



**DETERMINANTS OF ISLAMIC BANKS'
DEPOSITS IN INDONESIA:
AN ARDL MODELING APPROACH**

BY

NYIMAS ROHMAH

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International Islamic University
Malaysia**

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ABSTRACT


There are not many studies investigating the determinants of banks' deposit especially the Islamic banks' deposit. Thus the purpose of this study is to examine the relationship between the real level of deposit in Islamic banks in Indonesia and its measurable determinants such as real rate of return, real interest rate, number of Islamic banks' branches, and real income. We employ the Autoregressive Distributed Lag (ARDL) modeling approach to test the existence of long-run relationship between the variables. This method was proposed by Pesaran and Shin (1995/1997). The main advantage of this approach is that it can be applied irrespective whether the underlying regressors are $I(0)$ or $I(1)$. The data used in this study is monthly data from March 2000 to February 2006 (72 observations). The result shows that there is a long-run relationship between real level of deposits and its predictors. Islamic banks' depositors are rational depositors who are influenced by the fluctuations of the real rate of return as well as the real interest rate. It also indicates that the displaced commercial risk does exist in Islamic banking system in Indonesia. This study also shows that the number of Islamic banks' branches and income have positive effect on the real level of deposit. The error correction term is found to be negative and significant. The finding gives more evidence that the model is cointegrated in the long-run.

ملخص البحث

لم تكن هناك دراسات كثيرة عن العوامل المؤثرة لقضية الإيداع في البنوك، خاصة في البنوك الإسلامية. لذا جاءت هذه الدراسة لتعمل على فحص المستوى الحقيقي للعلاقة بين قضية الإيداع في البنوك الإسلامية في إندونيسيا وعواملها المؤثرة القابلة للقياس مثل نسبة الربح الحقيقي، ونسبة الفائدة الحقيقية، وعدد فروع البنوك الإسلامية، والدخل الحقيقي. تستخدم الباحثة أوتو ريجريسييف دستريوتيد لاق (ARDL) لاختبار وجود علاقة المدى البعيد بين المتغيرات. وقد اقترح هذا الطريقة بساران (Pesaran) و شين (Shin) في عام 1997/1995. فالنتيجة الرئيسية من الدراسة هي أن هذه الطريقة يمكن تفعيلها، إذا كان انخفاضها يكون (0) أو (1). إن البيانات المستعملة في هذه الدراسة هي البيانات الشهرية من مارس 2000 إلى فبراير 2006 (72 بحثاً). وتدل النتيجة على أن هناك علاقة المدى البعيد بين المستوى الحقيقي للإيداع ومقاييسها. فالمدعون في البنوك الإسلامية هم المدعون الواعون المتوترين بأحوال نسبة الأرباح والفوائد من حيث الارتفاع والانخفاض. وتدل على أن الخطر التجاري موجود في نظام المصارف الإسلامية في إندونيسيا. وتكشف الدراسة كذلك بأن عدد فروع البنوك الإسلامية ودخلها لها تأثير إيجابي في النسبة الحقيقية للإيداع. كما وجد أن مقياس نسبة الأخطاء سلبية وموجودة. وتؤكد نتيجة الدراسة على أن تلك الطريقة لها بعد علاقة متتالية.


APPROVAL PAGE

I certify that I have supervised and read this study and that in my opinion, it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a research paper for the degree of Master of Science in Finance.



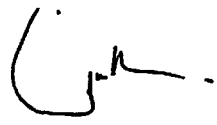
Mohd. Azmi Omar
Supervisor

This research paper was submitted to the Department of Business Administration and is accepted as a partial fulfillment of the requirements for the degree of Master of Science in Finance.



Rafikul Islam
Head, Department of Business
Administration

This research paper was submitted to the Kulliyah of Economics and Management Sciences and is accepted as a partial fulfillment of the requirements for the degree of Master of Science in Finance.

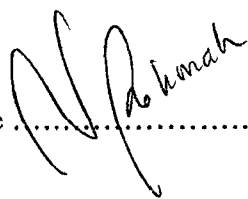


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DECLARATION

I hereby declare that this research paper is the result of my own investigations, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degree at IIUM or other institutions.

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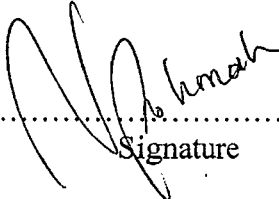
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To my husband.

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CHAPTER ONE

INTRODUCTION

1.1. BACKGROUND

The first Islamic bank in Indonesia, Bank Muamalat Indonesia (BMI), was established in 1992. It had become the sole Islamic bank in Indonesia until 1999 when the second Islamic bank, Bank Syariah Mandiri (BSM), was launched. The Act 1998 No. 10 based on the amendment of the Act 1992 No. 7 concerning banking came into force to give stronger legal foundation for the existence of Islamic banking system in Indonesia. Thus, Indonesia applies dual banking system whereby Islamic and conventional banking systems operate side by side to serve the public. As of per February 2006, there are three Islamic commercial banks and nineteen Islamic banking units (of the conventional banks) with a total asset of more than 20 trillion rupiahs or 1.4% of the national banking asset (Bank Indonesia, 2006).

Bank Indonesia as the banking authority in Indonesia has the responsibility to regulate and supervise Islamic banks as well as conventional banks. Several prudential regulations have been modified to make sure that Islamic banks can operate in accordance to *sharia* (Islamic law) principles. Bank Indonesia has also formulated the Blue Print of Islamic Banking Development in Indonesia in 2002. This blue print contains the vision, mission, and strategic objectives to be achieved in the next ten years. Islamic banking in Indonesia is targeted to capture five percent of the total market share in the banking industry in year 2011. The development of Islamic banking in Indonesia is a realization of the needs of the public seeking an alternative banking system that is both capable of delivering sound banking/financial services and compliant with *sharia* rules (Bank Indonesia, 2002).

As an intermediary institution, Islamic bank in Indonesia also mobilizes funds from Surplus Spending Units (SSUs) in the form of deposits and channels the funds to Deficit Spending Units (DSUs). Thus, Islamic bank also depends on depositors' money to run its business. Bank Indonesia statistics showed that until February 2006, 73% percent of the total assets of Islamic banks in Indonesia are financed by the funds from depositors comprising *wadiah*-current account (two trillions rupiahs), *mudaraba*-saving account (four trillions rupiahs), and *mudaraba*-investment account (eight trillions rupiahs). In the Islamic banking development framework, it is obvious that the factors that determine the level of deposit in Islamic banking are important issues to be looked at.

There are numerous researches on the saving determinants from macroeconomics perspectives. However, the study that focused on determinants of banking's deposit is not that much. One such study has been conducted by Shrestha and Chowdhury in 2005. They tested the effect of interest rate, income, and number of branches on deposit held at a bank in Nepal.

Furthermore, little research has been carried out on Islamic banks' deposit. Most studies are found for Malaysian case (Haron and Shanmugam, 1995; Haron and Norafifah, 2000; Sukmana and Rosylin, 2005). However, one pioneer study for Indonesian case has been conducted by Mangkuto in 2004. All of these studies only attempted to see the effect of rate of return and interest rate on Islamic banks deposit. A more comprehensive study on this area has been conducted by Haron and Wan Nursofiza in 2005. Besides the financial variables such as rate of return and interest rate, they also incorporated some macroeconomic variables in the model.

Studies on Islamic banks' customers' behaviour based on survey using questionnaires gained more attention. The studies have been conducted in several

countries such as Jordan (Erol and El-Bdour, 1989; Naser, Jamal, and Al-Khatib, 1999), Malaysia (Haron, Norafifah, and Planisek, 1994), Singapore (Gerrard and Cunningham, 1997), and Bahrain (Metawa and Almossawi, 1998). In Indonesia, the studies on potency, preference, and people's behaviour toward Islamic bank have been conducted by Bank Indonesia since 2000 to 2005. With collaboration from several universities, Bank Indonesia had carried out the study covering at least 11 provinces in Indonesia. The studies revealed that most people choose Islamic bank because of its conformity with *sharia* principles and the location of the branch. They also found that rate of return is not a significant reason in preferring Islamic bank. The perception on interest rate is ambiguous. Most of the respondents agreed that interest rate is prohibited in Islam. However, they are not against the interest rate application in banking system.

1.2. RESEARCH PROBLEM

In the dual banking system environment, Islamic banks have to meet challenges to compete with their conventional counterparts. They have to face the same pool of funds provider with various bank selection criteria. Previous studies did not give clear indication whether religious reason is a dominant factor in choosing Islamic banks or not. However, other researchers found that financial factors such as rate of return and conventional interest rate as significant factors that determine the level of deposits in Islamic banks.

The main purpose of this study is to quantify the purported link between the level of deposit of Islamic banks in Indonesia and its measurable determinants such as rate of return, interest rate, number of Islamic banks' branches, and income.

1.3. OBJECTIVES

There are several objectives in this study. The first one is to determine whether the Islamic banks' depositors are motivated by profit objective. It can be seen in the significance of rate of return and interest rate variables in determining the level of deposit. The significance of the interest rate variable also reveals whether displaced commercial risk (withdrawal risk) exists or not in Islamic banking system in Indonesia. This study also attempts to determine whether the policy to increase the number of Islamic banks' branches is the right one within the Islamic banking development framework. Lastly, we want to determine whether the increase of level of income also has a positive relationship with the increase in the level of deposit of Islamic banks.

1.4. SIGNIFICANCE OF THE STUDY

There is only one study that has been done to examine the relationship between level of deposit in Islamic banks and its determinants in Indonesia. By using simple regression (OLS), Mangkuto (2004) captured only two financial variables such as the rate of return and interest rate in his model. Furthermore, the object of the study is only one Islamic bank in Indonesia i.e. Bank Muamalat Indonesia (BMI). He found that both explanatory variables affect the level of deposit. However, the study done by Bank Indonesia found that profit objective did not motivate people to deposit their fund in Islamic Bank.

Therefore, this study will improve the previous study done by Mangkuto (2004). We will use the latest development of time series econometrics method. Furthermore, there will be more explanatory variables to be used in this study such as rate of return, interest rate, number of Islamic banks' branches, and income. This study will also

cover all Islamic banks in Indonesia including the Islamic banking units. Thus, this study will be the first study that represents the Islamic banking industry in Indonesia.

1.5. STRUCTURE OF THE STUDY

The rest of this paper is structured as follows. First, the extant literatures on determinants of saving behaviour, Islamic banks deposit, and Islamic banks' customers' behaviour are reviewed. This is followed by a description of the data and research method used in the study. Then the findings are discussed and summarized. Finally, implications, limitations, and directions for future research are offered.

CHAPTER TWO

LITERATURE REVIEW

To see the relationship between the level of deposit in Islamic banks and its determinants, we have to review the theory and empirical researches on saving determinants from macroeconomics perspectives. Then we shall explore the studies on the Islamic banks' deposit itself. To give a better perspective on this topic, we will also assess the depositors' behaviour of Islamic banks.

2.1. SAVING DETERMINANTS

Most of the saving theory is derived from the consumption theory. Keynes (1936) stated that saving means the excess of income over expenditure on consumption. Thus saving is a function of income. Further development of the saving theory is proposed by Modigliani and Brumberg (1954). The theory is known as life-cycle hypothesis. People save in order to smooth consumption overtime since income tends to fluctuate systematically over the course of a person's life. Individuals will have low or zero income and negative savings when they are young, positive savings during their productive years and once again negative savings when they are old and retired. Thus, the main feature of the life-cycle hypothesis is age-related and the savings will follow a hump-shaped pattern, which is high at middle age and low at young and old age.

There are many empirical studies on the saving behaviour all over the world. However, only the important ones are described in this section, especially those which focus on private saving behaviour in developing countries.

Snyder (1974) sought to review the econometric literature on household saving behaviour in developing countries. Based on several existing literatures at that time, he classified at least six determinants of household saving such as current income, permanent income, wealth, interest rate, price level, and demographic characteristics. All the studies under observation found current income to be positively significant on the household saving. This result is inline with the Absolute Income Hypothesis proposed by Keynes. Meanwhile the Permanent Income Hypothesis suggested by Friedman (1957) is found to be at an early stage of testing. However, the evidence to date appears to be nominally in its favor. The evidence generally supported the hypothesis that wealth has negative significant impact on household saving. It is consistent with a “target” or “normal wealth” theory of saving. However, wealth and income are often highly correlated, making it unfeasible for further econometric test. Those studies also found that the impact of interest rate to household saving is ambiguous. However, positive interest rate effect was more frequent with higher significance level than the negative effect. Meanwhile, the price level was found to have negative relationship with the saving. Inline with life-cycle hypothesis, the results showed that the higher the dependency ratio, the lower the household saving (negative relationship).

Masson, Bayoumi, and Samiei (1998) extended the empirical knowledge of private saving behaviour by looking at a broad set of possible determinants of private saving. They employed time series and cross-sectional estimation with data range from 1971 to 1993. The objects of the study consist of 21 industrial countries and 40 developing countries. However, due to the data availability, they only used data from 1982 to 1993 for developing countries. They identified at least five variables that

could affect the private saving in those countries, i.e., demographic factor, GDP growth, GDP per capita, real interest rate, and term of trade.

They found that for both country groups, the demographic effects were an important determinant of private saving rates (significant). They also found that there was positive association between GDP growth and private saving especially for developing countries. The same result also found in GDP per capita (positive relationship). The real interest rate has a positive, and significant, coefficient for industrial countries, but the results are not very robust. On the other hand, the real interest rate has a negative, but insignificant, coefficient for developing countries. The authors suspected the result was due to measurement problem (the choice of the appropriate interest rate and inflation rate), different levels of financial development, or there are financial reforms. Finally, changes in the terms of trade have a significantly positive effect on saving for industrial countries, but not for developing countries.

Loayza, Hebbel, and Serven (2000) also extended the previous literatures in several dimensions. Based on the previous panel studies, they identified nine determinants of the private saving ratio such as income; rate of return uncertainty; domestic borrowing constraints; foreign borrowing constraints; financial depth; fiscal policy; pension system; demographics; and income and wealth distribution.

They employed dynamic, reduced-form, saving regression equation to estimate the relationship between saving rate and its determinants. There are 11 explanatory variables in the equation, i.e., real GPDI, real GPDI growth, real interest rate, M2/GDP, terms of trade, urbanization ratio, old dependency, young dependency, government saving/GPDI, private credit flow/GPDI, and inflation rate. Twenty

industrial countries and 49 developing countries became the object of the study during 1965-1994 periods.

The result showed that private saving rates show inertia. The lagged private saving rate has a positive and significant coefficient which revealed a large degree of persistence. Private saving rates rose with the level and growth rate of real per capita income. The influence of income was larger in developing than in developed countries. Dependency ratios had a negative effect on private saving rates (support life-cycle hypothesis). The impact of the old dependency ratio was more than twice as large as that of young dependency ratio. Inflation had positive impact on private saving. This result supported the precautionary saving theory. The theory predicted that greater uncertainty should raise saving since risk averse consumers set resources aside as a precaution against possible adverse changes in income and other factors (Skinner, 1988). Credit availability reduced the private saving rate. Lastly, larger financial depth and higher real interest rate did not raise saving.

Another study that focused on Asian countries has been conducted by Agrawal (2001). He attempted to estimate the saving functions in seven Asian countries, i.e., South Korea, Taiwan, Singapore, Malaysia, Thailand, Indonesia, and India. By using VECM and VAR procedures, he examined the relationship between savings rate and its potential determinants such as real income per capita, growth, dependency ratio, real interest rate, foreign savings per GNP, and provident fund rate. Prior to the regression process, he found that dependency ratio had strongly negative correlation with real income per capita. However, this result is consistent with general finding that higher income levels are associated with lower birth rates (lead to lower dependency ratio).

The regression result showed that the high savings rates in Asia were found to be due to the high rate of growth of income per capita, declining shares of dependent population, and some special institutional features (such as the high central provident fund rates in Singapore). Interest rates were found to have little impact on saving. In South Korea, Taiwan, Singapore, and India, the interest rate had insignificant impact. In Indonesia, the impact is negative with small coefficient. Meanwhile in Malaysia and Thailand, the impact is positive and also with small coefficient. The limitation of the study is that he used relatively small sample in his regression (25-30 observations).

A study that focused on the determinants of deposits held at banks has been conducted by Shrestha and Chowdhury in 2005. By using Autoregressive Distributed Lag (ARDL) model, they sought to test the relationship in Nepal case. The data used in this study came from 1970 quarter 1 and ending in 2003 quarter 4 (136 quarterly observations). They identified three explanatory variables such as real GDP, real deposit rate, and average population density per bank branch. They found that there is a long-run relationship in the model. The real interest rate has a significant effect on the real time deposits in long-run. Meanwhile, in the short-run, a change in real income and real interest rate are associated with a change in the real savings.

Table 2.1
Existing Literatures on Saving Determinants

Author	Objectives	Variables	Main Contribution
Snyder (1974)	To review the econometric literature on household saving behaviour in developing countries	<ul style="list-style-type: none"> • current income • permanent income • wealth • interest rate • price level • age dependency 	<ul style="list-style-type: none"> • Current income had positive impact on saving. • Permanent income did not give clear result. • Wealth, price level, and age dependency had negative impact on saving. • Wealth and income were

			<ul style="list-style-type: none"> • often highly correlated. • Interest rate had ambiguous result.
Masson, Bayoumi, and Samiei (1998)	To examine a broad set of possible determinants of private saving behaviour in 21 industrial countries and 40 developing countries	<ul style="list-style-type: none"> • demographic factor • GDP growth • GDP per capita • real interest rate • term of trade 	<ul style="list-style-type: none"> • Demographics (age dependency), growth, and GDP per capita were important determinants of private saving rates. • Real interest rate had positive and significant impact for industrial countries. Meanwhile, it had negative and insignificant effect for developing countries. • Terms of trade had significantly positive effect for industrial countries, but not for developing countries.
Loayza, Hebbel, and Serven (2000)	To examine the relationship between saving rate and its determinants in 20 industrial countries and 49 developing countries	<ul style="list-style-type: none"> • real GPDI • real GPDI growth • real interest rate • M2/GDP • terms of trade • urbanization ratio • old dependency • young dependency • government saving/GPDI • private credit flow/GPDI • inflation rate 	<ul style="list-style-type: none"> • The income, growth, and inflation rate had positive impact on saving. • Dependency ratios and credit availability had negative effect on saving. • Larger financial depth and higher real interest rate did not raise saving.
Agrawal (2001)	To estimate the saving functions in seven Asian countries, i.e., South Korea, Taiwan, Singapore, Malaysia, Thailand, Indonesia, and India	<ul style="list-style-type: none"> • real GNP per capita growth rate of GNP • dependency ratio • real interest rate on bank deposits • foreign savings/GNP • provident fund rate 	<ul style="list-style-type: none"> • Dependency ratio had strong negative correlation with real income. • Growth rate and provident fund rate had positive impact on saving. • Dependency ratio had negative impact on saving. • Interest rate had insignificant impact in South Korea, Taiwan, Singapore, and India. In Indonesia, the impact was negative with small coefficient. In Malaysia and Thailand, the impact was positive with

			small coefficient.
Shrestha and Chowdhury (2005)	To test the relationship between deposits held at a bank with its determinants in Nepal	<ul style="list-style-type: none"> • real GDP • real deposit rate • average population density per bank branch 	<ul style="list-style-type: none"> • Real interest rate had a significant effect on the real time deposit in long-run and short-run. • Real income had positive and significant effect on deposit in short-run only.

Looking at the empirical studies above, we can conclude that there are various results regarding the determinants of private savings. Some of them are in accordance with the theoretical background. However, some of them are not.

2.2. ISLAMIC BANKS' DEPOSIT

There are several studies that have been conducted to examine the relationship between Islamic bank's deposit and its determinants. Most studies are found for Malaysian case. However, there is one study for Indonesian case. These studies only focus on rate of return and conventional bank's interest rate as the potential determinants. Though, the latest study also incorporated the macroeconomics variables on their model.

Haron and Shanmugam (1995) measured the strength of the relationship between the total deposit of Islamic banks and its 'rate of profit'. In their study, they used various types of deposits facilities, i.e., savings account, 1, 3, 6, 9, 12, 15, 18, 24, 36, 48, and ≥ 60 -months investment deposits. They also measured whether these rates of profit have a significant influence on the deposit level for the coming year. To measure the strength of the relationship, they used the Pearson product moment coefficient of correlation. Meanwhile, autoregressive model is used to examine the relationship between rates of profit and the future deposit level. Bank Islam Malaysia