



**RATE OF RETURN RISK OF ISLAMIC BANK:
EMPIRICAL EVIDENCE IN MALAYSIA**

BY

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ABSTRACT

The study aims to measure the exposure of the Islamic banks in Malaysia to the rate of return risk. The study also analyses the impact of changes in the market interest rate to the profitability of Islamic banks. This study involves two major techniques; namely, Vector Autoregressive (VAR) approach by using aggregated data and gap analysis by using bank level data in order to provide empirical evidences on the exposure of the Islamic banks to the rate of return risk. With VAR approach, using the data covering the period from January 1997 to December 2013, the method of analysis included time series econometric techniques of unit root test, cointegration test, impulse response function (IRF) and variance decomposition (VDC). With the second approach, namely Gap analysis, it is a technique for the measurement of rate of return risk which is particularly aimed to analyse the rate of return risk at the Islamic banks individually in order to see the effect of changes in market interest rates to the profitability of the Islamic banks. The repricing gap approach is used to measure the effect of rate changes on the Islamic banks' profitability. The study finds that the Islamic banks are exposed to the rate of return risk and displaced commercial risk (DCR) from the result of Granger causality test and IRF in the VAR analysis. The results of Gap analysis implies that the Islamic banks would benefit from a fall in market interest rate whereby rate on liabilities decline faster than rate on assets. This will cause a wider spread of the rates and the Islamic banks stand to gain more profit from it. In addition, the profitability of the Islamic banks is vulnerable to an increase in market interest rate. The findings of this study have a major implication on the Islamic banks practice. The most important issue to address is the issue of sensitivity of Islamic banking products to the changes in the conventional banks' interest rate. The main reason of this issue is the practice of benchmarking the Islamic banks' rate of return against the conventional market interest rate. It is crucial that the concept of rate of return risk should be treated differently from the interest rate risk as this may lead to a problem of identification of rate of return risk in the Islamic banking system and also its impact. Moreover, this will cause a misconception of the Islamic banks mechanism of operation. In accepting major findings of this study, the policymakers should be aware of the fact that the Islamic banks are largely exposed to the rate of return risk. The results of this study have important implications to the Islamic banking system in Malaysia, particularly to ensure the healthy growth of these institutions. This can be done through a better risk management by using several ways of hedging the rate of return risk which could possibly exist in the Islamic banking system.

خلاصة البحث

تهدف الدراسة إلى تقديم أساليب مقترحة مناسبة لتخفيف مخاطر العائدات في البنوك الإسلامية بماليزيا. حيث تناولت تحليل تأثير التغييرات لأسعار الفائدة في السوق إلى ربحية في المصارف الإسلامية، وقد تبنت الدراسة منهجين، هما: منهج متجه الانحدار الذاتي، ومنهج تحليل الفجوات لعرض تحليل قيمة العائد في الصناعة المصرفية الإسلامية وذلك باستخدام بيانات التجمع، وتحليل أثر المخاطر على بنية الميزانية العمومية للمصارف الإسلامية على مستوى البنوك. ومن خلال منهج متجه الانحدار الذاتي، استخدام البيانات ما بين الفترة يناير ١٩٩٧م إلى ديسمبر ٢٠١٣م، والمشملة على طرق الاقتصاد القياسي للسلاسل الزمنية لفحص جذر الوحدة، واختبار التكامل المشترك، ودوال استجابة النبضة، ومكونات التباين. أما المنهج الثاني لتحليل الفجوات، فهو عبارة عن أسلوب قياس مخاطر قيمة العائد والذي يهدف بشكل خاص إلى تحليل مخاطر قيمة العائد في المصارف الإسلامية بشكل فردي للكشف عن أثر التغييرات في معدل فائدة السوق. كذلك تم استخدام طريقة إعادة التسعير لقياس أثر تغييرات قيمة الفائدة على ربحية البنوك الإسلامية. وتوصلت الدراسة إلى أن البنوك الإسلامية تتعرض لمخاطر مقدار العائد ومخاطر تجارية منقولة بواسطة نتيجة اختبار جرانجر للسببية، ودوال استجابة النبضة في تحليل متجه الانحدار الذاتي. وتشير نتائج مقدار الموقع المتباين للعائد عند انخفاض قيمة فائدة السوق فإن قيمة الالتزامات تنخفض أسرع من قيمة الأصول. وتشير نتيجة تحليل الفجوات إلى أن البنوك الإسلامية تستفيد من الانخفاض في قيمة فائدة السوق، كما تشير أيضا إلى أن ربحية البنوك الإسلامية تتعرض للزيادة في نسبة فائدة السوق. ولنتائج هذه الدراسة دلالة مهمة على ممارسة البنوك الإسلامية، في اتخاذ قيمة فائدة السوق معيارا لها. وفي سبيل قبول النتائج الرئيسة لهذه الدراسة ينبغي على صانعي القرارات أن يكونوا على وعي تام بالحقيقة من أن البنوك الإسلامية معظمها متعرضة لمخاطر معدل قيمة العائد. إضافة إلى ذلك فإن لنتائج هذه الدراسة آثار مهمة على النظام المصرفي الإسلامي في ماليزيا، خاصة في التأكد من ضمان النمو الصحي لهذه المؤسسات. وذلك من خلال تحسين إدارة المخاطر بشكل أفضل باستخدام أساليب عدة من أجل حماية قيمة مخاطر العائد والمتوفرة في نظام المصرفية الإسلامية.

APPROVAL PAGE

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DECLARATION

I hereby declare that this thesis 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 degrees at IIUM or other institutions.

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CHAPTER ONE

INTRODUCTION

1.0 OVERVIEW

A major challenge facing a banking institution is estimating the impact of interest rate movements on its financial condition. In light of the uncertain movements of interest rates, banks can face very significant challenges in managing their interest rate risk exposures. In general, interest rate risk refers to the risk that changes in market interest rates might adversely affect a bank's financial condition. On one hand, accepting this risk can be an important source of profitability and shareholder value especially when the market interest rate rises. On the other hand, excessive exposure to interest rate risk can be a significant threat to a bank's earnings and capital base. This situation is particularly relevant for a bank whose rate-sensitive liabilities change faster than its assets, implying that the bank's net present value will decline even if the interest rate rises.

Interest rate movements can also affect Islamic banks in terms of rate of return risk. In a system where Islamic banks are operating hand-in-hand with their conventional counterparts and the practice of benchmarking their products based on the market interest rate, these factors could expose Islamic banks to the rate of return risk. The exposure of banks to rate of return risk has significant consequences for Islamic banks' stability and performance. Furthermore, such exposure could also lead to other problems, namely the asset-liability mismatch, withdrawal risk and displaced commercial risk (DCR).

1.1 BACKGROUND OF THE STUDY

Banks play a very significant role in the economy as financial intermediaries in matching up the lenders or the suppliers of funds and the borrowers or the demanders of funds. The lenders direct a portion of their financial wealth to bank deposits. The borrowers seek loans to finance various expenditures, especially investment in capital goods. Here, banks' activities mainly rely on their intermediation functions for these lenders and borrowers, normally converting deposits into loans.

The profitability of banks is at most due to the interest rate spread, that is, the difference in interest rates charged on loans and interest rates paid to depositors. Pyle (1971) argues that the larger the spread between loan and deposit rates, the more likely the necessary condition for intermediation to occur can be met.

Banks are viewed as providing a special role in the economy as asset transformers whereby their existence is to minimize the adverse selection and moral hazard problems. This is done through maturity and liquidity transformation as well as filtering, sorting and assessing information. Thus, banks are able to evaluate loans which cannot be priced accurately by market participants. Banks play their role in converting short term deposits into long term loans. The maturity and liquidity intermediation causes the maturity of a bank's statement of financial position or balance sheet to be mismatched and therefore exposes the bank to fluctuations in market interest rate. The imbalance of adjustment of asset and liability rates toward changes in market rates significantly affects the value of bank equity.

Fluctuations of market interest rates exert significant influence on the main activities of commercial banks (Ghazali and Ali, 2002). The impact of the fluctuations of market interest rates on banks essentially depends on the sensitivity of banks' assets and liabilities to variations in open market rates. Most importantly, a higher level of

market interest rates improves banking profitability (Samuelson, 1945; Hancock, 1985). Furthermore, the effect of interest rate spread changes on banks' profitability is shown to be asymmetric with the effect originating from lending rates being greater than that of deposit rates. The stochastic behavior of market rates is also argued to be a significant factor that determines the mode banks adopt in delivering their services.

An adverse movement in the market interest rates may have a direct impact on banks' financial condition in terms of interest rate risk. The level of interest rate risk, particularly the uncertainty in banks' profitability is due to an imbalance of sensitivity of banks' assets and liabilities towards the volatility of market interest rates (Flannery and James, 1984; Yourougou, 1990; Bae, 1990; Akella and Greenbaum, 1992; and Madurra and Zarruk, 1995). Flannery (1981) explains that banks are exposed to fluctuations in market interest rates through the mismatch of maturity of assets and liabilities. This is due to the practice of 'borrowing short and lending long' that subjects banks to a non-synchronized refunding reschedule, which could be expensive during a high interest rate environment. In this respect, Tobin (1982) views banking decisions as solving precautionary portfolio allocation problems with banks attempting to minimize the cost of unexpected deposit withdrawals.

According to Bacha (2004), a constant rise in the interest rates may lead to several problems for the bank such as increasing the cost of funds where the bank would have to pay a higher rate in order to attract new deposits and to avoid the outflow of the existing deposits.

In Islamic economics, *riba* or interest rate is prohibited and any element of it is avoided in all transactions. The Quran states that interest constitutes an unfair business transaction as profits realized from loans are risk free with no evidence of value addition by lenders (Rosly and Bakar, 2003). The prohibition of an interest rate means

that Islamic banks are not allowed to incur or earn interest in any of their financial transactions (Karim, 1996).

With the prohibition of interest in all transactions, the Islamic banking system is free from any involvement with interest rates. Therefore, interest rates have no adverse impact on the Islamic banking system. In fact, the interest-free Islamic banking system has several advantages. Since Islamic banks' operations are not affected by interest rates, this makes Islamic banks more stable compared with conventional banks (Kassim et al., 2009). One of the stabilities is the stability of demand for money. Kia and Darrat (2007) refer to two major reasons for the positive impact of an interest-free banking system upon stability in the demand for money. These are speculation from a demand perspective and revaluation of statement of financial position items from a banking perspective. Amongst the factors determining demand for money, interest rates appear to be the most visible component that is subject to speculation. Islamic banks' transactions may introduce a more stable function of demand for money in the presence of Islamic funds as they are free from any element of interest. It should also be noted that, in case of changes in the interest rates, banks revalue their assets before liabilities. The loan interest rates respond to a change in the interest rate much earlier than the savings interest rates. In this case, the revaluation of statement of financial position entries, a key component of motive for profit maximization, makes the impact of the fluctuation in the interest rates much stronger. However, in the Islamic banking system, there is no need for revaluation of statement of financial position entries because there is no risk of interest rate involved. Therefore, for these two primary reasons, the demand for money becomes more stable in the Islamic banking system.

In economies with a dual banking system, the conventional banks enjoy the flexibility to engage in both regular banking activities and interest-free banking as well whereas the Islamic banks are unable to benefit from arbitrage advantages because they are limited to make transactions in interest-free financial markets only (Kaleem and Isa, 2006). However, in reality, Islamic banks are more sensitive to changes in interest rates compared with the conventional banks because they are operating in shallow financial markets (Kassim et al., 2009).

The relationship between interest rate with the deposit rate and financing rate in Islamic banks can be explained in two frameworks. First is through the PLS (Profit and Loss Sharing) model. On the asset side, the statement of financial positions of Islamic banks has an implicit link to interest bearing instruments. In theory, the Islamic model of banking adheres to the principles of equity participation and risk sharing since *Shari'ah*-compliant banks derive their earnings from a participatory PLS model. It is well-established in the literature that Islamic banks follow their conventional counterparts in creating assets through debt-like instruments with a predetermined fixed rate of return (Beck, Demirguc-Kunt and Merrouche, 2013). As a result, given the implicit link to interest rates on the asset side of the statement of financial position, PLS returns follow conventional bank deposit rates. In the case of Malaysia, for example, Chong and Liu (2009) found that retail Islamic deposit rates mimic the behavior of conventional interest rates. Moreover, Islamic banks tend to link the mark-up to a conventional interest rate, typically the London Interbank Offered Rate (LIBOR) or a domestic equivalent. As a result, in the case of such debt-like instruments, the pricing of Islamic financing is not a function of real economic activity but is based on a pre-determined interest rate plus a credit risk premium, similar to conventional loans

Second, according to profit maximization theory, the higher the rate of interest, the more money will be saved since at higher interest rates people will be more willing to reduce consumption. Each of the different types of deposits available at the conventional and Islamic banks carries a different yield to the depositor. In general, the longer the maturity of a deposit, the greater the yield to the depositor due to the concept of time value of money and the frequent upward slope of the yield curve. Similarly, saving or deposits are designed to attract funds from customers who wish to set aside money in anticipation of future expenditures or financial emergencies. These deposits generally pay significantly higher interest rates to customers than transaction deposits do particularly for those deposits the customer agrees to hold with the bank for several months or years. In a conventional bank, changing deposit rates affect not only the net interest margin, the spread between deposit rates and loan rates, but also affect customer balances and deposit mix decisions that will influence bank growth and profit margin (Edmister, 1982).

Haron and Azmi (2008) find that the interest rate has long been recognized as one of the factors that determine the level of savings in the economy and the interest rate has a positive relationship with savings. In other words, customers are guided by the profit maximization theory. Based on this theory, the management of Islamic banks is bound to follow the market rate when declaring the rate of profit to their customers and *vice versa*. Haron and Azmi (2008) also find that conventional interest rates and rates of profit on funds deposited with the Islamic banking system in Malaysia raises a few important considerations. One of them is the acknowledgment by conventional banks that those who are willing to part with their money must be rewarded. Other than the acknowledgement, the recognition that different types of deposits carry different amounts of returns or rewards had been identified. Thus, if the

management of Islamic banks believes that the attitude of accountholders of Islamic banks is not different to those of conventional banks, the same rates of return will be rewarded with rates of conventional banks. As a result, interest rates will continue to have an influence on the operations of Islamic banks. Findings of Metwally (1997), confirmed that conventional and Islamic banks offer their accountholders similar returns.

In extending financing and raising resources, Islamic banks face risks similar to those encountered by their conventional counterparts, but with variations due to specific requirements to comply with the *Shari'ah*. Similarly to conventional banks, Islamic banks could also be exposed to the risk brought about by changes in the interest rate level which is known as the rate of return risk as suggested by the Islamic Financial Services Board (IFSB) (2005).

The main source of rate of return risk in Islamic banks is the practice of benchmarking the rate of return against market interest rates. In the absence of an Islamic benchmark rate, the Islamic banks use the conventional benchmark rate to mark-up their financial instruments. For example, in the *murabahah* (cost-plus) contract, the markup is determined by adding the risk premium to the benchmark rate, usually based on LIBOR, and it is fixed throughout the duration of the contract. Consequently, any movement of the market interest rates will then affect the rate of return that the Islamic banks were supposed to gain from their use of funds and payment to their accountholders.

Managing risk is a crucial determinant of an Islamic bank's profitability and shareholder added-value. As Islamic banks act as intermediaries between surplus of funds and demand for funds, their objective is to maximize profits as well as shareholder added value. Thus, risk management is pivotal to the achievement of the

objective whereby it is important for Islamic banks to adopt an appropriate risk management system, in conformity with *Shari'ah*. Islamic banks and financial institutions also need to meet the regulatory requirements for risk measurement and capital, in order to expand their global operations.

1.2 PROBLEM STATEMENTS

Fluctuations in interest rates have a significant impact on earnings and bank capital by changing their net interest income, the market value of trading accounts and other interest sensitive incomes and expenses. Islamic banks are actually using the market interest rates, particularly LIBOR, as a benchmark in pricing their products. With the use of interest rate as a pricing mechanism in Islamic banks, any change in the interest rate will affect the rate of return that the Islamic banks expect to collect from the financing and pay to their depositors (Ariss and Saredidine, 2007). Therefore, when the interest rate changes, the rate of return in Islamic banks is also affected.

Islamic banks are exposed to the problem of rate of return risk as a result of using the market interest rate as a benchmark to determine the rate of return on investment accounts and the financing rate (IFSB, 2005). This is due to the fact that Islamic banks are actually not in a position to influence the market as the share of the Islamic banking industry in local and global financial markets is still small in size compared with its conventional counterpart. Hence, there is no choice for Islamic banks except to follow the market interest rate as their benchmark or otherwise there would be distortion or chaos (Ayub, 2007). Therefore, when the benchmark rate changes and the mark-up rate on fixed investment contracts like *murabahah* cannot be adjusted, this will lead to the problem of a mismatch in the asset and liability structure of the Islamic banks (Bacha, 2004).

Despite this, according to Khan and Ahmed (2001), as Islamic banks do not deal with interest rates in their operations, it may appear that they are not exposed to any risk arising from changes in interest rates. There is a belief that Islamic banks are free from any risks that are related to interest rate movements since their operations are free from the element of interest rates. Baldwin (2002) states that many Islamic banks, especially in the Middle East, do not pay much attention to manage rate of return risk due to the belief that an Islamic bank, by virtue of its *Shari'ah*-compliant operations, is not subject to this risk. In other words, they believe that interest rate movements do not have any direct impact on the Islamic banks' operations. Moreover, they believe that Islamic banks are not influenced by interest rates and this feature makes them more stable compared with their conventional counterparts. In this context, a monetary system that relies on interest-free assets has less element of uncertainty and is more predictable and reliable by virtue of having links to monetary policy objectives (Kassim et al., 2009). Thus, it is believed that financial intermediaries that operate in an interest-free financial system are shielded from risks associated with changes of interest rates and are more stable compared with their conventional counterparts (Khan, 1985).

In economics, an interest rate is considered as a price, whereby it is the relative price of present money to future money. This argument is made according to positive analysis which is objective, fact-based and without moral judgment (Omar et al., 2010). In terms of loans, an interest rate is considered as the price of borrowing and as a key driver of cost in financial transactions like cost of funds, administrative costs, cost of default and capital requirement. Therefore, all products in conventional banks are priced based on interest rates.

In Islamic bank practice, there is an issue of the permissibility of using the interest rate as a benchmark for pricing, as any interest rate is definitely prohibited in Islam. According to Usmani (2007), using an interest rate like LIBOR as a benchmark for the pricing of Islamic banking products and services does not make the transaction as invalid or prohibited, as the deal does not contain an interest rate and it is only used as an indicator. However, there are some criticisms of using the interest rate as a benchmark. Among the reasons for the prohibition of benchmarking is that it contains the element of controlling prices in the market which is not allowed in Islam. Basically, Islam encourages individual property rights, whereby fixing the price will violate the right of sellers in determining the price. Moreover, using an interest rate as a benchmark for a permissible business is undesirable and does not advance the basic philosophy of Islamic economy, thereby making no impact on the system of distribution (Usmani, 2007).

Another problem faced by Islamic banks is the possibility of a sharp decline in cash flows for the bank caused by a drop in total deposits as accountholders withdraw their deposits. Islamic banks could be exposed to the withdrawal risk if the accountholders withdraw their funds and transfer them to the conventional counterparts that offer higher returns. This is due to the characteristics or the behaviour of Islamic bank customers, which can be divided into two types. The first type is the customer who is loyal to Islamic banks and uses the Islamic banks' products though their return is not much as compared with that of the conventional banks (Haron and Azmi, 2008; Yap and Kader, 2008). The second type is the customer who is motivated by high returns and is sensitive to changes in market interest rates, who would switch to the conventional banks if the rate of return is low or the cost of financing is high in Islamic banks. This withdrawal risk is important to

pre-empt since the risk affects the liquidity of Islamic banks and consequently, the performance of the banks (Kasri and Kassim, 2009; Yap and Kader, 2008).

The only way that Islamic banks can prevent the withdrawal risk is by apportioning part of their share in profits to the investment accountholders. This practice, however, may lead to another risk namely DCR, whereby the banks are forced to transfer part of their profit to the accountholders in order to prevent them from withdrawing their deposits or investments in the event of lower returns (Khan and Ahmed, 2001). The depositors would have the incentive to withdraw their funds and the Islamic banks have to pay a return that exceeds the rate that has been earned on assets financed by the investors when the return on assets is under-performing as compared with the conventional counterparts' rates. Consequently, they waive their rights to a part of or the entire fund manager or agent share of profits in order to retain the fund providers and prevent them from withdrawing their funds. The practice of DCR will adversely affect a bank's capital and may lead to another risk, namely insolvency risk. Islamic banks are required to put a big portion of their assets in a reserve account with the central bank and this affects their capital and profitability (El-Hawary et al., 2007).

In order to evaluate the impact of a change in interest rate on the net income margin, banks compute a repricing gap table (also known as the interest-rate-sensitivity table) which is reported in the banks' annual reports. Assuming that the reinvestment of the assets takes place over a quarter, a positive cumulative gap indicates that there will be a net excess of assets to reprice in the next quarter, while a negative cumulative gap indicates that there will be an excess of deposits to reprice. The gap also gives some indication of the future profitability of the bank whereby in the case of an increasing interest rate, a positive gap will increase the profit of the