

ISLAMIC BANKS EXPOSURE TO DISPLACED COMMERCIAL RISK: IDENTIFICATION AND MEASURE

Kaouther TOUMI
CR2M, Université Montpellier 1
UR Finance Quantitative (IHEC Sousse, Tunisie)
toumi.kaouther@yahoo.fr

Jean Laurent VIVIANI
CR2M, Université Montpellier 1
jviviani@univ-montpl.fr

CR2M - CC028 - Université Montpellier 2
Place Eugène Bataillon, 34095 Montpellier
Fax: +33 4 67 14 42 20

ABSTRACT

Islamic banks differ significantly in that they typically mobilise funds in the form of Profit Sharing Investments Accounts that are remunerated on the basis of sharing the actual returns on assets financed by the investment funds, with the Investment Account Holders. In theory, the profits are shared in pre-agreed ratio and all losses on assets financed by the investment funds are to be borne by Investment Account Holders, except in the case of misconduct, negligence or breach of contracted terms by the Islamic bank. In practice, the concept of sharing the actual profits with Investment Account Holders is far from being the common practice of Islamic banks. Under commercial pressure or regulatory pressure, the majority of Islamic banks absorb a proportion of losses normally borne by Investment Account Holders in order to mitigate potential massive withdrawal of funds. This practice exposes Islamic banks to a specific risk, called displaced commercial risk which requires allocating adequate capital to cover losses.

The paper identifies the Displaced Commercial Risk and proposes a methodology to measure this risk based on Value at Risk model. The measure of the actual risks sharing depends on returns smoothing politics of the Islamic bank. It illustrates this approach with a case study of an Islamic Bank. Our results support capital requirements for displaced commercial risk lower than in IFSB (2005).

KEYWORDS

Islamic Banking, Returns smoothing, Displaced Commercial Risk, Value at risk.

1. INTRODUCTION

The essential feature of Islamic banking is that it is free of interest. Islamic banking refers to Shariah compliant mechanisms to replace interest-based financial intermediation with interest-free one. Unlike conventional banks, Islamic banks are not allowed to offer a fixed and predetermined interest rate¹ on deposits and are not allowed to charge interest on loans. The rationale is that the conventional credit system involving interest leads to an inequitable distribution of income in society and is considered as a form of exploitation. In fact, the perception of any pre-determined fixed rate of return completely disconnected from the actual performance of the underlying asset is not permitted. In Islamic theory, the relationship between investors and financial intermediaries is based on Profit and Loss Sharing principle since the terms of financial transactions need to reflect a symmetrical risk-return distribution between counterparties. Added to interdiction of the interest, Islamic banks are not allowed to invest in activities featuring extreme uncertainties and risks². Gambling³ is also one of three fundamental prohibitions. Islamic finance laws require also assigning capital in socially responsible investments, and Shariah-approved activities⁴.

The respect for these Shariah requirements changes the classical scheme of banking intermediation (Grenning & Iqbal, 2007; El-Hawary et al, 2007). Islamic banking intermediation presents specific aspects as for the mobilisation and the allocation of funds and hence, the balance sheet structure differs completely from conventional banks. In theory, the capital structure of an Islamic bank is based on shareholders and Investment Account Holder's capital. These specific institutions differ significantly in that they typically mobilise funds in the form of, not interest-based deposits, but of Profit Sharing Investments Accounts⁵ based on Profit and Loss Sharing principle. Profit Sharing Investment Accounts are remunerated, not on the basis of a predetermined interest rate, but on the basis of sharing the

¹ Called "Riba" in Islamic finance terminology

² Transactions that have excessive risk due to uncertainty around key terms are forbidden by Shariah, called "Gharar" in Islamic finance terminology

³ Called "Maysir" in Islamic finance terminology

⁴ Ethical dimension of the Islamic Finance

⁵ There are two types of Profit Sharing Investment Accounts: Unrestricted Investment accounts and restricted investment accounts. With the first type, the depositors authorize the Islamic bank to invest the funds in a manner which the Islamic bank deems appropriate without laying down any restriction as to where, how and for what purpose the funds should be invested. With the second type, the depositors impose some restrictions as where, how and for what purpose their funds are to be invested (Accounting, Auditing and Governance standards for IFIs, AAOIFI 2008)

actual rate of return generated by assets financed by these investment funds between the Islamic bank and the Investment Account Holders. Funds deposited in investment accounts are placed with full depositor's knowledge that their funds will be invested in risk-bearing projects where neither their deposits nor the associated rate of return are guaranteed. Profit Sharing Investment Accounts held in Islamic banks constitute about 62% of assets on average for a sample of Islamic banks in 12 countries in Middle East and South East Asia (Sundararajan, 2008). Islamic banks collect Profit Sharing Investment deposits on the base of what is known as the Mudaraba⁶ contract (El-Hawary et al, 2007). The bank acts thus as a fund manager (Mudarib⁷). On the other side, investment funds are invested by the Islamic bank on behalf of the Investment Account Holders and are allocated to entrepreneurs, the Islamic bank assumes then the role of an investor (Rab al Mal). The Investment Account Holders share the profits accruing to the bank's investments on the assets side in the proportions pre-specified in the contract. Islamic finance principles convert the relationship between the Islamic bank and the depositors from being a borrower and a lender to becoming partners

Understanding the difference in nature of financial intermediation is the key to understand the difference in nature of risks faced by Islamic banks in comparison with conventional banks. A common perception about Islamic banking is that these financial institutions carry less risk since the banking operations are not based on interest rates and the majority of Islamic financial instruments used in practice are trade financing instruments based on a mark-up arrangement (Akkizidis & Khandelwal, 2008; Khan & Bhatti, 2008; Fiennes, 2007; Greuning & Iqbal, 2007; El-Hawary et al, 2007; Sundararajan & Errico, 2002). Islamic banks are subject to many risks that are similar to those faced by conventional banks. Credit, market and operational risk are present and these are magnified because the instruments are new (Fiennes, 2007). In addition, Shariah compliant banking activities expose Islamic banks to unique risks as a result of the specific assets and liabilities structure of their balance sheets (El-Hawary et al, 2007; Fiennes, 2007; Sundararajan, 2007; Sundararajan & Errico, 2002; Khan & Ahmed, 2001). In fact, the management of the Profit Sharing Investment Accounts by Islamic bank on behalf of Investment Account Holders exposes it to unique risks as the fiduciary risk and the

⁶ Mudaraba is a partnership investment whereby one party provides capital (Rab-al Mal) and the other party provides labour (Mudarib). Profits are shared in pre-agreed ratio and loss, if any, is borne by the investor (Shariah standard 13, AAOIFI 2008).

⁷ In a Mudaraba contract, the person or party who acts as entrepreneur

displaced commercial risk (AAOIFI⁸, 1999). Under the Mudaraba contracts that typically govern the Profit Sharing Investment Accounts, the profits are shared in pre-agreed ratio, between the bank and the investment depositors, and losses arising from the assets financed by these investments funds are to be borne by Investment Account Holders, except in the case of misconduct, negligence or breach of contracted terms by the Islamic bank. This operational risk, called fiduciary risk, is absorbed by Islamic banks (AAOIFI, 1999). The investment accounts serve as powerful risk mitigant in Islamic finance, a unique feature not available for conventional banks (Sundararajan, 2008). In practice, the concept of sharing the actual profits and losses with Investment Account Holders is not the common practice of Islamic banks in certain condition (Archer, Rifaat, 2006, Sundararajan, 2008). In fact, in dual banking environment where the two categories of banks operate (Islamic and conventional), the majority of Islamic banks are obliged in several cases to absorb a proportion of losses normally borne by Investment Account Holders. Returns attributed to the investment depositors are smoothed at the expense of returns normally attributed to shareholders, in order to mitigate potential massive withdrawal of funds by Investment Account Holders (AAOIFI, 1999; Khan & Ahmed, 2001). This practice exposes Islamic banks to a unique risk, called “Displaced commercial risk” (Sundararajan, 2008, Sundararajan, 2007; Archer & Rifaat, 2007; El Hawary, 2007; Haron & Hin Hock, 2007; Fiennes, 2007; Khan & Ahmed, 2001)

The exposure to displaced commercial risk requires Islamic banks to allocate adequate capital to cover losses arising from it (Archer & Rifaat, 2007; Grais & Kulathunga, 2007, Fiennes, 2007). Recently, the Islamic Financial Services Board⁹ (IFSB, 2005) issued a capital adequacy standard based on Basel II standardized approach with a similar approach to risk weights (Archer & Rifaat, 2007; Grais & Kulathunga, 2007; Sundararajan, 2007). IFSB (2005) calls for a supervisory discretion in determining a share “ $\alpha\%$ ” of risk weighted assets financed by Profit Sharing Investment Accounts as a capital charge required to Displaced Commercial Risk. Sundararajan (2007) finds that the IFSB (2005) proposition does not reflect the actual Islamic banks exposure to this specific risk and hence, raises questions on the best measure which actually reflects the losses borne by Islamic banks. The development of

⁸ Accounting and Auditing Organisation of Islamic Financial Institutions

⁹At January 2009, the 178 members of the IFSB include 42 regulatory and supervisory authorities as well as International Monetary Fund, World Bank, Bank for International Settlements, Islamic Development Bank, Asian Development Bank and the Islamic Corporation for the Development of Private Sector, Saudi Arabia, and 130 market players and professional firms operating in 34 jurisdictions

internal model based on Value at Risk is an appropriate method to measure the additional capital charge required effectively for the displaced commercial risk. In our knowledge, no study so far focuses on the measure of displaced commercial risk. The rest of the paper is organised as follows: Section 2 provides an analysis of the displaced commercial risk and propose a Value at Risk model to measure this risk. Section 3 analyses a case study of an Islamic Bank.

2. MEASURE OF DISPLACED COMMERCIAL RISK: THE PROPOSED MODEL

2.1. DISPLACED COMMERCIAL RISK: AN EMPIRICAL EVIDENCE

Displaced commercial risk is a new term in banking risk literature and it occurs only in the dual banking system environment and mainly arises from the risk faced by Islamic banks in the liabilities side, as a result of the mobilisation of deposits which are on Mudaraba basis. IFSB (2005) define the displaced commercial risk as *“the risk arising from assets managed on behalf of Investment Account Holders which is effectively transferred to the Islamic Financial Institutions own capital because the Institution forgoes part or all of its mudarib’s share (profit) of on such fund, when it considers this necessary as a result of commercial pressure in order to increase the return that would otherwise be payable to Investment Account Holder’s”* (Standard 76¹⁰). In other words, displaced commercial risk refers to the risk of losses which an Islamic bank absorbs to make sure that Investment Account Holders are paid in rate of return equivalent to a competitive rate of return (benchmark rate, rate of return paid by conventional bank, rate of return paid by the peer, etc.). The Accounting and Auditing Organisation of Islamic Financial Institutions (1999) identifies this specific risk as the risk resulting from the volatility of returns, rate of return risk, generated from assets financed by investment accounts. This risk arises when the actual rate of return is lower than returns expected by Investment Account Holders, which follow current market expectations and generally equivalent to rate of returns offered on alternative investment. For instance, Islamic banks invest funds in Murabaha or Ijara assets¹¹ which yield lower rate of return compared to the current expectations of Investment Account Holders (Haron & Hin Hock, 2007). Consequently, under commercial pressure, the majority of Islamic banks smooth the rate of return attributed to their Investment Account Holders at the expense of profits normally attributed to shareholders, in order to offer them a competitive remuneration and persuade

¹⁰ See IFSB (2005) “Guiding Principles of Risk Management for Institutions (other than Insurance Institutions) offering only Islamic Financial Services (IIFS)”.

¹¹ Associated returns are fixed in advance.

them to keep their funds in the bank (Khan & Ahmed, 2001; Archer & Rifaat, 2006). An Islamic bank is strongly exposed to massive withdrawal risk due to lower rate of return on Investments Deposits, which explains the logic of increasing the profits distributed to Investment Account Holders (Khan and Ahmed, 2001). Failure to smooth the Investment Account Holders returns might result in a volume of withdrawals of funds by depositors to place it in other institution that gives higher yield, which jeopardize the bank's commercial position. Any attempt by Islamic banks to match the market expectation, by smoothing the actual rate of return on deposits investment and covering losses arising from assets financed by investment funds, may expose them to displaced commercial risk. The lack of transparency in the financial reporting of Islamic banks means that this smoothing process is generally not observable in the Islamic banks financial statements (Archer & Rifaat, 2006). The studies conducted by Accounting and Auditing Organisation of Islamic Financial Institutions showed well that the smoothing is widely practiced, the perfect profits and losses sharing is limited with Investment Account Holders in some situation. This practice is even recognized as a normal feature of the Islamic banking (Sundararajan, 2008; Archer, Rifaat; 2006).

Several empirical studies analyze the effect of changes in conventional deposit interest rates on the rates of return and the volume of deposits in Islamic banks in several countries where Islamic banks operate with conventional ones (Chong & Liu, 2009; Rahmatina & Salina , 2006; Sundarajan, 2005; Bacha, 2004; Rachmawati & Syamsulhakim, 2004; Kaleem & Mansoor, 2003; Sudin & Norafifah, 2000; Haron & Schanmugan, 1995). Most of these studies reveal a negative (positive) relationship between conventional interest rate (rate of return) and the volume of deposits in Islamic banks. An early study of Chong and Liu (2009) for example reveals that changes in conventional deposit interest rates in Malaysia causes changes in investment deposit rates of return of Islamic banks, but not vice versa. Moreover, investment deposit rates of return are positively correlated to conventional deposit interest rates in the long-term. Islamic banks adjust rates of return upwards (downwards) when the rate is lower (higher) than conventional deposit rates.

To cover losses arising from assets financed by Investment funds and to smooth rates of return paid to the Investment Account Holders, Islamic banks developed in practice several techniques in order to maintain stable and competitive rates to investment depositors. A first method consists of investing a significant part of unremunerated accounts in assets with certain return and lower risk (short-term maturity). This practice generates additional returns

for shareholders and provides a cushion for Islamic banks to facilitate returns smoothing (Archer & Rifaat, 2006). Smoothing returns, using a combination of reserves retained from the profits attributed to both Investment Account Holders and shareholders, is a second mechanism (Sundararajan, 2008; Archer & Rifaat, 2007; Sundararajan, 2007; Archer & Rifaat, 2006). Islamic banks can include a clause in the terms of contracts with Investment Account Holders giving the right to the bank to retain a certain proportion of their profits. Generally, the amount of reserves is positively correlated to the rate of return on assets (Sundararajan, 2007). The retention of reserves is a common practice of the majority of Islamic banks (Sundararajan, 2008, Archer & Rifaat, 2006). A third mechanism consists of the variation of the percentage of profit taken by Islamic banks as the “Mudarib Share¹²”. The percentage of the Mudarib share profit predetermined initially is the maximum part, while the share distributed actually is liable to vary from year to year according to the actual rate of return on asset financed by investment accounts (Archer & Rifaat, 2006). When reserves are insufficient, Islamic banks adjust the Mudarib share, if obliged, and reduce it below to the contracted share (Sundararajan, 2008). Islamic banks may also transfer some proportion of shareholders returns to investment account depositors (Sundararajan, 2008). The shareholders decision to agree, which is a Shariah condition, to give up part or all of their profits to increase Investment Account Holders returns means that the shareholders accept that the risk attaching to the returns of a portfolio of assets financed partly or wholly by Profit Sharing Investment funds is displaced, so that is borne largely by themselves (the Shareholders) (Archer & Rifaat; 2007).

Islamic banks have in general two standard practices of retaining reserves to mitigate displaced commercial risk: the retention of the Profit Equalisation Reserve (PER) and the Investment Risk Reserve (IRR). The Profit Equalisation Reserve is created from the total income before the profit allocation between shareholders and Investment Account Holders and the calculation of Mudarib Share. The retention of Profit Equalisation Reserve reduces returns actually distributed to both parties. However, Investment Risk Reserve is retained only from the profits attributed to Investment Account Holders (After deduction of Mudarib share). Profit Equalisation Reserve is needed to smooth a low rate of return and reduce the volatility of Investment Account Holders returns. However, the Investment Risk Reserve is needed to cover potential losses on assets invested with Investment Account Holders funds (Archer and

¹² In a Mudaraba contract, Mudarib share is the % of the profits of the Islamic bank as a Mudarib (Fund manager of the investment Account). The profits are distributed according to a pre-agreed ratio between the Islamic bank and the Investment Account Holders.

Rifaat, 2006; Grais & kulathunga, 2007; Sundararajan, 2008). In the contract in general, Investment Account Holders agree in advance on the proportion of their income that may be allocated to both reserves, which is determined by the management of the bank at their own discretion. A percentage of Profit Equalisation Reserve and the totality of Investment Risk Reserve belong to Investment Account Holders but retained by the Islamic bank. The remainder part of accumulated Profit Equalisation Reserve belongs thus to shareholders. These reserves are generally invested by the Islamic bank to generate additional returns to Investment Account Holders (Archer and Rifaat, 2006).

The following diagram represents how an Islamic Bank calculates the profit attributed to shareholders and Investment Account Holders and illustrates the retention of different reserves (Profit Equalisation Reserve and Investment Risk Reserve). We suppose that the capital structure of the Islamic bank is based on shareholders and Investment Account Holders capital.

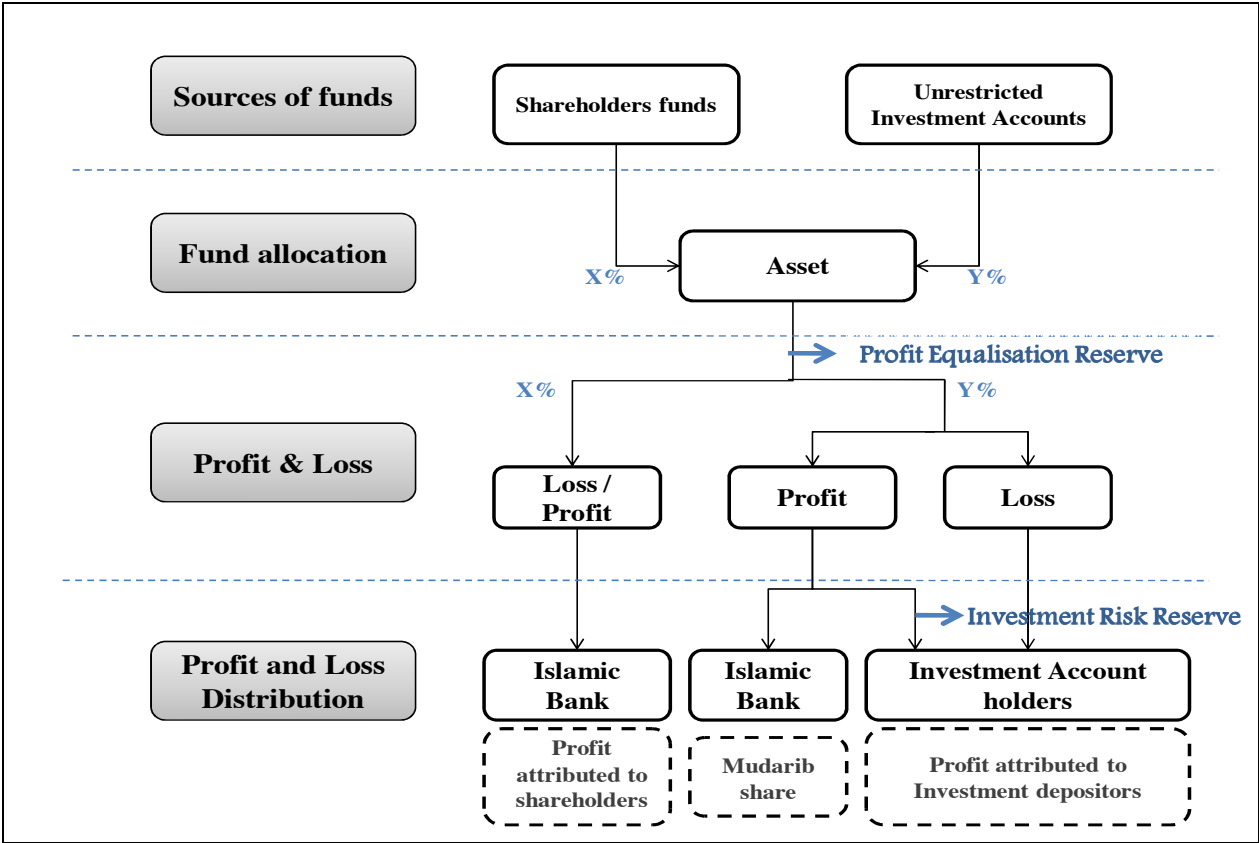


Fig 1: Allocation of profits /losses between the Islamic bank and Investment Account Holders and the retention of reserves.

Islamic bank policies regarding Profit Equalisation Reserves and Investment Risk Reserve play a critical role in the management of displaced commercial risk (Sundararajan, 2008). If these reserves are adequate to avoid the transfer of income from shareholders to Investment Account Holders, there is no exposure of the Islamic bank to displaced commercial risk. In the opposite case, If these reserves are insufficient and the transfer of some proportion of shareholders returns to depositors is necessary, then the displaced commercial risk is positive (Sundararajan, 2008).

Although Islamic banks are not obliged to carry out such returns smoothing in theory, they are virtually forced to do so under commercial pressure or supervisory authority pressure (Haron & Hin Hock, 2007; Archer & Rifaat, 2007, Fiennes, 2007). In some countries (e.g. Qatar and Malaysia), the supervision authority takes the view that Islamic banks should not allow Investment Account Holders to suffer a loss of their capital or a major fall in their returns, so Islamic banks have a constructive obligation to continue this practice of returns smoothing. Thus, instead of being voluntary, the practice becomes obligatory and Profit Sharing Investment Account being regarded as virtually certain capital (Archer & Rifaat, 2007; Fiennes, 2007).

In practice, there is a considerable ambiguity in the nature and characteristics of Profit Sharing Investment Account and may vary between banks and jurisdiction (Sundararajan, 2008; Archer & Rifaat, 2007). In no case, Profit Sharing Investment Accounts are part of Islamic banks capital but these accounts are available to absorb all losses resulting from credit and market risk exposure financed by investments funds (IFSB, 2005). However, in practice, the nature of Profit Sharing Investment Accounts could vary from being assimilated to conventional deposits (they carry no risk of loss of principal) to being investment deposits that bear the risk of losses in the underlying assets (Sundararajan, 2008; Archer & Rifaat, 2007). This divergence in practices between Islamic banks and jurisdictions presents challenges to regulators and Islamic banks to assess the actual risk sharing borne by shareholders (Sundararajan, 2008).

Displaced commercial risk affects the capital of Islamic Banks and exposes them to losses which requires an additional capital charge (Archer and Rifaat, 2007; Grais & Kulathunga, 2007). In environments where displaced commercial risk is a significant factor, the volume of investment accounts has capital adequacy implication and supervisors should review whether added regulatory capital should be set aside (Archer and Rifaat, 2007; Fiennes, 2007).

The IFSB (2005) recognizes the exposure of Islamic banks to displaced commercial risk and recommends establishing these prudent reserves to mitigate the impact of returns smoothing to Investment Account Holders on Islamic banks capital. The IFSB (2005) framework¹³ proposes two alternative versions of capital adequacy ratio for Islamic banks.

In the first version¹⁴, Profit Sharing Investment Accounts are treated as typical Mudaraba investment, so Investment Account Holders fully absorb the risks (credit and market risks). The operational risk resulted from Investment Account management are borne by Islamic banks. Therefore, the formula excludes risk weighted assets (credit and market risks) funded by these Profit Sharing Investment Accounts. In other words, there is no capital requirement in respect of risk arising from assets funded by such funds.

In the second version¹⁵, Profit Sharing Investment Accounts are treated as similar to deposits and quasi deposits products. Investment Account Holders don't (fully or partially) absorb the risks. Therefore, Islamic banks are required to hold regulatory capital function of the extent of risks actually borne by Investment Account Holders. IFSB (2005) recommends to include a proportion α % of risk-weighted (credit and market risk) assets financed by Profit Sharing Investment Accounts for the calculation of capital adequacy ratio. " α %" reflects the displaced commercial risk which is the extent of risks displaced to shareholders from Investment Account Holders. The extent of risk sharing actually borne by them determines the value of " α %". Higher would be the value of " α %", more the bank absorbs a higher proportion of risk weighted (credit and market) assets and Investment Account Holders are treated more as conventional depositors than investors.

If the value of " α " is equal to zero, investment funds are equivalent to shareholders capital and Investment Account Holders bear the totality of losses. Therefore, risks on assets financed by Investment funds are not subject to minimum capital requirements. If value of " α " is equal to the unit, Investment funds are similar to conventional deposits. The capital invested and the associated returns are implicitly guaranteed and the Islamic bank bears consequently the totality of losses.

In practice, the value of " α " is generally superior to zero (Sundararajan, 2008). A positive relationship exists between α and displaced commercial risk. The lower (higher) is this risk, the lower (higher) the value of " α " (IFSB, 2005). The IFSB (2005) has left the determination of α % value at the discretion of national supervision authorities. The majority of central banks

¹³ See Appendice A

¹⁴ Standard approach

¹⁵ Supervisory discretion formula

determine arbitrarily the value of α at certain level. The central bank of Bahrain for example has ruled it to be 30 %. In other words, Islamic banks bear 30 % of the credit and market risk-weighted assets financed by Investment Accounts to mitigate the displaced commercial risk. The rest (70 %) is to be borne by Investment Account Holders (Excluded from the total of risk-weighted assets in the denominator). Even, Dubai Financial Services Authority fixed it to 35%.

The national supervision authority imposes the same value to all Islamic banks operating under its control. The rationale of this supervisory discretion formula is to allow national authority to decide on displaced commercial risk that Islamic banks are exposed to under its jurisdiction. The formulation of the IFSB (2005) assumes that practice of returns smoothing are similar to all Islamic banks in the same jurisdiction. This proposition does not reflect the reality of Islamic banks (Sundararajan, 2007). Application of specified $\alpha\%$ to risk weighted assets financed by investments funds to each Islamic bank would be more appropriate than application of unique value in order to reflect a best measure of displaced commercial risk (Sundararajan, 2007). The exposure to displaced commercial risk raises hence questions on the best measure which actually reflects the losses to be borne by Islamic banks (Sundararajan, 2007). The development of internal model based on Value at Risk to measure the displaced commercial risk is an appropriate method to measure effectively the capital charge for this risk. A measure of the actual risks sharing function of returns smoothing politics between the Islamic bank and the Investment Account Holders has to be the basis of calculation of capital requirement (Sundararajan, 2005).

2.2 THE PROPOSED MODEL OF VALUE AT RISK

Displaced commercial risk comes from the fact that the rate of return on deposit investment falls below a floor.

From the balance sheet identity, we know that the amount invests in asset, A , is the sum of bank shareholders funds, K , and Profit Sharing Investment Account (PSIA), DI :

$$A = K + DI \quad (1)$$

From the profit on asset, the Profit Equalization Reserve (PER) is retained. The profit on asset net on PER is equal to $(1 - p)R_A$.

P: the proportion of profit retained

R_A : the profit on asset.

The profit on asset is then divided between the profit going to bank shareholders and the profit going to PSIA in proportion of their investment. From the balance sheet identity (1) and the definition of PER, we obtain:

$$(1-p)\tilde{R}_A = \frac{K}{A}(1-p)\tilde{R}_A + \frac{DI}{A}(1-p)\tilde{R}_A = (1-x_A)(1-p)\tilde{R}_A + x_A(1-p)\tilde{R}_A \quad (2)$$

The Islamic Bank charge a commission, k , on the profit as manager of the investment accounts. This commission represents the “Mudarib Share”. Thus return on the investment account net of charge before the retention of Investment Risk Reserve is:

$$x_A(1-p)(1-k)\tilde{R}_A \quad (3)$$

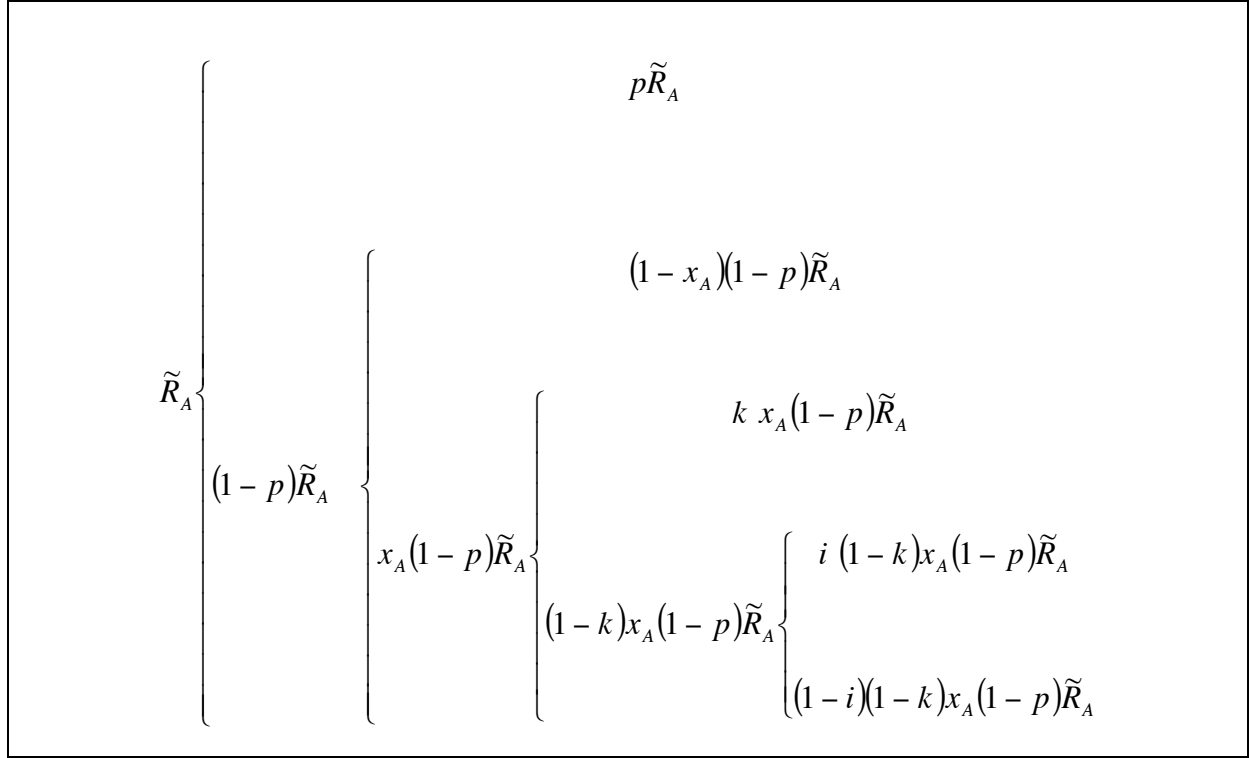
k : commission in % of asset return.

The Islamic bank retains the Investment Risk Reserve, a proportion i , from the income attributed to investment account holders. The return on the investment account:

$$\tilde{R}_I = x_A(1-p)(1-k)(1-i)\tilde{R}_A \quad (4)$$

The income is attributed to Investment Accounts Holders after setting aside provisions, reserves (Profit Equalization reserve and Investment risk reserve) and deducting the Bank’s share of income called ”Mudarib share”. The allocation of income is determined by the management of the Bank within the allowed profit sharing limits as per the terms and conditions of the investment accounts.

The following diagram illustrates the distribution of profits and the retention of the different reserves and the Mudarib share we described above.



With:

\tilde{R}_A : Revenue on Asset.

p : Proportion of Profit Equalization reserve retained for the year.

x_A : Percentage of IAHS profits share.

k : Proportion of Mudarib Share taken by the bank.

i : Proportion of Investment Risk Reserve taken for the year.

The Investment Account Holder compares his return with the return of a benchmark \tilde{R}_B , this return is not necessarily known at the date of the investment.

We want to know the bank equity amount necessary to absorb the displaced commercial risk. In spite of the existing reserve level, the return on investment can fall below the benchmark level. The equity level uncovered by the reserve amount will be obtained by the Value at Risk, VaR, for a given probability level, α , and a given horizon of time.

$$\begin{aligned} p(\tilde{R}_I + E - \tilde{R}_B \leq VaR_\alpha) &= \alpha \\ p(\tilde{R}_I - \tilde{R}_B \leq VaR_\alpha - E) &= \alpha \end{aligned} \quad (5)$$

E: the part of accumulated amount of reserve attributed to Investment Account Holders.

From equation (5), by subtracting the mean and dividing by the standard deviation of the deviation between the profit on investment and in benchmark we obtain:

$$p \left(\frac{\tilde{R}_I - \tilde{R}_B - (E(\tilde{R}_I) - E(\tilde{R}_B))}{\sigma(\tilde{R}_I - \tilde{R}_B)} \right) \leq \frac{VaR_\alpha - E - (E(\tilde{R}_I) - E(\tilde{R}_B))}{\sigma(\tilde{R}_I - \tilde{R}_B)} = \alpha$$

If investment and benchmark profits follow the standard normal law, and by isolating the VaR it comes:

$$VaR_\alpha = z_\alpha \sigma(\tilde{R}_I - \tilde{R}_B) + E + (E(\tilde{R}_I) - E(\tilde{R}_B))$$

z_α : quantile of the standard normal law for the level of probability α .

It is easier to express the VaR in percent of the amount in investment account, DI. By developing the standard deviation of the difference between the two profits, the VaR is:

$$VaR_\alpha = DI \left\{ z_\alpha [V(\tilde{r}_I) + V(\tilde{r}_B) - 2Cov(\tilde{r}_I, \tilde{r}_B)]^{1/2} + e + (E(\tilde{r}_I) - E(\tilde{r}_B)) \right\}$$

\tilde{r}_I : Return on investment account, from (3) $\tilde{r}_I = (1-p)(1-k)(1-i)\tilde{r}_A = f\tilde{r}_A$

\tilde{r}_B : Return on benchmark,

e : reserves expressed in % of investment account amount,

VaR expressed as percent of investment account is then:

$$\frac{VaR_\alpha}{DI} = z_\alpha [V(\tilde{r}_I) + V(\tilde{r}_B) - 2Cov(\tilde{r}_I, \tilde{r}_B)]^{1/2} + e + (E(\tilde{r}_I) - E(\tilde{r}_B))$$

The Islamic bank invests the amount of investment accounts in well diversified portfolio. The benchmark is also a well diversified portfolio. Betas of investment and benchmark portfolios are respectively β_A, β_B with $f\beta_A > \beta_B$.

Using the CAPM equation, we can write:

$$\begin{aligned} E(\tilde{r}_I) &= fE(\tilde{r}_A) = f[r_F + \beta_A [E(\tilde{R}_M) - r_F]] \\ E(\tilde{r}_B) &= r_F + \beta_B [E(\tilde{R}_M) - r_F] \end{aligned}$$

Without taking into account the specific risk, we have the following relations:

$$\begin{aligned} V(\tilde{r}_I) &= f^2 \beta_A^2 V(\tilde{R}_M) \\ V(\tilde{r}_B) &= \beta_B^2 V(\tilde{R}_M) \\ Cov(\tilde{r}_I, \tilde{r}_B) &= f\beta_A \beta_B V(\tilde{R}_M) \end{aligned}$$

$$VaR \text{ is: } \frac{VaR_\alpha}{DI} = (f\beta_A - \beta_B) [z_\alpha \sigma(\tilde{R}_M) + (E(\tilde{R}_M) - r_F)] + e + (f - 1)r_F \quad (6)$$

In the simplest case where the benchmark portfolio is the risk free asset and the invested portfolio is equal to the market portfolio, the VaR becomes:

$$\frac{VaR_\alpha}{DI} = f [z_\alpha \sigma(\tilde{R}_M) + (E(\tilde{R}_M) - r_F)] + e + (f - 1)r_F$$

For instance, if:

- The risk premium is 4 %,
- The market volatility is 20 %,
- The risk free rate is 4 %,
- The reserves are 25 %,
- f is equal to 0,9
- the probability level 99 % (investment accounts are highly protected)

$$VaR \text{ is equal to: } \frac{VaR_\alpha}{DI} = 0,9(-2,33 \times 20\% + 4\%) + 25\% - 0,1 \times 4\% = -13,74\%$$

In this case, equity used to protect the displaced commercial risk are 13,74% of the amount of investment accounts.

3. CASE STUDY: BAHRAIN ISLAMIC BANK

We consider Bahrain Islamic Bank as a case study and we attempt to measure potential losses resulting from the displaced commercial risk from the Bahrain Islamic Bank annual report of 31-12-2008. The methodology applied is based on the Value at risk model presented in section 2.2.

The invested portfolio is equal to a *Shariah-Compliant* market portfolio. In fact, Islamic finance laws require assigning capital in socially responsible investments and Shariah-approved activities. Several Islamic Market Indexes¹⁶ are introduced in Markets in the world to represent Islamic-compliant portfolios. We suppose that Bahrain Islamic bank invest in *S&P Bahrain Shariah Index*. We consider also *Bahrain all Share index* as a market portfolio. The following diagram and table 1 represent the main data we need from the balance sheet and the income statement (of 31/12/2008) of Bahrain Islamic Bank in order to assess the displaced commercial risk.

$$\begin{array}{l}
 \left. \begin{array}{l}
 R_A = 36934 \\
 (1-p)R_A = 36934
 \end{array} \right\} \left. \begin{array}{l}
 x_A(1-p)R_A = 30885 \\
 (1-k)x_A(1-p)R_A = 17702
 \end{array} \right\} \left. \begin{array}{l}
 kx_A(1-p)R_A = 13183 \\
 i(1-k)x_A(1-p)R_A = 167 \\
 (1-i)(1-k)x_A(1-p)R_A = 17535
 \end{array} \right\} \begin{array}{l}
 pR_A = 0 \\
 (1-x_A)(1-p)R_A = 6049
 \end{array}
 \end{array}$$

Accumulated PER	2368
Accumulated IRR	167
Profit Sharing Investment Deposits (DI)	624119
Market Portfolio	<i>Bahrein all Share index</i>
Shariah Compliant Portfolio	<i>S&P Bahrain Shariah index</i>
rf¹⁷	4,5%

¹⁶ Dow Jones Islamic Market indexes, S&P Islamic Index, FTSE Islamic Global Index, etc.

¹⁷ Annual rate, <http://www.bahrainstock.com/bahrainstock/index.asp>

The historical data concerning *Bahrain all Share index* and *S&P Bahrain Shariah index* are exported from the financial database Datastream.

Table 2 presents the various parameters of formula (6) we calculated using the data described above.

p^{18}	0
k^{19}	0,426841509
i^{20}	0,009433962
f^{21}	0,567751336
e	0,003794148
$E(R_m)^{22}$	0,00035183
Standard deviation σ_m	0,00605432
Beta β_A^{23}	1,12672218

Applying the formula (6) for different holding period and confidence level, we obtain these results of VaR:

	0,995	0,99	0,95
1	-0,00549339	-0,00452716	-0,00188778
10	-0,02327775	-0,02022227	-0,01187581
90	-0,05283987	-0,04367345	-0,01863406
1 année	-0,14582344	-0,13048509	-0,08858617

For Example, the capital required by Bahrain Islamic Bank to cover the displaced commercial risk: $DCR_{VaR} = 13,05\%$ of the total of investment accounts with 99% confidence and a holding period 1 year.

The amount of capital Charge required thus to cover the displaced commercial risk for different holding period and confidence level are presented in the table below:

¹⁸ Profit Equalization Reserve PER retained in 2008/ Total Income

¹⁹ Mudarib Share/ Profit Attributable to IAHS net of PER before Mudarib share

²⁰ Investment Risk reserve IRR retained in 2008/ Profit Attributable to IAHS (net of PER and Mudarib share)

²¹ $(1 - p)(1 - k)(1 - i)$

²² We calculated the daily returns using times series of the market index prices for a period of 2 years (30-03-2007 to 31-12-2008) to assess the daily volatility of returns σ_m and the daily expected returns $E(R_m)$.

²³ The same period for S&P Bahrain Shariah index related data. $\beta_A = \text{Cov}(R_{\text{Shariah index}}, R_m) / V(R_m)$.

	0,995	0,99	0,95
1	-3428,5276	-2825,48785	-1178,19844
10	-14528,0843	-12621,1052	-7411,91865
90	-32978,368	-27257,4307	-11629,8711
1 year	-91011,1815	-81438,2223	-55288,3135

For example, the capital required by Bahrain Islamic Bank to cover the displaced commercial risk: $DCR_{VaR} = 81438 \text{ BD}^{24}$ with 99% confidence and a holding period of 1 year.

The result obtained by the model we proposed will be compared to the capital charge needed for displaced commercial risk calculated based on Central Bank of Bahrain capital adequacy guidelines. The Central Bank of Bahrain has examined its prudential regime for Islamic finance in order to ensure its regime is in line with international standards, including the standards produced by the Islamic Financial Services Board (IFSB). Central Bank of Bahrain fixed the ratio of 30% for displaced commercial risk (equivalent to the value of Alpha). In other words, Islamic banks in Bahrain must bear 30 % of the credit and market risk-weighted assets financed by investment accounts to mitigate the displaced commercial risk. The rest (70 %) is to be borne by Investment Account Holders. As the Bahrain Islamic bank funds are comingled, we suppose that the risk-weighted assets financed by the Investment Accounts are calculated based on their prorata share of the relevant assets.

From the annual report, we note:

Total credit weighted assets	390344
Market risk weighted asset	54733
Total risk weighted assets (credit risk + Market risk)	445077
Total liabilities, Investment Account and Equity	873967
Investment Account	624119

We calculate the charge of capital required to displaced commercial risk using the methodology described above, the result is:

²⁴ 13,04%* *Investment Deposits*

% Investment Account of Total (liabilities, Investment account and Equity)	71,41%
Total risk weighted assets (credit risk + Market risk) funded by investment Account	317839,2458
Alpha	30%
The charge of capital required to displaced commercial risk: DCR_{α}	95351,77375

The comparison between the DCR_{VaR} et DCR_{α} reveals that the Bahrain Islamic Bank charge of capital needed to displaced commercial risk as proposed under the simple risk weight supervisory discretion approach of IFSB (2005) is higher than capital charge requirement calculated based on the Value at risk model we proposed.

4. CONCLUSION AND IMPLICATIONS:

Displaced Commercial risk is a new risk in banking risks literature. The paper has attempted to identify the displaced commercial risk, a specific risk faced by Islamic banks arising from the management of Profit Sharing investment accounts. The majority of Islamic banks absorb a proportion of losses normally borne by investment account holders under commercial pressure and this practice exposes them to the displaced commercial risk. We have proposed an internal model based on Value at Risk to measure the displaced commercial risk based on returns smoothing politics of the Islamic bank. The measure of the actual risks sharing depends on returns smoothing politics of the Islamic bank within the retention of different Reserves. The model depends on various parameters: the proportion of Profit Equalisation Reserve that the Islamic bank retains from the total revenue on asset, the ratio of profits and losses sharing between the Islamic bank and Investment Account Holders, the proportion of Mudarib Share of the bank as a fund manager and finally the proportion of the Investment Risk Reserve. We studied a case of Bahrain Islamic Bank and we attempted to apply the Value at risk model we proposed on this Islamic bank. We find that the capital requirement to displaced commercial risk as proposed under the simple risk weight supervisory discretion approach of IFSB(2005) is higher than the capital requirement that result from the Value at Risk model. The supervisory discretion approach proposed by IFSB (2005) is subject to many criticisms since the IFSB recommend to all Islamic banks in the same jurisdiction, the same proportion of risk weighted asset funded by Investment Accounts without taking into account the actual returns smoothing peculiar to each Islamic bank. The Value at Risk model we proposed would be an alternative method to measure the additional capital charge required to

cover the displaced commercial risk especially that the IFSB (2005) capital framework and the capital requirements directive allow for an internal model approach. As we proposed, the assessment of the displaced commercial risk should be based on actual returns smoothing politics of each Islamic Bank. The comparison we have conducted should be made on a large panel of Islamic banks to confirm our funding. Applying the model on only one Islamic bank is considered as a limit of our study. However, it's an original study since in our knowledge; no study so far focuses on the measure of this new specific risk associated to Islamic Banks.

REFERENCES

1. Archer S., Rifaat A A K. (2007). 'Measuring risk for capital adequacy: the issue of profit sharing investment accounts' in Simon Archer & Rifaat Ahmed Abdel Rifaat 'Islamic finance: the regulatory challenge" Edition John Wiley&Sons, Ltd, pp 223-236.
2. Archer S., Rifaat A A K. (2007). 'specific corporate governance issues in Islamic banks' in Simon Archer & Rifaat Ahmed Abdel Rifaat 'Islamic finance: the regulatory challenge" Edition John Wiley&Sons, Ltd, pp 311-341.
3. Archer S., Rifaat A A K. (2006)'On capital structure, Risk Sharing and Capital adequacy in Islamic Banks' International Journal of theoretical and Applied Finance' 9(3) pp 269-280.
4. Akkisidis, I. and Khandelwal, S., (2008). Financial Risk Management for Islamic Banking and Finance: Edition PALGRAVE MACMILLAN.
5. Bacha. O., (2004) "Dual Banking Systems and Interest Rate risk for Islamic banks" Mpra Paper 12763
6. Chong B. S., Liu M.H., (2009). 'Islamic Banking: interest free or interest based' Pacific Basin Finance Journal, N°17, pp 125-144.
7. Grais W., Kulathunga A. (2007) "Capital structure and Risk in Islamic Financial Services" dans Simon Archer & Rifaat Ahmed Abdel Rifaat 'Islamic finance: the regulatory challenge" Edition John Wiley&Sons, Ltd, pp 69-93.
8. Grenning, H.V, Z. Iqbal (2007). 'Banking and the risk environment' in Simon Archer & Rifaat Ahmed Abdel Rifaat 'Islamic finance: the regulatory challenge" Edition John Wiley&Sons, Ltd, pp 11-39.
9. Haron A., Hin Hock J L. (2007) 'Inherent Risk: Credit and Market Risks' dans Simon Archer & Rifaat Ahmed Abdel Rifaat 'Islamic finance: the regulatory challenge" Edition John Wiley&Sons, Ltd, pp 94-119.
10. Haron, S., Shanmugam, B. (1995), 'The Effects of Rates of Profit on Islamic Bank's Deposits: A Note.' Journal of Islamic Banking and Finance, 12 (2), pp. 18-28.
11. Fiennes T. (2007) "Supervisory Implications of Islamic banking: A supervisor's perspective" in in Simon Archer & Rifaat Ahmed Abdel Rifaat 'Islamic finance: the regulatory challenge" Edition John Wiley&Sons, Ltd, pp 11-39 pp 247-256
12. IFSB (2005). 'Guiding Principles of Risk Management for Institutions (other than insurance institutions) offering only Islamic financial services.'
13. IFSB (2005) 'Capital Adequacy Standard for institutions (Other than Insurance Institutions) Offering only Islamic Financial Services'
14. Khan M.M., Bhatti, M.I., (2008). 'Development in Islamic banking: a financial risk-allocation approach.' The Journal of Risk Finance, 9 (1), pp 40-51.
15. Khan, T., Ahmed, H., (2001). Risk Management: An analysis of issues in Islamic financial industry: Islamic Development Bank.
16. Kaleem. A.,Mansor. Md Isa (2003)"Causality relationship between Islamic and conventional banking instruments in Malaysia" International Journal of Islamic Financial Services, 4(4).
17. Rahmatina A.K., S. H. Kassim (2008) "Risk Identification of the Islamic Banks in Indonesia: A VAR Modeling Approach" Islamic Financial services awareness programmes, 27-31 octobre 2008

18. Erna Rachmawati, Ekki Syamsulhakim, 2004. "Factors Affecting Mudaraba Deposits in Indonesia," Working Papers in Economics and Development Studies (WoPEDS) 200404, Department of Economics, Padjadjaran University, revised Aug 2004
19. Sundarajan V. (2008) "Issues in Managing Profit Equalisation Reserves and Investment Risk Reserves in Islamic Banks".
20. Sundararajan V. (2007) 'Risk characteristics of Islamic product: implications for risk measurements and supervision' in Simon Archer & Rifaat Ahmed Abdel Rifaat 'Islamic finance: the regulatory challenge' Edition John Wiley&Sons Ltd, pp 40-68
21. Sundararajan V. (2005) 'Risk measurement and disclosure in islamic finance and the implications of profit sharing investment account' sixth international conference on islamic economics, banking and finance, Jakarta, Novembre 22-24.
22. Sundararajan V., Errico L. (2002)'Islamic Financial Institutions and Products in the Global Financial System: Key issues in risk management and challenges ahead' IMF Working Paper 192.
23. Sudin, H., Norafifah, A (2000)" The effet of conventional interest rates and rate of profit on funds deposited with islamic banking system in Malaysia" International Journal for Islamic Financial Sercvices, 1 (4)

APPENDIX A

1. STANDARD APPROACH

$$\text{ratio} = \frac{\text{capital}}{\text{total risk weighted asset (credit + market + operational)} - \text{risk weighted assets(credit + market)}_{\text{financed by PSIA}}}$$

2. SUPERVISORY DISCRETION FORMULA

$$\text{ratio} = \frac{\text{capital}}{\text{total risk weighted asset (credit + market + operational)} - (1 - \alpha)\text{risk weighted asset (credit + market)}_{\text{financed by unrestricted PSIA}}}$$

The proportion “ $\alpha\%$ ” quantifies the risk to be absorbed by shareholders of Islamic banks, with the remainder “ $(1 - \alpha\%)$ ” absorbed by Profit Sharing Investment Account holders. The national supervision authority determine in arbitrary manner the value of $\alpha\%$ and impose the same value to all Islamic banks operating under its jurisdiction.