dist / Avg Equity	-99.15	3.76	-102.91	0.20
Non Op Items / Net Income	7.76	-34.45	42.20	0.03
Cost To Income Ratio	79.86	56.39	23.47	0.31
Recurring Earning Power	1.75	0.93	0.83	0.23
Liquidity				
Interbank Ratio	191.56	426.72	-235.16	0.15
Net Loans / Tot Assets	50.87	49.91	0.97	0.81
Net Loans / Cust & ST Funding	61.45	79.13	-17.68	0.00
Net Loans / Tot Dep & Bor	58.25	66.42	-8.17	0.11
Liquid Assets / Cust & ST Funding	31.90	41.45	-9.56	0.06
Liquid Assets / Tot Dep & Bor	30.16	34.53	-4.37	0.30

Table 5: Determinants of Return on Assets (ROA)

The regression is estimated using GLS estimation pooling bank level across 21 countries where there are Islamic Banks for the 1994-2001 period. Regression also includes countries dummies, which are not reported. Dependent variable is return on assets, which is defined as net income (profit after taxes) over total earning assets. Detailed variable definitions and data sources are given in the appendix. Standard errors are given in parenthesis.

	1	2	3	4
Bank Characteristics				
EQTA(-1)	0.022 (0.014)	-0.029 (0.057)	-0.023 (0.051)	-0.031 (0.051)
EQAGDP(-1)	0.001 (0.006)	0.004 (0.010)	0.004 (0.010)	0.004 (0.010)
LOANTA	-0.015** (0.008)	-0.022*** (0.008)	-0.024*** (0.008)	-0.018** (0.007)
LONGDP	0.004 (0.003)	0.007* (0.004)	0.007* (0.004)	0.005 (0.004)
NIEATA	-0.039*** (0.015)	-0.056*** (0.020)	-0.056*** (0.018)	-0.058*** (0.015)
NIEAGDP	0.019*** (0.006)	0.019* (0.011)	0.022* (0.011)	0.021* (0.012)
CSTFTA	-0.006 (0.013)	-0.019 (0.016)	-0.018 (0.016)	-0.020 (0.016)
CSTFGDP	-0.001 (0.003)	-0.001 (0.003)	0.000 (0.003)	0.000 (0.003)
OVRHD	-0.090 (0.179)	0.016 (0.124)	0.008 (0.129)	-0.033 (0.138)
OVRGDP	0.031 (0.045)	0.030 (0.045)	0.054* (0.030)	0.051* (0.029)
LATA	0.052* (0.031)	0.020 (0.097)	0.027 (0.087)	0.042 (0.085)
LATAGDP	-0.006 (0.007)	-0.004 (0.016)	-0.004 (0.015)	-0.006 (0.015)
Macro variables				
GDPPC		-0.012 (0.020)	-0.008 (0.021)	-0.005 (0.022)
GDPGR		0.247* (0.143)	0.397** (0.166)	0.397*** (0.128)
INF		-0.017 (0.015)	-0.010 (0.014)	0.013 (0.016)
INFGDP		0.004 (0.003)	0.005** (0.003)	0.006 (0.005)
Financial Structure				
RES			0.051 (0.106)	0.050 (0.109)
RESGDP			-0.051 (0.040)	-0.045 (0.037)
TAX			-0.005 (0.003)	-0.005* (0.003)
TAXGDP			0.002*** (0.001)	0.002*** (0.000)
BANK				0.041 (0.036)
BANKGDP				0.002 (0.007)
NUMBER				0.000 (0.000)
CONCEN				0.056** (0.024)
CREDIT				-0.042** (0.020)
ASST				0.000* (0.000)
C	-0.002 (0.020)	0.047 (0.096)	0.023 (0.097)	-0.008 (0.100)
Adjusted R2	0.28	0.33	0.40	0.46
N	157	143	143	143

*, ** and *** indicate significance level of 10, 5 and 1 percent respectively.

Table 6: Determinants of Return on Equity (ROE)

The regression is estimated using GLS estimation pooling bank level across 21 countries where there are Islamic Banks for the 1994-2001 period. Regression also includes countries dummies, which are not reported. Dependent variable is return on assets, which is defined as net income (profit after taxes) over equity. Detailed variable definitions and data sources are given in the appendix. Standard errors are given in parenthesis.

	1	2	3	4
Bank Characteristics				
EQTA(-1)	-0.611* (0.338)	-0.696 (0.861)	-0.753 (0.780)	-0.923 (0.715)
EQAGDP(-1)	0.059 (0.093)	0.060 (0.150)	0.065 (0.148)	0.053 (0.146)
LOANTA	-0.316** (0.139)	-0.352** (0.135)	-0.353*** (0.124)	-0.265** (0.114)
LONGDP	0.079 (0.058)	0.092** (0.046)	0.086* (0.046)	0.061 (0.044)
NIEATA	-0.985*** (0.301)	-0.909*** (0.329)	-0.862*** (0.302)	-0.880*** (0.278)
NIEAGDP	0.337** (0.139)	0.347* (0.193)	0.372* (0.205)	0.347* (0.206)
CSTFTA	-0.056 (0.233)	0.061 (0.244)	-0.023 (0.241)	-0.080 (0.229)
CSTFGDP	-0.059 (0.049)	-0.061 (0.044)	-0.045 (0.040)	-0.041 (0.037)
OVHRD	-0.440 (1.772)	0.475 (1.781)	0.767 (1.747)	0.465 (1.670)
OVRGDP	-0.299 (0.453)	-0.304 (0.380)	-0.376 (0.416)	-0.477 (0.409)
LATA	1.184** (0.534)	1.806 (1.977)	1.683 (1.717)	1.759 (1.588)
LATAGDP	-0.088 (0.124)	-0.149 (0.287)	-0.137 (0.273)	-0.176 (0.265)
Macro variables				
GDPPC		-0.075 (0.313)	-0.052 (0.336)	-0.064 (0.331)
GDPGR		1.075 (1.434)	1.609 (1.526)	2.143* (1.150)
INF		0.074 (0.173)	0.069 (0.160)	0.275 (0.185)
INFGDP		0.034 (0.037)	0.055 (0.039)	0.133 (0.092)
Financial Structure				
RES			-0.876 (1.336)	-1.001 (1.403)
RESGDP			-0.350 (0.565)	-0.261 (0.531)
TAX			-0.026 (0.046)	-0.023 (0.044)
TAXGDP			0.006 (0.007)	0.005 (0.007)
BANK				0.235 (0.436)
BANKGDP				0.118 (0.103)
NUMBER				-0.006 (0.006)
CONCEN				0.576** (0.225)
CREDIT				-0.430** (0.191)
ASST				-0.004* (0.002)
C	-0.268 (0.370)	-0.912 (1.838)	-0.564 (1.724)	-0.715 (1.647)
Adjusted R2	0.28	0.29	0.29	0.35
N	157	143	143	143

*, ** and *** indicate significance level of 10, 5 and 1 percent respectively.

Table 7: Determinants of Profit before taxes (PBT)

The regression is estimated using GLS estimation pooling bank level across 21 countries where there are Islamic Banks for the 1994-2001 period. Regression also includes countries dummies, which are not reported. Dependent variable is the profit before taxes, which is defined as profit before taxes over total assets. Detailed variable definitions and data sources are given in the appendix. Standard errors are given in parenthesis.

	1	2	3	4
Bank Characteristics				
EQTA(-1)	0.000 (0.015)	-0.108 (0.072)	-0.096 (0.059)	-0.109* (0.056)
EQAGDP(-1)	0.002 (0.006)	0.008 (0.009)	0.007 (0.009)	0.007 (0.009)
LOANTA	-0.015* (0.009)	-0.024** (0.009)	-0.027*** (0.009)	-0.019** (0.008)
LONGDP	0.002 (0.004)	0.004 (0.004)	0.005 (0.004)	0.003 (0.003)
NIEATA	-0.053*** (0.019)	-0.080*** (0.026)	-0.080*** (0.022)	-0.081*** (0.017)
NIEAGDP	0.018*** (0.006)	0.016 (0.011)	0.019* (0.011)	0.018 (0.011)
CSTFTA	-0.008 (0.017)	-0.036* (0.021)	-0.032 (0.020)	-0.033* (0.020)
CSTFGDP	-0.002 (0.003)	-0.002 (0.003)	-0.001 (0.003)	-0.001 (0.003)
OVRHD	-0.152 (0.259)	0.043 (0.156)	0.026 (0.155)	-0.022 (0.157)
OVRGDP	0.033 (0.056)	0.023 (0.056)	0.060** (0.028)	0.055** (0.027)
LATA	0.044 (0.035)	-0.017 (0.104)	-0.002 (0.093)	0.009 (0.093)
LATAGDP	-0.004 (0.007)	-0.002 (0.016)	-0.003 (0.015)	-0.005 (0.015)
Macro variables				
GDPPC		-0.013 (0.021)	-0.009 (0.020)	-0.004 (0.022)
GDPGR		0.381* (0.214)	0.600** (0.255)	0.599*** (0.199)
INF		-0.026 (0.022)	-0.015 (0.019)	0.018 (0.021)
INFGDP		0.004 (0.003)	0.006 (0.004)	0.007 (0.006)
Financial Structure				
RES			0.097 (0.115)	0.103 (0.113)
RESGDP			-0.070 (0.048)	-0.065 (0.042)
TAX			-0.006 (0.005)	-0.006* (0.004)
TAXGDP			0.003*** (0.001)	0.003*** (0.001)
BANK				0.065 (0.045)
BANKGDP				0.000 (0.007)
NUMBER				-0.001 (0.001)
CONCEN				0.076** (0.036)
CREDIT				-0.060* (0.031)
ASST				-0.0005* (0.0003)
C	0.012 (0.022)	0.106 (0.108)	0.060 (0.101)	0.025 (0.105)
Adjusted R2	0.21	0.31	0.44	0.53
N	157	143	143	143

*, ** and *** indicate significance level of 10, 5 and 1 percent respectively.

Table 8: Determinants of Net Non Interest Margin (NNIM)

The regression is estimated using GLS estimation pooling bank level across 20 countries where there are Islamic Banks for the 1994-2002 period. Regression also includes countries dummies, which are not reported. Dependent variable is the net interest margin, which is defined as net interest income over total earning assets. Detailed variable definitions and data sources are given in the appendix. Standard errors are given in parenthesis.

	1	2	3	4
Bank Characteristics				
EQTA(-1)	0.073** (0.036)	0.182** (0.076)	0.254*** (0.091)	0.238** (0.095)
EQAGDP(-1)	-0.001 (0.005)	-0.012* (0.007)	-0.016** (0.007)	-0.015** (0.008)
LOANTA	-0.014 (0.015)	-0.025 (0.016)	-0.024 (0.016)	-0.019 (0.015)
LONGDP	0.008* (0.004)	0.008 (0.005)	0.008 (0.006)	0.006 (0.006)
NIEATA	-0.105* (0.057)	-0.108** (0.053)	-0.074 (0.049)	-0.084* (0.049)
NIEAGDP	0.017*** (0.006)	0.005 (0.008)	-0.005 (0.009)	-0.006 (0.009)
CSTFTA	-0.169*** (0.062)	-0.153** (0.063)	-0.111** (0.054)	-0.119** (0.055)
CSTFGDP	0.011** (0.004)	0.007 (0.005)	0.002 (0.004)	0.004 (0.005)
OVRHD	2.665*** (0.769)	2.907*** (0.826)	2.906*** (0.732)	2.959*** (0.763)
OVRGDP	-0.126 (0.094)	-0.140 (0.103)	-0.124 (0.094)	-0.130 (0.094)
LATA	0.241*** (0.085)	0.554*** (0.178)	0.655*** (0.183)	0.622*** (0.179)
LATAGDP	-0.018*** (0.007)	-0.049*** (0.016)	-0.055*** (0.016)	-0.054*** (0.016)
Macro variables				
GDPPC		0.035** (0.015)	0.044** (0.017)	0.034 (0.022)
GDPGR		0.250 (0.164)	0.512*** (0.177)	0.471** (0.195)
INF		-0.015 (0.042)	-0.017 (0.040)	-0.014 (0.052)
INFGDP		0.006 (0.005)	0.005 (0.004)	0.008 (0.008)
Financial Structure				
RES			0.095 (0.254)	0.009 (0.293)
RESGDP			0.004 (0.058)	0.022 (0.062)
TAX			0.026** (0.013)	0.026** (0.013)
TAXGDP			-0.002 (0.002)	-0.002 (0.002)
BANK				-0.091 (0.105)
BANKGDP				0.011 (0.011)
NUMBER				0.001 (0.001)
CONCEN				0.025 (0.050)
CREDIT				-0.020 (0.043)
ASST				-0.001 (0.001)
C	-0.087* (0.047)	-0.398*** (0.149)	-0.573*** (0.183)	-0.517** (0.199)
Adjusted R2	0.56	0.58	0.63	0.62
N	157	143	143	143

*, ** and *** indicate significance level of 10, 5 and 1 percent respectively.

Appendix A:

Bank Characteristics

- **Net Interest Margin**: interest income minus interest expenses over total assets
- **Net Profit/TA**: before tax profit over total assets
- **Equity/TA**: book value of equities (assets minus liabilities) over total assets
- **Loan/TA**: total loans over total assets
- **Non-interest earning assets/TA**: cash, non-interest earning deposit at other banks, and other non-interest assets
- **Customer & Short term funding/TA**: all short term and long term deposits plus other non-deposit short term funding over total assets
- **OVERHEAD/TA**: personnel expenses and some other non-interest expenses over total assets

All bank level data and variables are obtained from BankScope database.

Macro Indicators

- **GDP/CAP**: real GDP per capital in constant 1995 US\$
- **Real Interest**: the nominal interest rate minus rate of inflation. Where available, nominal rate is the lending rate. Otherwise, deposit rate is used
- **Data on GDP, population and interest rate** are from International Financial Statistic (IFS).

Taxation

- **Reserves**: Reserve of the banking system over deposit of the banking system (time, saving and demand deposit) multiplied by Customer & Short Term Funding/TA for each bank.

Financial Structure

- **BANK/GDP**: Total deposit (time, demand and saving) of banking system divided by GDP.
- **Number of banks**: Number of banks with complete data in the BankScope database
- **Total Assets (TA)**: Total assets of each bank in a given year in US million \$ (from BankScope database)

Asset Quality¹⁵

- **Loan Loss Res / Gross Loans**: The loan loss reserve over gross loan ratio indicates how much of the total portfolio has been provided for but not charged off. It is a reserve for losses expressed as percentage of total loans. Given a similar charge-off policy, the higher the ratio the poorer will be the quality of the loan portfolio.
- **Loan Loss Prov / Net Int Rev**: Loan loss provision over net interest revenue presents the relationship between provisions in the profit and loss account and the interest income over the same period. Ideally this ratio should be as low as possible. In a well-run bank, if the lending book is higher in risk, this would be reflected by higher interest margins. If the ratio deteriorates this means that risk is not being properly remunerated by margins
- **Loan Loss Res / Impaired Loans**: The loan loss reserve over impaired loans (non-performing loans) ratio relates loan loss reserves to non-performing or impaired loans. The higher this ratio is the better provided the bank is and the more comfortable we will feel about the assets quality.
- **Impaired Loans / Gross Loans**: This is a measure of the amount of total loans which are doubtful. The lower this figure is the better the assets quality
- **NCO / Average Gross Loans**: Net charge off or the amount written-off from loan loss reserves less recoveries is measured as a percentage of the gross loans. It indicates what

¹⁵ All definitions of Asset Quality, Capital, Operations and Liquidity were obtained from the BankScope database

percentage of today's loans have been finally been written off the books. The lower this figure the better as long as the write off policy is consistent across comparable bank

- **NCO / Net Inc Bef Ln Lss Prov:** Net charge-off over net income before loan loss provision ratio is measured similar to charge-offs but against income generated in the year. The lower this ratio is the better, other things being equal.

Capital

- **Equity / Tot Assets:** This ratio measures the ability of the bank to withstand losses. A declining trend in this ratio may signal increased risk exposure and possibly capital adequacy problem.
- **Equity / Net Loans:** this ratio measures the equity cushion available to absorb losses on the loan book
- **Equity / Cust & ST Funding:** This ratio measures the amount of permanent funding relative to short term potentially volatile funding. The higher this ratio is the better.
- **Equity / Liabilities:** This leverage ratio is simply another way of looking at the equity funding of the balance sheet and is another way of looking at capital adequacy.
- **Cap Funds / Tot Assets:**
- **Cap Funds / Net Loans:**
- **Cap Funds / Cust & ST Funding:**
- **Cap Funds / Liabilities:**
- **Subord Debt / Cap Funds:** this ratio indicates what percentage of total capital funds is provided in the form of subordinated debt.

Operations

- **Net Interest Margin:** This ratio is the net interest income expressed as a percentage of earning assets. The higher this ratio, the cheaper the funding or the higher the margin the bank is commanding. Higher margins and profitability are desirable as long as the asset quality is being maintained
- **Net Int Rev / Avg Assets¹⁶:** Net Interest Income over average assets indicates that the item is averaged using the net income expressed as a percentage of the total balance sheet
- **Oth Op Inc / Avg Assets:** Other operating income over average assets. When compared to the above ratio, this indicates to what extent fees and other income represent a greater percentage of earnings of the bank. As long as this is not volatile trading income it can be seen as a lower risk form of income. The higher this figure is the better
- **Non Int Exp / Avg Assets:** Non interest expenses or overheads plus provisions give a measure of the cost side of the banks performance relative to the assets invested.
- **Pre-Tax Op Inc / Avg Assets:** This is a measure of the operating performance of the bank before tax and unusual items. This is a good measure of profitability unaffected by one off non trading activities.
- **Non Op Items & Taxes / Avg Ast:** This ratio measures costs and tax as a percentage of assets.
- **Return On Avg Assets (ROAA)**
- **Return On Avg Equity (ROAE)**
- **Dividend Pay-Out:** This is a measure of the amount of post tax profits paid out to shareholders. In general the higher the ratio the better but not if it is at the cost of restricting reinvestment in the bank and its ability to grow its business.
- **Inc Net Of Dist / Avg Equity:** This ratio is effectively the return on equity after deducting the dividend from the return and it shows by what percentage the equity has increased from internally generated funds. The higher the better.
- **Non Op Items / Net Income:** This denotes what percentage of total net income consists of unusual items.
- **Cost to Income Ratio:** This is one of the most focused on ratios currently and measures the overheads or costs of running the bank, the major element of which is normally salaries, as percentage of income generated before provisions. It is a measure of efficiency although if the lending margins in a particular country are very high then the

¹⁶ The acronym "AVG" stands for the arithmetic mean of the value at the end of year t and t-1

ratio will improve as a result. It can be distorted by high net income from associates or volatile trading income.

- **Recurring Earning Power:** This ratio is a measure of after tax profits adding back provisions for bad debts as a percentage of Total Assets. Effectively this is a return on assets performance measurement without deducting provisions.

Liquidity

- **Interbank Ratio:** this is money lent to other banks divided by money borrowed from other banks. If this ratio is greater than 100 then it indicates the bank is net placer rather than a borrower of funds in the market place, and therefore more liquid.
- **Net Loans / Tot Assets:** This liquidity ratio indicates what percentage of the assets of the bank are tied up in loans. The higher this ratio the less liquid the bank will be.
- **Net Loans / Cust & ST Funding:** This loans to deposit ratio is a measure of liquidity in as much as high figures denotes lower liquidity.
- **Net Loans / Tot Dep & Bor:** This similar ratio has as its denominator deposits and borrowings with the exception of capital instruments.
- **Liquid Assets / Cust & ST Funding:** This is a deposit run off ratio and looks at what percentage of customer and short term funds could be met if they were withdrawn suddenly, the higher this percentage the more liquid the bank is and less vulnerable to a classic run on the bank.
- **Liquid Assets / Tot Dep & Bor:** This ratio is similar to the mentioned above but looks at the amount of liquid assets available to borrower as well as depositors.