

**DIVIDEND SIGNALING HYPOTHESIS AND SHORT-TERM  
ASSET CONCENTRATION OF ISLAMIC  
INTEREST-FREE BANKING\***

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*This paper finds that the dividend signaling hypothesis is able to explain the phenomenon of asset concentration in short- and medium-term investments in the Islamic interest-free banking system. To maintain a stable dividend payout, managers of Islamic banks will prefer to invest in instruments with more certain returns. This leads to concentration in short and medium term mark-up based investments. Our results show that dividends in Islamic banks are stable. Bank earnings are a major source of this stability. We also find that short- and medium-term investments are more important in generating earnings than long-term investments.*

**1. INTRODUCTION**

In the last three decades, Islamic Interest-Free Banks (IIFBs hereafter) have grown in size and number around the world. IIFBs operate in more than 50 countries, most of them in the Middle East and Asia. In Iran and Sudan, the entire banking system has been converted to the Islamic mode of operation. However, in most countries where IIFBs operate, conventional banking institutions dominate the banking system. Still, IIFBs are the highest growing segment of the credit market in Muslim countries. IIFBs offer instruments consistent with the religious

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beliefs of Muslim societies. According to religious literature, IIFBs should emphasize profit-and-loss sharing contracts and prohibit interest-based contracts.

Investment financing, and dividend decisions are the basic concerns of corporate finance. The dividend decision is one of three issues of long-term financial decision-making. Stewart Myers (1984) refers to “the capital structure puzzle”, and after pointing to an earlier paper in which Fischer Black mentioned “the dividend puzzle”, he concludes that “the capital structure puzzle is tougher than the dividend one” [Myers, 1984, pp. 575]. In a frictionless world, when the investment policy of a company is constant, its dividend payout policy has no impact on shareholders’ wealth (Modigliani and Miller, 1958, 1961). Contrary to this theory, Linter (1956) finds that US companies follow an adaptive process in their dividend policies. Moreover, Gay and Hartford (2000) find that companies tend to increase dividends when they believe that there is a permanent increase in their net incomes.

Various theories exist regarding the effects of a firm’s dividend policy on its value. Prominent among these theories are asymmetric information and agency cost arguments. The signaling (asymmetric information) theory suggests that managers, acting as insiders, choose dividend payment levels and changes in order to signal private information to investors. Managers have an incentive to signal this private information to the investors when they believe that the current market value of their firm’s stock is below its intrinsic value. The increased dividend payment serves as a credible signal when other firms that do not have favorable inside information cannot mimic the dividend increases without unduly increasing the chance of later incurring a dividend cut. The implication of the dividend-signaling hypothesis is that firms that increase (decrease) cash dividends should experience positive (negative) price reactions. (Bhattacharya, 1979; John and Williams, 1985 and Miller and Rock, 1985).

Agency costs theory explains cash dividend payments as attempts by management to minimize the deadweight costs of agency conflicts between managers and shareholders. The prediction of the agency costs model of dividends is summarized in Table 1 (Megginson, 1997).

Much of the empirical research has been applied to companies listed on advanced stock markets, while the number of empirical papers that examine the dividend stability issue in emerging markets are relatively limited. On the other hand, empirical studies about dividends in IIFBs are non-existent. The trend of asset concentration in short- and medium-term investments is well-documented in the literature of IIFBs. However, no explanation has been given for this phenomenon. In this paper, we introduce signaling theory as a potential model to explain why and how IIFBs use dividends to solve three problems simultaneously: maintaining the inflow of investment deposits, minimizing the costs for public

investment and achieving optimal levels of investment from the depositors' viewpoint.

**Table 1**  
*Prediction of Dividend Payout According to Agency Theory*

<b>Increase in Firm and Macro Variable</b>	<b>Impact on Dividend Payout</b>
Asset Growth Rate	Reduce
Positive-NPV Investment Opportunity	Reduce
Capital Intensity of the production process	Increase
Free Cash Flow Generated	Increase
Number of Individual Shareholders	Increase
Relative "Tightness" of Ownership Coalition	Reduce
Size of Largest Bloc Holder	Reduce
Transaction Costs of Security Trading	Increase
Personal Tax rates on Dividend Income	Reduce
Personal Tax rates on Capital Gains Income	Increase
Importance of Institutional Investors	Reduce
Power of Institutional Investors in Corporate Governance	Reduce
Relative Importance of Capital Markets versus Intermediated Financing	Increase
Amount of Corporate Information Disclosure	Reduce

The paper is organized into five sections. Following the introduction, We provide an overview of relevant institutional issues for Dividend Policy of IIFBs. in section 2. We discuss institutional issues that are relevant to IIFBs' dividend policy. Specifically, we examine the financial contracting and capital structure, and corporate governance of Islamic banks. We provide a summary of relevant literature in section 3. In section 4, we examine the hypotheses that may explain the asset concentration in short- and medium-term investments and report the empirical results. In section 5, we conclude the paper.

## 2. RELEVANT INSTITUTIONAL ISSUES FOR DIVIDEND POLICY OF IIFBs

### 2.1 Financial Contracting and Capital Structure in Islamic Interest-Free Banks (IIFBs)

The short-term asset concentration can be observed in a standard balance sheet for an Islamic bank, as shown in Deehani-al, et al. (1999) using data from many banks. They argued that the concept of financial risk, on which modern capital structure theories are based, is not relevant to Islamic banks. Given the contractual obligation binding the Islamic bank's shareholders and investment account holders to share profits from investments, they showed that under certain assumptions, an increase in investment accounts financing enables the Islamic bank to increase both its market value and its shareholders' rates of return at no extra financial risk to the bank. Such a process leads to an increase in the Islamic bank's market value but does not alter its weighted average cost of capital.

Transactions in IIFBs are regulated by Islamic legal principles. Prohibition of interest is the most important of these principles. Zaher and Hassan (2001) provide an extensive survey of the Islamic financial contracts. IIFBs have developed alternative interest-free financing techniques. Those techniques are based on two principles: the profit and loss sharing (PLS) and markup (MUP) principles. The PLS principle is the cornerstone of contractual transactions. Moreover it is the most accepted in the Islamic legal literature. Under the PLS principle, if the bank is willing to share in the risk of the investment and bear a loss if the project fails, then the financier can earn a return on his investment. Thus, instruments based on PLS principles can be thought of as equity investments. IIFBs utilize two instruments based on this principle (PLS). In *mud~~ar~~abah* financing, the bank provides capital while the entrepreneur contributes effort and exercises complete control over his business venture. In case of loss, the bank earns no return or negative return on its investment and the entrepreneur receives no compensation for his effort. In *mush~~ar~~akah* financing, the entrepreneur and the financier jointly supply the capital and manage the project. Losses and profits are born in proportion to the contribution of capital.

Markup (MUP) is the second principle that IIFBs have utilized for commercial financing. The bank finances the purchase of goods or rents assets in exchange for a profit margin calculated as the difference between the cost price and sale or rental price. Two main instruments are used on MUP method. In *mur~~ab~~ah* financing, the bank purchases a good at the request of a client. The bank resells this commodity to the client at a predetermined price that covers the original cost and an agreed profit margin. Payment is made in the future in installments or in a lump-sum. In *ij~~ar~~ah* financing (leasing), the bank purchases the asset and allows the entrepreneur to use it for a fixed charge. The ownership of the asset either remains

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with the bank or it is gradually transferred to the entrepreneur in a rent and purchase scheme.

Many Islamic economists discourage the use of markup financing as these, although legally acceptable, are very close to interest-based debt instruments. Markup financing techniques can imply a fixed return on investment for the financier. The Islamic jurists fear that markup financing may open a “back door” to interest. In addition, markup financing may affect economic development by constraining entrepreneurs from investing in new projects. Still, markup techniques are widely used. Islamic banks also make charitable loans (*qard hasanah*) with no interest due, no mark-up and no charge. (Aggarwal and Yousef, 2000).

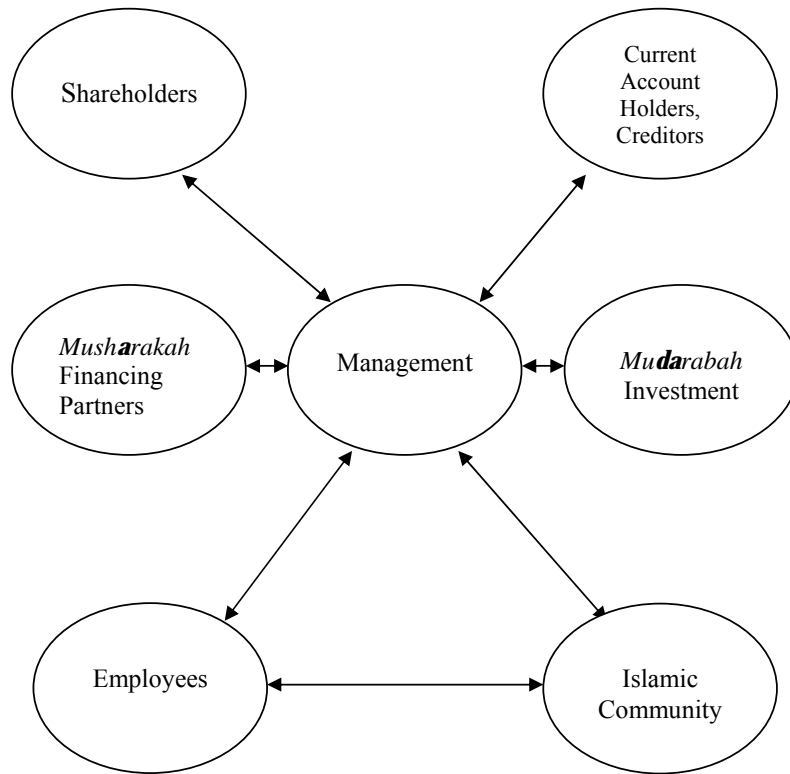
IIFBs operate three main categories of depositors’ accounts. First, the current account, which as in the case of conventional banks, bears no return. It is essentially a safe-keeping arrangement between the depositors and the bank which allows the depositors to withdraw their money at any time and permits the bank to use the depositors’ money while in its custody. Second, the savings account is also operated on a safekeeping basis, but the bank may voluntarily pay the depositors a positive return periodically. The savings account holders are allowed to withdraw their money at any time. Third, the investment account is based on the *musharakah* principle and the deposits are term deposits, which cannot be withdrawn before maturity. Losses and profits are distributed in proportion to the contribution of capital.

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## 2.2. Corporate Governance of Islamic Banks

Islamic banking embodies a number of interesting features since equity participation, risk and profit- and loss-sharing contracts form the basis of Islamic financing. All of these financial transactions must involve real transactions and not purely financial ones. Depositors have a direct financial stake in the bank’s investments and equity participation. IIBFs are subject to *shari’ah* supervision, which make sure the investment and financing activities conform to Islamic Law. There are at least four direct stakeholders that exist in the corporate governance of banking organizations. These are shareholders, depositors, management and government. Figure 1 shows the key stakeholders in an Islamic bank. Unlike conventional banks, IIBFs must serve God and develop a distinctive corporate culture. Second, they must provide and design acceptable financial products and instruments. The Islamic concept of *amanah*, or trust, signifies “that wealth belongs to God and man is individually and collectively custodian of wealth”. Wealth cannot be an end by itself and should be used for defined ends. (Algaoud and Lewis, 1999).

**Figure 1:**  
**Key Shareholders in Islamic Bank**



IIFBs should be viewed within the context of their culture, which is a series of variables that shape an organization and behavior of its members. The culture sets out appropriate behavior, motivates individuals, governs internal relations and values, and groups together to act within organizations and to deal with the external environment. IIFBs should be organizations in which Islamic cultures and values are reflected in all facets of behavior ranging from internal relations (employee relationships) to external relations (dealing with bank customers).

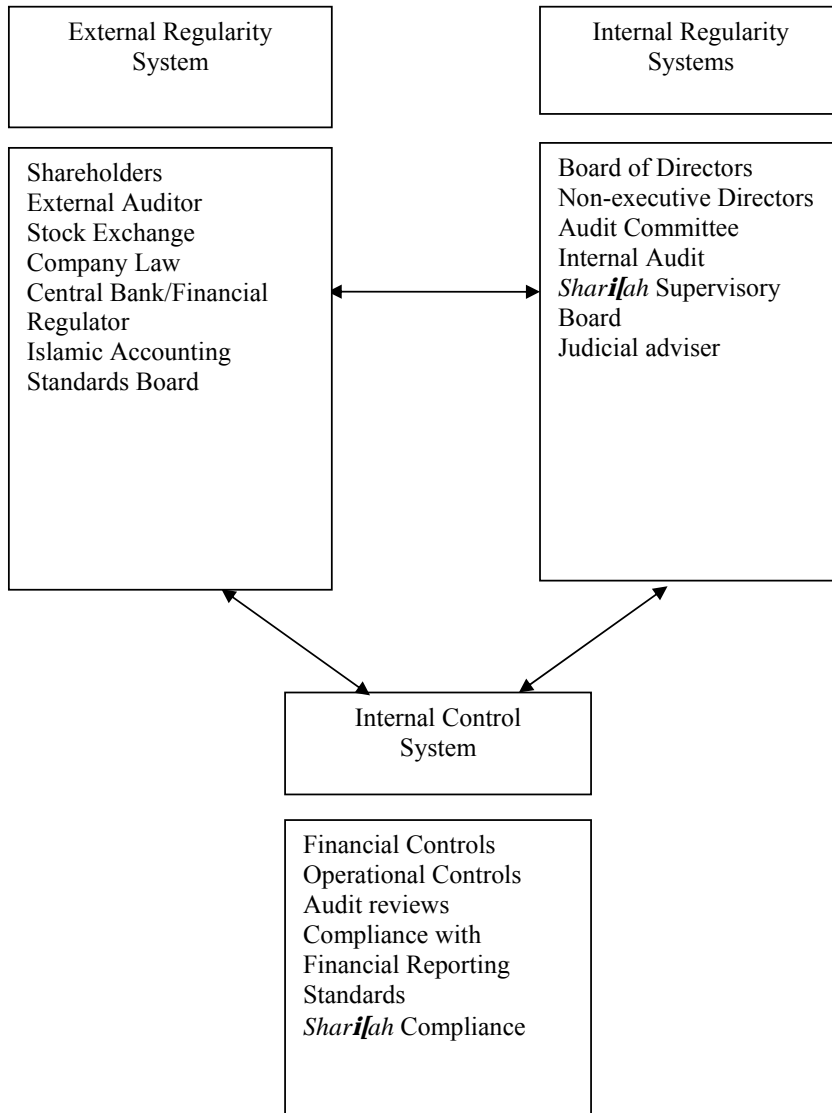
The IIFBs are seen as financial intermediaries mobilizing savings from the public on a *mudarabah* (trustee) basis and channeling capital to entrepreneurs on a *mudarabah* (trustee) basis and providing capital to entrepreneurs on a PLS

partnership basis. Such financing contracts create agency problems. First, the absence of collateral in IIFBs may aggravate the adverse selection problem. The borrowers who can derive non-monetary benefits but low realized profits from their projects would prefer PLS financing because they will reap high total returns at a very low cost of capital. Second, *mudharabah* contracts create a moral hazard problem because IIFBs are unable to exert pressure on the entrepreneur's effort and actions for an optimal outcome. Third, in PLS contracts, entrepreneurs have incentives for under-reporting profits and over-reporting expenses. (Sarker, M.A.A., 1999).

Such agency problems can also exist on the liability side of IIFBs. Current account holders are like creditors to banks as the current account balances are the bank's non-contingent liability to pay on demand. Investment accounts operate under a PLS scheme, where capital is not guaranteed nor is there a fixed predetermined return. *Mudharabah* account holders are very close to shareholders at least with respect to downside risk. In the event of a loss, both *mudharabah* depositors and bank shareholders share the loss.

Figure 2 provides a governance structure for the IIFBs. Internal regulations include activities and functions of the board of governors, non-executive directors, the audit committee and the internal audit. These must be supplemented by internal control systems that have the objectives of ensuring the reliability of financial reporting, compliance with relevant laws and regulations, and the efficiency of operations. *Shari'ah* supervision plays a very critical role in IIFBs. *Shari'ah* scholars work for banks either on an advisory or a consultancy basis to ensure that the day-to-day policies and activities of the bank are in accordance with *shari'ah*. The *shari'ah* supervisory board (SSB) and the internal controls that support it are important for two reasons. First, those who deal with Islamic banks require assurance that its activities are *shari'ah*-compliant. If the SSB report any wrongdoing on behalf of the management of IIFBs, the bank will lose the confidence of its customers. Second, Islamic religious principles act to counter the incentive problems arising from moral hazard and asymmetric information. External regulation includes the external audit function, along with the associated best accounting practices, stockholders and the stock exchange.

**Figure 2**  
*Corporate Governance in Islamic Banking*





### 2.3 Implications of the Institutional Issues for Dividend Signaling in the IIFBs

The distinguishing features of IIFBs are that they are unlevered firms, interest-free and they do not make loans. Examining the ownership structure of Islamic banks reveals that governments, government agencies, financial institutions and large individual investors hold the majority of the shares. Big individual equity holders usually form the board of directors of IIFBs, and therefore, equity shareholders may be considered insiders to the firms. The *mudarabah* and *musharakah* account holders (investment depositors) may be considered outsiders to the firms. Equity-holders of IIFBs use their capital jointly with investment depositors to generate cash flows and profit surplus. Profits or losses will be shared between the partners depending on the equity ratio. In this case, both insiders and outsiders can be considered equity holders. Four factors distinguish insiders from outsiders. First, insiders can access capital markets to sell their shares whereas outsiders cannot do so. Second, insiders have a voting right in the firm. Third, insiders claim all earnings generated from financial services provided by the IIFBs except the earnings generated from investment, which are shared between the insiders and outsiders on the basis of profit-loss ratio. Finally, insiders have more information about the firm than outsiders.

In IIFBs, the two main sources of capital are equity and investment deposits. Since the cost of equity is higher compared to that of investment deposits due to the adverse selection problem, managers will prefer to raise capital from investment deposits. Table 2 shows the mean and the median of the percentage of both equity and investments to total assets. In our sample of banks, on average investment deposits account for 71% of the total capital available for investment, whereas equity counts as little as 14%. This confirms that managers rely on investment deposits more than equity to finance their investment opportunities. Even though this percentage varies between different IIFBs, equity represents a very low percentage compared to investment deposits. Thus, managers will be more inclined to signal their bank profitability to investment depositors in order to maintain the level and inflow of investment deposits.

**Table 2**  
*Capital Structure in IIFBs (1982-1992)*

Bank Name	Percentage of Equity to Total Assets	Percentage of Investment Deposits to Total Assets	Percentage of Equity to Total Assets	Percentage of Investment Deposits to Total Assets
	Median		Mean	
International Islamic Bank for Investment and Development	1.93	65.10	4.75	62.92
Faysal Islamic Bank of Egypt	4.70	82.26	4.34	82.03
Nasar Social Bank	16.33	40.27	17.14	37.65
Dubai Islamic Bank	5.49	89.15	6.67	87.38
National Islamic Bank	4.23	83.19	4.34	84.23
Kuwait Finance House	5.02	87.73	6.01	87.06
Jordan Islamic Bank	10.36	84.29	12.30	80.72
Bahrain Islamic Bank	20.32	70.38	22.23	70.55
Baraka Islamic Bank-Bahrain	4.51	94.39	7.54	91.55
Faysal Islamic Bank of Bahrain	21.90	65.52	20.72	65.19
Faysal Islamic Bank of Sudan	10.95	65.90	11.98	65.22
Sudan Islamic Bank	15.68	57.51	25.96	54.83
Baraka Islamic Bank-Sudan	8.82	75.27	11.60	73.21
South of Sudan Islamic Bank	11.07	62.40	15.40	64.81
Baraka Finance House-Turkey	7.31	72.74	9.82	73.71
Development Islamic Bank-Sudan	11.78	68.32	17.76	68.73
Tadamon Islamic Bank-Sudan	24.15	46.90	19.23	45.53
Bangladesh Islamic Bank	30.69	61.37	35.33	56.49
Islamic Bank International of Denmark	4.76	84.18	6.13	82.99
Total	9.65	73.33	13.65	70.67

Notes: Percentage of Equity to Total Assets is calculated as the ratio of total equity to total assets. Percentage of Investment Deposits to Total Assets is calculated as the ratio of total investments deposits to total assets. The mean and the median are reported for the period 1982-1992.

In the IIFBs framework, banks act as investment agents for the investment depositors. The financial instruments used in IIFBs raise three main problems: agency problems, the over-investment problem, and maintaining the inflow and the level of capital by outsider holders (investment depositors). Outsiders have no means to control the managers' investment decisions nor can they observe them. Thus, outsiders try to acquire information about the insiders' investment behavior, which lead to higher agency costs to the outsiders. The over-investment problem occurs because outsiders require that investment deposits be employed optimally so as to maximize their returns. On the other hand, managers seek to invest each dollar of the investment deposits, which in turn could force the managers to take less profitable projects or even projects with a negative net present value (NPV). Thus, it appears that there is a conflict of interest between bank managers (as insiders) and bank investment depositors (as outsiders) regarding the optimality of investment decisions. Assuming that the managers and equity holders act as insider groups, their objective is to maximize equity holders' wealth by taking optimal positive NPV projects, but the objective of the investment depositors is to maximize profits. While profit maximization does not necessarily lead to wealth maximization, the natural agency conflict between equity holders and investment depositors arises. Maintaining the inflow and the level of capital by outsiders is an important task for the managers. Since outsider (investment) deposits represent the primary source of capital, a large decrease in these deposits results in lower profits for IIFBs, as they are unable to realize the economies of scale of their investment. In the worst case scenario, this could lead to corporate bankruptcy.

Managers and equity holders in IIFBs must solve these problems by utilizing existing financial tools. To recast, the main problems are: maintaining the inflow and the level of capital by outsiders; minimize the agency cost for outsiders and investing at the optimal level from the point view of the outsiders.

In IIFBs, dividends are the only information available to outsiders (investment depositors) and the public, since return on investment deposits is not released until the realization of profit. Under PLS principle, dividend and return on investment deposits is highly correlated (the correlation is 0.73 and significant at the 0.01 level). Managers of IIFBs will find that dividends are the only tool to signal profitability to the outsiders of bank investment. This reduces the agency costs and allows the bank to maintain both the inflow and the level of investment deposits. In doing so, managers have to maintain stability of dividends across years to reflect the stability of return on investment. Maintaining a stable dividend, which leads to a stable return on investment deposits (ROID), is not an easy task for the managers and equity holders (insiders) and imposes a restriction on the type of investment that manager have to take. Short-term and medium-term investments in IIFBs have the feature of both quick and stable returns. The return on long-term investment is unstable and risky due to the various macroeconomic and political factors in the countries where most IIFBs operate.

To overcome the problem of optimal investment as seen by outsiders, managers tend to utilize all cash flows supplied by investment depositors. In other words, the investment amount taken by the IIFBs turns out to be close to the amount of the investment deposits.

### 3. LITERATURE REVIEW

Empirical studies on Islamic banking have been increasing in recent years. Khan (1983) covered IIFBs operating in the United Arab Emirates, Sudan, Jordan, Kuwait, Bahrain, and Egypt. Khan identified two main types of investment accounts. In the first, the depositor authorizes the bank to invest in any project, whereas in the second, the depositor has to choose the project to be financed. On the instruments side, the banks under study had resorted to *mud~~a~~rabah*, *mush~~a~~arakah* and *mur~~a~~abah~~ah~~* instruments. The profit rates of the IIFBs studied were very competitive with those of conventional banks. The rates of returns of IIFBs ranged from 9% to 20% and the deposit rates of returns ranged from 8% to 15%, which were very similar to those offered by conventional banks. He found that IIFBs investments were concentrated in trade finance and real estate investments, which are short-term and medium-term investments. Khan did not provide any explanation for why IIFBs preferred short- and medium-term investments to long-term investments.

Iqbal and Mirakhor (1987) included IIFBs in both Iran and Pakistan, where the entire banking system was Islamized. They documented that the transfer to Islamic banking system was much faster on the deposit side than on the asset side. In Iran IIFBs were not able to use more than 50% of their investment deposits, the recourses used were mostly in the form of short-term investments. The authors contended that short-term asset concentration of IIFBs is undesirable for two reasons. First, it is inconsistent with the intentions of Islamic banking system and second, the risk increases due to less diversification in assets.

Case studies (Khan 1986, Nienhaus 1988, Man 1988 and many other) of IIFBs operating in Bangladesh, Egypt, the Philippines, Malaysia, Pakistan, Sudan and Southeast Asia, documented similarities and differences between IIFBs operating in those countries. A striking common feature of all these IIFBs is that they have a concentration in short- to medium-term investments.

In summary, previous empirical research and field work on IIFBs documented the phenomenon of assets concentrated in short- and medium-term investments, but they did not offer any explanation as to why such concentrations occur.

#### 4. METHODOLOGY, DATA AND RESULTS

Short-term asset concentration creates two types of concerns. First, in many countries, where the Islamic banking system operates, the capital markets are underdeveloped and the institutional structures are not suitable for the growth of investment-type lending, and banks are the only source of long-term project financing. Second, a natural tendency exists among bankers to favor short-term trade financing, thus leading to a bias against *mudharabah* and *musharakah* investment-type bank financing. The banks, under the short-term asset concentration, use dividend as a signal to attract investment depositors. This argument follows closely with Deehani-al, et al. (1999) who argue that increase in investment deposits may indeed increase the market value of Islamic banks. We argue that banks do so by attracting investment depositors by using dividend signaling device.

Within the previous analytical framework, we expect the dividend payout to be stable in IIFBs. Moreover, the stability of dividends is driven from investing in short- and medium-term projects, which most likely use the markup principle. In investigating the use of dividend as a signaling device by insiders, we collected data for a total of 52 IIFBs over the 1980 to 1992 period. In order to test dividend stability, which requires time series data, we limited our analysis to 19 banks that have continuous time series data over 9 years. In total, we have a balanced panel dataset of 171 observations, which we believe is sufficient to give us robust econometric results.

In his classic study of the dividend policy of sample of 28 U.S. corporations, Linter (1956) found two attributes of corporate dividend policy. Managers tend to establish target dividend payouts as a proportion of earnings and they set dividend payments to adjust slowly over time towards a desired fraction of earnings. Using a partial adjustment model of dividend smoothing, Linter used the following equation to test the dividend stability hypothesis.

$$DPS_{i,t} = \alpha_i + \beta_1 DPS_{i,t-1} + \beta_2 EPS_{i,t} + \varepsilon_{i,t} \quad (1)$$

where

$DPS_{i,t}$  = dividend per share (i) in time period (year) t

$EPS_{i,t}$  = earning per share (i) in time period t

$DPS_{i,t-1}$  = dividend per share (i) in time period t-1

$\varepsilon_{i,t}$  = the error term.

We use a variety of econometric modeling experiments such as panel data methodology, pooled ordinary least squares, a fixed-effects model, and a random effects model to settle on an appropriate model for our sample. According to the

signaling effect, changes in the level of dividends convey new information to investors about the future earnings of companies. This argument is based on the information asymmetries that exist between insiders and outsiders. Moreover, the signaling effect can be used to justify stable dividends. Under the theoretical model of dividend stability the coefficients,  $\beta_1, \beta_2$ , have to be positive to provide support to the dividend stability hypothesis.

Table 3 reports the estimates of Linter's model. The high and significant value of the Hausman statistic indicates that the fixed-effects model is the most appropriate specification. Based on estimated fixed-effects model, we can make a number of conclusions. First, the lagged dividend per share coefficient is positive and statistically significant (0.59). Second, the earnings per share coefficients are high and statistically significant (0.76). Third, all of the estimated equations have high-adjusted  $R^2$  values. Overall, we can state that dividends tend to be sensitive to lagged dividends and sensitive to current earnings. Thus, we conclude that there is evidence supporting the stability hypothesis of dividends.

**Table 3**  
*Estimates of Linter's Model*

The dependent variable is dividend per share ( $DPS_{i,t}$ ). The independent variables are earnings per share ( $EPS_{i,t}$ ) and lagged dividend per share ( $DPS_{i,t-1}$ ). Regression 1 is estimated using ordinary least squares. Regression 2 is estimated using the random effects model and regression 3 is estimated using fixed effects.

$$DPS_{i,t} = \alpha_i + \beta_1 DPS_{i,t-1} + \beta_2 EPS_{i,t}$$

Coefficient	Regression 1	Regression 2	Regression 3
$\alpha_i$	0.357 (0.75)	0.295 (1.01)	
$\beta_1$	.971 (26.36**)	0.750 (9.25**)	0.590 (15.01**)
$\beta_2$	0.340 (0.81)	0.198 (1.95)	0.760 (2.29*)
Adjusted $R^2$	0.72	0.71	0.74
Hausman Test			25.23**

\* Indicates that the t-statistic is significant at the 0.05 level.

\*\* Indicates that the t-statistic is significant at the 0.01 level.

To test the hypothesis that short- and medium-term investments play a greater role in generating earnings than long-term investments, the following regression was run.

$$\text{Exp}_{\text{osit}} = I + \beta_1 \text{LTIN}_{i,t-1} + \beta_2 \text{STIN}_{i,t-1} + i_t \quad (2)$$

where

$\text{Exp}_{\text{osit}}$  = earning per share (I) in time period t

$\text{LTIN}_{i,t-1}$  = the ratio of Long term investment to total assets (I) in time period t-1

$\text{STIN}_{i,t-1}$  = the ratio of Short and medium term investment to total assets (I) in time period t-1

$i_t$  = the error term.

Table 4 reports the estimates of equation 2 based on a fixed-effects specification based on Hausman statistic. Thus, Table 4 reports the results of the fixed-effects model only. Based on these results, short- and medium-term investments are the main determinants of earnings-per-share. The coefficient of short-term investment is 0.648 and significant at 5% level, while the coefficient of long-term investment is negative but not statistically significant. These results are consistent with the hypothesis that short- and medium-term investments are the main source of generating earnings.

**Table 4**  
*Estimates of Equation 2 Based on A Fixed-Effects Specification*

The dependent variable is earning per share  $\text{EPS}_{i,t}$ . The independent variables are the lag of the ratio of long-term investment to total assets, the lag of the ratio of short-term investment to total assets.

$$\text{EPS}_{i,t} = \alpha_i + \beta_1 \text{LTIN}_{i,t-1} + \beta_2 \text{STIN}_{i,t-1} + \varepsilon_{i,t}$$

Coefficient	Regression
$\beta_1$	-0.230 (-0.515)
$\beta_2$	0.648 (2.65*)
Hausman Test	32.1**
Adjusted R <sup>2</sup>	0.81

\* Indicates that the t-statistic is significant at the 0.05 level.

\*\* Indicates that the t-statistic is significant at the 0.01 level.

If dividends are used as a signaling device to maintain the level and the inflow of investment deposits, we expect changes in the investment deposits to be positively related to the level of dividends. We employ the following empirical regression equation to test the hypothesis.

$$\Delta \text{INVAS}_{i,t} = \alpha_i + \beta_1 \text{DPS}_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

where

$\Delta \text{INVAS}_{i,t}$  = the change in the ratio of investment deposits to total assets (i) in time period t

$\text{DPS}_{i,t-1}$  = lagged dividend per share. (i) in time period t-1

$\varepsilon_{i,t}$  = the error term.

Table 5 reports the estimates of equation 3 using the fixed-effects model. These results support our hypothesis of a positive relationship between dividends and change in investment deposits, which is statistically significant. Our results indicate that managers use dividends as a signaling device to maintain the inflow of investments deposits.

**Table 5**  
*Estimates of Equation 3 Using the Fixed-Effects Model*

The dependent variable is the change in the ratio of investment deposits to total assets. The independent variable is the lagged dividend per share ( $\text{DPS}_{i,t-1}$ ).

$$\Delta \text{INVAS}_{i,t} = \alpha_i + \beta_1 \text{DPS}_{i,t-1} + \varepsilon_{i,t}$$

Coefficient	Regression 1
$\beta_1$	0.16 (4.57**)
Hausman Test	42.3**
Adjusted R <sup>2</sup>	0.41

\*\* Indicates that the t-statistic is significant at the 0.01 level.

To give more insight on the structure of investment in IIFBs, we report the mean and median of the ratio of long-term investment to total assets and the ratio of short- and medium-term investments to total assets in Table 6. The mean ratios of short/median-term investments to total assets and long-term investments to total assets are 58% and 2%. A parametric paired samples test shows that the ratio of short- and medium-term investments to total assets is larger (significant with P-Value=0) than the ratio of long-term investment to total assets.



**Table 6**  
*Structure of Investment in IIIBs*

Bank Name	Long-term investment to Total assets		Short/Medium-term investment to Total assets	
	Mean	Median	Mean	Median
International Islamic Bank for Investment and Development	0.77	0.55	61.99	62.26
Faysal Islamic Bank of Egypt	2.47	2.22	72.53	75.40
Nasar Social Bank	12.03	12.63	23.69	19.11
Dubai Islamic Bank	3.06	3.10	79.42	84.32
National Islamic Bank	4.20	4.49	62.17	57.29
Kuwait Finance House	0.25	0.23	61.66	62.89
Jordan Islamic Bank	14.63	10.98	78.15	83.09
Bahrain Islamic Bank	11.94	1.56	80.16	89.68
Baraka Islamic Bank-Bahrain	0.50	0.32	97.83	97.84
Faysal Islamic Bank of Bahrain	5.95	3.28	27.57	26.96
Faysal Islamic Bank of Sudan	1.52	1.02	33.37	34.81
Sudan Islamic Bank	4.69	5.42	30.91	29.68
Baraka Islamic Bank-Sudan	2.12	0.89	41.76	43.66
South of Sudan Islamic Bank	0.00	0.00	73.32	80.60
Baraka Finance House-Turkey	3.71	2.74	37.47	41.74
Development Islamic Bank-Sudan	3.14	2.76	23.86	21.46
Tadamon Islamic Bank-Sudan	0.61	0.50	81.95	83.22
Bangladesh Islamic Bank	4.18	3.66	80.47	82.59
Islamic Bank International of Denmark	1.45	1.11	59.77	60.22
Total	3.98	2.08	58.46	60.22

Notes: Percentage of Long-term investments to Total Assets is calculated as the ratio of total Long-term investments to total assets. Percentage of Short/Medium-term to Total Assets is calculated as the ratio of total Short/Medium-term investments to total assets. The mean and the median are reported for the period 1982-1992.

To test the over-investment hypothesis, we generate a variable called *Under*, which is equal to the investment deposits divided by the total investment. A value of *Under* less than 1 implies under-investment and a value greater than 1 implies over-investment. In order to satisfy full utilization of funds and profit maximization goal of outsider investment deposit holders, the managers undertake less profitable projects. Table 7 reports descriptive statistics of the created variable (*Under*).

**Table 7**  
*Investment Deposits as a Percentage of Total Investment*

The variable *Under* is equal to the investment deposits divided by the total investment. A value of this variable >1 indicates over-investments and a value of <1 indicates under-investments.

	Frequency	Percent
Under <1	62	36.25
Under >1	109	63.75
Total	171	100.0

We find that in 63.75% of the years in our data, IIFBs over-invest and in 36.25% of the years they under-invest. To investigate the effect of over-investment on the return on investment deposits, we employ the following equation:

$$ROID_{i,t} = \alpha_i + \beta_1 LTIN_{i,t-1} + \beta_2 STIN_{i,t-1} + \beta_3 UNDER_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

where

$ROID_{i,t}$  = return on investment deposits (i) in time period t

$LTIN_{i,t-1}$  = the ratio of long-term investment to total assets (i) in time period t-1

$STIN_{i,t-1}$  = the ratio of Short- and medium-term investment to total assets (i) in time period t-1

$UNDER_{i,t-1}$  = the ratio of investment deposits to the total investment (i) in time period t-1

$\varepsilon_{i,t}$  = the error term.

Table 8 reports the fixed-effects estimates of equation 4. We again find that the coefficients of short-term/medium-term investment to total assets are the major sources of bank profitability. Moreover, we find a significant negative coefficient for *Under*, which supports our conjecture that managers, in order to invest all investment deposits and to minimize the agency conflicts between insider and outsiders, over-invest by undertaking less profitable projects and even projects with negative net present value.

**Table 8**  
*Fixed-effects Estimates of Equation 4*

The dependent variable is return on investment deposits ( $ROID_{i,t}$ ). The independent variables are the lag of the ratio of long-term investment to total assets; the lag of the Short-term investment to total assets and the ratio of investment deposits to the total investment estimated using the fixed-effects model.

$$ROID_{i,t} = \alpha_i + \beta_1 LTIN_{i,t-1} + \beta_2 STIN_{i,t-1} + \beta_3 UNDER_{i,t-1} + \varepsilon_{i,t}$$

Coefficient	Regression
$\beta_1$	0.238 (1.03)
$\beta_2$	0.325 (5.25**)
$\beta_3$	-0.121 (-2.88**)
Hausman Test	31.3**
Adjusted R <sup>2</sup>	0.616

\*\* Indicates that the t-statistic is significant at the 0.01 level.

In summary, we can state that insiders of IIFBs use dividends as a signaling device to outsiders. We find evidence in favor of stable dividend policies pursued by IIFBs. Earnings are found to be generated by short- and medium-term investments and not by long-term investments. The long-term investments carry significant risk in the countries in which these IIFBs operate. The MUP financing, which consists of short-term and medium-term investments, is less risky and generates more certain profits. In order to minimize agency problems, the IIFBs concentrate very heavily in short- and medium-term investments. In addition, insiders of IIFBs tend to over-invest under pressure from the outsider investment deposit holders to maintain full employment of investment deposits.

## 5. SUMMARY AND CONCLUSIONS

Empirical literature on IIFBs has documented asset concentration in short- and medium-term investments. No explanation has been given to explain such a phenomenon. In this paper, we use a dividend signaling framework to study the possible determinants of short-term asset concentration in IIFBs. In the process of maintaining a stable dividend, managers of IIFBs prefer to invest in assets with certain returns, which results in investing in markup financing (MUP) and increasing investments in short- to medium-term assets. The empirical results of this paper are found to be consistent with the prediction of our model. The IIFBs

follow a stable dividend policy with earnings being the primary determinant. Moreover, there is evidence that the short- and medium-term investments are more important in generating earnings than long-term investments. In this study, empirical evidence indicates that insiders of IIFBs over-invest in short-term assets in order to convince the outsiders that their investment deposits are fully invested, but not necessarily optimally in a risk-return framework.

Imposition of restriction on risk-return portfolio activities of Islamic banks may result in non-optimal aggregate capital formation in an Islamic economy. Relaxation of portfolio composition is expected to allow Islamic banks to diversify their asset portfolios and reduce portfolio risk. The practice of Islamic *shari'ah*, enforced by the means of *Shari'ah* Supervisory Board, in-house judicial advisors and compliance officers may ensure the confidence of the depositors and investors who seek fairness and justice in Islamic financial matters.

This research can be extended further in a number of ways. First, Linter's model has been supplemented by three new theories of dividend policy. The first is the signaling theory, which emphasizes the role of dividends in conveying information about the prospects of the firm. The second is the agency theory of dividend policy, which underpins the role of dividends in controlling agency behavior. The third is the transaction cost theory of dividends, which suggests that dependency on external finance is particularly important in determining the payout policies of firms in emerging markets. Testing a hybrid model of these three theories on IIFBs is an interesting research idea. Second, there can be econometric improvements for panel data such as using a dynamic panel data (DPD) method and estimating the model using GMM, and/or invoking a panel data co-integration method. These can only be performed if sufficiently large data points are available.

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## Appendix

### A Model of Short-term Asset Concentration, Regulation and Risk in IIFBs:

It is argued that removal of interest rates increases the potential of moral hazard, thus making long-term profit-sharing investment projects risky. The regulators of Islamic banks, while agreeing that Islamic banking system must operate on the basis of risk-return sharing arrangements (*musharakah* and *mudharabah*), are concerned about the safety of the banking system. Their argument is that the removal of interest rates increases overall risk in the financial system, particularly in the banking system. As a result, the authorities have imposed regulations that narrow Islamic banks' operations to include only the low-risk method of financing. Therefore, the policy stance of regulators has been to restrict long-term financing and encourage short-term, low risk financing, which has resulted in a concentration of short-term trade financing in Islamic banking. We argue that given a favorable policy and institutional framework, Islamic banks will undertake long-term profit-sharing projects. We borrow ideas from portfolio theory to show that the relevant object of policy should be the overall risk of an Islamic bank's portfolio and their expected returns, not the risk of individual assets (Roy, 1952; Tesler, 1955; Kahane, 1977; Blair and Heggstad, 1978; Koehn and Santomero, 1980; Allen, 1983; Tobin, 1958; Mirakhor, 1987).

Mirakhor (1987) shows that the implementation of portfolio regulation via restrictions placed on high-risk, high-return asset acquisition through *musharakah* and *mudharabah* financing may produce results not intended by authorities, i.e., there is a distinct possibility that the risk of bank failure may in fact increase. The regulators, while agreeing with the partnership rather than creditor-debtor relationship in Islamic banking, argue that the structure of the Islamic financing mechanism must not lead to the collapse of the banking system. The safety concern arises from a type of moral hazard argument that, in the absence of operating under Islamic values in the economy, engaging in high-risk, high-return activities by the banks may lead to bank failure. Mirakhor contends that the removal of interest rates increases risk in the financial system in general, and in the banking system in particular. One way of reducing bank failure and enhancing bank safety is by restricting the use of *mudharabah* and *musharakah* financing. The regulatory concern coupled with the relative ease of low-risk methods of financing has led to an overwhelming dominance of short-term assets, acquired through trade financing, in the asset portfolio of the Islamic banking system.

Failure occurs when a bank's losses exceed its total capital. Given a bank's capital position and its asset portfolio characteristics, defined by its expected return and its variance, an upper boundary can be estimated for the probability of failure.

One method of estimation is to use Chebyshev Inequality, which states that if  $x$  is a random variable with mean  $\bar{x}$  and variance  $\sigma^2$ , then

$$P = PR\left(|x - \bar{x}| > n\right) \leq \frac{\sigma^2}{n^2} \quad (1)$$

where  $n$  is any positive number and  $P = PR\left(|x - \bar{x}| > n\right)$  is the probability that  $y$  will differ from  $m$  by at least  $\pm n$ .

If the regulations designate some disaster level  $d$  for expected net profits  $\bar{\Pi}$ , i.e.,  $n = \bar{\Pi} - d$ , then the probability of failure will be given as:

$$P = PR\left[\bar{\Pi} \leq d\right] = \frac{\sigma^2}{(\bar{\Pi} - d)^2} \quad (2)$$

The letter  $d$  can be any positive or negative number and determines the intercept of the ray in the expected return-standard deviation space. Equation (2) can be graphically represented as the square of the reciprocal of the slope of any ray in the risk-return space with the specified intercept  $d$ . Further, one can infer from (2) that an increase in the expected return decreases failure risk while an increase in variance increases the probability of failure. Thus the bank's portfolio has an upper limit on its probability of failure, which is constant across the ray represented by (2). Utilizing the efficient frontier framework, the point of intersection between the ray, the bank's indifference curve, and the efficient frontier will determine the bank portfolio decision. Hence, a steeper ray to the selected portfolio will imply lower probability of its failure for any specification of  $d$ .

As mentioned above, the regulators of Islamic banks are concerned about the safety of the Islamic banking system due to their belief that removal of interest rates increases overall risk in the financial system, particularly in the banking system. We will argue that such policy action actually increases the probability of banks failure not their safety; i.e. the entire efficient frontier facing each bank will shift downward, increasing the probability of bank failure and decreasing profits. Moreover, by discarding the high-risk, high-return activities, the bank will end up with a less diversified portfolio. To illustrate this point, let us assume the following:

To avoid the moral hazard problem, the regulators set a minimum capital to asset ratio,  $\kappa$ .

- a. Banks operates in a perfectly competitive market structure

- b. There are only two assets available in the bank's portfolio, those acquired via markup (denoted by  $u$ ) and those obtained via *mudārabah* (denoted by  $m$ ) financing.<sup>1</sup>
- c.  $\phi_u$  and  $\phi_m$  are the fractions of bank capital allocated to the two assets.

Assume that the overall and individual net return per unit of bank capital are  $\Pi$ ,  $\Pi_u$ , and  $\Pi_m$ , so that:

$$\Pi = \phi_u \Pi_u + \phi_m \Pi_m \quad (3)$$

where the sum of  $\phi_u$  and  $\phi_m$  accounts for the bank's degree of leverage.<sup>2</sup>

The binding constraint on how much must be invested in each asset are as follows:

$$\phi_u + \phi_m = \frac{1}{\kappa} \quad (4)$$

The portfolio variance is the sum of the variances of the individual securities multiplied by the square of their weights plus the covariance between the two securities. Mathematically, this can be illustrated as follows:

$$\sigma_p^2 = \phi_u^2 \sigma_u^2 + \phi_m^2 \sigma_m^2 + 2\phi_u \phi_m \rho_{u,m} \sigma_u \sigma_m \quad (5)$$

where  $\sigma_p^2$ ,  $\sigma_u^2$  and  $\sigma_m^2$  are the portfolio variance and the variances of the two assets respectively. The product  $\rho_{u,m} \sigma_u \sigma_m$  is the covariance between the markup and *mudārabah* assets. Where  $\rho_{u,m}$  is the correlation coefficient between the two assets, while  $\sigma_u$ ,  $\sigma_m$  are the standard deviation of mark-up and *mudārabah*.

Equation 5 can be used to find the combination of random variables,  $u$  and  $m$ , that provides the portfolio with minimum variance. So if the bank chooses to minimize the variance of its overall returns, then the values of  $\phi_u$  and  $\phi_m$  minimize the portfolio variance.

We can minimize portfolio variance by setting the first derivatives equal to zero:

<sup>1</sup> The selection of only two assets is designed for simplicity and will easily be generalized to  $n$  number of assets.

<sup>2</sup> Bank's degree of leverage is the amount of assets per unit of capital.

$$\frac{\partial \sigma_p^2}{\partial \phi_u} = 2\phi_u \sigma_u^2 + 2\phi_m \rho_{u,m} \sigma_u \sigma_m = 0 \quad (6)$$

$$\frac{\partial \sigma_p^2}{\partial \phi_m} = 2\phi_m \sigma_m^2 + 2\phi_u \rho_{u,m} \sigma_u \sigma_m = 0 \quad (7)$$

Solving for the optimal percentage to invest in u and m in order to obtain the minimum variance portfolio, we get:

$$\phi_u^* = \frac{\sigma_m^2 - \rho_{u,m} \sigma_u \sigma_m}{\kappa(\sigma_u^2 + \sigma_m^2 - 2\rho_{u,m} \sigma_u \sigma_m)} \quad (8)$$

$$\phi_m^* = \frac{\sigma_u^2 - \rho_{u,m} \sigma_u \sigma_m}{\kappa(\sigma_u^2 + \sigma_m^2 - 2\rho_{u,m} \sigma_u \sigma_m)} \quad (9)$$

The necessary and sufficient condition for  $\phi_u^*$  to yield a global minimum, is that  $\sigma_p^2, \sigma_u^2 > \sigma_m^2$ .

However, since the probability of bank failure is a function of expected returns as well as its variance, minimizing the variance of return could increase the probability of bank failure. The alternative is to choose asset weights such that the right-hand side of (2) is minimized. This occurs at the point:

$$\phi_u^{**} = \frac{\sigma_m^2 (\bar{\Pi} + \kappa) - \rho_{u,m} \sigma_u \sigma_m (\bar{\Pi} + \kappa)}{\kappa \left( \sigma_u^2 (\bar{\Pi}_m + \kappa) + \sigma_m^2 (\bar{\Pi}_u + \kappa) - 2\rho_{u,m} \sigma_u \sigma_m (\bar{\Pi}_u + \bar{\Pi}_m + 2\kappa) \right)} \quad (10)$$

From (10) it can be seen that:

$$\phi_u^{**} = \phi_u^* \text{ if } \bar{\Pi}_m = \bar{\Pi}_u$$

$$\phi_u^{**} > \phi_u^* \text{ if } \bar{\Pi}_m < \bar{\Pi}_u$$

$$\phi_u^{**} < \phi_u^* \text{ if } \bar{\Pi}_m > \bar{\Pi}_u$$

$\phi_u^{**}$  is an increasing function of the variance of investing in *mudharabah* and the expected payoff on markup. At the same time  $\phi_u^{**}$  is a decreasing function of its own variance and the expected payoffs of *mudharabah*.

$\phi_u^{**}$  is an increasing function of the covariance between  $u$  and  $m$  if and only if,

$$\left( \bar{\Pi}_u + \kappa \right) \sigma_m^2 > \left( \bar{\Pi}_m + \kappa \right) \sigma_{hm}^2 \quad (11)$$

The major theme of inequality (11) is that attempts to constrain the bank's from engaging in risk-return sharing financing, could increase the probability of failure if the expected return from *mudharabah* assets exceed the expected return from markup, given the variances are the same, i.e. *mudharabah* assets dominates markup in the first-order stochastic dominance sense, assuming a risk averse framework.