

Islamic Banking: Interest-Free or Interest-Based?

Beng Soon Chong ¹

Ming-Hua Liu ^{2, *}

ABSTRACT

A unique feature of Islamic banking, in theory, is its profit-and-loss sharing (PLS) paradigm. In practice, however, we find that Islamic banking is not very different from conventional banking. Our study on Malaysia shows that only a negligible portion of Islamic bank financing is strictly PLS based and that Islamic deposits are not interest-free, but are closely pegged to conventional deposits. Our findings suggest that the rapid growth in Islamic banking is largely driven by the Islamic resurgence worldwide rather than by the advantages of the PLS paradigm and that Islamic banks should be subject to regulations similar to those of their western counterparts.

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¹ Nanyang Business School, Nanyang Technological University, Singapore. ² Faculty of Business, Auckland University of Technology, New Zealand.

* Corresponding author. Ming-Hua Liu, Department of Finance, Faculty of Business, AUT, Private Bag 92006, Auckland, 1020, New Zealand. Email: mliu@aut.ac.nz.

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ABSTRACT

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1. Introduction

The first modern experiment with Islamic banking can be traced to the establishment of the Mit Ghamr Savings Bank in Egypt in 1963. During the past four decades, however, Islamic banking has grown rapidly in terms of size and the number of players. Islamic banking is currently practiced in more than 50 countries worldwide.¹ In Iran, Pakistan, and Sudan, only Islamic banking is allowed. In other countries, such as Bangladesh, Egypt, Indonesia, Jordan and Malaysia, Islamic banking co-exists with conventional banking. Islamic banking, moreover, is not limited to Islamic countries. In August 2004, the Islamic Bank of Britain became the first bank licensed by a non-Muslim country to engage in Islamic banking. The HSBC, University Bank in Ann Arbor and Devon Bank in Chicago offer Islamic banking products in the United States. Recent industry estimates show that Islamic banking, which managed around US\$250 billion worth of assets worldwide as of 2004, is expected to grow at the rate of 15% per annum.

¹ Islamic banking is practised in, but not limited to, the following countries: Albania, Algeria, Australia, Bahamas, Bahrain, Bangladesh, British Virgin Islands, Brunei, Canada, Cayman Islands, North Cyprus, Djibouti, Egypt, France, Gambia, Germany, Guinea, India, Indonesia, Iran, Iraq, Italy, Ivory Coast, Jordan, Kazakhstan, Kuwait, Lebanon, Luxembourg, Malaysia, Mauritania, Morocco, Netherlands, Niger, Nigeria, Oman, Pakistan, Palestine, Philippines, Qatar, Russia, Saudi Arabia, Senegal, Singapore, South Africa, Sri Lanka, Sudan, Switzerland, Tunisia, Turkey, Trinidad & Tobago, United Arab Emirates, United Kingdom, United States and Yemen.

The rapid growth of Islamic banking raises a series of important questions: Is the growth in Islamic banking a result of the comparative advantages of the Islamic banking paradigm or is it largely attributable to the worldwide Islamic resurgence since the late 1960s? Should Islamic banks be regulated differently from their western counterparts? Thus, an important question in understanding the growth — as well as the regulation and supervision — of Islamic banking is how and to what extent it differs from conventional banking. To answer these questions, our study focuses on Malaysia, where a full-fledged Islamic banking system has developed alongside a conventional banking system. The dual banking system in Malaysia, in particular, provides a unique setting for us to compare Islamic banking practices with those of conventional banking. In addition, Malaysia, which is reported to have the largest Islamic banking, capital, and insurance markets in the world (World Bank, 2006), is an ideal representative of Islamic banking practices in general.

From a theoretical perspective, Islamic banking is different from conventional banking because interest (*riba*) is prohibited in Islam, i.e., banks are not allowed to offer a fixed rate of return on deposits and are not allowed to charge interest on loans. A unique feature of Islamic banking is its profit-and-loss sharing (PLS) paradigm, which is predominantly based on the *mudarabah* (profit-sharing) and *musyarakah* (joint venture) concepts of Islamic contracting. Under the PLS paradigm, the assets and liabilities of Islamic banks are integrated in the sense that borrowers share profits and losses with the banks, which in turn share profits and losses with the depositors. Advocates of Islamic banking, thus, argue that Islamic banks are theoretically better poised than conventional banks to absorb external shocks because the banks' financing losses are partially absorbed by the depositors (Khan and Mirakhor, 1989; Iqbal, 1997). Similarly, the risk-sharing feature of the PLS paradigm, in theory, allows Islamic banks to lend on a longer-term basis to

projects with higher risk-return profiles and, thus, to promote economic growth (Chapra, 1992; Mills and Presley, 1999).

The PLS paradigm, moreover, subjects Islamic banks to greater market discipline. Islamic banks, for example, are required to put in more effort to distinguish good customers from bad ones because they have more to lose than conventional banks. The banks also need to monitor their investments and borrowers more closely to ensure truthful reporting of profits and losses. Islamic bank depositors, furthermore, are required to choose their banks more carefully and to monitor the banks more actively to ensure that their funds are being invested prudently. Advocates of Islamic banking, therefore, argue that a primary advantage of PLS banking is that it leads to a more efficient allocation of capital because the return on capital and its allocation depend on the productivity and viability of the project (Khan, 1986).

In practice, however, do Islamic banks operate according to the PLS paradigm? Our study finds that Islamic banking, as it is practiced today, tends to deviate substantially from the PLS paradigm. First, we find that the adoption of the PLS paradigm of Islamic banking in Malaysia has been much slower on the asset side than on the liability side. On the asset side, only 0.5% of Islamic bank financing is based on the PLS paradigm of *mudarabah* (profit-sharing) and *musyarakah* (joint venture) financing. Islamic bank financing in Malaysia, in practice, is still based largely on non-PLS modes of financing that are permissible under the *Shariah* (Islamic law), but which ignore the spirit of the usury prohibition.² On the liability side, however,

² This result, in general, is consistent with Islamic banking experiences in other countries, such as Bangladesh, Egypt, Iran, Pakistan, Philippines, and Sudan (Mills and Presley, 1999).

mudarabah (profit-sharing) deposits, which account for 70% of total Islamic deposits, are more predominant.

Second, the *mudarabah* (profit-sharing) deposits, which are structured according to the PLS paradigm, are supposed to be interest-free and equity-like in theory. In practice, however, we find new evidence that shows that the Islamic deposits are not really interest-free, but are very similar to conventional banking deposits. More specifically, we find that, contrary to expectation, the investment rates on Islamic deposits are mostly lower and less volatile than that of conventional deposits.³ Also, using the Engle-Granger error correction model, we show that (a) changes in conventional deposit rates cause changes in Islamic investment rates, but not vice-versa, (b) the Islamic investment rates are positively related to conventional deposit rates in the long-term, and (c) when the Islamic investment rates deviate far above (below) the conventional deposit rates, they will adjust downwards (upwards) towards the long-term equilibrium level. Those results imply that the Islamic banking deposit PLS practices are actually closely pegged to the deposit rate setting practices of conventional banking.

Our overall results, thus, suggest that Islamic banking, as it is practiced today in Malaysia, is not very different from conventional banking, and the alleged benefits of Islamic banking exist in theory only. There are two important implications associated with this finding: First, the key reason for the rapid growth in Islamic banking worldwide during the past decades is unlikely to be associated with the attributes of the Islamic PLS banking paradigm. Instead, its rapid growth is most likely spurred by the worldwide Islamic resurgence since the late 1960s, which leads to a heightened demand by Muslims for financial products and services that conform to their

³ An exception is in the case of the Islamic banks' investment rates on savings deposits, which are more volatile.

religion.⁴ Second, Islamic banks in practice are similar to conventional banks, and, as such, should be regulated and supervised in a similar fashion. For example, our results suggest that there should not be any capital relief for assets that are funded by *mudarabah* deposits.

The rest of the paper is organised as follows: Section 2 provides a description of Islamic banking concepts and practices. Section 3 details the Engle-Granger error-correction methodology used to study the long-term relation and short-term dynamics between Islamic investment rates and conventional deposit rates. Section 4 analyzes the results and Section 5 examines the implication of our results on the regulation of Islamic banking institutions. The final section concludes the paper.

2. Islamic Banking Concepts and Practices

In this section, we first examine basic Islamic concepts as well as the profit-and-loss sharing (PLS) paradigm in Islamic banking. We then provide a discussion of Islamic banking practices in Malaysia.

2.1 Islamic Banking Concepts and Paradigm

In Islam, there is no separation between mosque and state. Business, similarly, cannot be separated from the Islamic religion. The *Shariah* (Islamic law) governs every aspect of a Muslim's religious practices, everyday life, and economic activities. Muslims, for example, are not allowed to invest in businesses considered non-*halal* or prohibited by Islam, such as the sale

⁴ More recently, industry observers noted that the growth in Islamic banking is further stimulated by the withdrawal of capital from the United States following the September 11 attack and wars in Afghanistan and Iraq. Visa restrictions and a freeze on assets have led many investors from Middle Eastern and other Islamic countries to shift their money into local and regional Islamic markets (Badawy, 2005).

of alcohol, pork, and tobacco; gambling; and prostitution.⁵ In Islamic contracting, *gharar* (uncertainty and risk) is not permitted, i.e., the terms of the contract should be well defined and without ambiguity. For example, the sale of fish from the ocean that has not yet been caught is prohibited.⁶ The prohibition of *gharar* is designed to prevent the weak from being exploited and, thus, a zero-sum game in which one gains at the expense of another is not sanctioned. Gambling and derivatives such as futures and options, therefore, are considered un-Islamic because of the prohibition of *gharar*.

More importantly, Muslims are prohibited from taking or offering *riba*. What constitutes *riba*, however, is controversial and has been widely debated in the Islamic community. Some view *riba* as usury or excessively high rate of interest. But the majority of Islamic scholars view *riba* as interest or any pre-determined return on a loan. The basis for the prohibition of *riba* in Islam may be traced to the common medieval Arabic practice of doubling the debt if the loan has not been repaid when due. This practice in its extreme form had led to slavery in medieval Arabia because of the absence of bankruptcy legislation that protects the borrower from failed ventures.⁷ Therefore, the prohibition of *riba* can be viewed as part of Islam's general vision of a moral economy.

In Islamic economics, the lender should bear the risk of the venture with the borrower because it is deemed that neither the borrower nor lender is in control of the success or failure of a venture.

⁵ The Dow Jones Islamic Market Indexes and the FTSE Global Islamic Index Series, which track the performances of *Shariah*-compliant stocks from around the world, were created to meet the growing demand for financial products that adhere to such Islamic investment guidelines.

⁶ The general *Shariah* principle is that the commodity to be sold must exist. The seller, moreover, is required to have acquired the ownership and be in possession of that commodity.

⁷ One can, therefore, argue that with the existence of modern bankruptcy legislation, the prohibition on interest is unnecessary because borrowers have the ability to escape from being a slave to the debt from a failed venture.

Thus, a unique feature that differentiates Islamic banking from conventional banking, in theory, is its profit-and-loss sharing (PLS) paradigm. Under the PLS paradigm, the ex-ante fixed rate of return in financial contracting, which is prohibited, is replaced with a rate of return that is uncertain and determined ex-post on a profit-sharing basis.⁸ Only the profit-sharing ratio between the capital provider and the entrepreneur is determined ex-ante. PLS contracts, in general, allow two or more parties to pool their resources for investment purposes and to share the investment's profit and loss.

The PLS paradigm is widely accepted in Islamic legal and economic literature as the bedrock of Islamic financing. Islamic bank financing, which adheres to the PLS principle, is typically structured along the lines of two major types of contracts: *musyarakah* (joint venture) and *mudarabah* (profit-sharing).

- *Musyarakah* contracts are similar to joint venture agreements, in which a bank and an entrepreneur jointly contribute capital and manage a business project. Any profit and loss from the project is shared in a predetermined manner. The joint venture is an independent legal entity, and the bank may terminate the joint venture gradually after a certain period or upon the fulfilment of a certain condition.
- *Mudarabah* contracts are profit-sharing agreements, in which a bank provides the entire capital needed to finance a project, and the customer provides the expertise, management and labour. The profits from the project are shared by both parties on a pre-agreed (fixed ratio) basis, but in the cases of losses, the total loss is borne by the bank.

⁸ Islamic contracts are never risk-free and do not involve the exchange of money in one period for money in another.

Most theoretical models of Islamic banking are based on the *mudarabah* (profit-sharing) and/or *musyarakah* (joint venture) concepts of PLS (Dar and Presley, 2000). There are, however, other financing contracts that are permissible in Islam but not strictly PLS in nature. Such financing contracts, for example, may be based on *murabaha* (cost plus), *ijarah* (leasing), *bai' muajjal* (deferred payment sale), *bai' salam* (forward sale), and *istisna* (contract manufacturing) concepts.

- *Murabaha* financing is based on a mark-up (or cost plus) principle, in which a bank is authorized to buy goods for a customer and resell them to the customer at a predetermined price that includes the original cost plus a negotiated profit margin.⁹ This contract is typically used in working capital and trade financing.
- *Ijarah* financing is similar to leasing. A bank buys an asset for a customer and then leases it to the customer for a certain period at a fixed rental charge. *Shariah* (Islamic law) permits rental charges on property services, on the precondition that the lessor (bank) retain the risk of asset ownership.
- *Bai' muajjal* financing, which is a variant of *murabaha* (cost plus) financing, is structured on the basis of a deferred payment sale, whereby the delivery of goods is immediate, and the repayment of the price is deferred on an instalment or lump-sum basis. The price of the product is agreed upon at the time of the sale and cannot include any charge for deferring payments. This contract has been used for house and property financing.

⁹ Advocates of Islamic banking argue that the profit mark-up on *murabaha* financing is not considered as “interest” because profit is made on the exchange of money for goods and not money for money. To be *Shariah*-compliant, the bank must enter into separate contracts with the supplier and the customer, take physical possession of the goods, and de-link the mark-up from the period of repayment (Mills and Presley, 1999).

- *Bai' salam* is structured based on a forward sale concept. This method allows an entrepreneur to sell some specified goods to a bank at a price determined and paid at the time of contract, with delivery of the goods in the future.
- *Istisna* contracts are based on the concept of commissioned or contract manufacturing, whereby a party undertakes to produce a specific good for future delivery at a pre-determined price. It can be used in the financing of manufactured goods, construction and infrastructure projects.¹⁰

The acceptability of the above non-PLS modes of financing, however, has been widely debated and disputed because of their close resemblance to conventional methods of interest-based financing. Many Islamic scholars, including Pakistan's Council of Islamic Ideology, have warned that, although permissible, such non-PLS modes of financing should be restricted or avoided to prevent them from being misused as a "back door" for interest-based financing.

2.2 *Islamic Banking in Malaysia*

Islamic banking was implemented in Malaysia following the enactment of the Islamic Banking Act in April 1983 and the subsequent establishment of its first Islamic bank, Bank Islam Malaysia Berhad (BIMB), in July 1983.¹¹ The Islamic Banking Act of 1983 provides Bank Negara Malaysia (BNM), the central bank of Malaysia, with powers to regulate and supervise Islamic

¹⁰ *Bai' salam* and *istisna* are two exceptions to the general *Shariah* principle that the commodity to be sold must be in existence and that the seller must have acquired the ownership and be in possession of that commodity. Unlike *bai' salam* contracts, *istisna* contracts (a) are always linked to goods that need to be manufactured, (b) do not require the price to be paid in advance, (c) can be unilaterally cancelled before the manufacturer starts the work, and (d) do not necessarily require a fixed delivery date (Usmani, 2005).

¹¹ Prior to that, Islamic finance in Malaysia can be traced to the establishment of the Pilgrims Fund Board in 1963 to help the Muslims save for their annual pilgrimage to Mecca. The Pilgrims Fund Board, however, is a non-financial institution that collects and then invests the savings of would-be pilgrims in sectors of the economy that do not violate the *Shariah* principle.

banks. To disseminate Islamic banking nationwide, BNM introduced the Interest-free Banking Scheme in March 1993, which allows existing banking institutions to offer Islamic banking services using their existing infrastructure and branch network. Furthermore, a second Islamic bank, Bank Muamalat Malaysia Berhad, was established in October 1999, and three new Islamic bank licences were issued to Islamic financial institutions from the Middle East in 2004 to enhance the diversity and depth of players in the Islamic financial system. As of end-2004, there were 29 Islamic financial institutions in Malaysia's banking system, which offer a full range of Islamic banking products and services.¹²

Today, Malaysia is widely believed to have the most developed Islamic financial system in the world that operates side-by-side with a conventional banking system. Besides the Interest-free Banking Scheme, Malaysia has a well-developed Islamic interbank money market, Islamic government debt securities market, and Islamic insurance market. The Islamic interbank money market, introduced in January 1994, allows Islamic banking institutions to trade in designated Islamic financial instruments among themselves. The Mudharabah Interbank Investments (MII) mechanism, moreover, allows a deficit Islamic banking institution to obtain investment from a surplus Islamic banking institution on a *mudarabah* (profit-sharing) basis. The Government Investment Issues (GII) market, which was introduced in 1983, is the Islamic equivalent of a conventional Treasury bill and bond market. Islamic insurance, or *takaful*, was first introduced in 1985 when the first *takaful* operator was established to fulfil the public's need for insurance products that are *Shariah*-compliant.

¹² The number of Islamic financial institutions in Malaysia's banking system excludes development financial institutions that offer Islamic banking services.

In Malaysia's dual banking system, separate Islamic banking regulations exist side-by-side with those for conventional banks. For example, as in the case of the legislation of conventional banks, the Islamic Banking Act of 1983 contains similar provisions on the licensing; financial (capital, reserve, and liquidity) requirements; ownership, control, and management; business restrictions; and supervision of Islamic banks. At the international level, the Islamic Financial Services Board (IFSB), which is the equivalent of the Basel Committee on Banking Supervision for conventional banks, promotes and enhances the soundness and stability of the Islamic financial services industry through the setting of global prudential standards and guiding principles for the industry.¹³ Unlike conventional banks, however, the Islamic banks have *Shariah* advisory committees to advise them and ensure that their operations and activities comply with the *Shariah* principles. The National Shariah Advisory Council, in addition, was established by BNM to streamline and harmonise the *Shariah* interpretations among banks.

The growth in the Islamic banking sector in Malaysia has been rapid since the establishment of Islamic Banking Act in 1983. Figure 1 captures the exponential growth in the total assets under the management of the Islamic banking system. Starting from a small base of RM0.4 billion in 1983, the total Islamic banking assets expanded rapidly in the 1980s and 1990s at an average rate of 31% and 44% per annum, respectively. More recently, over the period of 2000 to 2004, the average growth rate in Islamic banking assets has moderated to 19% per annum, but continues to outpace the rest of the banking system.

¹³ The Islamic Financial Services Board was established in 2002 as an international standard-setting body of regulatory and supervisory agencies for the Islamic financial services industry. Its 110 members includes the International Monetary Fund, World Bank, Bank for International Settlements, Islamic Development Bank, Asian Development Bank, 27 regulatory and supervisory authorities, and 78 market players from 21 countries.

[Insert Figure 1 here]

The total Islamic banking assets amounted to RM95.0 billion as at end-2004, accounting for 10.5% of the total assets of the entire banking system. Table 1 provides a further breakdown of the percentage of banking assets that are under the management of the Islamic banking system by type of institutions. Islamic banks, in general, are restricted from participating in the conventional banking system, while the other financial institutions can participate in both the conventional banking system and Islamic banking system. Commercial banks, finance companies, merchant banks, and discount houses' participation in Islamic banking is through the Interest-free Banking Scheme. Thus, we find that for Islamic banks, all their assets are managed under the Islamic banking system. For the other financial institutions, the percentage of their assets that are under the management of the Islamic banking system is relatively small in comparison. Islamic banking assets only accounts for 7.3%, 11.4%, 6.0%, and 18.6%, respectively, of commercial banks, finance companies, merchant banks, and discount houses' total portfolio of assets. Among the commercial banks, we find that Islamic banking assets accounts for a larger share (8.5%) of the domestic banks' asset portfolio than that of foreign banks (3.7%). This finding may be explained by the foreign commercial banks' lower participation rate (31%) in Islamic banking, compared with that of the domestic commercial banks (90%).

[Insert Table 1 here]

Figure 2 plots the market share of Islamic banking assets by various financial institutions as at end-2004. Despite having only a small percentage of their asset portfolio in Islamic banking, commercial banks actually held the largest market share (56.7%) of the total Islamic banking

assets. Islamic banks' market share, in contrast, is at 26.2%, while finance companies, merchant banks, and discount houses' market share is at 8.2%, 2.7%, and 6.3%, respectively. Thus, a large proportion of the Islamic banking assets (73.8%) is held by institutions that provide Islamic banking services through the Interest-free Banking Scheme. Available data from December 2002 to December 2004 also show that Islamic banking assets held by institutions under the Interest-free Banking Scheme grew at an average rate 20.8% per annum, while assets held by the pure Islamic banks grew at 11.1% per annum. A probable reason why institutions under the Interest-free Banking Scheme experienced higher growth in Islamic banking assets is because, in comparison to the pure Islamic banks, such institutions are more established, have greater distribution network, and enjoy greater economies of scale and scope.

[Insert Figure 2 here]

Although Islamic banking is said to have made significant inroads in Malaysia, we find that, in practice, the adoption of the PLS paradigm of Islamic banking in Malaysia has been much slower on the asset side than on the liability side. Table 2 provides a breakdown of the types of Islamic financing and Islamic deposits in Malaysia. Total financing in the Islamic banking sector amounts to RM57.9 billion as of the end of 2004. The Islamic banking sector, in general, has been expanding much more rapidly than the conventional banking sector.¹⁴ This has resulted in an expansion of the market share for Islamic financing to 11.3% of total banking sector financing as of the end of 2004.

¹⁴ Islamic bank financing in Malaysia, for example, grew at the annual rate of 19% in 2004, compared with 8.5% for the entire banking system.

[Insert Table 2 here]

A breakdown of the total Islamic financing in Panel A of Table 2 shows that financing is predominantly based on the *bai' muajjal* (deferred payment sale)¹⁵ and *ijarah* (leasing) concepts, which account for 49.9% and 24.0% of total financing. *Murabaha* (cost plus), *istisna* (contract manufacturing) and other non-PLS financing account for a further 7.0%, 1.2%, and 17.4%, respectively. The *mudharabah* (profit-sharing) and *musyarakah* (joint venture) financing modes, in total, amount to only 0.5% of total Islamic financing. Thus, Islamic bank financing in Malaysia, in practice, does not appear to be very different from conventional bank lending. PLS modes of financing account for only a negligible portion of total Islamic bank financing. Islamic bank financing in Malaysia, in particular, is still largely based on the non-PLS modes of financing that are permissible under the *Shariah* law, but ignore the spirit of the usury prohibition.¹⁶

The adoption of the PLS paradigm, however, appears to be faster on the liability side of Islamic banking. Total Islamic banking deposits in Malaysia amount to RM72.9 billion, or 11.2% of total banking sector deposits as of the end of 2004. The breakdown of the Islamic banking deposits by type in Panel B of Table 2 shows that demand deposits, saving deposits, investment deposits, and negotiable instruments of deposit (NID) account for 17.7%, 11.6%, 57.6%, and 12.3%, respectively, of total Islamic deposits. Demand deposits and saving deposits are structured under the *al-wadiah* (savings with guarantee) concept, in which a bank guarantees the repayment of the depositors' money when demanded. The depositors of *al-wadiah* accounts are not entitled to any

¹⁵ The concept of deferred payment sale is referred to as *bai' bithaman ajil* in Malaysia.

¹⁶ Studies of Islamic bank financing in other countries also yield similar results (Mills and Presley, 1999). Case studies on Bangladesh, Egypt, Pakistan, Philippines, and Sudan, for example, find that most of the financing provided by Islamic banks does not conform to PLS. Statistics from the International Association of Islamic Banks show that PLS modes of financing accounted for less than 20% of overall financing made by Islamic banks worldwide in 1996.

share of the bank's profits, but the bank may — at its absolute discretion — provide returns or gifts (*hibah*) to the depositors periodically as a token of appreciation.

Investment deposits and NID are term deposits that operate under the *mudarabah* (profit-sharing) concept. Theoretically, such *mudarabah* deposit accounts are much riskier than conventional-banking fixed deposits for a number of reasons. First, Islamic banks guarantee neither the depositors' capital nor the return on the deposits. Second, profit sharing under *mudarabah* contracts is asymmetric, i.e., the depositors share the investment profits with the bank but bear all the losses.¹⁷ Finally, *mudarabah* deposit accounts are equity-like from a residual claimant perspective, but the depositors of such accounts do not have any of the management and control rights typically accorded to shareholders of a bank.

The *mudarabah* deposits accounts, in theory, should be interest-free from an Islamic banking perspective. In practice, however, are such *mudarabah* contracts, which form the bedrock of the Islamic banking PLS paradigm, truly interest-free? Also, are the returns on *al-wadiah* (savings with guarantee) deposits independent of interest rates? To address these questions, we examined the relation between the investment rates offered by Islamic deposits and the corresponding deposit rates offered by conventional bank deposits. The next section describes the Engle-Granger error correction methodology used to study such a relation.¹⁸

¹⁷ In the United States, deposits structured according to profit-and-loss sharing have not been permitted. Deposit products offered through University Bank, for example, are modified so that the principal is guaranteed and the depositors share only in the bank's profits, not losses. The Islamic Bank of Britain has similarly modified its deposit products within United Kingdom strictures.

¹⁸ The methodology used here has similarly been used by Scholnick (1996), Heffernan (1997), and Chong, Liu, and Shrestha (2005) to study the dynamics of administered bank interest rates in response to changes in the benchmark money market rate.

3. The Methodology

To determine the long-run relation as well as short-run dynamics between conventional deposit rates and Islamic investment rates, we first carried out the bivariate Granger causality test to determine the dependent and independent variables. The following two null hypotheses were tested: (i) changes in the Islamic investment rate do not Granger cause the conventional deposit rate to change and (ii) changes in the conventional deposit rate do not Granger cause the Islamic investment rate to change.

To further ascertain that the relation between the conventional deposit rate and Islamic investment rate is not spurious, we then carried out unit root and cointegration tests. Unit root tests were based on the standard Augmented Dickey Fuller (ADF) and Philips Perron (PP) procedures, and the cointegration test was done using the Johansen procedure. Once cointegration between the two time series was established, we then estimated their long-term relation and short-term dynamics on a maturity-matched basis.

First, the long-term relationship between two time-series variables was modelled as follows:

$$y_t = \alpha_0 + \alpha_1 x_t + \varepsilon_t \quad (1)$$

where y_t represents the endogenous variables, x_t denotes the exogenous variable, and ε_t is the disturbance term. The degree of pass-through in the long run, α_1 , measures the extent to which a change in the independent variable gets reflected in the dependent variable. The long-run pass-through is considered complete when α_1 is equal to one and incomplete when it is less than one.

Second, we used the following error-correction representation to examine the short-term dynamics:

$$\Delta y_t = \beta_1 \Delta x_t + \beta_2 (y_{t-1} - \alpha_0 - \alpha_1 x_{t-1}) + v_t \quad (2)$$

where Δ denotes the first difference, β_1 measures the short-term pass-through rate, and v_t is the error term. $\hat{\varepsilon}_{t-1} = (y_{t-1} - \alpha_0 - \alpha_1 x_{t-1})$, which is the residual term associated with the long-term relation given by Equation (1), represents the extent of disequilibrium at time $(t - 1)$. β_2 , therefore, captures the error correction adjustment speed when the rates are away from their equilibrium level. In the mean reverting case, the sign of β_2 is expected to be negative. Also, following Hendry (1995), the mean adjustment lag of a complete pass-through can be calculated using the following equation:

$$MAL = (1 - \beta_1) / \beta_2 \quad (3)$$

4. Data and Results

Our data on the monthly series of Islamic investment rates and conventional deposit rates were collected from the *Monthly Statistical Bulletin*, which is published by the Bank Negara Malaysia. The series of monthly data are aggregated and reported based on the *average* rates across all financial institutions.¹⁹ The sampling period was from April 1995 to April 2004. The sample size was 109 for each time series. For robustness, we examined the rates provided by two types of

¹⁹ Bank Negara Malaysia does not provide individual bank data series. Data intervals that are shorter than a month are also not available. However, from the web-sites of a number of banking institutions, we were able to obtain a snapshot of the cross-sectional variation in the conventional deposit and Islamic investment rates as at July 26, 2007. Based on this snapshot, we find that there is a high degree of conformity in the conventional deposit rates across banks. For Islamic investment rates, there is a slightly greater variation across banks, but the variation is not very large.

financial institutions: banks and finance companies.²⁰ For each type of institutions, we compared Islamic investment rates and conventional deposit rates on savings deposits as well as time deposits of various maturities, ranging from one month to 12 months.

Table 3 provides the descriptive statistics for the sample data. The summary statistics, in particular, show that the Islamic investment rates are, on average, significantly lower than the conventional deposit rates. This finding is true for both the banks and the finance companies. Furthermore, the volatility and the minimum–maximum range of Islamic investment rates are significantly lower than those of conventional deposit rates, except for the investment rates on Islamic banks’ savings deposits. These results are counterintuitive because the Islamic deposits, based on the PLS theory, should have higher risks than conventional deposits.

A possible reason for the above results is that, in practice, the returns on Islamic deposits are administratively linked to the deposit rates offered by conventional banking. The last column of Table 3, in particular, shows that the Islamic investment rates are highly correlated with the conventional deposit rates on a maturity-matched basis. The correlation coefficients, for example, range from 0.89 to 0.97 for the banks and from 0.88 to 0.94 for the finance companies. However, to rule out the possibility of spurious correlations, we next conducted several standard econometric tests to determine Granger causality, unit root, and cointegration.

[Insert Table 3 here]

²⁰ In comparison to the banks, the finance companies are much smaller and riskier. The finance companies, which have a less diversified portfolio of assets, typically undertake small-scale financing (such as hired-purchase and mortgage lending) and lend mostly to individuals and small businesses. Also, unlike the banks, the finance companies are much more dependent on deposits as a source of funding.

The Granger causality test was carried out to determine if changes in Islamic investment rates cause adjustments in the conventional deposit rates and if changes in the conventional deposit rates cause adjustments in the Islamic investment rates. Table 4 reports the results of the pair-wise Granger causality test. The results show that for each of the six maturity-matched cases, we cannot reject the null hypothesis that changes in Islamic investment rates do not cause adjustments in the conventional deposit rates. On the other hand, we can reject the null hypothesis that changes in the conventional deposit rates do not cause adjustments in Islamic investment rates. This is true for both the banks and the finance companies. In other words, changes in conventional deposit rates cause Islamic investment rates to change, but not vice versa.

[Insert Table 4 here]

Having determined the endogenous and exogenous variables, we then carried out the standard stationarity and cointegration tests. We applied both the Augmented Dickey Fuller (ADF) and Philips-Peron procedures to test the null hypothesis of unit root against the alternative hypothesis of stationarity. Although not reported, both ADF and Philips-Peron test results show that all the data series are non-stationary in levels and stationary in first differences. The results of the cointegration tests are reported in Table 5. The Johansen cointegration test results show that all the Islamic investment rates are cointegrated with their corresponding maturity-matched conventional deposit rates at the 5% significance level for Islamic banks and at 10% for Islamic finance companies. The cointegration test results, hence, show that there is a long-term relation between the Islamic investment rate and the conventional deposit rate for both the banks and the finance companies.

[Insert Table 5 here]

The estimated coefficients of the long-term relation (Equation 1) are reported in Table 6. The results show that there exists a long-term positive relation between Islamic investment rates and maturity-matched conventional deposit rates. The adjusted R^2 is very high. In the case of the banks, 79% to 93% of the variation in Islamic investment rates can be explained by changes in conventional deposit rates. The degree of long-term pass-through (α_1) is about 76%. In the case of finance companies, 76% to 87% of the variation in Islamic investment rates can be explained by changes in conventional deposit rates. The degree of long-term pass-through (α_1) is about 64%. For both banks and finance companies, the degree of pass-through for savings deposits is higher than that of time-deposits.²¹

[Insert Table 6 here]

The results of the short-term dynamics and the mean adjustment lags are reported in Table 7.²² The β_2 estimates in Table 7, which are all significantly negative, indicate a mean-reverting process. This implies that when the Islamic investment rate is above its long-term equilibrium level, it will adjust downwards. When it is below its long-term equilibrium level, it will adjust upwards. The mean adjustment lag (MAL) results, furthermore, show that for banks, the short-run adjustment process takes about 3.9 months to complete. For finance companies, the MAL ranges

²¹ For robustness, we also estimated the long-term relation (Equation 1) using two alternative procedures: the Johansen VECM and Bewley estimator. The results from using the Johansen VECM and Bewley estimator procedures are consistent with those reported in Table 6.

²² Both the Schwartz Criterion and Akaike Information Criterion tests confirmed that a one-period lag in our error correction model is appropriate.

from 1.4 to 5.6 months. The MAL, moreover, is shorter for savings deposits than for the various time deposits.

[Insert Table 7 here]

Our overall results, thus, suggest that the Islamic deposits, in practice, are not very different from conventional deposits. In particular, we found that the Islamic investment rates for both the banks and the finance companies are closely pegged to the conventional deposit rates. In theory, *mudarabah* deposits are structured based on a “profit-sharing” basis, whereas the *al-wadiah* savings deposits are structured based on the “savings with guarantee” concept. In practice, however, we found that both the *mudarabah* deposits and the *al-wadiah* savings deposits are not “interest-free,” and their investment rates are closely linked to conventional deposit rates.

Furthermore, the *mudarabah* deposits, in theory, are supposed to be equity-like because of their PLS paradigm. Our results show that the *mudarabah* deposits are more debt-like than equity-like. For robustness, we examined if there is any long-term relation between the various Islamic investment rates and the return on the Malaysian benchmark KLCI equity index. Although not reported here, our results show that none of the Islamic investment rates is cointegrated with the return on the KLCI equity index and, hence, there is no long-term relation between them.²³

An interesting question that arises, therefore, is why are the Islamic deposits not interest-free in practice? One explanation is that the actual implementation of the PLS paradigm is constrained by competition from conventional banking practices. Religion notwithstanding, individuals can choose to bank with an Islamic bank and/or a conventional bank. Thus, in terms of best practices,

²³ These results are available from the authors upon request.

Islamic banking practices often cannot deviate substantially from those of conventional banking because of competition. Obaidullah (2005), for example, commented that: *“Islamic financial institutions face a kind of “withdrawal risk” that mainly results from the competitive pressures an Islamic financial institution faces from existing Islamic or conventional counterparts. An Islamic bank could be exposed to the risk of withdrawals by its depositors as a result of the lower rate of return they would receive compared to what its competitors pay. Faced with this scenario Islamic financial institutions, operating in mixed systems, may pay their investment account holders a competitive “market” return regardless of their actual performance and profitability ... Failure to do this might result in a volume of withdrawals of funds by investors large enough to jeopardize the bank’s solvency.”* The Governor of the Central Bank of Malaysia, Dr. Zeti Akhtar Aziz, in fact acknowledged in her keynote address on February 15, 2006 at the 2nd International Conference on Islamic Banking, Kuala Lumpur that *“[profit-and-loss sharing] places a higher degree of fiduciary risk on the Islamic financial institutions in ensuring that the investment deposits funds are managed in the most effective and efficient manner. This is further compounded by competition in managing the liquidity in the system. The profit share distributed needs to be competitive relative to that earned and paid by the conventional banks. This is important to avoid a shift of deposits and to retain the funds in the system ... Given the dual banking environment, as the one in Malaysia, the ability to maximize risk-adjusted returns on investment and sustain stable and competitive returns is an important element in ensuring the competitiveness of the Islamic banking system.”*

Consistent with the above competition explanation, our study shows that, because of competition from conventional banking, the returns on the Islamic deposit accounts are effectively pegged to the returns on conventional banking deposits. Our results, for example, show that changes in the

conventional deposit rates cause Islamic investment rates to change, but not vice versa. Estimates of the long-term relation between the two rates of return, moreover, show that many of the changes in Islamic investment rates can be explained by changes in conventional deposit rates. Short-run dynamic analysis, in addition, shows that the Islamic investment rates are mean-reverting, i.e., when Islamic investment rates deviate far above (below) conventional deposit rates, they adjust downwards (upwards) toward the long-term equilibrium level.

Another possible explanation on why the Islamic deposits are not interest-free is that, contrary to Islamic banking PLS theory, the depositors' funds are mostly invested in non-PLS financing in practice. Under the aforementioned asset-liability matching explanation, the risk and return characteristics of Islamic deposits should be similar to that of the Islamic bank's financing (investment) portfolio. We are unable to study this relation directly because the return data on Islamic bank's financing as far as we know is not available to the public. However, anecdotal evidence shows that, contrary to the asset-liability matching explanation, the Islamic bank depositors in practice do not fully share in the financing losses incurred by Islamic banks. The Bank Islam Malaysia Berhad's depositors, for example, continued to receive "market" investment rate of returns despite the bank's reported loss of RM480 million (US\$127 million) as at June 30, 2005 due to non-performing loans. Moreover, the above asset-liability matching explanation cannot explain why the Islamic investment rates are pegged to conventional deposit rates. More specifically, it cannot explain why the changes in the conventional deposit rates cause Islamic investment rates to change, but not vice versa. Finally, the asset-liability matching explanation cannot explain why Islamic investment rates are, on average, significantly lower and less volatile than comparable conventional deposit rates, given that Islamic banks' financing portfolio tend to be riskier than those of conventional banks. For example, Bank Islam Malaysia Berhad's non-

performing loans (NPL) ratio of 12.46 percent as at June 30, 2005 is significantly higher than the banking industry average of 5.1 percent.²⁴

5. Suggested Reform

Our results in the previous sections show that Islamic banking, as it is practiced today, is very similar to conventional banking. Hence, one implication of this finding is that Islamic banks should be regulated and supervised in a similar manner as conventional banks. For example, our results suggest that there should not be any capital relief for assets that are funded by *mudarabah* deposits. According to the prudential regulatory and supervisory standards on capital adequacy for Islamic banking institutions, which has been issued by the Islamic Financial Services Board (2005) and adopted by Bank Negara Malaysia for implementation on a trial run basis in April 2007, all assets that are funded by *mudarabah* deposits (or profit sharing investment accounts) would be excluded from the calculation of the denominator (or risk-weighted assets) of the capital adequacy ratio (CAR) because it is deemed (in theory) that 100% of the credit and market risks of such assets are borne by the *mudarabah* depositors (or investment account holders) themselves.²⁵ However, our study shows that the *mudarabah* deposits, in practice, are similar to conventional banking deposits and, therefore, should not be treated any differently. Furthermore, the failure of Islamic banking deposits to share in the losses of the bank is best highlighted in the case of Bank Islam Malaysia Berhad in 2006 when the bank continued to pay out RM0.371

²⁴ A probable reason for why Islamic deposits have lower risk and return profile than conventional deposits is that Islamic financial institutions are subjected to a higher degree of fiduciary risk and the ability to sustain stable and competitive returns is an important element in ensuring the competitiveness of the Islamic banking system, i.e., as acknowledged by the Governor of the Central Bank of Malaysia, Dr. Zeti Akhtar Aziz. Another probable reason for the lower return is that part of the compensation to Islamic depositors is non-pecuniary in nature, i.e., Islamic depositors are willing to accept a lower return because of the religious fulfilment provided by such products, which cannot be satisfied by conventional deposits.

²⁵ BNM will also consider profit sharing investment accounts as part of overall Islamic banking capital fund for the purpose of determining single customer limit.

billion in “profit sharing” to its depositors despite incurring a reported loss of RM1.3 billion. As such, assets that are funded by *mudarabah* deposits (or profit sharing investment accounts) should not be excluded from the calculation of the denominator (or risk-weighted assets) of the CAR.²⁶

To determine the potential overstatement in Islamic banks’ CAR under the Islamic Financial Services Board’s (2005) Capital Adequacy Standard for institutions offering Islamic financial services, we examine the case of Bank Islam Malaysia Berhad. Assuming that 62% of the bank’s risk-weighted assets are funded by *mudarabah* deposits²⁷, our estimate is that Bank Islam Malaysia Berhad’s CAR as at fiscal year-ended 2004, which is equivalent to 11.6% under Basel guideline, would increase to 31% under IFSB’s guideline of excluding all assets that are funded by *mudarabah* deposits from the CAR calculation. Alternatively, the bank’s CAR would increase to 17% under IFSB’s guideline if we only exclude 50% of the assets that are funded by *mudarabah* deposits. Thus, using Bank Islam Malaysia Berhad as a representative case, Islamic banks’ CAR in general could be significantly overstated under the IFSB (2005) guidelines. The potential overstatement in the IFSB’s measurement of Bank Islam Malaysia Berhad’s CAR is especially poignant given that the bank actually became insolvent in 2006 despite having an estimated IFSB CAR of 31% in 2004, which is very unusual.

²⁶ The Islamic Financial Services Board (2005) does recognize that, in practice, an Islamic bank may be obligated for competitive reasons to forgo some or all of its profits to maintain a certain level of return for *mudarabah* depositors. In such an environment, the supervisory authority has the discretion to require the Islamic banks to include a specified percentage (α) of assets financed by *mudarabah* deposits in the denominator of the CAR. The results of our study suggest that the specified percentage (α) should be set to 100%.

²⁷ This assumption is based on the fact that, according to Bank Islam Malaysia Berhad’s 2004 Annual Report, *mudarabah* deposits accounted for 62% of the bank’s total deposits.

6. Conclusions

In this paper, we attempted to establish whether Islamic banking is really different from conventional banking. In theory, a unique feature that differentiates Islamic banking from conventional banking is the PLS paradigm. In practice, however, we found that Islamic banking is not very different from conventional banking from the perspective of the PLS paradigm. On the asset side of Islamic banking, we found that only a negligible portion of financing is based on the PLS principle. Consistent with Islamic banking experiences elsewhere, a large majority of Islamic bank financing in Malaysia is still based on non-PLS modes that are permissible under the *Shariah* law, but ignore the spirit of the usury prohibition. On the liability side, the PLS principle is more widely adopted in structuring Islamic deposits. Our study, however, provides new evidence, which shows that, in practice, Islamic deposits are not interest-free.

There are several possible reasons for the poor adoption of the PLS paradigm in practice. First, unlike conventional banking, PLS financing encounters severe principal–agent problems. Moral hazard problems associated with ex-post information asymmetry, for example, are especially significant in PLS financing because the entrepreneur (borrower) has incentive to under-declare or artificially reduce reported profit (Mills and Presley, 1999). Also, in the case of *mudarabah* (profit-sharing) contracting, the entrepreneur has an incentive to undertake high-risk projects because the entrepreneur is actually given a call option whereby he or she gains on the upside but bears no losses at all on the downside. PLS financing, thus, requires more costly monitoring.

Second, the adoption of PLS financing is disadvantaged by a lack of management and control rights (Dar and Presley, 2000). In *mudarabah* (profit-sharing) financing, for example, the bank

provides all the risk capital, but the management and control of the project is mostly in the hands of the entrepreneur. The lack of management and control, in particular, accentuates the principal–agent problems associated with PLS financing.

Finally, our study suggests that the adoption of the PLS paradigm is constrained by competition as well as by best practices from conventional banking. Religion notwithstanding, individuals can choose to bank with an Islamic bank and/or a conventional bank. Thus, in terms of best practices, Islamic banking practices often cannot deviate substantially from those of conventional banking because of competition. In particular, our study shows that the returns on the Islamic deposit accounts are effectively pegged to the returns on conventional banking deposits because of competitive reasons.

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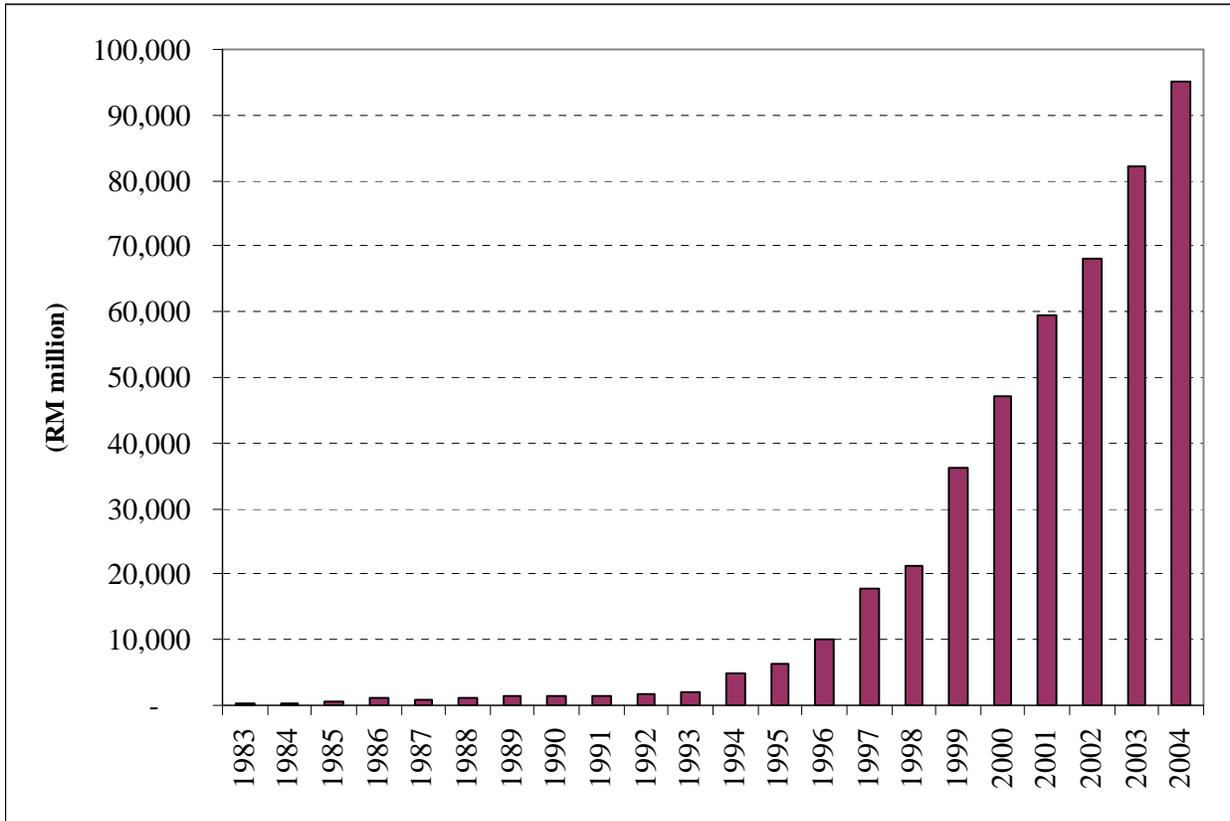


Figure 1: Total Asset under Islamic Banking in Malaysia

Table 1: Islamic Banking Assets by Type of Institutions

(As at end-2004) Type of institutions	Entire Banking System ¹		Islamic Banking System		
	Number of institutions	Total assets (RM billion)	Number of institutions	Islamic banking assets	
				(RM billion)	(% of financial institution's total assets portfolio)
Islamic Banks ²	2	24.9	2	24.9	100%
Commercial Banks	23	736.4	13	53.9	7.3%
<i>Domestic</i> ³	10	552.1	9	47.2	8.5%
<i>Foreign</i> ⁴	13	184.3	4	6.7	3.7%
Finance Companies ⁵	6	68.4	3	7.8	11.4%
Merchant Banks ⁶	10	42.8	4	2.6	6.0%
Discount Houses ⁷	7	31.9	7	5.9	18.6%
Banking System	48	904.3	29	95.0	10.5%

Notes:

¹ The Entire Banking System includes both the conventional banking system and the Islamic banking system.

² The two pure Islamic banks as at end-2004 are Bank Islam Malaysia Berhad and Bank Muamalat Malaysia Berhad.

³ The 10 domestic commercial banks as at end-2004 are: Affin Bank Berhad, Alliance Bank Malaysia Berhad, AmBank Berhad, Bumiputra-Commerce Bank Berhad, EON Bank Berhad, Hong Leong Bank Berhad, Malayan Banking Berhad, Public Bank Berhad, RHB Bank Berhad, and Southern Bank Berhad.

⁴ The 13 foreign commercial banks as at end-2004 are: ABN AMRO Bank Berhad, Bangkok Bank Berhad, Bank of America Malaysia Berhad, Bank of China (Malaysia) Berhad, Bank of Tokyo-Mitsubishi (Malaysia) Berhad, Citibank Berhad, Deutsche Bank (Malaysia) Berhad, HSBC Bank Malaysia Berhad, J.P. Morgan Chase Bank Berhad, OCBC Bank (Malaysia) Berhad, Standard Chartered Bank Malaysia Berhad, The Bank of Nova Scotia Berhad, and United Overseas Bank (Malaysia) Berhad.

⁵ The six finance companies as at end-2004 are: AFFIN-ACF Finance Berhad, AmFinance Berhad, Bumiputra-Commerce Finance Berhad, Kewangan Bersatu Berhad, RHB Delta Finance Berhad, and Southern Finance Berhad.

⁶ The 10 merchant banks as at end-2004 are: Affin Merchant Bank Berhad, Alliance Merchant Bank Berhad, AmMerchant Bank Berhad, Aseambankers Malaysia Berhad, Commerce International Merchant Bankers Berhad, Malaysian International Merchant Bankers Berhad, Public Merchant Bank Berhad, RHB Sakura Merchant Bankers Berhad, Southern Investment Bank Berhad, and Utama Merchant Bank Berhad.

⁷ The seven discount houses as at end-2004 are: Abrar Discounts Berhad, Affin Discount Berhad, Amanah Short Deposits Berhad, CIMB Discount House Berhad, KAF Discounts Berhad, Malaysia Discount Berhad, and Mayban Discount Berhad.

Source: Bank Negara Malaysia Annual Reports, Monthly Statistical Bulletin

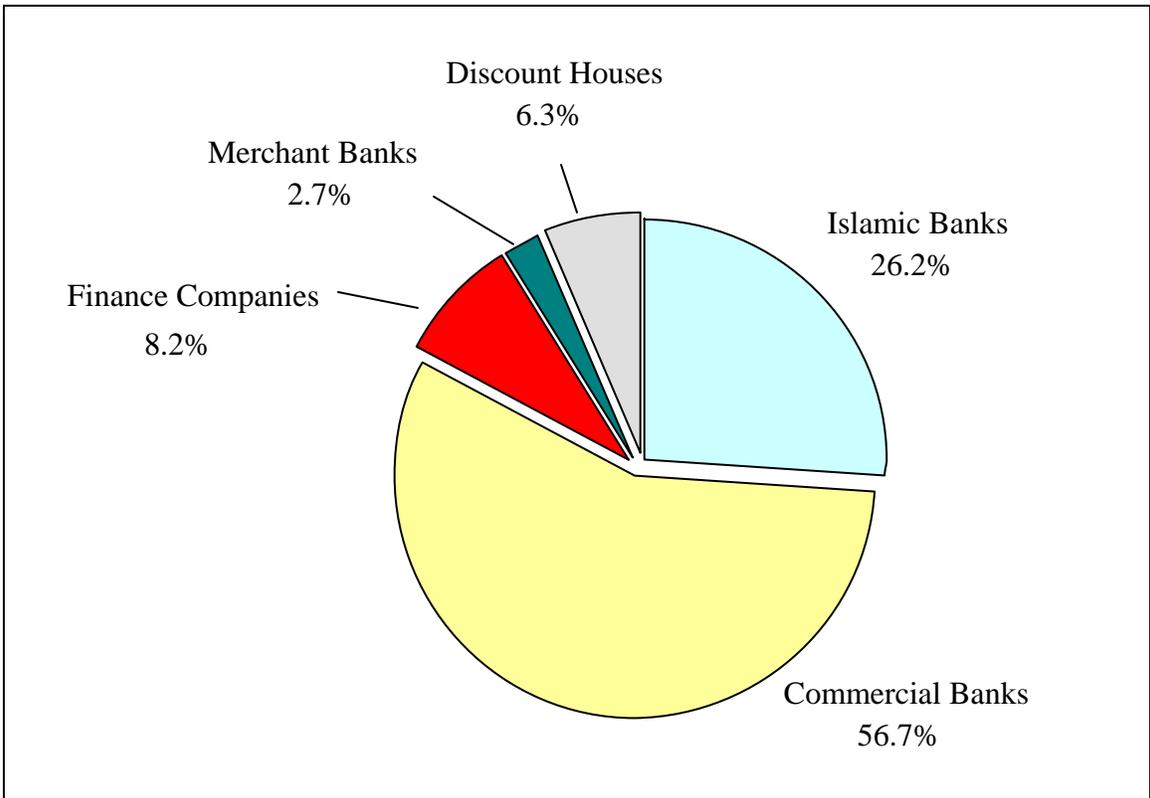


Figure 2: Market Share of Islamic Banking Asset – RM95 billion as at end-2004

Table 2
Islamic Banking System — Financing and Deposits by Type

Panel A: Islamic Financing By Type (as of the end of 2004)	(RM million)¹	(%)
<i>Mudarabah</i> (profit-sharing)	38	0.1%
<i>Musyarakah</i> (joint venture)	238	0.4%
<i>Bai' muajjal</i> (deferred payment sale)	28,884	49.9%
<i>Ijarah</i> (leasing)	13,892	24.0%
<i>Murabaha</i> (cost plus)	4,052	7.0%
<i>Istisna</i> (contract manufacturing)	695	1.2%
<i>Others</i>	10,072	17.4%
Total Islamic financing	57,883	100.0%

Panel B: Islamic Deposits By Type (as of the end of 2004)	(RM million)¹	(%)
<i>Al-wadiah</i> demand deposits	12,917	17.7%
<i>Al-wadiah</i> saving deposits	8,432	11.6%
<i>Mudarabah</i> investment deposits	41,996	57.6%
<i>Mudarabah</i> negotiable instrument of deposits (NID)	8,962	12.3%
<i>Others</i>	552	0.8%
Total Islamic deposits	72,859	100.0%

Note: ¹ RM/USD = 3.8 as at end-2004.

Source: Bank Negara Malaysia

Table 3
Descriptive Statistics

Variable ²	Mean	Std Dev	Minimum	Maximum	Variable	Mean	Std Dev	Minimum	Maximum	Correlation Coefficient ¹
Investment rates of Islamic banks					Deposit rates of commercial banks					
<i>Muda_IsBank_01</i>	4.24 ***	1.53 ***	2.61	7.55	<i>FD_CoBank_01</i>	5.03	2.18	3.00	10.14	0.95
<i>Muda_IsBank_03</i>	4.42 ***	1.61 ***	2.67	7.78	<i>FD_CoBank_03</i>	5.07	2.22	3.00	10.27	0.94
<i>Muda_IsBank_06</i>	4.63 *	1.61 ***	2.93	8.24	<i>FD_CoBank_06</i>	5.11	2.23	3.00	10.28	0.93
<i>Muda_IsBank_09</i>	4.82	1.63 ***	3.11	8.43	<i>FD_CoBank_09</i>	5.18	2.19	3.02	10.24	0.92
<i>Muda_IsBank_12</i>	5.05 *	1.61 **	3.27	8.59	<i>FD_CoBank_12</i>	5.51	1.97	3.69	10.28	0.89
<i>Alwa_IsBank_00</i>	3.14	1.03 *	1.78	5.11	<i>SD_CoBank_00</i>	3.11	0.86	1.77	4.54	0.97
Investment rates of finance companies					Deposit rates of finance companies					
<i>Muda_Finance_01</i>	4.64 **	1.56 ***	2.66	7.94	<i>FD_Finance_01</i>	5.21	2.44	3.00	10.93	0.92
<i>Muda_Finance_03</i>	4.79 *	1.60 ***	3.03	8.10	<i>FD_Finance_03</i>	5.26	2.44	3.00	10.97	0.92
<i>Muda_Finance_06</i>	4.97	1.52 ***	3.23	7.77	<i>FD_Finance_06</i>	5.30	2.42	3.01	10.88	0.91
<i>Muda_Finance_09</i>	5.17	1.54 ***	3.41	8.25	<i>FD_Finance_09</i>	5.39	2.34	3.03	10.82	0.88
<i>Muda_Finance_12</i>	5.38	1.50 ***	3.56	8.28	<i>FD_Finance_12</i>	5.68	2.14	3.66	10.88	0.88
<i>Alwa_Finance_00</i>	3.75	1.05	2.36	5.81	<i>SD_Finance_00</i>	3.87	1.11	2.14	5.59	0.94

Notes:

* Difference between investment rate and corresponding deposit rate is significant at the 10% level using a two-tailed test. ** Difference between investment rate and corresponding deposit rate is significant at the 5% level using a two-tailed test. *** Difference between investment rate and corresponding deposit rate is significant at the 1% level using a two-tailed test.

¹ Denotes the correlation coefficient between Islamic investment rates and conventional deposit rates on a maturity-matched basis.

² Each variable is denoted in the *xxxx_yyyyyy_zz* format, where *xxxx* is the type of deposit; *yyyyyy* is the type of financial institution; and *zz* is the maturity in months. For example, *Muda_IsBank_01* = Islamic banks' investment rate on 1-month *mudharabah* deposits; *Alwa_IsBank_00* = Islamic banks' investment rate on *al-wadiah* savings deposits; *Muda_Finance_01* = finance companies' investment rate on 1-month *mudharabah* deposits; *FD_CoBank_01* = Commercial banks' deposit rate on 1-month fixed deposits; *SD_CoBank_00* = Commercial banks' deposit rate on savings deposits; and *FD_Finance_01* = Finance companies' deposit rate on 1-month fixed deposits.

Table 4
Pair-wise Granger Causality Test

This table presents the results of the pair-wise Granger causality test. Two null hypotheses are tested. The first null hypothesis is that changes in the Islamic investment rate do not Granger cause the conventional deposit rate to change. The second null hypothesis is that changes in the conventional deposit rate do not Granger cause the Islamic rate to change. In all cases, the first null hypothesis cannot be rejected, whereas the second null hypothesis can be rejected.

Null Hypothesis ¹	F-Statistic	p-value
<i>Muda_IsBank_01</i> does not Granger cause <i>FD_CoBank_01</i>	0.59	0.558
<i>FD_CoBank_01</i> does not Granger cause <i>Muda_IsBank_01</i>	47.11	0.000
<i>Muda_IsBank_03</i> does not Granger cause <i>FD_CoBank_03</i>	0.24	0.789
<i>FD_CoBank_03</i> does not Granger cause <i>Muda_IsBank_03</i>	44.4	0.000
<i>Muda_IsBank_06</i> does not Granger cause <i>FD_CoBank_06</i>	1.01	0.366
<i>FD_CoBank_06</i> does not Granger cause <i>Muda_IsBank_06</i>	41.28	0.000
<i>Muda_IsBank_09</i> does not Granger cause <i>FD_CoBank_09</i>	0.64	0.531
<i>FD_CoBank_09</i> does not Granger cause <i>Muda_IsBank_09</i>	38.32	0.000
<i>Muda_IsBank_12</i> does not Granger cause <i>FD_CoBank_12</i>	0.32	0.726
<i>FD_CoBank_12</i> does not Granger cause <i>Muda_IsBank_12</i>	39.81	0.000
<i>Alwa_IsBank_00</i> does not Granger cause <i>SD_CoBank_00</i>	0.93	0.397
<i>SD_CoBank_00</i> does not Granger cause <i>Alwa_IsBank_00</i>	21.83	0.000
<i>Muda_Finance_01</i> does not Granger cause <i>FD_Finance_01</i>	0.09	0.906
<i>FD_Finance_01</i> does not Granger cause <i>Muda_Finance_01</i>	12.93	0.000
<i>Muda_Finance_03</i> does not Granger cause <i>FD_Finance_03</i>	0.39	0.679
<i>FD_Finance_03</i> does not Granger cause <i>Muda_Finance_03</i>	12.84	0.000
<i>Muda_Finance_06</i> does not Granger cause <i>FD_Finance_06</i>	0.10	0.907
<i>FD_Finance_06</i> does not Granger cause <i>Muda_Finance_06</i>	9.83	0.000
<i>Muda_Finance_09</i> does not Granger cause <i>FD_Finance_09</i>	1.21	0.303
<i>FD_Finance_09</i> does not Granger cause <i>Muda_Finance_09</i>	8.15	0.001
<i>Muda_Finance_12</i> does not Granger cause <i>FD_Finance_12</i>	0.09	0.911
<i>FD_Finance_12</i> does not Granger cause <i>Muda_Finance_12</i>	14.96	0.000
<i>Alwa_Finance_00</i> does not Granger cause <i>SD_Finance_00</i>	0.26	0.774
<i>SD_Finance_00</i> does not Granger cause <i>Alwa_Finance_00</i>	8.56	0.000

Note:

¹Each variable is denoted in the *xxxx_yyyyyy_zz* format, where *xxxx* is the type of deposit; *yyyyyy* is the type of financial institution; and *zz* is the maturity in months. For example, *Muda_IsBank_01* = Islamic banks' investment rate on 1-month *mudarabah* deposits; *Alwa_IsBank_00* = Islamic banks' investment rate on *al-wadiah* savings deposits; *Muda_Finance_01* = finance companies' investment rate on 1-month *mudarabah* deposits; *FD_CoBank_01* = Commercial banks' deposit rate on 1-month fixed deposits; *SD_CoBank_00* = Commercial banks' deposit rate on savings deposits; and *FD_Finance_01* = Finance companies' deposit rate on 1-month fixed deposits.

Table 5
Johansen Cointegration Tests

The presence of pair-wise cointegration between the Islamic investment rate and the conventional deposit rate with the same maturity was tested using the trace and maximum eigenvalue test statistics. Two null hypotheses were tested. The first null hypothesis ($r = 0$) is that there is no cointegration equation. The second null hypothesis ($r \leq 1$) is that there is at most one cointegration equation. Both the trace and maximum eigenvalue test statistics reject the first null hypothesis ($r = 0$). The second null hypothesis ($r \leq 1$), however, cannot be rejected by either the trace or maximum eigenvalue test statistics.

Dependent Variable ¹	Independent Variable ¹	Trace $r = 0$	Trace $r \leq 1$	Max Eigenvalue $r = 0$	Max Eigenvalue $r \leq 1$
Banks					
<i>Muda_IsBank_01</i>	<i>FD_CoBank_01</i>	40.78 ***	2.06	38.71 ***	2.060
<i>Muda_IsBank_03</i>	<i>FD_CoBank_03</i>	49.93 ***	1.75	48.19 ***	1.750
<i>Muda_IsBank_06</i>	<i>FD_CoBank_06</i>	54.00 ***	2.66	51.34 ***	2.660
<i>Muda_IsBank_09</i>	<i>FD_CoBank_09</i>	46.34 ***	2.40	43.94 ***	2.400
<i>Muda_IsBank_12</i>	<i>FD_CoBank_12</i>	56.77 ***	2.49	54.27 ***	2.490
<i>Alwa_IsBank_00</i>	<i>SD_CoBank_00</i>	19.42 *	2.44	16.98 **	2.440
Finance companies					
<i>Muda_Finance_01</i>	<i>FD_Finance_01</i>	21.72 **	1.53	20.19 ***	1.530
<i>Muda_Finance_03</i>	<i>FD_Finance_03</i>	23.19 **	1.27	21.93 ***	1.270
<i>Muda_Finance_06</i>	<i>FD_Finance_06</i>	19.85 *	1.31	18.54 **	1.310
<i>Muda_Finance_09</i>	<i>FD_Finance_09</i>	17.90 *	1.45	16.34 **	1.450
<i>Muda_Finance_12</i>	<i>FD_Finance_12</i>	26.06 ***	1.63	24.43 ***	1.630
<i>Alwa_Finance_00</i>	<i>SD_Finance_00</i>	32.53 ***	2.94	29.59 ***	2.940

Note:

*** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

¹ Each variable is denoted in the *xxxx_yyyyyyy_zz* format, where *xxxx* is the type of deposit; *yyyyyy* is the type of financial institution; and *zz* is the maturity in months. For example, *Muda_IsBank_01* = Islamic banks' investment rate on 1-month *mudarabah* deposits; *Alwa_IsBank_00* = Islamic banks' investment rate on *al-wadiah* savings deposits; *Muda_Finance_01* = finance companies' investment rate on 1-month *mudarabah* deposits; *FD_CoBank_01* = Commercial banks' deposit rate on 1-month fixed deposits; *SD_CoBank_00* = Commercial banks' deposit rate on savings deposits; and *FD_Finance_01* = Finance companies' deposit rate on 1-month fixed deposits.

Table 6
Long-term Relation between Islamic Investment Rate and Conventional Deposit Rate

The following equation is estimated to measure the long-term relation between the Islamic investment rate and the conventional deposit rate on a maturity-matched basis:

$$y_t = \alpha_0 + \alpha_1 x_t + \varepsilon_t$$

where y_t represents the various Islamic investment rates and x_t denotes the corresponding conventional deposit rates. ε_t is the disturbance term. The degree of pass-through in the long run, α_1 , measures the extent to which a change in the conventional deposit rate gets reflected in the Islamic investment rate.

Dependent variable ¹	Independent variable ¹	Constant (α_0)	Slope (α_1)	Adjusted R ²
Banks				
<i>Muda_IsBank_01</i>	<i>FD_CoBank_01</i>	0.91	0.66	0.89
<i>Muda_IsBank_03</i>	<i>FD_CoBank_03</i>	0.97	0.68	0.88
<i>Muda_IsBank_06</i>	<i>FD_CoBank_06</i>	1.18	0.67	0.87
<i>Muda_IsBank_09</i>	<i>FD_CoBank_09</i>	1.27	0.68	0.84
<i>Muda_IsBank_12</i>	<i>FD_CoBank_12</i>	1.02	0.73	0.79
<i>Alwa_IsBank_00</i>	<i>SD_CoBank_00</i>	-0.45	1.16	0.93
Finance Companies				
<i>Muda_Finance_01</i>	<i>FD_Finance_01</i>	1.58	0.59	0.85
<i>Muda_Finance_03</i>	<i>FD_Finance_03</i>	1.61	0.60	0.85
<i>Muda_Finance_06</i>	<i>FD_Finance_06</i>	1.93	0.57	0.83
<i>Muda_Finance_09</i>	<i>FD_Finance_09</i>	2.07	0.58	0.76
<i>Muda_Finance_12</i>	<i>FD_Finance_12</i>	1.88	0.62	0.77
<i>Alwa_Finance_00</i>	<i>SD_Finance_00</i>	0.32	0.89	0.87

Note:

¹ Each variable is denoted in the *xxxx_yyyyyy_zz* format, where *xxxx* is the type of deposit; *yyyyyy* is the type of financial institution; and *zz* is the maturity in months. For example, *Muda_IsBank_01* = Islamic banks' investment rate on 1-month *mudarabah* deposits; *Alwa_IsBank_00* = Islamic banks' investment rate on *al-wadiah* savings deposits; *Muda_Finance_01* = finance companies' investment rate on 1-month *mudarabah* deposits; *FD_CoBank_01* = Commercial banks' deposit rate on 1-month fixed deposits; *SD_CoBank_00* = Commercial banks' deposit rate on savings deposits; and *FD_Finance_01* = Finance companies' deposit rate on 1-month fixed deposits.

Table 7
Short-term Dynamics between Islamic Investment Rates and Conventional Deposit Rates

The following error-correction model is estimated to determine the short-term dynamics between Islamic investment rates and conventional deposit rates:

$$\Delta y_t = \beta_1 \Delta x_t + \beta_2 \hat{\varepsilon}_{t-1} + \nu_t$$

where Δ denotes first difference. $\hat{\varepsilon}_{t-1}$, which is the residual term associated with the long-term relation given by Equation (1), represents the extent of disequilibrium at time $(t - 1)$. ν_t is the error term. β_1 measures the short-term pass-through rate, and β_2 captures the error-correction adjustment speed when the rates are away from their equilibrium level. The mean adjustment lag (MAL) of a complete pass-through can be calculated as: $MAL = (1 - \beta_1) / \beta_2$.

Dependent variable ¹	Independent variable ¹	β_1	t-value	β_2	t-value	MAL
Banks						
$\Delta Muda_IsBank_01$	ΔFD_CoBank_01	0.102	2.66 ***	-0.269	-8.71 ***	3.3
$\Delta Muda_IsBank_03$	ΔFD_CoBank_03	0.053	1.38	-0.247	-9.07 ***	3.8
$\Delta Muda_IsBank_06$	ΔFD_CoBank_06	0.094	2.24 **	-0.237	-8.55 ***	3.8
$\Delta Muda_IsBank_09$	ΔFD_CoBank_09	0.071	1.66 *	-0.212	-8.27 ***	4.4
$\Delta Muda_IsBank_12$	ΔFD_CoBank_12	0.083	1.88 *	-0.172	-7.39 ***	5.3
$\Delta Alwa_IsBank_00$	ΔSD_CoBank_00	0.367	2.54 ***	-0.240	-5.36 ***	2.6
Finance Companies						
$\Delta Muda_Finance_01$	$\Delta FD_Finance_01$	0.190	2.23 **	-0.303	-5.14 ***	2.7
$\Delta Muda_Finance_03$	$\Delta FD_Finance_03$	0.170	2.92 ***	-0.182	-4.84 ***	4.6
$\Delta Muda_Finance_06$	$\Delta FD_Finance_06$	0.150	2.94 ***	-0.151	-4.57 ***	5.6
$\Delta Muda_Finance_09$	$\Delta FD_Finance_09$	0.073	0.94	-0.169	-4.03 ***	5.5
$\Delta Muda_Finance_12$	$\Delta FD_Finance_12$	0.095	1.70 *	-0.165	-5.25 ***	5.5
$\Delta Alwa_Finance_00$	$\Delta SD_Finance_00$	0.745	3.88 ***	-0.179	-3.65 ***	1.4

Note:

*** Significant at the 1% level; ** significant at the 5% level; * significant at the 10% level.

¹ Each variable is denoted in the *xxxx_yyyyyy_zz* format, where *xxxx* is the type of deposit; *yyyyyy* is the type of financial institution; and *zz* is the maturity in months. For example, *Muda_IsBank_01* = Islamic banks' investment rate on 1-month *mudarabah* deposits; *Alwa_IsBank_00* = Islamic banks' investment rate on *al-wadiah* savings deposits; *Muda_Finance_01* = finance companies' investment rate on 1-month *mudarabah* deposits; *FD_CoBank_01* = Commercial banks' deposit rate on 1-month fixed deposits; *SD_CoBank_00* = Commercial banks' deposit rate on savings deposits; and *FD_Finance_01* = Finance companies' deposit rate on 1-month fixed deposits.