

Estimating the Profitability of Islamic Banking: Evidence from Bank Muamalat Indonesia

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Abstract: The primary goal of this paper is to empirically analyze the performance of Bank Muamalat Indonesia (BMI) in terms of its *ROA*. Utilizing regression analysis, the paper estimates the internal determinants; taken from the bank financial structure as well as its external determinant. It is found that profit has been dominantly generated from financing activities. On the other hand, service activities have not contributed significantly to the profitability of BMI. The paper also indicates that, during 1996–2001, BMI’s portfolio has been greatly biased towards short-term based financing. The result of the paper also confirms the hypothesis of the positive relationship between inflation and profitability measure.

I. Introduction

Islamic banking in Indonesia began well before a formal legal framework for Islamic banking operations was brought into force. Before 1992, several non-bank financial institutions had been founded that worked on the basis of a ‘share contract’. This was evidence that there was a public need for financial institutions applying *Shari‘ah* principles in their operations. In order to accommodate that need, the government in 1992 implicitly sanctioned Islamic banking through Government Decree No. 72 of 1992 relating to Banks Applying Share Base Principles. Thereafter, these regulations served as the legal framework for Islamic banking operations in Indonesia (the new era of dual banking system) (Joyosumarto, 1995: 5).

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Between 1992 to 1998, one Islamic commercial bank and 78 Islamic rural banks came into operation. The Act No. 10 of 1998, amending Act No. 7 of 1992 related to banking came into force and gave stronger legal foundation for the existence of Islamic banking in Indonesia. Then, Act No. 23 of 1999 related to Bank Indonesia authorized Bank Indonesia to also conduct its operations according to *Shari'ah* principles. The Islamic banking industry has been growing rapidly since then (Bank Indonesia, 2002: 4).

Using the method used by previous studies to assess profitability in the banking industry, this paper investigates the profitability of Bank Muamalat Indonesia, which has become the pioneer of the Islamic banking industry in Indonesia.

II. Bank Profitability: A Literature Review

Among the studies of the effects of internal determinants on bank profitability are: Hester and Zoellner (1966), Haslem (1968, 1969), Fraser and Rose (1971), Fraser et al. (1974), Heggsted (1977), Mullineaux (1978), Kwast and Rose (1982), Smirlock (1985), Bourke (1989), Molyneux and Thornton (1992), and Stienherr and Huveneers (1994). Most of these studies were conducted using American data except for the three last mentioned, in which international data were used. In addition, there have also been studies on the effect of internal determinants and external determinants on banks profitability using data of the Hong Kong Banking sector (Jiang *et al.*, 2003), and some EU countries (Abreu, 2002). Studies on the profitability of Islamic banks were conducted by Haron (1996), Bashir (2000), and Hassan and Bashir (2003).

Hester and Zoellner (1966) studied the relationship between balance sheet items and the earnings of 300 banks in Kansas City and Connecticut. They found that changes in balance sheet items had a significant impact on bank earnings. While all asset items obtain positive results, liability items such as demand, savings and time deposits adversely affected profits. Haslem (1968) used 64 operating ratios in order to measure the effects of management, size, location and time on profitability of commercial banks. Haslem's findings indicated that all variables tested were significantly related to profitability. Fraser and Rose (1971) found that loan rate, time deposit rate, loan to deposit ratio, service charges and portfolio selection had no effect on profitability. Fraser, Philips and Rose (1974) considered operating costs, deposit and loan compositions as factors within the control

of management. They found that the factor which had the biggest influence on bank performance is bank costs followed by bank deposit and loan composition. Mullineaux (1978) used a profit function approach in his study and found that balance sheet structure had a significant impact on profitability and, depending on the nature of the balance sheet items, the relationship could be either negative or positive.

With regard to deposit structure, Heggsted (1977) found that banks heavily committed to time and savings deposits earned considerably lower returns than banks that have a higher dependence on demand deposits. Smirlock (1985) confirmed that demand deposits were a cheaper source of funds and had a positive impact on bank profits. However, Kwast and Rose's (1982) study claims that operating efficiency had nothing to do with profitability. They found that there was no compelling evidence that high-profit banks were characterized by a greater level of efficiency than low-profit banks. In the analysis of internal determinants, source of fund is represented by consumer and short-term funding to total assets. Most previous studies had found that it was in inverse relationship to profitability. Demirguc-Kunt and Huizinga (1997), Bashir (2000), Hassan and Bashir (2003) found that third-party funds adversely affect profitability of banking.

Among other previous studies Haron (1996) found that the percentage of incomes from financing activities had a positive relationship to profitability. His findings indicated the incremental increase of Islamic banks' income from financing activities. Therefore, based on his results, he suggested that the profit-sharing ratio between Islamic banks and the users of funds favours the bank. Incomes from service activities are also expected to have positive relationship with profitability indicators.

A positive relationship between the ratio of bank loans to total assets and profitability was also found using an international database (Demirguc-Kunt and Huizinga, 1997). Bank loans are expected to be the main source of revenue, and are expected to impact profit positively. However, since most Islamic banks' loans are in the form of profit and loss sharing (*PLS*) loans with equity features, the loan-performance relationship depends significantly on the expected performance 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.

In general, Islamic banking operations are characterized by a high degree of financial risk. In the absence of guaranteed returns on deposits, Islamic banks undertake risky operations in order to be able to generate comparable returns to their customers. Adapting Hassan and Bashir (2003), this paper uses the ratio of total liabilities to total assets as a proxy for risk. The ratio is also an indicator of lower capital or greater leverage. Using this ratio adds greater depth in understanding the risks a bank takes when trying to obtain higher returns. When a bank chooses (assuming this is allowed by its regulator) to take more capital risk, its leverage multiplier and return on equity, *ceteris paribus*, are higher. It is expected that the ratio of total liabilities to total assets (*LB*) will be positively correlated with performance measures. On the other hand, in the absence of deposit insurance, high-risk taking will expose the bank to the risk of insolvency. Therefore, the coefficient of *LB* may also be negative. Since the bulk of the earnings of Islamic banks come from interest-free activities, the ratio of interest-free earning assets to total assets (*EA*) is expected to impact profitability positively.

Previous studies of the determinants of bank profitability in the United States found a strong and statistically significant positive relationship between (*EQ*) 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).

The ratio of overhead to total assets (*OC*) 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 *OC* ratio is expected to impact performance negatively because efficient banks are expected to operate at lower costs. On the other hand, the use of new electronic technology, like ATMs and other automated means of delivering services, has caused wage expenses to fall (as capital is substituted for labour). Therefore, a lower *OC* ratio may impact performance positively. The sign of the coefficient of this variable is not restricted.

Regarding the external variables, this study utilizes Consumer Price Index (*P*) as a proxy for inflation. The effect of inflation on bank profitability was first discussed by Revell (1980), who held that inflation could be a factor in the causation of variations in a bank's profitability. This hypothesis was empirically tested by Bourke (1989) and Molyneux and Thornton (1992). Using *P* as a proxy for inflation, both studies found that inflation had a significant relationship with profit.

In addition, Demirguc-Kunt and Huizinga (1997) explained in their study of bank profitability that inflation is associated with higher realized interest margins and higher profitability. Inflation entails higher costs, more transactions, and generally more extensive branch networks, and also higher income from bank float. The positive relationship between inflation and bank profitability implies that bank income increases more with inflation than bank cost. Further, higher interest rates are associated with higher interest margins and profitability. However, since Islamic banks do not charge fixed rates on their deposits or loan transactions, inflation may be a factor in the variations in bank profitability. Its effect may depend on the assumption that wages and other costs are growing faster than the rate of inflation. Yet, inflation may affect the performance of Islamic banks positively, since larger portions of their profits accrue from service charges and trade activities.

Other interesting findings about the effect of inflation on bank profitability are found in Guru *et al.* (1999), and Perry (1992). The former stated that the impact of inflation on bank profitability will depend on its effect on bank costs and revenues (1999:10). While Perry (1992), working on bank gains and losses from inflation, asserted that the effect of inflation on bank performance depends on whether the inflation is anticipated or unanticipated. If the inflation is fully anticipated and interest rates are adjusted accordingly, resulting in revenues that increase faster than costs, then it may have a positive impact on profitability. However, if the inflation is not anticipated and the banks are sluggish in adjusting their interest rates then there is a possibility that bank costs may increase faster than bank revenues and hence adversely affect profitability.

III. Model Specification

The paper aims to examine the relationship between the performance of Islamic banks against a set of internal and external determinants. While internal performance is evaluated by analyzing financial ratios, external performance is measured by a macroeconomic indicator, namely inflation.

The operating efficiency and profitability measures used as criteria for performance are specified below. Capital ratios, leverage, overheads, loan and liquidity ratios were used as proxies for banks' internal measures; the macroeconomic indicators of inflation, is used to represent the external measures. A linear equation, relating the performance measures to a variety

of financial indicators is specified. There is no need to justify that as the linear functional form has been widely used by previous researchers to measure the banking (see: Short, 1979; Bourke, 1989; Haron, 1996; Demirguc-Kunt and Huizinga, 1997; Bashir, 2000; Hassan and Bashir, 2003).

The subsequent regression analysis starts from estimating the following basic equation (1):

$$ROA = \alpha \pm \beta_1 TPF \pm \beta_2 IFIN \pm \beta_3 ISA \pm \beta_4 L \pm \beta_5 LB \pm \beta_6 EA \pm \beta_7 EQ \pm \beta_8 OC \pm \beta_9 P \pm \varepsilon_1 \quad (1)$$

where *ROA* is the measure of performance for Bank Muamalat Indonesia (BMI); *TPF*, *IFIN*, *ISA*, *L*, *LB*, *EA*, *EQ*, *OC* and *P* are the financial structure variables for BMI; *P* is the macro economic indicator (inflation).

IV. Defining Variables and Data

The data used in this study are monthly data of Bank Muamalat Indonesia, which contains balance sheets and income statements from January 1996 to December 2001. The macroeconomic indicator data are taken from financial statistics issued by Bank Indonesia.

Dependent variable used in this study is Return on Assets (*ROA*). This measure is closely tied to the key item in the income statement – net income. *ROA* has been used in most structure-performance studies and is included here to reflect the bank's ability to generate income from non-traditional services. *ROA* shows the profit earned per rupiah (Indonesian currency) of assets and most importantly, reflects management's ability to utilize the bank's financial and real investment resources to generate profit. For any bank, *ROA* depends on the bank's policy decisions as well as uncontrollable factors relating to the economy and government regulations. Many regulators believe that *ROA* is the best measure to assess bank efficiency.

Return on Assets (*ROA*) is formulated as follows:

$$ROA = \frac{\text{Before Tax Profit}}{\text{Total Assets}}$$

where, before tax profit is calculated for each month from the corresponding monthly data.

In addition, internal determinants are derived from balance sheets and income statements. The following is the way in which some of the internal determinants or variables are calculated:

TPF is third party funds, comprising current accounts, savings accounts and investment accounts as a percentage of total assets, and generated from

wadī'ah (safe custody or deposit) demand deposits, *muḍārabah* savings deposits and *muḍārabah* investment deposits;

IFIN stands for income from financing activities as a percentage of total financing, and generated from margin income and profit-sharing for the bank;

ISA is income from service activities as a percentage of total revenue. It is generated from service fees;

L is total financing as a percentage of total assets, and generated from the volume of total financing that the Islamic bank provides;

LB is total liabilities as a percentage of total assets, calculated from total liabilities over total assets

EA is *interest-free* earning assets as a percentage of total assets, comprising current accounts and placement with other banks, securities and other receivables, financing facilities, investment in shares of stock, and commitment and contingencies liabilities that carry credit risk (Bank Muamalat, 2002: 54).

EQ is total equity (core capital) as a percentage of total assets. It is the summation of capital stock, additional paid-in capital, and retained earnings.

OC stands for overhead cost as a percentage of total assets, consisting of employee expenses, general and administrative expenses.

The external determinant (Consumer Price Index) denoted as *P* is placed with the group of data and is directly ready to be regressed alongside with the others.

V. Unit Root Test Results

Unit root test is used in this study to ensure that the time series data are stationary. The specification for the Dickey-Fuller unit root test is:

$$Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \alpha_2 \Delta Y_{t-1} + \mu_t \quad (2)$$

in the *ADF* test, the unit root test can be presented as:

$$\Delta Y_t = \alpha_j Y_{t-1} + \sum_{j=1}^k \alpha_j \Delta_{t-j} + \mu_t \quad \text{where } j=1, 2, \dots, k. \quad (3)$$

If α_1 from the above equation is significantly different from zero then it can be said that Y_t is stationary or does not have unit roots.

However, Phillips and Perron (1988) proposed a nonparametric method of controlling for higher-order serial correlation in a series. The test regression for the Phillips-Perron (*PP*) test is the *AR*(1) process:

$$\Delta Y_t = \alpha + \beta Y_{t-1} + \varepsilon_t \quad (4)$$

While the ADF test corrects for higher-order serial correlation by adding lagged differenced terms on the right-hand side, the *PP* test makes a correction to the *t*-statistic of the γ coefficient from the *AR*(1) regression to account for the serial correlation in ε . The correction is nonparametric since we use an estimate of the spectrum of ε at frequency zero that is robust to heteroskedasticity and autocorrelation of unknown form. *EViews* uses the Newey-West heteroskedasticity autocorrelation consistent estimate as follows:

$$\omega^2 = \gamma_0 + 2 \sum_{j=1}^q \left(1 - \frac{j}{q+1}\right) \gamma_j, \quad \gamma_j = \frac{1}{T} \sum_{t=j+1}^T \tilde{\varepsilon}_t \tilde{\varepsilon}_{t-j} \quad (5)$$

where q is the truncation lag. The *PP* *t*-statistic is computed as:

$$t_{PP} = \frac{\gamma_0^{1/2} \delta_b}{\omega} - \frac{(\omega^2 - \gamma_0) T \delta_b}{2\omega \bar{\sigma}} \quad (6)$$

where t_δ, δ_b are the *t*-statistic and standard error of β , and $\bar{\sigma}$ is the standard error of the test regression.

In order to test the stationarity of each variable, both methods, Dickey Fuller and Phillip and Perron tests, are employed. As shown in table 1, most of the variables are stationary in the first difference.

VI. Empirical analysis: results

The empirical analysis was conducted in line with the specific description given above. The regression analysis was done using the least square method as exemplified in the earlier research. The results are shown in Table 2.

First, considering bank characteristic, the first issue is the source of funds, represented by the *TPF* variable. This variable produced adversely insignificant impact on *ROA*. This is in line with the findings of Hester and Zoellner (1966) that third-party funds result in adverse effect on the profitability indicator.

The results demonstrate that the percentage of incomes from financing activities (*IFIN*) had a positive relationship with profitability measure. It confirms the findings of Haron (1996), as 1% increase in the percentage of income from financing activities will result in an increase of *ROA* by 18%. This indicates the incremental increase of Islamic banks' income from financing activities.

Table 1: Summary of Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) Statistics

Unit Root Test		
Level	ADF	PP
	K=0	k=3
ROA	-2.081	-3.287**
	K=1	k=3
TPF	-2.213	-2.648
	K=2	k=3
IFIN	-2.427	-7.425*
	K=1	k=3
ISA	-2.914	-3.540**
	K=1	k=3
L	-2.750	-3.050
	K=1	k=3
LB	-4.219*	-4.289*
	K=1	k=3
EA	-4.362*	-6.054*
	K=1	k=3
EQ	-4.100**	-5.529*
	K=2	K=3
OC	-3.784**	-4.532
	K=2	K=3
P	-4.524188**	-5.684*
1st Difference	ADF	PP
	K=1	k=3
ROA	-5.962*	-7.619*
	K=1	k=3
TPF	-5.358*	-7.679*
	K=1	k=3
IFIN	-11.317*	-16.707*
	K=1	k=3
ISA	-4.541*	-6.096*
	K=1	k=3
L	-5.253*	-7.514*

Table 2: Summary of Regression Results

Equation	Significant at 0.01	Significant at 0.05	Significant at 0.10	Not Significant
ROA $R^2 = 0.408531$	(0.180099) IFIN (2.7151)	(-0.048750) L (-2.5)		(0.001359) TPF (0.03)
DW= 2.278700	(0.015464) P (3.0261)	(-0.118564) LB (-2.55)		(0.011120) ISA (1.1454)
		(0.042253) EA (2.33)		(0.00252) EQ (0.241)
				(0.015464) OC (1.484)

Note: The coefficients are in the first parentheses, while the t-statistics of variables are in the second.

Incomes from service activities are positive and insignificant for the profitability indicator. It shows us that *ISA* contributes very little portion on the profit of the bank.

Loan over total assets (*L*) is significant on profitability. But it contradicts the findings of previous literature, which found a positive relationship with profitability measures. The negative relationship between *L* and profitability indicator as found in this study indicates that the Islamic bank portfolio is heavily biased towards short-term trade-based financing loans. As such, these loans are low risk and only contribute modestly to bank profits.

A positive relationship of *LB* indicates that the Islamic bank has incentives to undertake more risks. However, this study found that mostly *LB* as a proxy for risk has a negative relationship and significant for *ROA*. It tells us that if an Islamic bank undertakes riskier projects it will not be profitable since the economic environment may not be favourable. We recall that most schemes in Islamic banks are profit and loss-sharing (*muḍārabah*) which are long-term projects, giving higher return along with higher risk. It actually tells us that, firstly, there are many problems that an Islamic bank will face once it launches *muḍārabah* schemes. Secondly, there are several things that should be set up first before launching *muḍārabah* schemes alongside the strategy in running it, including the prevention of agency problems which can be anticipated.

EA has a significant and positive impact on profitability indicator. This finding is in line with the findings of Demirguc-Kunt and Huizinga (1998) and Bashir (2000).

Despite *EQ* not having significant impact on profitability ratios, it is found to have negative relationship with *ROA*. This does not fit with earlier researches, which had found a positive relationship between capital ratio and profitability. The insignificant impact of *EQ* on profitability measures shows us that the equity is a small proportion of total assets.

OC variable is found to have a insignificant and positive relationship with profitability indicators. We can interpret the relationship of *OC* and profitability indicators in two ways: first, it indicates quite good expenses-management since this promotes good performance; second, it could also be interpreted that the more profitable the bank the higher salary expenses will be.

The findings in this study also confirm the hypothesis of a positive and significant relationship between inflation and profitability indicator.

VII. Conclusion

This study has attempted to empirically investigate the determinants of profitability in the case of an Islamic bank. Regression analysis was applied to examine which variables are actually significant in determining the profit of an Islamic bank, in this case, Bank Muamalat of Indonesia.

Generally, the study revealed that three sources of funds for Islamic banks are negatively related with profitability indicator. This result particularly may be utilized by the management of Islamic banks to review and reassess the performance of these sources of funds in order to increase their profitability level.

IFIN, on the other hand, is consistent with the hypothesis, which predicts its positive relationship with profitability indicator. It is also the most significant variable under our consideration. This particular result is in line with other major research findings, which state that Islamic banks are keen to rely on financing activities which for the most part consist of *murābahah* (resale with mark-up) financing. This result is supported by analysis of *L* and *LB*, which was done in our study:

From the results of the empirical study, it was found that mostly *L* and *LB* have negative relationship with profitability ratio. This tells us that Islamic banks are relying too much on short-term financing, *i.e.* *murābahah*, which generate less profit than the PLS ventures (*muḍārabah* or *mushārahah*). Positive coefficient of *LB* on the other hand shows that Islamic banks have an incentive to undertake higher risk. We know the maxim of investment theory – high risk will be rewarded with higher rate of return. In Islamic bank activities, high returns can only be generated from *muḍārabah* schemes, which usually entail long-term investment. Although there is an incentive for Islamic banks to take more risk to be rewarded with higher returns, negative coefficients of *LB* tell us that Islamic banks tend to experience a loss situation when they are offering more of *muḍārabah* schemes. Our findings are, again, consistent with the literature on agency-related problems associated with *muḍārabah* or profit-sharing schemes.

As for *EA*, it has a positive relationship with profitability ratio. This is consistent with the hypothesis predicted earlier. The same goes for *OC*. Positive coefficients of *OC* reflect that from 1996 to 2001 Bank Muamalat Indonesia had been trying to expand its branches.

One macro indicator used in this study, *P*, has significant (at 1% level of significance) and positive relationship with *ROA*. This proves that Bank Muamalat Indonesia had been trading in a large volume in relation to the economy.

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