The Dynamic Value Creation of Profit-Loss Sharing Arrangement in Islamic Banking Industry
(Penciptaan Nilai Dinamik Bagi Tatacara Perkongsian Untung-Rugi di dalam Industri Perbankan Islam)

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ABSTRACT
The adoption of Profit-Loss Sharing arrangement in Islamic banking models can create value for their shareholders. Previous studies discuss Profit-Loss Sharing arrangement in the context of financial intermediation theory, but fail to link the adoption of Profit-Loss Sharing arrangement with value creation and to produce empirical evidence. The aim of this study is to address optimal conditions of the Profit-Loss Sharing contracts in Islamic banking models to minimize the problems of asymmetric information and transaction costs. Three propositions are presented to achieve the optimal conditions of Profit-Loss Sharing contracts in Islamic banking models that can create positive values, given that: First, for mudharaba contract, Islamic banks as rabbul maal give incentives of \( \phi^*(R^\beta) \) to entrepreneurs if the positive value of the Islamic bank’s expected net profit is obtained. Next, if an Islamic bank, as mudharib is appointed as wakeel, the depositors of mudharaba investment account are imposed \( \epsilon^*(m) \) for cost of processing information. Third, for musyaraka contract, the Islamic bank is proposed to incur monitoring cost of \( \epsilon^*(\gamma) \). In addition, this study also produces empirical evidence to determine to what extent the adoption of Profit-Loss Sharing arrangement in Islamic banks creates value for their shareholders. This study utilizes the Malaysian Islamic banks panel data from 2005-2009 and employs Economic Value
Added (EVA) as a technique of value creation measurement of Islamic banks. The empirical findings reveal that there is no indication that the adoption of Profit-Loss Sharing arrangement on the deposits structure (MDIA) significantly creates positive value to Islamic banks. This result is consistent for both measurement of value creation against shorter and longer terms opportunity costs of capital employed. This suggests that Islamic banks utilize a lower cost of capital, as Non-mudharaba deposits accounts constitute a large amount of current and saving accounts. On the other hand, for asset structure, this study finds that funds allocated in Financing (FPLS) based on Profit-Loss Sharing arrangement results in a reduction in the value of Islamic banks. However, funds allocated in Securities Investment (FIM) using Profit-Loss Sharing arrangement are significant and create positive value. Collectively, the findings reveal that theoretically, Profit-Loss Sharing arrangement can create value for the shareholders of Islamic banks, and it is evident that Islamic banks need to extensively utilize Profit-Loss Sharing arrangement in Islamic banking operation.

Keywords: Profit-Loss Sharing, EVA, Value Creation, Islamic banking

ABSTRAK

Kata kunci: Perkongsian Untung-Rugi; Nilai Tambah Ekonomi (EVA); Penciptaan Nilai
Kod JEL: G11, G14 dan G32

INTRODUCTION
Islamic banking, in principle promotes the adoption of Profit-Loss Sharing arrangement. Advocates of Islamic banking, among others Siddiqi 1983, Chapra 1985, Ahmed 2000, 2002, Rosly & Bakar 2003 and Hassan 2002, 2008, favor Profit-Loss Sharing arrangement. They assert that the Islamic banking model should be predominantly based on Profit-Loss Sharing arrangement to be congruent with the spirit of Shariah. In addition, the fundamentals of Profit-Loss Sharing arrangement requires financial transactions to be supported by real economic activities that add economic value. Thus, the design of Profit-Loss Sharing arrangement is by means of creating economic value to the beneficiaries.
Islamic banks have been depicted as financial intermediaries that mobilize resources in accordance to the principles of *Shariah* using financial instruments (Rosly & Zaini 2008). It is believed that Islamic banks are able to provide quality information at lower cost by utilizing their roles as financial intermediaries. Furthermore, the adoption of Profit-Loss Sharing arrangement is able to create economic value, wherein Islamic banks minimize asymmetric information and transaction costs through greater monitoring and supervision (Ahmed 2002; Khan 1996; Presley & Sessions 1994) and incentive alignment (Aggarwal & Yousef 2000; Ahmed 2002; Usmani 1999). As a result, Islamic banks’ investment decisions yield optimal returns. Consequently, Islamic banks can create value for their shareholders. Thus, one of the challenges of Islamic banks is adhere to *Shariah* compliance without undermining the business aspects of being profitable and create legitimate wealth the beneficiaries (Chapra 2000). In addition, value creation for the beneficiaries contributes to the economy in additive form. Thus, the expansion of Islamic banking asset contributes positively to economic growth (Haron 2004; Hassan and Bashir 2003).

In Malaysia, the Islamic banking system is currently represented by 18 commercial banking institutions comprising of 11 Islamic domestic commercial banks and 7 Islamic foreign commercial banks, which include Citibank Berhad. These Islamic banking institutions offer a comprehensive and broad range of Islamic financial products and services, including financing and investment in Securities. Islamic banking institutions have been able to arrange and offer products with attractive and innovative features at competitive prices. These products have received wide acceptance by both Muslim and non-Muslim customers (Iqbal & Molyneux 2005), reflecting the capacity of the Islamic banking system as an effective means of financial intermediation.

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1. According to Islamic Financial Service Board (IFSB), it has been estimated that total of Islamic banking assets are USD660 billion at the end of 2007 and expanded to total of USD822 billion in 2009. It has also been anticipated that Islamic banking assets will reach USD1,600 billion by year 2012 (IFSB 2010). As the biggest and fastest growing segment of the Islamic financial system, Islamic banking industry has crucial roles to facilitate economic growth and serve as a platform for efficient allocation of resources in an economy.
Table 1.1 Malaysia: Total assets for Islamic banks

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Assets (RM Million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>512</td>
</tr>
<tr>
<td>2001</td>
<td>529</td>
</tr>
<tr>
<td>2002</td>
<td>563</td>
</tr>
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<td>2003</td>
<td>629</td>
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<tr>
<td>2004</td>
<td>762</td>
</tr>
<tr>
<td>2005</td>
<td>884</td>
</tr>
<tr>
<td>2006</td>
<td>1,027</td>
</tr>
<tr>
<td>2007</td>
<td>1,145</td>
</tr>
<tr>
<td>2008</td>
<td>1,279</td>
</tr>
<tr>
<td>2009</td>
<td>1,364</td>
</tr>
<tr>
<td>2010</td>
<td>1,486</td>
</tr>
</tbody>
</table>

Source: Bank Negara Malaysia, Annual Report 2010

The upward trend of total assets by Islamic banking in Malaysia is reflected in Table 1.1. The rapid progress of the domestic Islamic banking system, accentuated by the significant expansion and developments in Islamic banking and finance have become increasingly more important in meeting the changing requirements of the new economy. In addition, total financing is the largest portfolio that constitutes more than 50 per cent of total assets. This exemplifies the importance of financing portfolio in Islamic banking. Nevertheless, it is shown that at the end of 2006, 78.9% of total financing on the asset side, issued by Islamic banks was based on the debt-based contracts. The dominant modes of financing used were fixed income-based instruments, such as *murabaha* and *ijarah*.

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2 From 2000 to 2005, Islamic banking assets have been gradually growing at 3.5, 6.3 and 11.8 per cent per annum. In the year 2005, total assets of the Islamic banking sector increased to RM884.6 million, which accounted for 10.5 per cent of the total assets in the banking system. As end of the year 2009, total Islamic banking assets stood at RM1.36 billion. Meanwhile, the market share of Islamic deposits and financing increased to 11.2 percent and 11.3 per cent of total banking sector deposits and financing respectively (Bank Negara Malaysia, 2010).

3 Calculated from Bank Negara Malaysia, Annual Report (2010)
Table 1.2 Malaysia: Total financing by Mudharaba and Musyaraka contracts for Islamic banks

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Financing by Mudharaba and Musyaraka contracts (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>0.42</td>
</tr>
<tr>
<td>2007</td>
<td>0.57</td>
</tr>
<tr>
<td>2008</td>
<td>1.38</td>
</tr>
<tr>
<td>2009</td>
<td>2.04</td>
</tr>
<tr>
<td>2010</td>
<td>2.66</td>
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</tbody>
</table>

Source: Calculated from Bank Negara Malaysia, Annual Report 2010

Table 1.2, shows that the Profit-Loss Sharing arrangement i.e. mudharaba and musyaraka contracts, comprise only 0.42 per cent of the total financing issued by the Islamic banks for the year ended 2006.

The stylized fact presented above seems to indicate that; first, in the practice of Islamic banks, Profit-Loss Sharing arrangement is utilized far less than other forms of Islamic financing, such as murabaha and ijarah contracts. In relation to that a few studies have also pointed out the lack of application of Profit-Loss Sharing arrangement either on the asset or liability side, relatively to the other types of financial contracts (Aggarwal & Yousef 2000; Ahmed 2002; Dar & Presley 2001; Khan 1995).

The increasing trend shows that as end of year 2009, the Profit-Loss Sharing arrangement comprises of 2.44 per cent of total financing by Islamic banks. Total financing is still dominated by debt contracts which constituted of 82.6 per cent. In contrast, on the liability side, mudharaba contract deposits are more dominant, which account for 70 per cent of total deposits. On the liability side; total deposits based on mudharaba contract contribute 65.4 per cent of total Islamic deposits. Even though there is a slight decrease in total deposit based on mudharaba contract, it still dominated the liability side. The adoption of the Profit-Loss Sharing arrangement appears to be faster on the liability side of Islamic banking. On the other hand, total income derived by Islamic banks is RM 5,271 million and RM 9,124 million in 2006 and 2008, respectively. These figures represent 26 per cent and 18.7 per cent increment of total income. Whereas, the pre-tax profit earned by Islamic banks is RM 1,612 million and RM 1,811 million in 2006 and 2008, respectively. These figures represent an increment of 4.5 per cent and reduction by 0.04 per cent in 2006 and 2008, accordingly.

The trend for Islamic banking in Malaysia shows that the adoption of Profit-Loss Sharing arrangement has been much slower on the asset side. On the other hand, as have been discussed above and noted in study done by Chong and Liu (2009); the applications of Profit-Loss Sharing arrangement, mudharaba contract deposits on the liability side are more dominant.
Second, a possible explanation as to why these instruments are not utilized to a greater extent are due to principal-agent problem (Ariff 1985; Chapra 1985). In addition, researchers such as Ahmed (2002), Aggarwal & Yousef (2000), Dar & Presley (2001) highlight on the issues of transaction cost and asymmetrical information. Thus, in Islamic banking, monitoring and supervision are essential due to information asymmetry. Furthermore, with the concept of universal banking, financing under musyarakah contract, would mean that the capital owner has a right to participate in the management and hence has some control over the problems arise due to the informational asymmetry.

Third, the role of Islamic banks as mudharib on the liability side and as rabbul maal on the asset side, give unique and different implications on the borrowing and lending relations (Ahmed 2002; Aggarwal & Yousef 2000). Theoretically, the role of Islamic banks as financial intermediaries is to screen and monitor the performance of projects undertaken by entrepreneurs using the funds contributed by the shareholders and depositors. But, the involvement of Islamic banks in many contracts leads to bigger roles for Islamic bank to perform as wakeel, mudharib and rabbul maal.

Previous empirical studies have not associated the adoption of Profit-Loss sharing arrangement with value creation. Furthermore, one of the objectives and the rationale for the shariah, referred to as Maqasid as-shariah is to promote justice and prosperity to the Ummah as a whole. Thus, the role of Islamic banks is significant, in accordance to Maqasid as-shariah, to create wealth, then distribute and manage the economic resources fairly. Therefore, Islamic banks, like other financial institutions, have a financial objective to generate shareholders’ value. In a Profit-Loss Sharing arrangement, the role of Islamic banks is to make investment decisions on behalf of their depositors and shareholders. The ability of Islamic banks to acquire and utilize the information is a very important factor, in order to efficiently allocate the capital contributed by their depositors and shareholders and create higher investment returns. Then, the higher returns could be redistributed, for instance through payment of zakah, to the Ummah and the economy as a whole. Thus, as a result of the significant role of Islamic banks, it becomes important to determine their ability to create value through the adoption of Profit-Loss Sharing arrangement.
To date, in the context of the above descriptions, there is no such study that examines to what extent the adoption of the Profit-Loss Sharing arrangement by Islamic banks could create value for their shareholders. In a related approach, Rosly and Zaini (2008) argue that financial ratios such as Return on Equity (ROE) and Return on \textit{mudharaba} deposits (ROMD) can be used to address value creation, specifically in Islamic banking and represent values generated to shareholders and depositors. They argue further that since both shareholders’ capital and \textit{mudharaba} investment deposits constitute risk capital, thus variance in yields should be proportional to risk. In their study of Islamic and conventional banks deposits and capital, they conclude that the results are not true in the case of Islamic banks’ in Malaysia. They found that the ROMD does not commensurate with the ROE, which is much higher, especially for Islamic banks with conventional banks as the parent bank. Thus, \textit{mudharaba} depositors are not justly rewarded, as compared to the shareholders, although \textit{mudharaba} deposits represent a larger proportion of the capital utilized by the Islamic banks.

This study differs in significant ways. First, it focuses on the issue of value creation as a result of the adoption of the Profit-Loss Sharing arrangement in Islamic banking models, particularly for depositors and shareholders. This study employs the asset side and liability side approach. Following Ahmed (2002), this study assumes that the analysis of net profit is done independently where the mode of financing has been analyzed individually and not as a set of assets. It also applies to the deposits. Second, this study produces empirical evidence to determine to what extent the adoption of the Profit-Loss Sharing arrangement in Islamic banking models creates value for the shareholders and depositors. Third, this study uses \textit{EVA} method as a measurement of value creation to the depositors and shareholders of Islamic banks, instead of the financial ratios.

Therefore, this study aims to theoretically demonstrate conditions of Profit-Loss Sharing arrangement (i.e. \textit{mudharaba} and \textit{musyarakah} contracts)
in Islamic banking models to minimize the problems of information asymmetry and transaction costs. This study also empirically examines to what extent the adoption of Profit-Loss Sharing arrangement could generate value for the shareholders. In order to achieve this objective, first this study presents a model of Islamic banking with the presence of asymmetric information and transaction costs, in the context of the financial intermediation theory. Then, the study shows that the EVA method represents a measurement of the value creation for Islamic banks. This measurement has been widely used to measure performance of a business unit's contribution to shareholders' value. It has an economic foundation to measure related risk consistently and allow banks to make decisions on risk and return tradeoff in different asset portfolio. Finally, this study utilizes the Malaysian Islamic banks annual data from 2005 to 2009, to examine to what extent the adoption of Profit-Loss Sharing arrangement in Islamic banking models create value for their shareholders.

This study is expected to contribute to the development of an appropriate regulatory framework for Islamic banking industry's evolution toward more consistent and fair wealth creation for the beneficiaries. Thus, it promotes the utilization of Profit-Loss Sharing arrangement in Islamic banking. In addition, the innovation in products and methods could increase efficiency in the usage of funds and consequently maximize the bank's value (Rosly 2010). It could also enhance the practice of Islamic banking in accordance to the objective of maqaasid as-shari'ah; Haq al-maal that is the duty to respect the rights of private property in the means of production which requires institutions to broaden access to capital ownership, that is the right to pursue economic interest. Moreover, this study uses EVA as a measurement of value creation to the beneficiaries. Thus, it provides better performance evaluation to evaluate the value creation on Islamic banks' activities and reflect the actual value creation based on current economic conditions.

The remaining part of this paper is organized as follows. Section 2 presents the review of literature. In Section 3, this study proposes the theoretical model of Islamic banks for asset and liability sides. Next, estimation utilizing selected Islamic banks data is analyzed. Finally, Section 5 concludes.
LITERATURE REVIEW

Profit-Loss Sharing arrangement dominates the theoretical literature on Islamic finance. Past theoretical literature contends that Profit-Loss Sharing arrangement (i.e., mudharaba and musharaka contracts) in Islamic banking models is desirable in which reward-sharing relates to risk-sharing between contracting parties (Dar & Presley 2001). In addition, earlier discussion on the banking theory also highlight that both mudharaba and musharaka contracts constitute the foundation of the Islamic banking system (Chapra 1985). Despite of its design which is able to minimize asymmetric information and reduce transaction costs, Profit-Loss Sharing arrangement is featured marginally in the practice of Islamic banking. Consequently, due to the under utilization of the Profit-Loss Sharing arrangement, Islamic banks’ investment decisions may not provide optimal returns to their shareholders.

Thus, there is a contradiction in the trend of Islamic banking in the application of Profit-Loss Sharing arrangement and the theoretical literature on Islamic banking that promotes Profit-Loss Sharing arrangement. In addition, in Malaysia, efforts by Bank Negara Malaysia to set out the relevant policies and regulatory provisions, specifically for musharaka and mudharaba contracts to promote Profit-Loss Sharing arrangement. This issue motivated this study to demonstrate theoretically the conditions of Profit-Loss Sharing arrangement in the Islamic banking models. This study presents the discussion from the context of contemporary financial intermediation theory in the presence of transaction cost and asymmetrical information. The Profit-Loss Sharing arrangement, however, has been criticized for having higher degree of adverse selection and moral hazard due to the presence of information asymmetry and transaction costs (Sadr & Iqbal 2002). In addition, the involvement of Islamic banks in Profit-Loss Sharing in both asset and liability sides complicate Islamic banks in performing different roles such as wakeel, mudharib and rabbul maal. For instance, as rabbul maal, Islamic

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Guidelines on Musharaka and Mudharaba contracts for Islamic Banking Institutions (BNM/RH/GL/007-8).
banks share profit and loss according to the pre agreed ratio for *musyarakah* contract and bear the loss, if any, in the case of *mudharabah* contract.

Nevertheless, in Islamic banking monitoring and supervision are essential. Usmani (1999) suggests that Islamic bank should impose a fine in cases where arrears payment arises, to overcome the slackness and dishonesty of the clients in *mudharabah* contracts. Adding to that, Dar (2007), Ahmed (2002) and Khan (1996) propose incentive-compatible profit sharing (PS) contract that reduces the moral hazard problem. For instance, Dar (2007) classifies *mudharabah* and *musyarakah* contracts as modes of variable return, in which these types of financing offers the possibility of sharing residual financial rights between the capital provider and user of funds. It also offers benefits in terms of improved productivity and profitability. Finally, it is subjected to the moral hazard problem. In addition, Ahmed (2002) and Khan (1996) emphasize the moral hazard problem in PS mode of financing has been identified as one of the important factors that hinder the use of PS contract in practice. Thus, in contracts that arise the possibility of asymmetric information between the capital providers and fund users, the realized profit from the project undertaken is not observable by the capital providers unless there is a penalty or reward function included in the contract that refers as incentive-compatible. On the other hand, for *musyarakah* contracts the capital owner has a right to be involved in the management and control over the problems that arise due to the informational asymmetry. Therefore, in a Profit-Loss Sharing arrangement additional monitoring, supervision and alignment of incentives are required to minimize transaction costs and asymmetrical information. Thus, it is important to propose conditions for the adoptions of Profit-Loss Sharing arrangement in Islamic banking models to minimize asymmetrical information and reduce transaction costs. Consequently, Islamic banks can maximize their net profits and create value for their shareholders.

THE MODEL

This study presents a model of Islamic banking that incorporates both asset and liability sides using the elements of contemporary financial intermediation theory with some modifications to capture the Profit-Loss Sharing arrangement. This study intends to demonstrate the optimal
conditions of Profit-Loss Sharing arrangement in Islamic banking models that incorporates both asset and liability sides of banks’ balance sheet. This model follows Diamond (1984) in modeling a bank as a delegated monitoring. However, this study replaces murabaha contract as fixed-income based contract and introduces mudaraba and musyarakah contracts as equity-based contracts. The discussion will be; first, Islamic bank as rabbul maal on the asset side and second, Islamic bank as mudharib on the liability side.

**Theoretical Model of asset side**

This study assumes there are N entrepreneurs indexed by $i = 1,\ldots,N$ in the economy. The entrepreneur is endowed with the technology for invisible investment project, $n$ with stochastic return. It is assumed that the projects could be financed via equity-based mechanisms, mudaraba contract (PS) and musharaka contract (PLS) and Fixed-income mechanism (i.e. murabaha contract). The entrepreneur’s wealth is zero, thus the need for financing arises, for the case of modeling Profit Sharing (i.e. mudaraba contract) and Fixed-income (i.e. murabaha contract); and $w$ for Profit and Loss Sharing (i.e. musyarakah contract). The scale of inputs for the project greatly exceeds both his personal wealth and the personal wealth of any single capital provider. The project requires inputs of the good today ($t=0$), and will produce output in one period ($t=1$). Normalize the required initial amount of inputs to one. The output produced at the end of the period ($t=1$), will give returns in terms of net profit. Let $eR_{pb}$ and $eR_{plb}$, be the expected net profit of Islamic banks in the case of mudaraba contract and musyarakah contract, respectively. Let the profit sharing ratio (i.e. mudaraba contract) be $\delta$, so that an Islamic bank as rabbul maal gets $\delta$ of the profit and $(1-\delta)$ is retained by the entrepreneur (mudarib). For musyarakah contract, it is assumed that $\beta$ is the profit and loss sharing ratio, Islamic bank entitles $\beta$ and the entrepreneur $(1-\beta)$ of any profit or loss. In both models, $\delta$ and $\beta$ are exogenously given based on the pre-agreed ratio between contracting parties. Therefore, the project would be undertaken if the risk neutral entrepreneur had available to him enough capital inputs. The Islamic bank is also risk neutral. To undertake the project, the entrepreneur must obtain sufficient resources from the capital provider to operate it at its scale of one. The Islamic bank
can access other projects which will give returns at least the same net profit. The entrepreneur must convince the potential Islamic bank that the net profit which he will pay has an expected value of at least \( eRpb \) and \( eRplb \). The capital market is competitive; if convinced that the expected returns equal or exceed \( eRpb \) and \( eRplb \), the Islamic bank will provide the capital to finance the project. Let the net profit, that is outcomes of the project be the random variable, \( \pi \). Assume that \( \pi < \infty \). The entrepreneur and all capital providers agree on the probability distribution of \( \pi \), shown in table 3.1.

In the case of mudharaba contract, the net profit (RM) of entrepreneur in states \( j=1, \ldots, h \) becomes zero (i.e., \( \pi_1 = \pi_2 = \ldots = \pi_h = 0 \)) and equals \((1-\delta)\pi_i \) in states \( k=h+1, \ldots, n \). The net profit for the Islamic bank is \( \pi_i < 0 \) for states \( j=1, \ldots, h \) and \( \delta \pi_i \) for states \( k=h+1, \ldots, n \). On the other hand, for musyaraka contract, the net profits of both entrepreneur and Islamic bank in states \( j=1, \ldots, h \) are \( \pi_i < 0 \). In states \( k=h+1, \ldots, n \), the net profits for both entrepreneur and Islamic bank are \( \pi_i > 0 \).

**Table 3.1** Probability distributions of net profit refer to outcomes of the project, Islamic bank, and entrepreneur in mudharaba contract and musyaraka contract

<table>
<thead>
<tr>
<th>Probability (p)</th>
<th>Project Profit/ Loss (( \mathbb{E} ))</th>
<th>Islamic Bank/ (Rabbul maal)</th>
<th>Entrepreneur (Mudharaba case)</th>
<th>Islamic Bank/ (Rabbul maal)</th>
<th>Entrepreneur (Mudharaba case)</th>
<th>Islamic Bank/ (Mudharaba case)</th>
<th>Islamic Bank/ (Mudharaba case)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( p_1 )</td>
<td>( \pi_1 &lt; 0 )</td>
<td>( \pi_1 &lt; 0 )</td>
<td>0</td>
<td>( \beta \pi_1 &lt; 0 )</td>
<td>( (1-\beta)\pi_1 &lt; 0 )</td>
<td>( \beta \pi_1 &lt; 0 )</td>
<td>( (1-\beta)\pi_1 &lt; 0 )</td>
</tr>
<tr>
<td>( p_2 )</td>
<td>( \pi_2 &lt; 0 )</td>
<td>( \pi_2 &lt; 0 )</td>
<td>0</td>
<td>( \beta \pi_2 &lt; 0 )</td>
<td>( (1-\beta)\pi_2 &lt; 0 )</td>
<td>( \beta \pi_2 &lt; 0 )</td>
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<tr>
<td>( p_n )</td>
<td>( \pi_n &lt; 0 )</td>
<td>( \pi_n &lt; 0 )</td>
<td>0</td>
<td>( \beta \pi_n &lt; 0 )</td>
<td>( (1-\beta)\pi_n &lt; 0 )</td>
<td>( \beta \pi_n &lt; 0 )</td>
<td>( (1-\beta)\pi_n &lt; 0 )</td>
</tr>
<tr>
<td>( p_{n+1} )</td>
<td>( \delta \pi_{n+1} &gt; 0 )</td>
<td>( (1-\delta)\pi_{n+1} &gt; 0 )</td>
<td>( \beta \pi_{n+1} &gt; 0 )</td>
<td>( (1-\beta)\pi_{n+1} &gt; 0 )</td>
<td>( \beta \pi_{n+1} &gt; 0 )</td>
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<td>( \pi )</td>
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<tr>
<td>( \delta \pi_n &gt; 0 )</td>
<td>( (1-\delta)\pi_n &gt; 0 )</td>
<td>( \beta \pi_n &gt; 0 )</td>
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<td>( \ldots )</td>
</tr>
</tbody>
</table>

Source: For mudharaba case (Ahmad, 2002) and musyaraka case (Ruhaini and Ismail, 2010)
Therefore, this study shows the conditions in which optimal contracts can be achieved for fixed income-based (i.e., *murabaha* contract), and Profit-Loss Sharing arrangement (i.e. *mudharaba* and *musyaraka* contracts) in Proposition 1, 2 and 3 (Appendix 1).

**Theoretical Model of Liability Side**

The model on liability side works as follows. Let the subscript \( i \) on the net profit, \( t \), of the \( i \)-th entrepreneur. For \( i = 1, \ldots, N \), the net profits are distributed independently. The probability distribution functions of the net profits are common knowledge to all. Let \( p_i^k \) be the payment to Islamic bank by the \( i \)-th entrepreneur as a function of return from different types of contracts offered by Islamic banks, from financing activities on the asset side, which comprise of \( R_i^m \), \( R_i^m \) for *mudaraba* contract, \( R_i^m \) for *musyarakah* contract and \( R_i^m \) for *murabaha* contract (fixed-income).

In this model, it is assumed that Islamic banks can monitor the net profit derived from the projects undertaken by entrepreneurs. This implies that Islamic banks can observe the outcomes of these projects. Due to the constraint that an entrepreneur can pay only what he has, that is a limited liability condition, then \( g(\pi_i) \leq \pi_i \). It is noted that limited liability condition implicit in the PLS contract, the manager has incentives to gain at the expense of lender/shareholder by increasing the riskiness of the investment the firm undertakes (Bashir 2000). Next, Islamic banks receive total payments from entrepreneurs of \( G_n \) when \( R_1^m = R_1^m, R_2^m = R_2^m, \ldots, R_N^m = R_N^m \) for *mudharaba* contract, \( R_1^m = R_1^m, R_2^m = R_2^m, \ldots, R_N^m = R_N^m \) for *musyaraka* contract and \( R_1^m = R_1^m, R_2^m = R_2^m, \ldots, R_N^m = R_N^m \) for *murabaha* contract, which is equal to \( G_n = \pi_n \). Let \( G_n \) be the random variable with realization \( \pi_n \). The Islamic bank must make total payments to depositors with expectation \( R_i^- \) and shareholders, \( R_i^s \). Since the constraint that entrepreneurs can pay Islamic banks at most \( R_i^m = R_i^m + R_i^m + R_i^m \), then \( P(\tilde{G}_n \geq n(R_i^- + R_i^s)) \leq P(\pi_i \geq n \cdot (R_i^- + R_i^s)) \). Islamic banks can pay to the depositors, only what it has, thus
R\textsuperscript{D} \leq R\textsuperscript{b}. For shareholders, Islamic banks can pay R \leq R\textsuperscript{b}. In the liability side model, it is assumed that the Islamic bank has two sources of funds; Shareholders' funds and Deposits. The Islamic bank takes deposits in terms of Demand deposits (D\textsubscript{D}) based on al-qard contract and mudaraba investment account deposits (D\textsubscript{I}). Thus, total deposits in the Islamic bank are TD=D\textsubscript{D}+D\textsubscript{I} which is held by m numbers of depositors. Therefore, the balance sheet of Islamic bank indicates that total assets (TA) must equal total deposits and total equity (i.e. TA = TD+TE).

Next, Islamic banks act as mudarib and Depositors are rabbul maal. From these funds, TD + TE, the Islamic bank invests in the financing projects engaged by entrepreneurs on the asset side, based on different types of contracts; R\textsuperscript{m} for mudaraba contract, R\textsuperscript{m} for musyaraka contract and R\textsuperscript{m} for murabaha contract (fixed-income). The net profit derived from the financing activities R\textsuperscript{h} which is equivalent to G\textsubscript{n}, be the total payment by entrepreneurs to Islamic bank, where R\textsuperscript{b} comprises of return to the depositors, R\textsuperscript{d} and shareholders, R\textsuperscript{s}. This study shows the condition in which optimal contracts can be achieved for Profit-Loss Sharing arrangement (i.e. mudaraba and musyaraka contracts) in Proposition 4 (Appendix 1).

**DISCUSSION**

The study puts forth three propositions that show the optimal conditions of each financing, between entrepreneur and the Islamic bank. The first proposition proposes an optimal condition for murabaha contract (fixed income). In murabaha contract, D\textsubscript{D} is the total payment to Islamic bank, D\textsubscript{D}= (h\textsubscript{Q}+\alpha)Q, where h\textsubscript{Q} is the price of assets (Q) sold to entrepreneur and \alpha is the mark-up. D\textsubscript{I} is the actual payment to the Islamic bank by entrepreneur. The expected total payment and the actual payment by entrepreneur to the bank are D\textsubscript{D} and D\textsubscript{I} accordingly. Hence, the actual payment received by the Islamic bank must be equal or less than D\textsubscript{D}. The optimal contract \phi*(D\textsubscript{D}) depends on D\textsubscript{I} where D\textsubscript{I} should be equal to D\textsubscript{D}. However, in the case of default or late payment, D\textsubscript{I} < D\textsubscript{D}. To induce the entrepreneur to pay D\textsubscript{D}, the entrepreneur must be given incentives, in terms of rebate, to make payment. Islamic banks must choose an incentive contract which depends on observable variables, payment according to...
schedule, as signed in the contract. An early payment by the entrepreneur will be rewarded in terms of rebate. This encourages entrepreneurs to make payment, $D_1 = D_0$, and Islamic bank’s net profit is less, after incorporating total rebate to entrepreneur, $D_1 - \varphi^*(D_1)$. Islamic banks will gain in terms of earlier net profit realization, with a cost of $\varphi^*(D_1)$.

The next two propositions show the optimal conditions for equity-based financing. Proposition two suggests an optimal condition for mudharaba contract. In this model, entrepreneurs and Islamic banks enter into mudharaba contract, where the bank as rabbul maal contributes capital of $h_0$, and entrepreneur as mudarib provides expertise. In this contract, the net profit derived from the projects, $\pi^p$, is shared based on the pre-agreed ratio, $\delta$ of the profit for Islamic bank and $(1-\delta)$ is retained by the entrepreneur (mudarib). The nature of the PS contract biases the expected net profit against Islamic bank as capital provider due to the existence of informational asymmetry. An ex-post information asymmetry arises because Islamic banks do not know how much the entrepreneur has produced. The outcome of net profit is only observed by the entrepreneur.

In addition, the bank is at a disadvantage because the entrepreneur might not honor ex ante promises to pay. Consequently, the bank needs to provide an incentive to the entrepreneur, since the entrepreneur has a tendency to declare a lower profit from the projects. This situation creates three possibilities. The possibilities are; first, the Islamic bank’s actual net profit derived from mudharaba contract financing is more than the expected value by the bank. Since the actual value is larger than expected ($R^W_{\pi^b} > \hat{\epsilon}R^\pi >= 0$, it gives a positive value of $R^W_{\pi^b}$. Next, the two possibilities ($R^W_{\pi^b} = \hat{\epsilon}R^\pi = 0$ and $(R^W_{\pi^b} < \hat{\epsilon}R^\pi) < 0$ give a zero and negative values, respectively. In the study, this model proposes that only in the case of a positive value of Islamic bank’s expected net profit, $(R^W_{\pi^b} > \hat{\epsilon}R^\pi) > 0$, Islamic bank will provide an incentive to entrepreneur. This incentive will minimize the informational asymmetry problem between the contracting parties, with some cost to Islamic bank. Therefore, the maximization of Islamic bank’s net profit is obtained when there is a positive value of Islamic bank’s expected net profit.

Proposition three shows optimal conditions for musyaraka contract (PLS). In musyaraka contract, both the bank and the entrepreneur
contribute capital, \( h_m = h_{p1} + h_2 \) where \( h_{p1} \) is capital provided by the Islamic bank and \( h_2 \) is capital contributed by entrepreneur. Since both parties can assess on the management control over the projects ventured, the realization of net profit is freely observed. In order to realize the expected net profit, Islamic banks need to monitor performance of the projects and enforces the stipulated contract. The performance of projects financed based on *musyaraka* contract could be increased using the monitoring system, (see Ahmed 2002). As suggested by Diamond (1984), monitoring activity consists of the combination of three elements: alertness to information signals, interpretation of signals and adjustment of incentives. The first two elements refer to the bank's effort in reducing asymmetries of information with entrepreneurs. The third element represents the ability to modify the terms of the contract to ensure good performance of the entrepreneur. Hence, in *musyaraka* contract the information and interpretation of signals are very crucial. By design, *musyaraka* contract allows contracting parties to participate in the management and monitor the investment activities. Thus, for *musyaraka* contract, the model proposes an optimal condition in the case of monitoring is possible at a cost \( c > 0 \). This condition is imposed to ensure the actual net profit for the bank is at least, \( h_{p1} \), that is initial capital contributed by Islamic bank or a maximum net profit of \( z \), where \( z = h_{p1} + \pi_{i}^{\text{ps}} \). Therefore, Islamic bank needs to incur some cost of \( c \) to monitor the entrepreneur. Hence, the actual net profit earned by Islamic bank is \( R^{\text{ps}} - c \gamma \), that is net of monitoring cost.

Finally, Proposition 4 shows that *mudharaba* contract offers an optimal contract between the bank and depositors as *rabbul maal*. The depositors of *mudharaba* Investment account appoint the bank as *wakeel*, who is delegated the power on behalf of depositors. This delegated power is *amanah* for Islamic banks to act at their best to monitor the projects engaged by the entrepreneurs on the asset side. An Islamic bank, relatively, has better knowledge or information on the projects carried out by entrepreneurs. Here, the bank, as *wakeel* acts as a screening agent for financing and credit allocation activities, and also as information producer in order to reduce the asymmetric information between depositors and entrepreneurs. However, the delegation of power to act at their best on behalf of depositors, come with some cost to the depositors, cost of processing information, \( c^*(m) \).
ESTIMATION AND DATA SOURCES

This study uses EVA as the method of performance measurement to capture value creation generated from the capital invested from the shareholders' funds (TE) and mudharaba investment account deposits (TD_m) for Islamic banks as defined by Uyemura et al. (1996) and a strand of studies, among others, Millar (2005), Fiordelisi (2007), Hefferman & Maggie (2008), Bidabad et al. (2008) and Fiordelisi & Molyneux (2010). Following Fiordelisi and Molyneux (2010), the EVA for banking could be written as follows:

\[ EVA = \Pi - kK \]  \hspace{1cm} (1)

Equation (1) shows that EVA represents the value creation over the period (t) for bank (i). This value is calculated from the difference between Net Operating Profit After Tax and Zakah (\(\Pi\)) and a capital charge over the same period which can be derived from the multiplication of Invested capital (K) at time (t) and the estimated cost of capital (k). According to Fiordelisi (2007) and Fiordelisi & Molyneux (2010), the Net Operating Profit depends on bank income and cost structures particularly, first; bank specific factors such as financial structure, deposits structure, asset structure, second; country-level factors such as economic growth of a country. On the other hand, a capital charge depends on the riskiness of future cash flows. Thus, this study affirms that a reduction in risk exposure reduces opportunity cost of capital.

Since Islamic banks assume the cost of capital is the actual realized returns on the projects investment. Hence, the price of capital invested, as defined by Bidabad et al. (2008), is the opportunity cost of capital can be represented by the rate of return required on the investment with the same risk level Fiordelisi & Molyneux (2010). from the shareholders (TE) and investments account deposits (TD_m) can be denoted as \(k_{pr} \) and \(k_{pd} \), respectively. Thus, the Islamic bank derives its EVA as in equation (2):

\[ EVA = \Pi - k_{pr} (TD_m) - k_{pd} (TE) \]  \hspace{1cm} (2)

By substituting profit function into equation (2), it gives
The Dynamic Value Creation of Profit-Loss Sharing Arrangement

\[
EVA = \left\{ \left( TY_{D1A} - OC_{D1A} \right) \left( q \right) + \left( TY_e - OC_e \right) - \left( NOC + Tax + Zakah \right) \right\} \\
- \left[ k_{p,d} \left( TD_{E1} \right) + k_{p,e} \left( TE \right) \right]
\]

Hence, in this study, an empirical research structure is developed based on the above model to gauge the ultimate consequences on the adoption of Profit-Loss Sharing arrangement in Islamic banking models that generate value to the shareholders and depositors of investment accounts using panel regression procedure.

The estimation model is developed to identify the factors affecting value creation in Islamic banking which is represented by \( EVA \). This estimation model explains the adoption of Profit-Loss Sharing arrangement in Islamic banking models and value creation. In addition, this estimation model seeks to gauge the extent of the allocations of capital invested; Total Equity (TE) and Total Deposits of mudharaba investment accounts funds (TD_{E1}) in different asset portfolios, namely, Financing and Investment Securities using Profit-Loss Sharing arrangement create value to the shareholders. These factors need to be incorporated to determine the value of \( EVA \). In order to integrate all the variables that are believed to affect the value creation of Islamic banking, the general estimation is shown in equation (4) as follows:

\[
EVA = f \left( MDIA, NMD, FINM, FIM, FMU, FPLS, YBTD, YFP, LIQUIDITY, LGDPPC, LSIZE, CAPS, RWTA \right)
\]

The estimated model specifies Islamic bank’s value creation is a function of banks’ specific factors, as internal factors and macroeconomic variable, as external factor. The bank specific variables include: \( EVA \) which represents value creation for Islamic bank’s shareholders and depositors of investment account. The value of \( EVA \) is determined by Economic profits that include the Adjusted Net Profit obtained by the Islamic bank and Income attributable to the depositors of investment accounts against the opportunity cost of capital, \( k_{p,d} \) and \( k_{p,e} \), accordingly. The studies on EVA for banks by Uyemura et. al (1996), Millar (2005), Fiordelisi (2007), Hefferman & Maggie (2008), Fiordelisi & Molyneux (2010) and Bidabad et. al (2008) suggest the value creation for shareholders to be determined using Adjusted Net Profit and incorporate
the opportunity cost of capital invested. Three components comprise of the Net Operating Profit after Tax and Zakah, Capital invested and Opportunity cost of capital; which are derived from the Net Operating Profit after Tax and Zakah (II) which represent the Operational adjusted profit of Islamic banks in order to take account of the actual profit value based on current economic conditions.

However, for simplicity and due to availability of data, this study considers Loan loss provision for adjustment, following Bidabad (2008). In addition, this study also includes Profit Equalization reserve for adjustment which is specifically applicable to Islamic banking operations. The adjustments for Loan loss provision and Profit Equalization reserve are to reflect the actual expense incurred during the time period. Second, this study defines capital invested as the shareholders’ funds (TE) and the deposit funds in mudharaba investment account (TD). Bashir (2001) also treats deposits in investment account as equity capital under contract of PS. Nevertheless, in conventional banking, capital invested is equity capital invested by shareholders, whereas depositors are treated as leverage. Thus, the value of EVA is expected to be different (i.e. lower) since in Islamic banking the value of capital is larger. Finally, it is assumed that the opportunity cost of capital comprises: cost of the shareholders’ funds, \( k_{pse} \) and depositors’ funds, \( k_{p,d} \). These costs of capital represent the opportunity cost for each capital invested by shareholders and depositors of Investment funds, accordingly. Therefore, this study uses EVA as dependent variable in which two proxies of EVA are applied which are based on the cost of capital using 10-year mgs rate for long term, \( EVAPP_{mgs} \) and 3-month klibor rate for short term, \( EVAPP_{klibor} \), respectively.

The inclusion of bank specific variables and macroeconomic variable as independent variables which have been derived in equation (4) are based on previous literatures that indicates a significant correlation with Economic value creation (EVA), among others, Hassan M. and Bashir A. 2003, Haron S. 1996 & 2004, Berger and Bonaccorsi di Patti 2006, Sufian, F. 2007, Brissimis et. al. 2008 and Fiorelisi and Molyneux 2010.

The exogenous factors are classified as follows: For Deposits structure, two variables are used as proxy: Total Mudharaba Deposits to Total assets (MDIA) and Non Mudharaba Deposits to Total assets (NMD). Both Total deposits include Deposits from customers and Deposits and placements
The Dynamic Value Creation of Profit-Loss Sharing Arrangement

of banks and other financial institutions based on Mudharaba and Non Mudharaba contracts. Previous studies found that savings and investment deposits have a negative relationship with bank’s financial performance. On the other hand, the current deposits are positively related to the profitability. For instance, a study by Smirlock (1985) found that bank utilizes demand deposits due to cheaper source of funds.

The asset structure is represented by four variables: Total funds allocated in Non Mudharaba Investment in securities (FINM), Total funds allocated in Mudharaba Investment in securities (FIM), Total funds allocated in mark up financing activities (FMU) and Total funds allocated in Profit-Loss sharing financing activities (FPLS). All four variables are in percentages of Total assets. The asset items are postulated to have a positive relationship with bank’s profit (Naceur 2003, Hassan & Bashir 2002). Bank financing and investment activities are expected to generate revenue to the bank. Nevertheless, Hassan & Bashir 2002 argued that since Islamic banks’ financing can be in form of Profit Loss Sharing, income generated from financing and investment activities are greatly affected by economic conditions. In favorable economic conditions, Profit Loss Sharing financing and investment activities are less likely to default relatively during economic down turn.

Meanwhile, income structure is represented by two variables; YBTD, that is bank’s share of income as a percentage of Total deposit of Investment account and YFP that is Income from financing activities as a percentage of Profit before Tax and Zakah. Following Haron (2004), the variables YFP and YBTD are introduced to asses to what extent profit sharing and mark up ratios do influence the EVA. YFP is expected to capture the effect of Profit-Loss sharing and mark up ratios imposed by Islamic bank in the use of funds. A higher ratio of income from financing activities as a percentage of Profit before Tax and Zakah indicates more profit to the bank. Thus, the ratio of Income from financing activities to total asset is expected to be positively related to the EVA.

Next, Liquidity (LIQUIDITY) is measured by Total cash and short term funds including Securities available for sale and trading as a percentage of Total assets. Haron (2004) found liquidity had a significant positive relationship with income received by banks. He use the total financing to total deposits ratio as a proxy for liquidity. An increase in financing is followed by an increase in profits. Meanwhile, Hassan & Bashir
Ruhaini Muda et al. (2003) define liquidity as ratio of consumer and short term funding to Total asset. The liquidity is assumed to affect bank's profit negatively, since higher liquidity represents higher expenses to the bank.

This study also includes macroeconomic variable, in order to isolate the effects of bank characteristics on Islamic bank's value creation (Hassan M. & Bashir A. 2003 and Haron S. 2004). The macroeconomic variable taken into consideration in the estimation is Gross Domestic Products per capita (LGDPPC) represented by Natural logarithm of Gross Domestic Products per capita. This variable is assumed to be a function of Islamic bank's value creation to the shareholders and Investment account depositors. This variable is expected to have positive effect on value creation as banks that operate in a country with lower income are less competitive due to larger profit margin (Bashir 2000, Kosmidou & Pariouras (2007)). In addition, Bank asset size (LSIZE) is represented by Natural logarithm of Total asset. The effect of bank size on bank profitability is expected to be positive. Several studies have analyzed the relationship between bank size and profitability, among others, Bashir (1999), Bashir & Darrat (1992) for Islamic banks which found that in the absence of guaranteed nominal returns, a larger bank yields positive profit. The study by Bashir (1999) revealed that as Islamic banks grow in their size, the operating risk decreases. This finding is supported by the financial intermediation theory which states that a diversification advantage as banks' size increases.

Meanwhile, for Capital structure (CAPS) is obtained from the ratio of Total equity and reserve to Total assets. A study by Molyneux & Thornton (1992) found a positive and significant relationship between capital structure and bank's profit. However, Haron (2004) found an inverse and significant relationship between capital structure, which is represented by total equity and reserve to total asset with total income. Haron argued that the result suggests that an increment of capital injection does not lead to an increase in income to shareholders because income received is shared with new shareholders as well. Risk structure is represented by RWTA that is ratio of risk weighted asset to Total assets. As defined by Fiordelisi & Molyneux (2010), the opportunity cost of capital can be represented by the rate of return required on the investment with the same risk level. Thus, the opportunity cost of capital could be reduced by reducing risk exposure. Furthermore, several studies on EVA also use risk as a factor.
that influences opportunity cost of capital. For instance, Millar (2005) uses bank rating as benchmarking for the risk exposure and postulated that higher risk is assigned for lower ranking banks. A study by Wang (2006) develops a risk index which includes liquidity, credit, profit and price risks for 118 Chinese banks. The risk index score will determine the level of risk exposure of the bank. Table 4.1 summarizes each variables employed in the study (Appendix 1).

The bank specific data for the empirical analysis are from the particular banks' Annual Reports for five years, from 2005 to 2009. This study employed annual data for 18 banks comprising of 11 local Islamic banks and 7 foreign Islamic banks which includes Citibank Berhad. During the period of study, there were a few mergers and acquisitions of commercial banks, affecting those banks which operate on the Islamic window basis. Particularly, in 2008 Malaysian Islamic banks experienced some structural change since those banks that had been operating under Islamic banking windows, transformed into full-fledged banks. To account for merger that had taken place within the sample banks, this study used the data of anchor banks prior to merger. Meanwhile, the new Islamic banks upgraded from their Islamic banking operations are treated as a continuation from Islamic banking operations or windows. Thus, this study includes both full fledge and Islamic banking operations. As previously mentioned, the study includes macroeconomic variable in the form of GDP per capita as control variable to isolate the effects of bank characteristics on Islamic bank's value creation. Its data is obtained from the publications of Central Bank Malaysia, 2009.

EMPIRICAL RESULTS

Empirical Analysis
Before proceeding with the empirical analysis, it is imperative that the nature of the data for each variable used in the study is examined. Table 4.2 presents the descriptive statistics for the full sample for each variable employed in the model.

8 The descriptive enables knowledge about Mean, Median, Standard Deviation, Skewness and Kurtosis, i.e. normality of the data to be gauged.
This study employs the panel data estimation (Table 4.3 in Appendix 1). The main advantages of panel data estimation, among others are controlling for individual heterogeneity, the larger number of data points, increase degrees of freedom and reduction of collinearity among explanatory variables. These factors might affect the efficiency of the econometric estimation (Baltagi 2008). Furthermore, the use of panel data is believed to be appropriate for this study due to the limited number of observations for several banks. For example, Al Rajhi Banking & Investment Corporation (Malaysia) Berhad and Asian Finance Bank Berhad only commenced their Islamic banking operations in Malaysia after 2005. Since some data are not available for the two banks, at least one time period in 2005, thus the data cover a sample of 16 banks for balanced data and 2 banks for unbalanced data, which amounted to a total of 18 local and foreign Islamic banks.

The empirical results show that among the deposit structures, *Mudharaba* deposit accounts (MDIA) and Non *Mudharaba* deposit accounts (NMD), only Non *Mudharaba* deposit accounts (NMD) significantly creates positive value to Islamic bank as measured by $EVAPP_{klibor}$ and $EVAPP_{mgs}$. This result is consistent for both measurement of value creation against shorter and longer terms opportunity costs of capital employed. This suggests that Islamic banks utilize a lower cost of capital, as Non *Mudharaba* deposit accounts constitute a large amount of current and saving accounts. Next, this study finds that funds allocated in Securities Investment (FIM) using Profit-Loss Sharing arrangement is significant and create positive value of $EVAPP_{mgs}$ and $EVAPP_{klibor}$. Although, this finding contradicts those of the earlier study such as Haron (2004), it is believed that this is due to the fact that Islamic banks allocate their funds in less risky investment portfolio such as Government securities and shorter term securities. Finally, this study finds that Financing based on Profit Loss Sharing (FPLS) arrangement results in a reduction in the value of Islamic banks. It is argued that financing activities based on Profit Loss Sharing arrangement are highly correlated with the economic conditions (Hassan & Bashir 2002), in a weak economy financing activities based on PLS are likely to default and in turn negatively affecting bank’s profitability.

These findings can provide some basis for the imposition of policy measure aimed at supporting Islamic banks with the ability to create value.
for their shareholders. The internal policy of Islamic banks related to the incentives given to the entrepreneurs must be formulated on the basis of the empirical observation that Islamic banks give incentives to the issuers of securities instead of to the entrepreneurs in financing portfolio. The incentives given are subjected to the expected return of Islamic banks. If the return from securities investment is above the expected return, Islamic banks can provide the positive difference as the amount of incentives. Furthermore, for external policy, the government should also consider giving tax rebate to Islamic banks or issuer of the securities, in order to encourage them to generate higher profits. On the other hand, the government can benefit in terms of higher economic growth from the higher profit generated.

Second, the Islamic bank as mudharib is appointed as wakeel by the depositors of mudharaba investment accounts. If the amount of value creation is above the expectation of the depositors, the positive value in terms of fee will be given to Islamic banks as mudharib for achieving positive values. Apparently, the implication of cost of processing treated as fee gives the implication that increment of fee based income of Islamic banks in which it significantly contributed to income of Islamic banks. Hence, this would create value for their shareholders. In addition, the accounting procedures that support Islamic banking operations are very important. Currently, the accounting procedures treat fees as a part of income to Islamic banks which are subjected to tax and zakah. This study proposes that the cost of processing as fee should not be subjected to tax and zakah since it is treated as ujr, which is directly earned by Islamic banks. Therefore, this will create higher value for their shareholders.

Third, by design musyaraka contract allows Islamic banks to be involved in the management of projects undertaken by the entrepreneurs. This condition provides Islamic banks, the ability to monitor the performance of the projects. Thus, Islamic banks’ representatives can become board members to review the projects undertaken. This is in line with guidelines prescribed by Bank Negara Malaysia on the Musharaka contract for Islamic Banking Institutions (BNM/RH/GL/007-9) on the appointment of the board representative. Islamic banks are allowed to appoint the board representative, in reference to Islamic banking institution’s employees or external parties in Investee Company to monitor business performance of
musharaka exposures. The function of board representative is to safeguard the interests of Islamic banking institution by providing continuous surveillance and monitoring of information on the business undertaken by Investee Company.

Consequently, the Islamic bank is proposed to incur monitoring costs in providing continuous surveillance and monitoring of information to ensure the performance of the projects. The question is how much would be the optimal monitoring cost incurred by Islamic bank. In this respect, the cost of monitoring by Islamic bank should be subjected to the marginal increase of the expected profit for Islamic banks from the projects undertaken by the Investee Company or entrepreneur. As stipulated in Bank Negara Guidelines\textsuperscript{9}, the appointment of the Board representative must commensurate with the size and complexity of the risk exposures undertaken by Islamic banks (BNM/RH/GL/007-9). Therefore, the policy on the board representative’s fee, should be given according to the positive marginal return generated from the projects undertaken by Investee Company. This condition will generate positive profit to Islamic banks and, in turn, create higher value for their shareholders.

CONCLUSION

This study presents the following conclusions:

First, debt contracts are optimal because they minimize the costs arising from asymmetric information or unobserved actions. Thus, debt contracts are dominant in the financial intermediation. In contrast, Islamic banking in principle promotes equity based contracts that is Profit-Loss sharing arrangement. In equity based contracts, banks and entrepreneurs share the profit and loss according to a pre-agreed ratio. For musyaraka contracts and bank will bear the loss, if any, in the case of mudharaba contract. There are some critics on the Islamic banking system that equity-based contracts are subjected to higher degree of adverse selection and moral hazard arising from the asymmetrical information.

\textsuperscript{9} Guidelines on Musharaka and Mudharaba contracts for Islamic Banking Institutions; 4.4 (i) (BNM/RH/GL/007-8).
However, with additional monitoring and supervision, equity based contracts are able to minimize the problems. In addition, by design, equity-based contracts allow Islamic banks to acquire and utilize the information. Therefore, Islamic banks can maximize their profit and create value for their shareholders.

Second, this study proposes that the optimality of Profit-Loss sharing arrangement can be achieved with these conditions: First, the Islamic bank as rabbul maal provides incentives to the entrepreneurs, if a positive value of the Islamic bank’s expected net profit is obtained. The positive value is where the returns derived from the projects undertaken by the entrepreneur, is above the expected net profit of Islamic banks. This incentive is to minimize the asymmetric information between the Islamic bank and entrepreneurs. Second, the Islamic bank as mudharib is appointed as wakeel by the depositors of mudaraba investment accounts. The delegated power is referred to as amanah, in which the Islamic bank acts with true Islamic ethics. If the amount of value created is above the expectation of the depositors, the positive value will be given to Islamic banks as fee to mudharib for achieving positive values. Third, for musyaraka contracts, Islamic bank is proposed to incur monitoring cost of \( \hat{c} \) (m). By design of musyaraka contract, the bank is allowed to participate in management decision and monitor the projects undertaken. It is believed that, with optimality conditions taking place, Islamic banks can then maximize their net profit and create value for their shareholders.

Third, empirical results show that of the deposits structures which are based on Profit-Loss Sharing arrangement, Mudaraba deposit accounts (MDIA), Non Mudaraba deposit accounts (NMD), only Non Mudaraba deposit accounts (NMD) significantly creates positive value to Islamic banks. This suggests that Islamic banks utilize a lower cost of capital, as Non Mudaraba deposit accounts constitute a large amount of current and saving accounts. On the other hand, this study finds that funds allocated in Securities Investment (FIM) using Profit-Loss Sharing arrangement is significant and create positive value to Islamic banks. Meanwhile, this study finds that Financing based on Profit Loss Sharing (FPLS) arrangement results in a reduction in the value of Islamic banks. It is argued that financing activities based on Profit Loss Sharing arrangement are highly correlated with the economic conditions. Therefore, in a weak economy
financing activities based on PLS are likely to default and in turn negatively affecting the bank's profitability.

There are several avenues for future research. First, the theoretical model has been developed by limiting the contracts of mudharaba and non mudharaba for both asset and liability sides. This study uses only mudharaba contracts to represent Profit-Loss sharing arrangement on the liability side. Since, the deposit accounts constitute a large amount of current and saving account which was treated as non Mudharaba contract, it is interesting to observe how different contracts of al-qard and al-wadiah which represent non mudharaba accounts affect the value creation for shareholders. On the asset side, although the information on the types of contract for financing and securities can be captured from the financial statement, some foreign Islamic banks do not allocate any funds using the Profit-Loss arrangement. Thus, the result for funds allocated in Financing warrant further discussion for interpretation. Therefore, the inclusion of different contracts for both asset and liability sides would be more ideal to capture the interaction of Profit-Loss sharing arrangement can be further analyzed on the impact of value created to the shareholders as a case in Islamic banking operations, particularly in Malaysia.

Second, this study was conducted using relatively limited number of annual observations from 2005 to 2009. This period was mainly chosen due to the fact that complete data information for the entire sample of 18 banks, including Citibank Berhad, was available. The data set comprises local Islamic banks and foreign Islamic banks. In fact, the data for two banks Al Rajhi Banking and Investment Corporation (M'sia) Bhd and Asian Finance Bank Berhad are not available for one year, since the banks only started operation in 2005. A larger number of observations would be able to produce more reliable and efficient regression results. This can be done using simulation technique to generate more samples for regression analysis. In addition, the analysis also can be done according to ownership of Islamic banks, since data for local Islamic banks are available prior to 2005. It would be interesting to compare the results of how local Islamic banks and foreign Islamic banks are able to create value for their shareholders.

Third, in defining shareholders of Islamic banks, this study included the depositors of mudharaba investment accounts as contributors to
the capital. The value creation for depositors of *mudharaba* investment accounts was derived from the income attributable to the *mudharaba* investment accounts deposits. The value creation which is represented by EVA only shows the value creation for both shareholders and depositors of *mudharaba* investment account in total. Therefore, the value creation can be further analyzed on each particular capital employed; for shareholders and depositors of *mudharaba* investment accounts, accordingly.

ACKNOWLEDGEMENT

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REFERENCE


The Dynamic Value Creation of Profit-Loss Sharing Arrangement


APPENDIX 1

Proposition 1: The optimal condition for Fixed-Income (i.e. Murabaha contract) Case which solves (1a) is given by \( \varphi^*(D1) = \max \{ (hfi-D1), 0 \} \), where \( hfi \) is the smallest solution for

\[
(P(D1 < hfi) . E\{ | D1 < hfi | \}) + (P(D1 \geq hfi), hfi) = Rfib \tag{2}
\]

Proof. Given \( \varphi^*(D1) D0 \) if \( D1 \geq hfi \) Max \( \varphi^* [D1 - \varphi(D1)] = hfi \) if \( D1 < hfi \)

Using equation (2), this satisfies with the equation, \( E\varphi^*i \{ D1 - \varphi(D1) \} = Rfib \) of providing a competitive return to the Islamic bank. By construction, \( hfi \) is the smallest number such that if the constraints \( Rfib \leq D0 \) and \( Rfib \leq hfi \) are satisfied. Hence, to satisfy (1c), there must be some payment, in term of rebate for early payment if \( h+ \geq h \), which is incentive compatible. If \( Rfib = h+ \) is incentive compatible fulfills max \( E\varphi^* \) \( [D1 - \varphi(D1)] \) given contract \( \varphi^*(D1) \), it must be true that

\[
D1 - h+ - \varphi(h+) \geq \max Rfib \{ 0, h+ \} \quad \text{or} \quad D1 - Rfib - \varphi(D1) \text{ for all } Rfib \{ 0, h+ \},
\]

\[
\varphi(D1) \geq h+ + \varphi \{ (h+) - Rfib \}
\]

\[
\geq h - Rfib
\]

\[
\varphi^*(Rfib)
\]

The final inequality follows from the requirement \( \varphi^*(Rfib) \geq 0 \) for all \( Rfib \). Combined with the result that \( \varphi^*(Rfib) = 0 \) for all \( Rfib \geq h \), this implies that \( \varphi^*(Rfib) \) gives the incentive compatible to fulfill (1c), implying that \( \varphi^*(Rfib) \) maximizes (1a).

Proposition 2: The optimal condition for mudharaba contract (Profit Sharing) Case which solves (1a) is given by \( \varphi^*(Rpb) = \max \{ (hp-z), 0 \} \), where \( hp \) is the smallest solution to

\[
(P(z < hp) . E\{ | z < hp | \}) + (P(z \geq hp), hp) = Rpb \tag{3}
\]
The Dynamic Value Creation of Profit-Loss Sharing Arrangement

**Proof.** Given \( \phi^*(Rpb^-) \)

\[
z' \text{ if } z' > hp \\
\text{Max } \pi^* [z - Rpe - \phi(Rpb^-)] = hp \text{ if } z' \leq hp
\]

Using equation (3), this satisfies with equality the constraint (1d) of providing a competitive return to the Islamic bank. By construction, \( hp \) is the smallest number such that if the constraints \( z \leq z \) and \( z' \leq hp \) are satisfied, the expectation of \( \hat{e}z' \) is at least \( Rpb \). Hence, to satisfy (1d), there must be some payment \( h+ \geq h \) which is incentive compatible. If \( Rpb = h+ \) is incentive compatible fulfills this equation, \( [z - Rpe - \phi(Rpb^-)] \) given contract \( \phi^*(Rpb^-) \), it must be true that

\[
z - h+ - \phi(h+) \geq \max Rpb [0, h+] z - Rpe - \phi (Rpb^-) \text{ or for all } z' \{0, h+\}, \\
\phi(Rpb^-) \geq h+ + \phi (h+) - Rpe \\
\geq h + \phi (h+) - Rpe \\
\geq h - Rpe \\
\Rightarrow \phi^*(Rpb^-)
\]

The final inequality follows from the requirement \( \phi^*(Rpb^-) \geq 0 \) for all \( Rpb^- \). Combined with the result that \( \phi^*(Rpb^-) = 0 \) for all \( z' \geq 0 \), this implies that \( \phi^*(Rpb^-) \) gives the largest incentive such that it is incentive compatible to fulfill (1d), implying that \( \phi^*(Rpb^-) \) maximizes (1a).

**Proposition 3:** The optimal condition for *mușyaraka contract (Profit and Loss Sharing) Case which solves (1a) is given by \( \phi^*(Rplb) = \max [(hpl+ \piplb), 0] \), where \( hpl \) is the smallest solution to

\[
(P(z' < hpl). \hat{E}[z < hpl]) + (P(z \geq hpl). hpl) = Rplb \tag{4}
\]

**Proof.** Given \( \phi^*(Rplb) \) if \( \piplb < hpl \)

\[
\text{max } \pi^* [z - Rpl \text{e} \cdot \hat{c}(\gamma)] = h1 \text{ if } \piplb \geq hpl
\]

Using equation (4), this satisfies with the constraint (1e) of providing a competitive return to the Islamic bank. By construction, \( hpl \) is the smallest number such that if the constraints \( Rplb \leq h1 \) and \( Rplb \leq hpl \) are satisfied,
the expectation of $\delta R_{Plb}$ is at least $R_{Plb}$. Hence, to satisfy (1e), there must be some cost to monitor, $h+ \geq h_{Plb}$. To ensure good performance of entrepreneurs, Islamic bank need to incur monitoring cost of $c$, this condition fulfills (1e) given contract $\phi^*(R_{Plb})$, it must be true that

$$\pi^*i - h+ - \phi(h+) \geq \max_{0, h+} R_{Plb} - \phi^*(R_{Plb})$$

or for all $R_{Plb} \in [0, h+]$,

$$\phi(R_{Plb}) \geq h+ + \phi^*(h+) - R_{Plb}$$

$$\geq h1 = \phi^*(h+) - R_{Plb}$$

$$= \phi^*(R_{Plb})$$

The final inequality follows from the requirement $\phi^*(R_{Plb}) \geq 0$ for all $R_{Plb}$. Combined with the result that $\phi^*(R_{Plb}) = 0$ for all $R_{Plb} \geq h1$, this implies that $\phi^*(R_{Plb})$ is an optimal contract in which Islamic bank incur monitoring cost of $c$ which depends on number of transactions, $\gamma$ and reduces bank’s net profit of $R_{Plb} - \epsilon(\gamma)$, implying that $\phi^*(R_{Plb})$ maximizes (1a).

**Proposition 4**: The optimal condition for mudharaba contract between Islamic bank and depositors for Investment accounts, which solves (1g) is given by $\epsilon(m) = \max \left[ H'I - HI, 0 \right]$, where $HI$ is the smallest solution to

$$(P(H'I < HI) \cdot \pi^*i \cdot H'I < HI)) + [(P(H'I < HI) \cdot HI) \geq N \cdot R \quad (5)$$

**Proof.** Given $\epsilon(m)$ $H'I$ if $H'I > HI$

$\max \pi^* [H'I - \epsilon(m)] = HI$ if $H'I \leq HI$

Using (5), this satisfies with equality the constraint (1i) of providing a competitive return to Islamic bank. By construction, $HI$ is the smallest number such that if the constraints $H'I \leq HI$ and $H'I \leq HI$ are satisfied, the expectation of $\delta R_{Plb}$ is at least $R_{Plb}$. In order to satisfy (1i), Islamic bank impose some payment, $\epsilon(m)$ as cost of processing information to the depositors of mudharaba investment accounts. If $Rd = H+$ is incentive compatible, it must be true that $HI$ is the actual amount received by
depositors initial capital, total deposits in the *mudharaba* investment account and depositors’ net profit.

\[
RbN - H+I - \hat{c}(H+I) \geq \max \left\{ (RbN) - Rd - \hat{c} \right\}
\]

or for all \( c \in [0, h+] \),

\[
\hat{c}(m) \geq H+I + \hat{c} (H+I) - Rd
\]

\[= \hat{c} *(m)\]

The final inequality follows from the requirement \( \hat{c} *(m) \geq 0 \) for all \( RbN \). This implies that \( \hat{c} *(m) \) is the smallest cost of processing imposed by Islamic bank on the *mudharaba* account holders. Thus, it is able to maximize \( RbN \), that is the total payment by entrepreneur in the case of Islamic bank can observe the net profit derived from the financing projects, with the payment of \( \hat{c} *(m) \) by the depositors.
<table>
<thead>
<tr>
<th>Variables</th>
<th>Definitions</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. EVA</td>
<td><em>Economic Value Added</em></td>
<td>Net Operating Profit After Tax and Zakah + Income attributable to depositors of <em>mudharaba</em> investment account + (Loan loss provision-Profit equalisation reserve) - [mgs or kibor(Total Deposit <em>mudharaba</em> Investment Account + Total Equity)]</td>
</tr>
<tr>
<td>2. MDIA</td>
<td><em>Mudharaba Deposits accounts</em></td>
<td>Ratio <em>Mudharaba</em> Deposit to Total deposit</td>
</tr>
<tr>
<td>3. NMD</td>
<td>Non <em>Mudharaba</em> Deposits accounts</td>
<td>Ratio non <em>Mudharaba</em> Deposit to Total deposit</td>
</tr>
<tr>
<td>4. FINM</td>
<td>Funds Allocated for Non <em>Mudharaba</em> Securities Investment</td>
<td>Ratio Total funds in Non <em>Mudharaba</em> Securities to Total assets</td>
</tr>
<tr>
<td>5. FIM</td>
<td>Funds Allocated for <em>Mudharaba</em> Securities Investment</td>
<td>Ratio Total funds in <em>Mudharaba</em> Securities to Total assets</td>
</tr>
<tr>
<td>6. FMU</td>
<td>Financing based on mark up contract</td>
<td>Ratio Total funds in mark up to Total financing</td>
</tr>
<tr>
<td>7. FPLS</td>
<td>Financing based on Profit/Profit and Loss Contract</td>
<td>Ratio Total funds in PLS to Total financing</td>
</tr>
<tr>
<td>8. YBTD</td>
<td>Bank's share of income from Investment account</td>
<td>Ratio of Bank's share of income to Total deposit of Investment account</td>
</tr>
<tr>
<td>9. YFP</td>
<td>Income from Financing Activities</td>
<td>Ratio of Income from financing activities to Profit Before Tax and Zakah</td>
</tr>
<tr>
<td>10. LIQUIDITY</td>
<td>Liquidity</td>
<td>Ratio of Cash and Short term funding to total asset</td>
</tr>
<tr>
<td>11. LGDPPC</td>
<td>GDP per capita</td>
<td>Natural logarithm GDP per capita</td>
</tr>
<tr>
<td>12. LSIZE</td>
<td>Bank Size or bank asset size</td>
<td>Natural logarithm of Total asset</td>
</tr>
<tr>
<td>13. CAPS</td>
<td>Capital Structure</td>
<td>Ratio of (Total equity + reserves) to Total assets</td>
</tr>
<tr>
<td>14. RWTA</td>
<td>Risk Weighted Asset</td>
<td>Ratio of Risk weighted asset to Total asset</td>
</tr>
</tbody>
</table>
### Table 4.2 Descriptive Statistics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
<th>Jarque Bera</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVAPmgs</td>
<td>1355.3</td>
<td>535.2</td>
<td>6851.201</td>
<td>5.265</td>
<td>29.216</td>
<td>2893.47</td>
</tr>
<tr>
<td>EVAPklibor</td>
<td>997.5</td>
<td>64.5</td>
<td>5286.411</td>
<td>6.079</td>
<td>38.762</td>
<td>5171.12</td>
</tr>
<tr>
<td>MDIA</td>
<td>0.446</td>
<td>0.494</td>
<td>0.254</td>
<td>-0.241</td>
<td>2.024</td>
<td>4.4397</td>
</tr>
<tr>
<td>NMD</td>
<td>0.381</td>
<td>0.359</td>
<td>0.230</td>
<td>0.817</td>
<td>3.315</td>
<td>10.3834</td>
</tr>
<tr>
<td>FINM</td>
<td>0.108</td>
<td>0.086</td>
<td>0.118</td>
<td>2.826</td>
<td>14.049</td>
<td>581.299</td>
</tr>
<tr>
<td>FIM</td>
<td>0.050</td>
<td>0.030</td>
<td>0.075</td>
<td>3.374</td>
<td>16.746</td>
<td>879.210</td>
</tr>
<tr>
<td>FMU</td>
<td>0.524</td>
<td>0.583</td>
<td>0.309</td>
<td>-0.125</td>
<td>1.838</td>
<td>5.2938</td>
</tr>
<tr>
<td>FPLS</td>
<td>0.012</td>
<td>0.000</td>
<td>0.045</td>
<td>4.340</td>
<td>22.170</td>
<td>1660.64</td>
</tr>
<tr>
<td>YBTD</td>
<td>0.266</td>
<td>0.017</td>
<td>1.184</td>
<td>5.951</td>
<td>39.849</td>
<td>5625.32</td>
</tr>
<tr>
<td>YFP</td>
<td>7.808</td>
<td>0.574</td>
<td>39.824</td>
<td>6.421</td>
<td>42.508</td>
<td>6471.76</td>
</tr>
<tr>
<td>LIQUIDITY</td>
<td>0.414</td>
<td>0.371</td>
<td>0.259</td>
<td>1.614</td>
<td>7.439</td>
<td>103.401</td>
</tr>
<tr>
<td>LSIZE</td>
<td>15.777</td>
<td>15.644</td>
<td>1.395</td>
<td>1.717</td>
<td>9.319</td>
<td>187.511</td>
</tr>
<tr>
<td>CAPS</td>
<td>0.110</td>
<td>0.080</td>
<td>0.116</td>
<td>4.156</td>
<td>22.690</td>
<td>1655.90</td>
</tr>
<tr>
<td>RWTA</td>
<td>0.579</td>
<td>0.598</td>
<td>0.230</td>
<td>-0.198</td>
<td>2.955</td>
<td>0.5772</td>
</tr>
</tbody>
</table>

*Note: Figure in parenthesis is the p value*
### Table 4.3 Regression results for $EVAPP_{mg}$ and $EVAPP_{klibor}$

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>$EVAPP_{mg}$</th>
<th>$EVAPP_{klibor}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDIA</td>
<td>107810 (68440.3)</td>
<td>182856 (114921)</td>
</tr>
<tr>
<td>NMD</td>
<td>384228*** (78484.5)</td>
<td>438720*** (169921)</td>
</tr>
<tr>
<td>FINM</td>
<td>589311*** (195470)</td>
<td>155692 (101777)</td>
</tr>
<tr>
<td>FIM</td>
<td>169806** (87163.9)</td>
<td>492242 (249981)</td>
</tr>
<tr>
<td>FMU</td>
<td>-215672*** (39813.6)</td>
<td>-278544*** (84762.9)</td>
</tr>
<tr>
<td>FPLS</td>
<td>-103669 (247092)</td>
<td>-646056*** (287151)</td>
</tr>
<tr>
<td>YBTD</td>
<td>198528 (189914)</td>
<td>214839*** (93546.1)</td>
</tr>
<tr>
<td>YFP</td>
<td>-378.865*** (932939)</td>
<td>-3886.17*** (1755.3)</td>
</tr>
<tr>
<td>LIQUIDITY</td>
<td>-234133*** (103893)</td>
<td>57246.9 (126908)</td>
</tr>
<tr>
<td>LGDPPC</td>
<td>287484** (134927)</td>
<td>-247564 (368761)</td>
</tr>
<tr>
<td>LSIZE</td>
<td>28831.7 (31853.9)</td>
<td>73650.6*** (13124.2)</td>
</tr>
<tr>
<td>CAPS</td>
<td>154907 (175283)</td>
<td>109986 (135645)</td>
</tr>
<tr>
<td>RWTA</td>
<td>3139.02 (93001.2)</td>
<td>-61831.8 (86589.8)</td>
</tr>
<tr>
<td>C</td>
<td>-4183836*** (1099995)</td>
<td>115904 (3297187)</td>
</tr>
<tr>
<td>AR(1)</td>
<td>0.323731*** (0.0037)</td>
<td>0.069752*** (0.0027)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.990673</td>
<td>0.985269</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.9982858</td>
<td>0.9972927</td>
</tr>
<tr>
<td>Durbin Watson</td>
<td>2.6371122</td>
<td>2.133021</td>
</tr>
<tr>
<td>F-Stat</td>
<td>126.7731</td>
<td>79.82953</td>
</tr>
<tr>
<td>Prob(F-stat)</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Notes: Table 4.3 provides the regression results for $EVAPP_{mg}$ and $EVAPP_{klibor}$ for Islamic banks in Malaysia based on the Generalised Least Square (GLS) estimation which includes the term AR(1). Figures in parentheses are standard error values of the regression coefficients. ***, ***, * denotes that the coefficient is statistically significant at 1 %, 5 % and 10 % confidence level, accordingly.
The estimation is performed as follows. Firstly, estimation is conducted using pooled least square regression model with the assumption of a common intercept and then using fixed effects model that allow for different intercepts representing each bank. The result of Likelihood Ratio test shows that the value of F-statistics (43.9548) and Chi-square (231.7063) reject the null hypothesis significantly at 1% level. This test is performed to choose a better model between the pooled and fixed effects models with the null hypothesis of $H_0: \alpha = \alpha$ and $H_1: \alpha_1 = \alpha$. The F-test statistic of $F = \left(\frac{(R^2_{fe} - R^2_p)}{(1-R^2_p)}\right)\left(\frac{(nT-n-k)}{(n-1)}\right)$ which follows an F-distribution with (n-1) and (nT-n-k) degrees of freedom, (Green 2003). Thus, the fixed effects model is better than pooled least square estimation model for this study. Then, models are estimated through random effects estimation. If the models do not suffer from any misspecification problem, then Hausman test is performed. The result for Hausman test as in Appendix I shows that the value of Chi-square is larger than the critical value, then the null hypothesis is rejected. Thus, the fixed effects model is better estimation method. If the models display autocorrelation which indicates by the Durbin-Watson statistics, then regression is estimated with Generalized least square (GLS). If autocorrelation problems still persist, the regression is corrected with AR term. The correctly specified models using Generalized least square (GLS) with AR(1) are reported in Table 4.3 as empirical output and being used for empirical analysis. Meanwhile, Table A:4 reports regression output on the dependent variables EVAPP\textsubscript{mgs} and EVAPP\textsubscript{klibor}, respectively.

### Table 4.4 Hausman Test using Wald Coefficient

<table>
<thead>
<tr>
<th>Model</th>
<th>F-Statistics</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVAPP\textsubscript{mgs}</td>
<td>86.2216 (0.0000)</td>
<td>86.2216 (0.0000)</td>
</tr>
<tr>
<td>EVAPP\textsubscript{klibor}</td>
<td>35.2514 (0.0000)</td>
<td>35.2514 (0.0000)</td>
</tr>
</tbody>
</table>

*Note: The probability values (p) are in parentheses*

The results of the Hausman test run on the random effect model. The Wald coefficients for EVAPP\textsubscript{mgs} and EVAPP\textsubscript{klibor} are 86.2216 and 35.2514, respectively. Meanwhile, the critical Wald value with thirteen degree of freedom with 5 percent significant level is 22.36. The null hypothesis is rejected, since the Wald coefficients are larger than critical Wald value. Thus, the random effects model would be inconsistently estimated and the fixed effects model would be the model of choice for both EVAPP\textsubscript{mgs} and EVAPP\textsubscript{klibor}.
### Table 4.5 Pearson’s Correlation Matrix

The Pearson’s Correlation Matrix is based on common sample for all the variables included in the models. Among independent variables, there is no severe correlation among independent variables. Thus, all independent variables are included in the regression estimation.

<table>
<thead>
<tr>
<th></th>
<th>EVAPP &lt;-</th>
<th>EVAPP &lt;-</th>
<th>LSIDE</th>
<th>CAPS</th>
<th>LIQUIDITY</th>
<th>MDIA</th>
<th>NMD</th>
<th>FINM</th>
<th>FIM</th>
<th>FMU</th>
<th>FPLS</th>
<th>YBTD</th>
<th>YFP</th>
<th>RWTA</th>
<th>LGDPCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVAPP &lt;-</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>EVAPP &lt;-</td>
<td>0.85873</td>
<td>1</td>
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<td></td>
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</tr>
<tr>
<td>LSIDE</td>
<td>-0.73308</td>
<td>-0.6614</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>CAPS</td>
<td>-0.1583</td>
<td>-0.1622</td>
<td>-0.2246</td>
<td>1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>LIQUIDITY</td>
<td>-0.24371</td>
<td>-0.2984</td>
<td>0.1152</td>
<td>-0.0063</td>
<td>1</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>MDIA</td>
<td>-0.29563</td>
<td>-0.3046</td>
<td>0.2325</td>
<td>0.1295</td>
<td>0.21815</td>
<td>1</td>
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<tr>
<td>NMD</td>
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Note: 1. EVAPP_mgs and EVAPP_kilob are the measures of EVA. Considering the relationship among the independent variables, there is no severe correlation among independent variables. Thus, all independent variables are included in the regression estimation.