

# **An Evaluation of Research on Monetary Policy and Stability of the Islamic Economic system**

**Shamim Ahmad Siddiqui**  
*Department of Economics*  
*University of Brunei Darussalam*  
**Siddiqui51@yahoo.com**

## **Abstract**

One of the key manifestations of Islamization of the contemporary economies had been replacement of interest based banking by a profit and loss sharing banking. By the end of 1970s the concept of Islamic banking had become quite popular. However, it was felt that more rigorous analytical research was required to clearly understand the consequences of the new system on savings, investment, stability of the economy, and implications for monetary policy. This paper critically evaluates some of the important theoretical models developed in this area to address different apprehensions. It has been noted that although a number of questions related to the new system remained un-answered, research interest in this area declined as Islamic banking failed to use profit and loss sharing modes of finance at a scale that would necessitate any meaningful change in monetary policy and its tools. Finally, the paper briefly contemplates on some of the reasons for this situation and makes few suggestions for future research.

## **1. Introduction**

For the early proponents of Islamic banking that included religious scholars as well as people with background in economics and finance,<sup>1</sup> its meaning and manifestation was never in doubt. They believed that Islamic banking could be established through profit and loss sharing modes of Islamic finance such as musharakah and mudarabah. They all had a firm opinion that bank interest comes under the definition of riba otherwise the question of Islamic banking would not arise in the first place. A number of influential attempts were made against treating bank interest as prohibited riba of Islam.<sup>2</sup> However, the vast majority of religious scholars did not agree to have any distinction between interest and usury. In most cases their criticism of interest was based on the fact that it allowed the providers of funds claiming a fixed positive return irrespective of the situation of the lenders. The issue of inflation was perhaps not so severe at the time. Therefore, they generally ignored the injustice due to the prevalence of low levels of returns to bank depositors that at times could even go to the negative territories in real terms.

In the next phase, the movement of Islamic banking and arguments in favor of practical application of Islamic banking was taken over by Islamic economists who

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<sup>1</sup> Foremost among religious scholars, Syed Abul Ala Maudoodi who wrote an extremely persuasive book 'Sud' (interest) in Urdu language in 1961. In his seminal work, *Muslim Economic Thinking* (1980), M.N. Siddiqui mentions a number of early contributors including Muhammad Uzair, Baqir Al- Sadr, Abu Saud, Ahmad al-Najjar among others. The fourth to sixth decades of the twentieth century could be regarded as the early or the first stage of Islamic banking movement.

<sup>2</sup> For example Fazlur Rahman (1969) argued that the riba prohibited by the Quran was the doubling and quadrupling riba of *jahiliya*.

were generally trained in the western traditions.<sup>3</sup> They were quite certain that Islamic banking could be established through a two tier profit and loss sharing arrangements; on one hand between banks and fund providers, and on the other between banks and fund users. Most of the writings at this stage, even though very influential and persuasive, remained pedagogical and lacked the kind of mathematical rigor that had become the hall mark of modern macro and monetary economics.<sup>4</sup> Nevertheless, the arguments were well received by Islamic political movements in different Muslim countries including Sudan, Pakistan and Iran that saw installation of new governments through powerful pro-Islamic political organizations. Apparently, the governments were serious and also in a haste to establish Islamic banking at the country level.

The consideration of having an entire economy based on profit and loss sharing banking required a thorough analysis of its macroeconomic effects and an appropriate monetary policy. Fortunately, at this third stage some of the best minds among Muslim economists working in the prestigious western institutions were attracted. It brought the kind of rigor hitherto lacking in the theoretical analysis of Islamic banking. Several attempts were made to model a profit and loss sharing banking system often using a variant of IS-LM or a related model of conventional macro / monetary economics.<sup>5</sup> A general conclusion of these models was that a banking system based on profit and loss sharing would not create any problem for conducting traditional monetary policies of controlling money supply for price stabilization or other macroeconomic goals. It was further shown how a banking system based on profit and loss sharing mechanism would be inherently more stable and could also lead to a more desirable distribution of income. Most of these technical contributions came during 1980-1995.

For a number of reasons that we will later discuss in some detail, Islamic banks all over the world, instead of moving towards a profit and loss sharing banking relied more on debt like financing on their assets side. For all practical purposes, the need for a different monetary policy subsided and as a consequent we now see very little emphasis on research related to such policies. The Islamic banking movement has now been taken over by financial and banking experts who are generally working under an environment of competition with conventional banks. Their basic aim is to maximize profit for the share holders (or owners) of the banks with minimum exposure to business risks. The realization of this goal has manifested in heavy reliance on the use of debt like financing techniques after seeking approval of the same from their respective shariah boards. There has been a phenomenal growth in the number of Islamic banks all over the world but the lack of a profit and loss sharing Islamic banking (that I prefer to popularize with the acronym PALSIB) failed to necessitate any significant change in monetary policy and the required research to formulate or evaluate new policies.

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<sup>3</sup> For example, see Siddiqi (1969) and Uzair (1978) among many others. It would be pertinent to mention that Uzair, an economist and financial expert, wrote a short (21 pages) booklet on the practicality of Islamic banking in 1955 which is often regarded as the first important technical and professional work in the field.

<sup>4</sup> This is nothing to suggest that a meaningful contribution could not be made in these areas unless one uses some kind of a mathematical model.

<sup>5</sup> Khan, Mohsin (1986), Siddiqi, S. A. (1989a & 1989b), and Anwar, Muhammad (1987). During this stage, the contribution made by some Muslim staff members (such as Mohsin Khan & Abbas Mirakhor) at the International Monetary Fund was exceptionally influential.

## **2. Monetary Policy Issues Discussed in Earlier Writings**

A number of issues were discussed in the second stage of writings of Islamic banking. It would be pertinent to review these issues in some detail to see how these concerns were later addressed in macroeconomic or banking models for an interest free economic system

### **2.1 Objectives of Monetary Policy**

Iqbal and Khan (1981; 24-28) suggested three main goals of monetary policy for an Islamic economic system:<sup>6</sup>

- a) Economic well being with full employment and high rate of growth
- b) Socioeconomic justice and equitable distribution of income and wealth
- c) Stability in the value of money

While the first and the last goals above are generally included also in objectives of monetary policy set for a capitalist economic system, the inclusion of socio-economic justice and equitable distribution of income was certainly an important additional ingredient for a proposed Islamic economic system. An important goal of monetary policy in conventional economics, but not explicitly mentioned by Iqbal and Khan, is maintaining financial stability in the economy. As discussed in section 2.3 below they were more concerned about the apprehension that a system of financial intermediation entirely based on profit and loss sharing may create instability in the economy.

### **2.2 Money Creating Power of Conventional Commercial Banks**

Iqbal and Khan (1981) note that since money creation is a social prerogative, should the banks be permitted to create credit in an Islamic economy or the central bank enforces a 100 per cent reserve requirement. They mention that, among Muslim economists there are two schools of thought on this question. The first school favors 100 per cent reserve requirement on three grounds. Firstly, fractional reserves cause the monetary system to suffer from an “inherent instability” because any switch from ‘high powered money’ to ‘deposit money’ and vice versa, change the supply of money. With 100 per cent reserves, such a switch will change only the composition of money, leaving its total supply constant. Secondly, changes in the money supply arising from deposit creation or resulting from substituting deposits and cash make it more costly to maintain the existing stock of real balances or to add to it. Finally, there is an equity aspect to credit creation. Some people argue that it is inequitable to permit the commercial banks to create credit because the beneficiaries of this process are the banks themselves and the borrowers who are mostly big businessmen and industrialists and who pay a little interest to the banks and earn huge profits from these borrowed funds. From an equity

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<sup>6</sup> It should be noted that different chapters in Iqbal & Khan (1981) were based on the papers presented and discussed at a conference held in January 1981 in Islamabad. It was an important conference where a number of prominent Islamic economists expressed their views and gave suggestions for the future course of theoretical and practical development of monetary and fiscal policies for an Islamic economic system.

point of view, the benefits of the process of money creation should accrue to the whole society which can be best achieved through 100 per cent reserve system.<sup>7</sup>

The other school while recognizing these problems proposes to solve them within the framework of fractional reserve system. If there are suitable checks and balances, they argue, the process of money creation will not be unstable. As far the equity consideration, they maintain that it is not true that the beneficiaries of credit creation are only banks and the big industrialists and businessmen. If feedback effects are taken into account, then the benefits are much more widespread. More importantly, the fact that at present the direct beneficiaries of credit creation are big industrialists is not a natural or necessary outcome of the system of fractional reserves. Measures can be adopted to ensure that the allocation of the derivative deposits is such that the benefits are more equitably distributed.<sup>8</sup> Iqbal and Khan noted that this was a subject where further research was required to establish whether a fractional or a 100 per cent reserve system will serve the needs of an Islamic economy in a better way. They claim that there was agreement among Muslim economists that both the stability of the value of money and equitable distribution of income and wealth are of fundamental importance to Islamic economic system. Therefore, if fractional reserve system was permitted, there must be checks *both* on the *creation* of credit by commercial banks and on its *allocation*.

### **2.3.1 Stability of the Economy Under a Profit and Loss Sharing System**

There were some apprehensions that abolition of interest from the banking system and its replacement by a profit and loss sharing system might lead to financial instability. The argument was that profit and loss sharing Islamic banking, with its two tier *mudarabah* arrangement on both liability and asset sides will leave the rate of returns to banks and their depositors uncertain. This would be true even when the rate of profit and loss sharing between the depositors and the banks on one side and the banks and the funds users on the other could be predetermined and known in advance. As the levels of profits accruing to the investments made by the banks will not be known in advance, the rate of profit would remain unknown. This may cause perplexity among funds providers and could lead to wild fluctuation in the supply of investable funds. Muslim economists, as noted by Iqbal and Khan (1981; 72-73), however, emphasized that there are built-in forces in Islamic economic system to ensure stability. Most of the arguments made in this regard were based on intuition, and the need for more rigorous and analytical work was stressed.

Siddiqi (1982) was an analytical paper that attempted to prove that introduction of ratios of profit-sharing to replace rate of interest will not destabilize the economy and that the changes in the entrepreneurial profit will not get communicated back all along the line.<sup>9</sup> It went further to establish that the system based on profit sharing will also ensure a better allocation of resources and more equitable distribution of wealth. The paper adopted a partial equilibrium approach to demonstrate how the mechanism of the determination of supply and demand for savings and advances will remain same as in the theory of loanable funds of modern economics. It showed how the system will tend to fall back to the equilibrium position if certain forces created disequilibrium. The paper, which was described as a preliminary exploration in the monetary dynamics in an Islamic economy, however, was not very rigorous. Much more than the partial equilibrium theory of loanable funds approach was needed in this respect. The theory of

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<sup>7</sup> Iqbal and Khan (1981; 14-15)

<sup>8</sup> Iqbal and Khan (1981), pp. 14-15.

<sup>9</sup> As noted by Iqbal and Khan (1984), pp. 72-73. Siddiqi's article was first presented at a seminar held in Islamabad in January, 1981.

loanable funds cannot describe what we call an Islamic economy. Also the replacement of interest by the ratios of profit-sharing will not affect the capital market only but will have repercussions for the whole economy. To simply demonstrate that the introduction of profit-sharing system will not destabilize capital market does not mean that the whole economy will remain stable. The stability has to be seen in the context of general equilibrium in the economy.<sup>10</sup>

Ali Khan (1981) adopted a general equilibrium approach and argued that there is no reason to doubt the instability of an economic system simply because the price of one of the factors is an uncertain variable. It would depend on what commodities and factors we treat in our model, particularly what treatment we give to 'uncertainty' and 'risk'. This paper did not answer the question as to how the introduction of a profit-sharing system will affect the capital market and other sectors of the economy.<sup>11</sup>

## 2.4 The Role of Profit Sharing Ratio

After making some persuasive arguments to merge capital and entrepreneurship into one factor of production for an Islamic economic system, Uzair (1980) discussed the issue of profit sharing ratios at the two tiers of mudarabah financing that would prevail in a profit and loss sharing Islamic banking system; one between the depositors and the bank, and the other between the bank and the ultimate or actual user of the fund or the entrepreneur. There may be, for example, an arrangement that the entrepreneur and the bank would share the profit in a ratio of 50 per cent each, or 60 per cent for the entrepreneur and 40 per cent for the bank, or any such ratio which may be agreed upon between themselves or regulated by the government or the central bank. Similarly, there will be an arrangement between the bank and the supplier of capital for sharing the profit in the ratio of 50 per cent each or 60 per cent for the bank and 40 per cent for the supplier of capital funds or the depositors. This may seem at first sight to be a complex arrangement, but once the system is introduced and begins to operate in practical life, it will become as mechanical and routine as the present-day system wherein banks charge a higher rate of interest on certain categories of deposit while paying nothing to some types of depositors, e.g. the current account depositors.<sup>12</sup>

According to Uzair, whether percentage or the ratio for sharing the profit between the entrepreneurs (borrowers) and the banks on the one hand, and that between the banks and the depositors on the other, should be determined in the normal course of business activities and bargaining or should be regulated by the government or central bank as a policy variable or a political decision by the government either arrangement would serve the purpose as far as the conceptual framework is concerned. The decision will have to be taken in the light of the actual circumstances prevailing and the inclination of the people who make the decision. On the face of it, it may seem that a ratio of two thirds for the users (65 per cent) and one third for the suppliers (35 per cent) would seem to be a reasonable arrangement because this would be a good via media. In the extract given, one extreme being the 50 per cent for each party, and the other extreme being one quarter for the supplier and three quarters for the user of capital. However, the central bank of the country can be empowered to introduce slight modifications in the details of the terms and conditions from time to time, depending

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<sup>10</sup> *ibid.*

<sup>11</sup> *Ibid.*, p. 73.

<sup>12</sup> Uzair (1980; p. 47)

upon the overall economic situation and the expansionary or contractionary policy pursued by the central bank in the interest of the overall national economic well-being of the country. This power would be analogous to the power to change the "bank rate" in the present system.<sup>13</sup>

Iqbal and Khan (1981; 75-76) discussed the possibility of using profit sharing ratio as a means of monetary tool for allocating resources according to social priorities. However, they also had the concerned that this could be questioned for its possible distortion of an otherwise equitable distribution of profit in different sectors brought about by the market sources.

According to Iqbal and Khan, the absence of rate of interest does not take away the tools of monetary policy because the profits-sharing rates can serve as monetary tools. Furthermore, although a view exists that the spirit of the system of profit-sharing is based on the concept of equitable distribution of profit and, therefore, the tools cannot be used for allocative purposes, the possibility of using these tools by monetary authorities to achieve some allocative objectives without adversely affecting the equity concept, cannot be over-ruled completely (Iqbal and Khan; 75-76).

## 2.5 Financing of Government Budget Deficits

According to Iqbal and Khan (1981; 14) there is nothing good or bad in deficit financing *per se* but it has been an important source of excessive monetary expansion and inflation. This does not, however, rule out fiscal deficits but imposes the constraint that deficits be allowed only to the extent necessary to achieve broad-based well-being within the framework of stable prices. The government could have genuine needs for which it has to borrow and arrangements must be made to enable the government to do so in a non-inflationary manner (1981; 14).

Iqbal and Khan (1982; 74) emphasized that analysis of the economics of profit-sharing was needed to answer the following questions:

- (a) What are principal economic determinants of the supply of savings, supply and demand of bank deposits and advances and the demand for investment in an Islamic economy?
- (b) What will be the nature of consequences of replacing interest by ratios of profit-sharing not only on the equilibrium in the capital market but on the general equilibrium in the economy? The public sector (taxes and tariffs), the foreign sector (particularly the international prices), economic activities in the real sector are some of the important variables to be included in such analysis that is aimed at tracing the economic consequences of the introduction of a system. It will also be instructive to demonstrate if there is any relationship between profits resulting from *mudarabah* (profit-sharing) and profits resulting from other activities in the economy.
- (c) What will be the role of central bank in the profit sharing system and how would it affect or control the consequences of the system is also an area for further research? If a central bank exists and if the ratios of profit-sharing can serve as tools for

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<sup>13</sup> Ibid.

achieving the objectives of the monetary policy, then it needs to be established what would happen to these objectives if the system is stable or unstable.

- (d) Will the system remain stable if there is also a stock market operating in the economy? The share market will be in direct competition with the banks. An analysis of the consequences of profit-sharing system will have to include share market also.
- (e) If the theory of loanable funds is to be followed to trace the effects of profit-sharing, the ratios of profit-sharing will not be the correct variables for the analysis, as they cannot be considered to be the determinants of supply of and demand for deposits/ advances. To explain supply of and demand for deposits/advances, the appropriate variables should be the rates of return to banks/depositors/entrepreneurs.

A survey of literature created after the publication of Iqbal and Khan (1981) may be able to conclude as to what extent the questions raised above has been satisfactorily answered.

### **3. Profit and Loss Sharing Banking System, Macroeconomic Stability and Monetary Policy: A Survey of Theoretical Models**

As discussed in the previous section there were concerns that by removing all financial assets with sure and fixed rate of returns may have negative effects on savings, investment and consequently lead to economic stability. It was also not clear if and how conventional monetary policy and tools could be used in the new system. In this section we would like to have a critical look at some of the important theoretical models that were developed to answer a number of questions raised by both proponents and skeptics of Islamic banking.

#### **3.1 Macroeconomics Models for an Islamic Economy**

One of the earliest and important contributions in the area of Islamic banking and its implications for monetary policy was that of Mohsin Khan (1986) published in IMF Staff Papers. Written in a conventional setup this paper not only used suitable mathematical models to deduce some important implications of a profit and loss sharing Islamic banking, it quite intelligently contrasted it with the problems associated with financial intermediation carried out by conventional banks. It also discussed the concerns raised by prominent western economists against fractional reserve banking. It was an important work that brought the concept of profit and loss sharing Islamic banking to the western professional audience. It could be also seen as an attempt to start the type of work that was envisaged by Iqbal and Khan (1981).

Mohsin Khan set four major goals for his paper: first, to show that the Islamic banking system can be rationalized in a neoclassical framework; second, to demonstrate that, the model underlying Islamic banking is not totally alien to western

economic thinking;<sup>14</sup> third, to argue that there may be circumstances in which an Islamic banking system would be relatively more stable (in strict mathematical sense) than the traditional, or interest-based banking system in the face of certain types of shocks; finally, to propose how the Islamic banking system should be implemented so as to maximize its inherent benefits.

To make his point Mohsin Khan modified a model first presented by Metzler in 1951 and later extended by Fernandez in 1984. The model has three markets; capital, money and goods. He came up with the following three final equations

$$S/P = s = y/r \quad (1) \quad \text{where}$$

$S$  = nominal value of shares issued by the banks to the depositors

$P$  = price level (assumed to be fixed like in Keynesian models)

$s$  = real value of shares

$y$  = real income of the bank which is the only firm in the economy

$r$  = real yield or real rate of return on shares

Equation 1 shows the balanced sheet of the bank; the left hand side being the liabilities and the right hand side representing the assets. Equilibrium in the money market could be ensured through demand and supply of money

$m/s = g(r)$ ,  $g_r < 0$ , where  $m = M/P$  exogenously determined by the government, or

$$m = g(r) \cdot y/r \quad (2)$$

The goods market was represented by the following equation:

$$y^d = C(r, w) + I(r) \quad C_r < 0, C_w > 0, \quad I_r < 0, \quad \text{where } w = m + y/r = \text{total wealth in the economy}$$

$$dy/dt = \beta [C(r, m + y/r) + I(r) - y] \quad \beta > 0$$

where the expression inside the brackets is excess aggregate demand. This can be written as a reduced-form equation:

$$dy/dt = f(r, y; m) \quad f_r < 0, f_y < 0, f_m > 0 \quad (3)$$

Mohsin Khan uses equation 2 for money market and equation 3 for goods market to draw a diagram for a dynamic version of IS-LM model to determine the equilibrium values of the real rate of return  $r$  and of real income  $y$ .

The main conclusion of Mohsin Khan's above model was that a shock to income level in the economy (that only consisted of bank income from its investment) will be quickly adjusted through an excess demand in the goods market created by an immediate lowering of *rate of return*  $r$ . The fixity of interest rate in the conventional system does not allow this quick return to normal level of income in the conventional system.

However, it is not clear how this lowering of  $r$  would necessarily increase the demand for goods in the economy. The lower  $r$  in the model represents a lower level of profit in the economy (the only source of income) due to certain shock. Why should it increase the consumers' demand for goods? In the conventional

<sup>14</sup> It was pointed out that out that variants of such a system had appeared in the writings of a number of eminent economists, such as Fisher (1945), Simons (1948), and Friedman (1969).



system a lower interest increases  $C$  as consumer durables become less expensive but it is not the same for an interest less economy. A low rate of return meaning a low level of income can actually dampen consumer demand for goods for an interest-less economy. Similarly, a low level of  $r$  represents a low level of profits for the producers too.

The  $r$  in the model should not represent cost of funds (loanable funds) for the producers. What must, however, could be emphasized through this model is that a lowering of  $r$  will not have the kind of impact producers experience in the conventional capitalist economy because of the fixity of the interest rate. As the shock to economy is largely absorbed by the financiers in a profit and loss sharing economy, producers of goods and services will have comparatively reduced compulsion to layoff workers. This would limit the ripple effect of the initial shock and, depending upon the nature of the shock, would bring back the economy on the track comparatively much sooner than that of a conventional capitalist economy. In our opinion, the model could be modified by redefining the investment as well as the consumption function. Similarly, it would be quite necessary to do further thinking as to how different would be the role of  $r$  in this model than that of the rate of interest in the conventional IS-LM models.

In order to consider how things would be different from the above IS-LM type model, Mohsin Khan extended his analysis to consider the alternative case in which output is exogenously given and prices adjust to excess aggregate demand, corresponding more like to the classical system. Equation 2 in the fixed price model remained applicable to the flexible price model. Equation 3 was adjusted to get the following equation:

$$dm/dt = -f(r, m; y^*) \quad f_r < 0, f_m > 0, f_y < 0 \quad (4)$$

Instead of changes in output, it would be changes in  $m$  that would bring necessary adjustment to get the economy back to an equilibrium position. Unlike the fixed price model where  $y$  was allowed to go back to the original level, it was puzzling to note that the flexible price model did not say whether the output level would eventually go back to the original level or stay at the same aftershock level. The classical model generally assumes that output level is fixed at the natural level in the long run. Also, the flexible model continued to rely on the excess demand created in the goods market as the source of adjustment in the economy. It implicitly works with the assumption that a decrease in real rate of return  $r$  would make the demand for goods and services greater than the lowered (after shock) level of  $y$  and create an excess demand for goods and services pushing prices up and eventually restoring equilibrium in both money and the goods market.

Our critical observation related to the fixed price model, therefore, remains valid for the flexible price model as well. Mohsin Khan himself observed that his was the first attempt to provide a technical apparatus to highlight some basic but quite distinctive features of an Islamic banking system. Its main thrust was to show how an Islamic system could solve the problem of inherent instability of a capitalist banking system with fixed rate of interest on both its liability as well as asset sides.

Mohsin Khan and Mirakhor's suggestion of treating transaction and investment deposits of Islamic banks separately and requiring 100% reserve ratio for the former was mainly to provide another source of financial stability also favored by a number

of western economists. They did not discuss the distributional implications of fractional reserve banking.

Mohsin Khan and Mirakhor (1989) considered a closed economy assumed to be composed of commercial banks, the central bank, and the non-bank public. In addition to financial assets, the model contained a single (composite) commodity that was both produced and consumed domestically. Commercial banks are assumed to offer only investment deposits (Db) to the public and pay a rate of return ( $r_b$ ) that is based on profits from their operations. If  $\pi$  represents distributable profits of banks, and  $\lambda$  is the share of the depositor, then

$$r_b = \frac{\lambda \pi}{D_b} \quad \lambda > 0, \pi > 0$$

Banks can borrow from the central bank only on an equity-participation basis. That is, the central bank purchases equity in the bank when it wishes to expand reserves in the system, and vice versa. Therefore, an additional source of funds for commercial banks becomes the sale of equity shares (Eb) to the central bank. As in the case of investment deposits, the rate of return on equity shares ( $r_e$ ) would depend on the overall profit position of banks.

On the lending side banks engage in only risk-return sharing mudarabah arrangements with the public. Mudarabah financing (Fb) in this case is assumed to subsume all other types of similar arrangements, such as musharakah financing. As in the case of investment deposits, the profits earned from the projects financed by the bank ( $\pi$ ), are shared between the bank and the entrepreneur on a prearranged basis. The rate of return the banks receive will be related to the rate they pay on their liabilities, with the spread essentially covering operating and other costs. If such costs are assumed to be zero, the rate of return on loans will be equal to rate of return on deposits. The banks would thus be receiving:

$$r = \frac{\gamma \pi}{F_b} \quad \gamma > 0, \pi > 0$$

where  $\gamma$  is the profit-sharing ratio in favor of the bank. The rate of return to the borrower would correspondingly be equal to  $(1 - \gamma) \pi / F_b$ , so that an increase in  $r_b$  brought about by a higher  $\gamma$  would reduce the demand for loans. Banks are also required to hold a certain proportion of their liabilities to the public (Db) in the form of reserves with the central bank (Rb).

The central bank's liabilities consist solely of reserves of commercial banks (Rc). Since there is no currency held by the public in the model, high-powered money in the economy is definitionally equal to the stock of bank reserves. On the asset side the central bank holds equity shares of commercial banks (Ec), and the rate of return ( $r_e$ ) on these is market determined. The supply of reserves is changed by the central bank through variations in its stock of bank equity shares ( $\Delta E_c = \Delta R_c$ ), which in turn alters the cost of borrowing for the banks.

Since commercial banks are the only financial intermediaries in the economy,

investment deposits in the banking system represent the financial wealth of the public. Total wealth of the public is, thus, equal to financial wealth and its stock of capital (K). The public has basically two sources of funds: first, *mudarabah* financing obtained from banks (Fp), and second, its own savings (S).

Mohsin Khan and Mirakhor used a simple IS-LM type macroeconomic model to incorporate the balance sheet restrictions on households, banks and the central bank. They made three simplifying assumptions; no distinction between real and nominal income, all expectations were supposed to be realized and the economy and its financial sectors were continuously in equilibrium (making it a comparative static analysis). Each economic variable is, thus, defined as a deviation from its respective equilibrium value.

The real side of the economy is represented by a function relating the excess of investment over savings to the rate of return on bank (*mudarabah*) financing, the level of national income, and total net wealth of the public:

$$(1) (I - S) = -a_1 r_b - a_2 Y + a_3 W_{-1} \quad \text{where,}$$

I = investment;

S = savings;

$r_b$  = rate of return on bank financing

Y = national income, and,

$W_{-1}$  = total net wealth of the public, defined as  $K + D_p$ , at the beginning of the period.

Equation (1) will be recognized as being simply an IS relationship, derived assuming that investment is a negative function of the rate of return on *mudarabah* financing, and savings a positive function of income. Net wealth at the beginning of the period is assumed to affect both investment and savings, with the former effect dominating. Given the underlying relationships all the parameters in equation (1) are written to be positive.

For the derivation of LM relation, three financial assets are introduced in the model: bank loans, investment deposits, and equity shares of commercial banks. Starting with the loan market, the public's demand for *mudarabah* financing is specified as a function of the banks' required rate of return, and net wealth at the beginning of the period:

$$(2) \Delta F_p = -f_1 r_b + f_2 W_{-1}$$

(The negative sign before  $f_1 r_b$  in equation 2 was missing in the article. However, this must have been a typographical mistake as the error was not carried over to equation (5).

The banking sector's supply of *mudarabah* financing is specified as a positive function of the rate of return, and a negative function of the cost of borrowing for banks.

$$(3) \Delta F_b = s_1 r_b - s_2 r_e$$

Changes in the public's demand for investment deposits are derived from the balance sheet constraint:

$$(4) \Delta D_p = \Delta F_p - (I - S)$$

Substituting equations (1) and (2) into equation (4) one can obtain:

$$(5) \Delta D_p = -(f_1 - a_1) r_b + a_2 Y + (f_2 - a_3) W_{-1}$$

(The original article has  $f_3$  instead of  $f_2$  which must have been typographical mistake).

The reserves of the banking system are given by the following definition:

$$(6) \Delta R_b = k \Delta D_p \text{ where } k \text{ is the reserve ratio.}$$

If the banking system passively meets the demand for deposits,  $\Delta D_b = \Delta D_p$ , the following four markets are left:

$$(7) (I - S) + (\Delta F_b - \Delta F_p) + (\Delta R_b - \Delta R_c) + (\Delta E_c - \Delta E_b) = 0$$

One can thus take advantage of Walras Law to eliminate anyone market. The model chooses to drop the equity shares market,  $(\Delta E_c - \Delta E_b)$ . The central bank adjusts the supply of reserves to the system by varying its holdings of equity shares of banks:

$$(8) \Delta R_c = \Delta E_c$$

Given that the equity shares market is determined through (7), the equilibrium conditions of the model, that is,

$$(9) \Delta F_p = \Delta F_b \quad (10) \Delta R_c = \Delta R_b \quad (11) I = S$$

allow to solve for the three endogenous variables, namely the rates of return on mudarabah financing ( $r_b$ ) and equity shares ( $r_e$ ), and the level of national income ( $Y$ ).

Given the assumed signs of the relevant parameters, an increase in the rate of monetary expansion will lower the rates of return on financial assets, and will raise the level of national income. This corresponds to the result obtained in the familiar IS-LM model when there is an outward shift in the LM curve. Suppose the central bank, instead of choosing to target the overall money supply, decides to use mudarabah financing ( $\Delta F_b$ ) as the operative variable and again adjusts  $\Delta R_c$  to achieve its target. In this case the central bank would have to ensure that the supply of mudarabah financing is equated to the demand.

According to Khan and Mirakhor, the solutions of the model clearly showed that it is a matter of indifference as to whether the authorities attempt to influence monetary conditions through changing the money supply, or use the flow of mudarabah financing as an intermediate objective. Both types of monetary policy measures yield identical effects on the financial rates of return in the system, and on the level of national income. To them, this is what one would expect to observe in a closed economy, where there is no economic difference whether the monetary authorities choose to focus on the liability or asset side of the balance sheet of the banking system. What is more important, they claim, is that exactly the same solutions would have been obtained if one was working with a traditional financial system with a predetermined rate of interest on deposits. As long as lending rates are fully flexible, the two systems turn out to be formally equivalent from the standpoint of monetary policy. This result, according to them, while obtained for a

closed economy also carries over to the more realistic case where trade in goods and financial claims is possible. As is well known, in an open economy with a fixed exchange rate, the money supply can no longer be treated as an exogenous policy instrument as variations in it can be brought about through balance of payments surpluses and deficits. Consequently, it is the domestic component of the money stock. i.e. domestic credit, that becomes the relevant instrument of policy. In the Islamic system *mudarabah* credit is the counterpart to domestic credit, and accordingly can be used in the same manner to alter domestic financial conditions to achieve the desired results on macroeconomic variables in an open economy.<sup>15</sup>

Hasan (1991) raised a number of questions against certain aspects of Mohsin Khan and Mirakhor's model and the conclusions drawn from the same. He admitted the fact that the rate of return ( $r$ ) the banks receive on loans must in some way be related, as Khan and Mirakhor hold, to the rate ( $r_b$ ) the banks pay on their liabilities. But he pointed out that even with the simplifying assumptions of operational and other costs of bank being zero,  $r$  and  $r_b$  could not be equal. He claimed that if one can show that  $r_b < r$ , the conclusions of the models could be questionable as the whole exercise was hinged on the equality of these two rates. According to Hasan, the equality of the two rates was just not possible under a "two tier *mudarabah*" based banking.

In our opinion, the observation made by Hasan was due to the omission of Mohsin Khan and Mirakhor's another assumption that they did not make explicitly; all bank loans are made from depositors' funds and nothing from bank's own (equity) funds. This would make  $F_b$  and  $D_b$  equal and with no cost incurred by the bank,  $\lambda$  would become 1. Thus return to the bank  $r$  and that to the depositors  $r_b$  will be the same.

Zubair Hasan's another observation in this regard that in *mudarabah* financing the role of profit sharing is not the same as that of loss sharing is valid. However, in my opinion, it was not necessary to use *mudarabah* financing assumption for bank's assets side. A *musharakah* arrangement on the asset side could have allowed using the same formula for any value of  $\pi$ , positive or negative (assuming that profit and loss were shared in the same proportion). Alternatively, it could have been said that in case of a loss,  $\gamma$  would be equal to 1 (a point not observed by Zubair Hasan), depicting the fact that all losses would be incurred only by the banks as required under a *mudarabah* financing. Mohsin Khan and Mirakhor made a further error; they first used  $\pi$  as the profit of the bank in their calculation of  $r_b$ , and then used the same  $\pi$  as the total profit of the projects financed by banks (of which only a fraction of  $\gamma$  will be received by the bank) in the calculation of  $r$ . Their main aim was to make the point that the rate of return to the bank and that of the depositors would be the same under the assumptions that there were no costs involved in financial intermediation and that banks did not use any of their own fund. In my opinion, therefore, these problems of the model could be set aside and see whether the rest of the model did make a significant contribution in getting some insights in understanding the characteristics of a profit and loss sharing financial system and the efficacy of monetary policy.

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<sup>15</sup> Khan and Mirakhor (1987; 53).

Another observation made by Zubair Hasan's (1991) was that in this model investment is an exogenous variable. However, investment was explicitly assumed to be a negative function of  $r$  (p.50) and also positively affected by  $W_{-1}$ . Some of Zubair Hasan's criticism (given in section 4 of his commentary) thus becomes a bit less important. However, I am much more sympathetic to his following comments:

“Clearly one cannot accept at face value the inferences drawn in Khan and Mirakhor based as they are on an untenable equality of rates ( $r_b=r$ ) proposition. Of greater consequence is, however, their replacing of the rate of interest in the secular model by a rate of profit for its Islamization. Indeed, not a few Islamic economists have been attracted to adopt this course either directly or via the sharing of profit ratio, presumably because it makes things (look) so easy. The demand and supply apparatus remains intact in the money market and its linkage with the commodity (and services) market is not disturbed. Simplicity is a virtue, but must be avoided if it tends to become misleading.

In secular economics interest is essentially viewed as a price for parting with liquidity. In contrast, profit is thought of as a reward linked with investment. Unlike the rate of interest, the rate of profit may be negative. The outside limit for the liquidity trap is the zero rate of interest. What this limit will be in the case of a profit rate? "The importance of the liquidity trap stems from its presenting a circumstance under which monetary policy has no effect on the interest rate and thus, on the level of real income" (Dornbusch and Fischer 1987, p.146). Can we erect a parallel proposition for the rate of profit? Is it possible to visualize a situation in which a profit rate could, for such a reason, fail to have any effect on the level of real income? How will the replacement influence the position and shift of the LM curve? Such questions require a more careful investigation than has so far been carried out." (p.88)

Let us look at equation 2 of the model. It says that public's demand for mudarabah financing will be a negative function of  $r$ . Now, this perception is based on how the interest rate affects demands for loans in a conventional economy where it is explicitly included in the cost of production. In a profit and loss sharing economy (and particularly in this model)  $r$  is not only the return to the bank but also return to the depositors. A high level of  $r$  (with positive expectations about profits) means a high expected level of income for depositors and hence a high level of savings through the first equation representing the goods market. Again it was assumed in the first equation that savings is positively related to  $Y$  but  $I$  was only related to  $r$  rather than both  $r$  and  $Y$  that has now become a common practice in designing macroeconomic models.<sup>16</sup> But even when we assume that the user of funds and the supplier of funds are not the same people from the public, will an increase in  $r$  must discourage the funds users or entrepreneurs? An increase in  $r$  could be a result of increase in  $\pi$  or  $\gamma$  in this model. While keeping  $\pi$  constant and increasing  $\gamma$  may discourage the funds users, an increase in  $r$  due to an increase in  $\pi$  may not have any negative effect on them. On the other hand if the increase in  $\gamma$  was a result of a decrease in  $\pi$ , then reduction of  $r$  may not be enough to induce entrepreneurs to increase investment. Perhaps thinking on these lines has always been missing from most of the models that used a variant of conventional models to get insights into the working of a profit and loss sharing economy.

Another observation one can make is that equation 4 could have been written as  $\Delta D_p + \Delta M = \Delta F_p - (I - S)$ . This basically says that any demand for funds that could

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<sup>16</sup> For example see Blanchard (2006), chapter 5.

not be satisfied from public's own resources is either financed through the increase in mudarabah financing from banks or through increase in the money supply. In our opinion, the central bank should be providing funds to the banks without demanding any thing in return if the issue was to ease the liquidity situation and avoid any run on bank. In case the additional money was provided to meet investment demand for profitable projects in good economic conditions, this may not necessarily lead to a reduction in the rate of profits in the economy, and consequently to banks and their depositors. We must emphasize therefore that the nature of profit sharing is quite different from charging of a fixed rate of interest.

Anwar (1987) was another significant attempt to provide the much needed theoretical model for a profit and loss sharing Islamic economy. Unlike Mohsin Khan's model Anwar's model does not addresses the issue of financial intermediation as its focus was somewhat different. He used Sargent's (1979) "classical" macroeconomic model which synthesized major classical beliefs with some Keynesian assumptions related saving and investment behaviors in the economy. The choice of Sargent's model was also due to its tractability, sophistication, realism of assumptions, relevance of some of the behavioral assumptions for Islamic economics, and its general acceptance by the profession at that time (Anwar: 1987; 21). According to Anwar, the classical view that saving was mainly determined by the rate of interest was intolerable for Muslim economist. On the other hand the Keynesian position (adopted by Sargent) that saving is mainly determined by income was much closer to the Islamic view. Similarly, the classical economists' preference for a balanced budget and their view on the motives for holding money (i.e., for transaction purpose only) was much more acceptable for Islamic economists (Anwar: 1987; 22).<sup>17</sup>

With modifications made for an Islamic profit and loss sharing system Anwar came up with a set of equations to serve as a theoretical macroeconomic model for what he called an interest-free economy. Tab 1 below shows both Anwar's and Sargent's macroeconomic models. The equations in these models were derived from the microeconomic behavioral relationship assumed for the two systems. The validity and results of the models, therefore, hinges on the assumptions being made and requires some critical analysis.

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<sup>17</sup> According to Anwar, although Sargent's model does not acknowledge it, the Classical model is based on Friedman's theory of demand for money. According to this theory, money is held only as a temporary abode of generalized purchasing power. The market value of the money is independent of the interest rate, the conversion cost of money is zero, money earns no interest, and money serves as a means of payment. The economic function of money is to separate a sale from a purchase and to permit exchange without barter. Again, since money is used only as a medium of exchange and not for speculation, these characteristics of money are accepted in Islam (Anwar: 1987; 35).

**Table 1**  
**Comparison of Anwar's and Sargent's Models**

	Anwar's Interest Free Model	Sargent's Classical Model
1	$w/p = F_L(K, L)$	$w/p = F_N(K, N)$
2	$N = N(w/p)$	$N = N(w/p)$
3	$Y = F(K, L)$	$Y = F(K, N)$
4	$C = C[Y - T - \delta K - \{ (M + \Phi)/p \} \pi + \{ (K, L, k, \theta, \delta, \pi) - 1 \} I; (k\theta - \pi)]$	$C = C[Y - T - \delta K - \{ (M + B)/p \} \pi + \{ (K, N, r - \pi, \delta) - 1 \} I; (r - \pi)]$
5	$I = I\{ \eta(K, L, k, \theta, \delta, \pi) - 1 \}$	$I = I\{ q(K, N, r - \pi, \delta) - 1 \}$
6	$Y = C + I + \delta K + G$	$Y = C + I + \delta K + G$
7	$M/p = m(k, Y) \quad m_k < 0 \text{ and } m_y > 0$	$M/p = m(r, Y) \quad m_r < 0 \text{ and } m_y > 0$

Lets us look at the reasons behind the apparent differences in the two models. The N and L (letter generally used for labor input) are used for the same labour input but they have slightly different meanings. Sargent's classical model includes both entrepreneurial labour as well as the workers hired by them. In Anwar's interest-free model entrepreneurs share part of the profits of the firms rather than receive fixed wages. However, the effect of this difference is nowhere discussed by Anwar.

In Sargent's classical model, firms deduct the user cost of capital  $(r + \delta - \pi)pK$  as expense from the total revenues to compute their profits.<sup>18</sup> The user cost contains three components: depreciation cost =  $\delta pK$ , change in the value of the capital due to anticipated inflation =  $\pi pK$  and the cost of capital =  $r pK$  determined on the basis of the fixed rate of interest,  $r$ . In Anwar's interest-free model the financier receives  $k$  % of the 'Islamic profits' as a reward for the use of the capital instead of interest income. 'Islamic profits' are equal to the total revenues less the total costs, where total costs do not include return to capital and entrepreneurial labor.

In Sargent's model firms undertake those projects for which marginal productivity of investment is greater than or equal to the user cost of capital. In Anwar's interest-free model firms view the expected profit-share of the financier as the capital finance cost. The most important (and perhaps most debatable too!) is his assumption that firms and financiers know the 'normal' rate of Islamic profits in the economy; the rate of Islamic profits being  $\theta (= (pY - wL)/pK)$ .<sup>19</sup> The 'normal' rate of Islamic profits is used to negotiate the profit-sharing ratios,  $(1 - k):k$ , in which entrepreneurs and capital financiers share the expected Islamic profits respectively. Therefore the profit-share of the capital financier  $k\theta pK$  is the expected finance cost to the entrepreneur. It was thus suggested that the term  $(r + \delta - \pi)$  representing the user cost of capital in the Sargent's model be replaced by the term

<sup>18</sup>  $r$  stands for interest rate,  $\delta$  for rates of depreciation,  $\pi$  for rate of inflation,  $p$  for price level and  $K$  for physical capital.

<sup>19</sup>  $w$  being the wage rate.



$(k\theta+\delta-\pi)$  to represent the same in an interest-free economy. One can easily observe that by assuming the rate of profit  $\theta$  to be known, and  $k$  being left to be determined by the system (as  $r$  is determined by the market in the classical system), there would be little difference between the two user costs of capital.

In the classical model, the goal of the firm is to maximize economic profits. It is assumed that a typical firm in the interest-free economy is interested in maximization of its profit-share,  $\Omega_i$  which is calculated after deducting labor and capital costs from total revenue i.e.,

$$\Omega_i = p F_i (K_i, L_i) - wL_i - (k\theta+\delta-\pi) pK_i$$

where  $F_i (K_i, L_i)$  is production function or output.

The corresponding investment demand in Sargent's classical and Anwar's interest-free model are:

$$I = dK/dt = \{ F_K - (r+\delta-\pi) / (r-\pi) \} = I(q-1)$$

$$I = dK/dt = \{ F_K - (k\theta+\delta-\pi) \} / (k\theta-\pi) = I(\eta-1) \quad \text{where}^{20}$$

$$q = [ \{ F_K - (r+\delta-\pi) / (r-\pi) \} + 1 ] \text{ and } \eta = [ \{ F_K - (k\theta+\delta-\pi) \} / (k\theta-\pi) \} + 1 ]$$

Apart from the difference between  $L$  and  $K$  mentioned above, the main difference between this profit function of the  $i$ th firm in Anwar's interest-free model and that of Sargent's classical model is that  $r$  or interest rate is replaced by  $k\theta$ . However, as  $\theta$  is assumed to be known to both the financiers and the firms,  $k$  is left as one of the variables determined by the system of equations. The other six variables determined by the system are labor employment, real wage rate, real output, real consumption demand, real investment demand and price level. The classical system differs from Anwar's model in determining nominal rate of interest instead of  $k$ . Anwar asserts that, unlike the classical system, any increase in the profit-share of the firm necessarily leads to a corresponding increase in the profit-share of the financiers in the interest-free economy. However, this is true if the increase in profit share comes only through  $\pi$  without any change in  $k$ . In our opinion the financiers and the firm would keep maneuvering over  $k$  same as being done over  $r$  in the classical case, keeping the expectations about profits unchanged.

It can be argued that firms in an Islamic system should not treat the payment to capital as a cost of capital because capitalists would be paid from the residual income. However, as long as  $k$  enters into the profit function as well as the consumption function (through disposable income, please see equation 4 in Table 1), suppliers and demanders of investable funds will keep struggling over it. Furthermore, the higher the demand for funds, higher would be  $k$  which could have same negative effect on level of investment as in the case of fixed interest. As long as this happens the investment will not be carried over to the point where the marginal efficiency of capital becomes unity (as suggested by Haque and Mirakhor (1987b)).

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<sup>20</sup> Anwar notes that although Sargent states that investment demand directly depends on the gap between the marginal product of capital and the user cost of capital, the investment demand is assumed to actually depend on the gap relative to the anticipated real rate of interest (Anwar: 1987; 29).

The other problem is that while in the classical model the value of  $r$  could be more or less same for all firms irrespective of the volume of financing, the value of  $k$  cannot be the same for different mudaribs, a point generally missed by almost every model developed by Islamic economists. Later in this paper we will show that in a mudarabah arrangement,  $k$  should become smaller and smaller as the volume of financing increases. As for musharakah,  $k$  will also be generally related to the proportion of investment financed by outside sources. Any extra payment for management of investment in a musharakah arrangement will be settled either through a fixed payment for such services or a decrease in  $k$  the magnitude of which will again depend on the volume of investment by the financiers.

A somewhat different but related issue is the desirability of a profit sharing arrangement under certainty. In the context of agricultural farming it is often argued that leasing of farm land on a fixed rent basis is more efficient than share cropping as the farmer receives the residual output. It is being argued that a farmer's incentive to work hard reduces knowing that half (or so) of the produce would go to the land lord. The advantage of a sharing arrangements in farming emanates from its ability to share the downside risk. Any model with a deterministic framework deprives itself from gaining a meaningful insight useful to understand the working of a sharing system.

In Anwar's model, household have three assets to construct their portfolio; money  $M$ , mudarabas  $\Phi$ , and the equities  $V$  representing the nominal value of real physical capital  $K$ . It is assumed that mudarabas and equity (like bonds and equities in Sargent's model) are perfect substitute and hence could be merged into mudarabas  $\Phi$ ; the difference from the classical mode being replacement of bonds  $B$  by mudaraba. In both models consumption (equation 4 in Table 1) depends on real disposable income which is equal to:

$$YD = Y - \delta K - T - [(M+B)/p]\pi + qK - K \quad \text{Sargent's model}$$

$$YD = Y - \delta K - T - [(M+\Phi)/p]\pi + \eta K - K \quad \text{Anwar's model}$$

$$\text{Where } q = \left[ \frac{F_k - (r + \delta - \pi)}{(r - \pi)} + 1 \right] \text{ and } \eta = \left[ \frac{F_k - (k\theta + \delta - \pi)}{(k\theta - \pi)} + 1 \right]$$

Real disposable income is assumed to consist of gross national output  $Y$ , minus capital depreciation, minus tax payments net of transfers  $T$ , minus rate of capital depreciation on financial assets due to inflation  $[(M + B)/p]\pi$  or  $[(M+\Phi)/p]\pi$ , plus appreciation in the value of existing real equities,  $qK$  or  $\eta K$ , minus the real rate at which new equities are issued,  $K$ .

The money demand-function (equation 7) assumes that people desire to hold more real balances in response to increases in their incomes. Moreover as the profit-sharing ratio,  $k$ , rises, the expected rate of return on mudarabas,  $k\theta$ , increases, which, in turn, increases the incentive to economize on real balances held for transactions, and hence a given level of economic activity is financed by a smaller amount of real balances. The opposite happens in response to a fall in the profit-sharing ratio. The assumption that all agents in the economy know the rate of (positive) profits in the economy, this demand of money function could be easily justified. This crucial assumption however renders little that is different in the two systems.

Anwar suggests that, like the interest system, when necessary, the government will finance its budget deficits by issuing mudarabas, rather than bonds. Moreover, as the government uses its funds to provide social services to the public at large, instead of the rate of return in the private sector i.e.,  $\theta$ , the *social rate of return* could be used to arrive at a reasonable rate of return to the suppliers of such funds. The government budget constraint is expressed by:

$$G = T + (\Phi/p) + (M/p)$$

$$dM = - d\Phi$$

After linearizing his system of equations, Anwar draws several conclusions: under two different scenarios; in one case  $M+\Phi$  is assumed to be zero and in the other scenario the same is allowed to be non zero.

In the first scenario:

- Increases in government spending and anticipated inflation will increase the profit-sharing ratio while an increase in taxes will decrease the profit-sharing ratio.
- An increase in taxes will increase investment spending and an increase in government spending will reduce investment spending. That is, some crowding out will occur. Change in anticipated inflation, however, does not effect investment decisions.
- Aggregate supply is independent of all the exogenous variables except capital stock. Whenever changes in the exogenous variables, other than capital stock, disturb the initial equilibrium by changing the level of aggregate demand, the profit-sharing ratio moves in appropriate direction to restore the equilibrium.
- For given  $Y$  and  $k$ , as determined by equations, prices and real balances grow at the same rate. Increases in output, however, will reduce prices; and increases in the profit-sharing ratio will increase prices and vice versa
- Therefore the system is stable if the profit-sharing ratio is inversely related to the demand for money and to aggregate demand in the economy.

It is quite clear that the implications of the model are similar to those of classical model. In Anwar's model there are two alternative explanations regarding determination of the equilibrium profit-sharing ratio. One of these approaches is akin to the leakages-injections approach and the other may be called the mudaraba funds market approach. In the first case the equilibrium profit-sharing ratio is determined at the point where real government expenditures plus real investment, evaluated at the stock market value of equities, is equal to the savings plus taxes (p. 53).

According to the mudarabah funds approach, the desired savings must equal the sum of the actual growth rates of mudarabas, real balances, and equities. That is, the demand for financial assets, dictated by savings must equal the supply of financial assets, determined by the desired investment (p.54).

In equilibrium, actual growth of the financial assets issued by the government must equal the government budget deficit. In other words, for given budget

deficits, the profit-sharing ratio must adjust to ensure that the desired savings minus real value of equities are exactly equal to the budget deficit. As increase in government spending, *ceteris paribus*, increases the budget deficit and implies an increased growth of financial assets, which leads to an excess of desired savings over the desired investment at the original equilibrium position. The investment schedule must rise in order to bring the system to a new equilibrium corresponding to a higher profit-sharing ratio (p.54).

A pertinent question that can be raised here: can we expect  $k$  to be flexible enough to ensure that the economy moves towards an equilibrium? Actually, the main strength of a profit and loss sharing system is that it distributes both profits and loss to a larger number of economic agents and that too in accordance with their contribution to capital formation. Furthermore, rather than  $k$  being flexible (but same throughout the economy) it would be an increasing function of level of investment or *ras-ul-mal*. Siddiqui and Zaman (1989) model compared levels of investment and savings in interest and profit and loss sharing based systems under a deterministic frame work. They found that investment will be relatively higher in a sharing system compared to the fixed interest system. However, investment could be further increased made higher in the profit sharing system if different sharing ratios are used for different ranges of investment (p. 19).

Actually by assuming  $\theta$  to be known  $k\theta$  just works like  $r$  and that is why all results of the model appear to be similar to the conventional classical or Keynesian model.

In the second scenario where  $B+\Phi \neq 0$ , an increase in government spending and a fall in taxation will lead to an increase in the profit-sharing ratio. An increase in government expenditures tends to increase the profit-sharing ratio. An increase in the profit-sharing ratio causes the price level to rise. A rise in the price level reduces real value of outstanding *mudarabas* and money, and also, for a given value of anticipated inflation, reduces the rate of real capital loss on assets. Consequently, expected real disposable income increases, which increases the desired rate of consumption, this in turn drives up the profit-sharing ratio still further. A similar explanation holds for the response of the profit-sharing ratio to an increase in taxes.

Change in the profit-sharing ratio in response to a change in the stock of money however will be dictated by the values of  $(M+\Phi)$  and  $k$ . If  $(M+\Phi)$  or  $k$  are positive then an increase in the money supply will lead to a higher profit-sharing ratio. If either  $(M+\Phi)$  or  $k$  is negative, however, then an increase in the money supply will lower the profit-sharing ratio.

The system is still neutral because all the dollar-denominated variables have been divided by other dollar-denominated variables. The system is not dichotomous because changes in the growth rate of money supply do affect equilibrium values of the real variables by influencing the equilibrium values of the price level and the profit-sharing ratio.

Zangeneh (1995) was an exercise similar to Anwar (1987). His model was also based on Sargent's (1987) macroeconomic model. He shared the views held by others that standard economic concepts and methods can be fruitfully employed to analyze issues in Islamic economics [Zangeneh: 1995; 57]. In his view it can be

shown that the Islamic economic system does exhibit properties that are consistent, reasonable, and familiar [Zangeneh: 1995; 56].

As Zangeneh's interest-free macro model is very similar to that of Anwar, we would only like to highlight the main differences of the two models. Like Anwar, Zangeneh assumed that the financiers and firms share in the profits of the firm in a predetermined ratio,  $s_m$  and  $1-s_m$  ( $s_m$  being same as  $k$  in Anwar's model). However, unlike Anwar who assumed that the rate of profit  $\theta$  is known to both the financiers and the firms and they only negotiate about the rate of profit sharing  $k$ , Zangeneh assumed that firms and financier do not know about the rate of profit (denoted in his model by  $m$ ).<sup>21</sup> The puzzling thing to note is that when defining the user cost of capital, like Anwar, he replaces the rate of interest  $r$  of Sargent's model by  $s_m m$ . But like Anwar, he also keeps claiming that as  $s_m m$  is not fixed (because  $m$  is not fixed in his model), the capitalist share in profits is not the cost to the firm! (p. 58). It is also interesting to note that according to the solutions of his own model  $q$  (representing the gap between marginal productivity of capital and the user cost of capital) is a decreasing function of the real rate of profits (Zangeneh uses real share of profits paid to capitalists)  $s_m m - \pi$ . He also admits that this would imply that an increase in financier's share of profits will decrease investment and capital accumulation (p. 64-65). This is similar to the outcome of conventional fixed interest model where increase in interest rate has negative effects on investment.

In order to refute the assertion that the interest free system may lead to a fall in savings level, Zangeneh used a logarithmic consumption function to get a solution for maximizing the present value of life time consumption subject to an inter-temporal budget constraint and using the rate of return on *mudarabah* accounts for discounting future consumption. He, however, makes no analysis to see whether this claim could be confirmed or refuted through his model.

The treatment of  $m$  or the level of profits in Zangeneh's model is unsatisfactory. He does not analyze the effects in the changes of relevant variable on  $m$ . Like Anwar, he concentrates on  $s_m$  ( $k$  in Anwar's model). In the beginning he mistakenly defines  $m$  as level of (unknown) profit level and then treats it as the rate of profit ( $\theta$  of Anwar's model). While Anwar assumes that  $\theta$  is known, Zangeneh claims it to be unknown but nowhere in the paper has he discussed about the profit function and the implication of different variables on its level.

Analyzing his model in the classical framework, Zangeneh gets the familiar result of the classical model that real output, employment and real wage are all increasing function of capital stock and unaffected by monetary or fiscal policy exogenous variables.<sup>22</sup> The effect of inflation on  $s_m$  is ambiguous while an expansionary fiscal policy reduces it (p. 65). Similarly, analyzing the model in the Keynesian frame work Zangeneh gets the familiar result that an increase in  $G$  or a decrease in  $T$  will increase real output.

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<sup>21</sup> Zangeneh refers  $m$  as level of profit but he actually uses it for rate of profit. Please see page 58 of his 1995 paper where he defines the user cost of capital as  $s_m m + \delta + \tau - \pi$  ( $\tau$  being the tax rate in his model).

<sup>22</sup> Same is true for Anwar's model (see Anwar (1987), p. 48).

One can safely conclude that the goal of providing an effective theoretical model to analyze the effects of a system where investment and financial intermediation are totally based on the principles of profit and loss sharing. As a matter of fact, nowhere in these two last models the case of a loss is discussed.

### 3.2 Interest: A Cause of Financial Instability in the Capitalist System

Fardmanesh and Siddiqui (1994) took a different approach in addressing the concern that financial intermediation through profit and loss sharing mechanism could create instability in the economy. Instead of using a conventional model to understand the working of a profit and loss sharing system, they took Lavoie's (1986-87) model based on Hyman Minsky's hypothesis to elaborate how the institution of interest affects the behavior of commercial banks and makes the capitalist system inherently unstable. They argued that a profit and loss sharing system will be inherently stable by changing the behavior of the banks as well as a mechanism of sharing both the profits and losses by a much larger number of economic agents. One of Lavoie's main equations can be used to make the point:

$$dg/g = dr/r + d\pi/\pi + du/u - dv/v + [dx/x]x / (1-x)$$

where  $g$  stands for growth rate of capital,  $r$  for retention (of profits) ratio,  $\pi$  for share of profits,  $u$  for capacity utilization rate,  $v$  for technical capital-capacity ratio, and  $x$  for leverage ratio and a proxy for financial fragility and consequently, instability. The growth rate of capital would require a higher retention ratio, or a larger profit margin, or a higher level of utilization of capacity, or a larger leverage ratio, or more likely a combination of these (assuming  $dv/v=0$ ). Lavoie explains that even a booming condition leads to higher leverage ratio as other avenues become saturated. The main reason for this is that commercial banks are carried away with speculative spirit of their borrowers. The institution of interest fails to impose necessary fear of loss to do a cautious analysis before granting a loan. A system based on profit and loss sharing mode of financial intermediation would thus be inherently more stable.

### 3.3 Savings and Investment Under PLS System

As mentioned in section 2, saving behavior in an Islamic economic system could be a cause of instability. It was suggested that financial intermediation based on profit and loss sharing principles would increase uncertainty about future return on capital and hence discourage saving. Haque and Mirakhor (1987a) was an excellent effort to investigate that issue. They emphasized saving behavior under uncertainty was a relatively new area of research and theoretical studies on the subject could not establish a clear case for such an assertion. They noted that much of the research on the effect of uncertainty on saving has been concerned with the effect of (non capital) income uncertainty on saving and almost all studies have, under alternative assumptions about the behavior of the risk aversion function, confirmed the Fisher-Boulding position that income risk increases current savings. In contrast to the problem of uncertainty about future income, the accumulated savings or individual capital holdings themselves may be subject to risk. According to them, studies dealt with this problem did not find clear direction for a change in saving behavior. It was

found that when the rate of return to saving is uncertain there is first a substitution effect, which tends to reduce saving, but then there is also an income effect, which tends to increase saving. Hence, the total effect of increased capital risk was found to be indeterminate (p. 128).

Haque and Mirakhor (1987a) noted that most of the previous studies were carried out in a two period framework and therefore decided to develop a dynamic model to analyze the consumption and saving behavior under deterministic as well as stochastic framework. Their main aim was to show under what conditions (about risk and return on capital) saving must decline with increased uncertainty about future capital income in a conventional framework. They thought that this would be a contribution to the relevant literature in conventional economics and could be used to establish the implications for an Islamic system. They found that in order for saving to decline when a system moves from a certain world to an uncertain one, the rate of return when risk is present must be no more than the rate of return when risk is absent. The implication for switching to an Islamic was clear; saving can only decline if the rate of return under an interest-free system would be less than the fixed rate of interest. Haque and Mirakhor then made several intuitive points to argue that the average rate of return would be more likely to be higher under a profit and loss sharing system. It was noted by them that as the Islamic system would require investable funds to be utilized by agent-entrepreneurs on a profit-sharing basis, it will effectively remove interest from the cost side leaving both the saver and the entrepreneur becoming residual income earners. As the rates of return to investment are on the average higher than the rate of interest paid on borrowed funds, the rate of return to investable funds may be higher. One can also argue that since the savers' reward will depend on the productivity of the investment undertaken, better quality investment projects, in terms of their rate of return, will be undertaken (p. 138).

Haque and Mirakhor (1987b) was another excellent effort to analyze the impact of profit and loss sharing mechanism on investment. Taking note of the most updated work in conventional economics on issues related to principal-agent problems, they developed three different two period models to analyze the levels of investment under three different scenarios: (a) when both the suppliers (principal) and users (agent) of investable funds know about certain return on investment (b) when both have symmetric information on uncertain outcome and the activities of the agents, and (c) when the suppliers of funds have relatively less information about the activities of the funds users and uncertain return on investment. They found that for the first case there would be no difference whatsoever between the interest based and the profit sharing system. Both the level of investment and the rate of return to either party would be the same in the two systems. They also found that the effect of an increase in the profit sharing ratio for funds suppliers on investment could be positive or negative depending on the substitution or the income effect (a higher investment means lower consumption in the first period and income effect, but a higher level of second period consumption and a substitution effect).

Siddiqui and Zaman (1989a) also developed a Ricardian type (two periods) corn model to compare the differences in investment and saving in interest and PLS systems with certainty. They found that while saving and investment will be higher in the PLS system compared to the interest system, the PLS system would yield higher rate of return to the funds providers. More interestingly, unlike the interest case, the PLS system was found to be Pareto inefficient as further investment (beyond the equilibrium

level and up to the point where marginal productivity becomes 1) would increase the utility level of both lenders and borrowers. However, this could only materialize when the sharing ratio of the lenders determined at the equilibrium level is frozen. This provided an insight that should be useful for Islamic banks when the production and profit levels are known with some certainty; fixing an optimal ratio of profit sharing for different ranges of mudarabah or musharakah funding (rather than changing the ratio continuously for higher and higher level of investment) may induce the funds users to carry out investment up to the level where rate of return approaches 1 (pp. 17-19).

In the second scenario Haque and Mirakhor found that the PLS system will cause investment to increase (compared to the fixed interest system) as it would be carried out to the point where the marginal productivity of capital becomes 1. First best solution is therefore still possible. The third case was more complex; the principal possessed less information because of un-observability of agent's actions or high cost of monitoring. To solve the problem of non-observability Haque and Mirakhor assume that the principal proposes to link the share of his profit  $\lambda$  with investment  $I$  (rather than profit) which is observable. In this case the model reveals that the agent would invest at a level that is higher than the optimal level (the marginal productivity of investment being less than the marginal rate of return in the second period to compensate for the consumption forgone in the first period. Furthermore, the rate of return to the principal thus lower in this case compared to the situation where all actions of the agent were observable. The total profit of the enterprise, however, becomes higher in this case as investment level is higher. Haque and Mirakhor thus concluded that an Islamic financial system would not face market failure due to moral hazard problem on part of the agents. In our opinion, one should have looked at the possibility of lowering  $\lambda$  as an incentive to minimize the moral hazard problem or fixing the level of  $\lambda$  for different range of investment so that a larger demand for fund may not decrease the sharing ratio of fund users. Haque and Mirakhor make a number of suggestions to solve the problem of moral hazard.

Waqar M. Khan's (1987) single period model structured in the conventional domain of theory of contracts and economics of information also concluded that dishonesty on part of the agents would render Islamic profit and loss sharing system inefficient. They however, insisted that the situation might be different in markets (including financial markets) where contracts are made repeatedly over many periods (pp. 104-05).

### **3.4 Consequences of PLS system in an Open Economy**

Mirakhor and Zaidi (1992) was an attempt to get insights into the working of an open economy without a fixed rate of interest. They constructed a model consisting of three financial and one real capital asset that could be held by domestic investors, domestic government and foreigners. The set of excess demand equations for these assets determines the rates on the assets, given the values of the various exogenous variables. The domestic private sector allocates its wealth between currency, bank deposits, bank equities, and loans. The foreign sector holds deposits in the domestic banking sector and also holds equity capital.<sup>23</sup>

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<sup>23</sup> Mirakhor and Zaidi (1992; 402).



The asset-holders demand functions for the four imperfectly substitutable assets are functions of the rates of return that are relevant for the particular sector. It is assumed that the assets are all gross substitutes in the portfolios of each sector, which implies that a rise in the rate on any asset will lead to substitution into that asset out of other assets in the portfolio. It is assumed that banks can borrow from the central bank only on an equity-participation basis and the central bank purchases equity in the banks when it wishes to expand reserves in the system, and vice versa. Therefore, an additional source of funds for the commercial banks is the rate of equity shares to the central bank, and the public also participates in this market. As in the case of investment deposits, the rate of return on equity shares, depends on the overall profit position of banks, so that in contrast to the official discount rate, it is not determined directly by the central bank.<sup>24</sup>

On the lending side, banks engage in only risk-return sharing *mudarabah* arrangements with the private sector. Banks are also required to hold a certain proportion,  $c$ , of their liabilities to the private and foreign sectors in the form of reserves with the central Bank. The foreign sector holds investment deposits in the banking system and physical capital. The foreign demand for investment deposits is a function of the rate of return on investment deposits, less foreign or world interest rate, and the expected depreciation of the domestic currency. The central bank's liabilities consist of reserves of commercial banks and currency held by the public. The central bank holds equity shares of commercial banks, and the rate of return on these is market determined. The supply of reserves is changed by the central bank through variations in its stock of bank equity shares, which in turn alters the cost of borrowing for the banks.<sup>25</sup>

Given the assumptions of the model, all three endogenous rates decline in response to an increase in central bank's holding of bank equities. Intuitively, the results can be explained by noting that the increase in central bank's holding of bank equities adds immediately to the supply of funds banks have for lending purposes. As banks seek out more projects for *mudarabah* financing, they accept projects with lower expected rates of return than previously. The lower earnings of *mudarabah* financing will be reflected in lower returns on *mudarabah* deposits. Given the decline in *mudarabah* deposit rates, there is substitution into the market for physical capital, and the increased demand for capital lowers the required rate of return on capital.<sup>26</sup>

It needs to be mentioned, however, that because deposit rates are flexible and not controlled by the central bank in Islamic banking, there will be partial offsets to the monetary action. As returns on *mudarabah* deposits decline, the private sector will not only substitute into physical capital but also into currency, thereby dampening the expansion of bank intermediation. Furthermore, the foreign sector will reduce its holdings of domestic assets, both *mudarabah* deposits and physical capital, because their rates of return have declined. These offsetting international capital flows will depend on the elasticities of the foreign asset demand functions with respect to the rates of return.<sup>27</sup>

Thus, the move to greater flexibility in the setting of deposit rates is likely to increase the extent to which capital flows offset monetary policy. But as long as the assets are imperfect substitutes, the offset is only partial. Although the greater flexibility

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<sup>24</sup> *ibid*; pp. 403-04.

<sup>25</sup> *ibid*; p. 404.

<sup>26</sup> *ibid*; p. 405.

<sup>27</sup> *ibid*.

in the rates of return increases the short-run international capital flows offset to monetary policy, this does not at all mean that the adoption of Islamic banking will lead to sustained medium or long-term capital outflows. The model is presented for the purpose of analyzing short-run effects of monetary policy.<sup>28</sup>

The issue of capital outflow in an increasing global world is extremely important and more studies are needed to understand the consequences of switching to an Islamic profit and loss sharing system. Appropriate policies and instruments will be needed to avoid a situation that could lead to flight of capital from domestic economy, and to thwart such an event by taking appropriate actions as soon as the symptoms for the same are detected.

### **3.5 Modeling the Case for a 100% Reserve Requirement**

Al-Jarhi (1987) took up the issue of the optimal arrangement for fiat money when an economy moves from a barter system to one that is monetized. He developed a complex and rigorous model to see the most efficient way of use of the fiat money. Fiat money, in his model could be issued by the government, private intermediaries or the households. The government could issue the fiat money at a price or as a gift. He found that in a world where only government issued the fiat money, the optimal monetary policy would be to expand the stock of real balances through successively decreasing gifts of means of exchange, always keeping the rate of return on the marginal unit of real fiat money equal to its marginal cost of production. The advantage of this policy was that it allows the stock of real balances to expand to the maximum possible amount without violating the efficiency rules.

In case private intermediaries are allowed to issue the fiat money along with the government, efficiency would require that a hundred percent reserve ratio as well as marginal cost pricing rule is imposed on the private intermediaries.

Al-Jarhi favored an economy where only government issues money as a gift up to the satiation level as it would eliminate any need for a debt market and saving the resources that would be spent on marketing household fiat assets (p. 72). The associated dead weight loss (of going beyond the efficient level and up to the level of satiation) might be less than the cost involved in alternate situations where government, intermediaries and households are allowed to issue fiat money.<sup>29</sup> He admitted that his model did not provide a theoretical support for his preferred solution and that it could be only decided on through empirical evaluation.

Al-Jarhi's chose an excellent topic, developed a model for rigorous analysis and came up with some interesting results. This effort could have been supplemented by a detail analysis of the reasons for the continued existence of debt markets in the real world and how an economy could start to gradually eliminate such markets.

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<sup>28</sup> *ibid*; p. 406.

<sup>29</sup> Al-Jarhi suggested that people could be given government fiat money free of cost according to the differences between their current portfolio and the desired one that would optimize their consumption level; not according to their existing possession of wealth which could have distributive implications (pp.49-50).

#### 4. The Handling of Profit and Loss Sharing Ratio

It is clear from the deliberation of section 3 that the issue of profit and loss sharing ratio is very crucial for an interest-free Islamic economy. Almost every macroeconomic or monetary model for an Islamic system has depended on its ability to equate the demand or supply of investable funds. However, the complexity of the role of this ratio warranted that it should have been given much more importance. As mentioned in section 3, commenting on Khan and Mirakhor (1989) Professor Zubair Hasan (1991) had emphasized the importance of understanding the differences between a profit and loss sharing system and the one based on interest. He criticized the simple replacement of interest by a rate of return by many Islamic economists and their claim that all monetary policies and the tools used in the conventional system could be more or less used in the same way in an Islamic system.

Zubair Hasan (1985) was an important contribution towards investigating the economics of profit sharing ratio at macro level where chances of overall negative or zero return on investment would be negligible and hence attention could be given on sharing of profits only. He first described the behavior of users and suppliers of funds in an economy where both the interest as well as the PLS systems existed, and then extended his analysis to the situation where funds could be availed or supplied only on a PLS basis. He considered the case of a typical firm that is interested in supplementary funds for business activities. He used following variables for his analysis:

$K$  = total capital employed in a firm's business

$K_o$  = owners contribution in  $K$  ( $K_o =$  equity)

$L$  = financier's share in  $K$  ( $K = K_o + L$ )

$P$  = profit measured as gross revenue minus all contractual payments and capital consumption but including interest.

$\sigma^*$  = financiers' ratio for sharing profit attributable to  $L$

$\lambda$  = financial leverage ( $L/K$ )

$\sigma$  = proportion of profit going to the financiers ( $\sigma = \sigma^* \lambda$ )

$r$  = rate of profit on total investment ( $r = P/K$ )

$r_i$  = rate of interest

$r^0$  = rate of profit on  $K_o$  under PLS finance

$r_0^i$  = rate of profit on  $K_o$  under interest finance

$r_L$  = rate of profit on Lender PLS finance

$\alpha$  = risk premium fraction

$x = r_0^i$

$y = r^0 - r$

After defining all these variables Hasan derives the equilibrium condition [ $\sigma = (\lambda / r) (r_i + \alpha)$ ] so that financiers and firm would be indifferent between the two systems, ignoring the fact that a decision could be made only on religious ground. Hasan argues that  $r$  on one hand and,  $\lambda$ ,  $r_i$  and  $\alpha$  on the other have opposite effects on  $\sigma$  and in a

dynamic situation they may neutralize each other's influence such that  $\sigma$  may remain unchanged. Similarly, keeping profit expectations unchanged,  $\sigma$  may move with the net change in  $\lambda$ ,  $r_i$  and  $\alpha$ . Other scenarios are also possible (pp. 19-20). Hasan also looks at the behavior of firm, given a minimum required level of earnings, in deciding about the optimal leverage ratios in different scenarios. He discusses the possible tension between owner and non-owner financiers regarding initial capitalization and subsequent changes. He argues that divergence in sharing ratios could generate destabilizing factors similar to conventional economies albeit at a lower scale. The main lesson that could be learned from his analysis is that the implications of financing under a PLS system are complex and must be understood clearly before developing a macroeconomic model to determine the nature and role of monetary policy under a PLS system.

Hasan also refutes the assertion that a PLS system would collapse when applied in competition with the interest system. He argues that the PLS system has the potential to be favored by both the firms and the financiers as they may both benefit from the system specially in the long run after the teething problems of the new system are resolved. Finally he concludes that

“The difficulty with PLS system is not that its relative usefulness is suspect in principle. Rather it may lie in the area of administrative alertness required for its successful operation” (p. 25).

Bacha (1995) & (1997) raised the issue of moral hazard problem in explaining the dismal use of mudarabah financing by Islamic banks. After explaining the differences in financing arrangements under debt, equity and mudarabah finance he presented a numerical example to show that mudarabah financing could be the least preferred mode of financing for financiers (or commercial banks)<sup>30</sup>. He suggested that in order to control moral hazard problem, in case of a loss in business, the sharing ratio of mudarib should be decreased. Commenting on Bacha's model and the numerical example based on that model Siddiqui (1998) claimed that only when the investment is very small, the share of mudarib should be high compared to that of the rab-ul-mal. For example, suppose A is a rab-ul-mal who wants to invest \$10,000 with B, a mudarib. If the expected total monthly profit is \$1000, B may not be willing to work as a mudarib, if his share of profit, for instance, is less than fifty percent. This would be particularly the case if (a) it is a full time job and the only source of his income and (b) B has an option to work for someone else where he may earn a salary of somewhat less than \$500 a month.<sup>31</sup>

The share of mudarib should be a decreasing function of the total investment made by the rab-ul-mal. Theoretically, mudarib is a person who does not have financial capital but has talent to run a business which the financier lacks or does not have time to carry on the same on his own. Mudarib has an option to work for someone on a fixed salary or to run the business for the rab-ul-mal on a profit sharing basis in which case his return would be zero if there is a loss. The opportunity cost of taking up the second option is the income forgone by not taking a salaried job. The risk involved in the second option requires that the expected earning for the mudarib must be sufficiently

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<sup>30</sup> Bacha (1997).

<sup>31</sup> For a risk-averse person, the equivalent of an expected income of \$500 per month is somewhat less than a certain income of \$500 per month. The exact amount would depend on the degree of risk aversion and the probability distribution.

higher than his opportunity cost to compensate for the risk involved. This expected earning would be higher, higher the level of investment and higher the expected rate of profit. For example, suppose a mudarib has an offer of a fixed salaried job where he can earn a million dollars in a year. He gets an offer of 10 % share in the profit for running a business worth a 100 million dollar which has an expected rate of profit of 12%. His expected earning is equal to 2.4 million which is more than double his fixed salary and perhaps enough to compensate for the risk undertaken if he is a risk averse person. For a risk neutral person the expected rate of earning is equal to a certain earning of the same amount. In that case a 10% profit sharing arrangement would be more than enough to induce the mudarib to take up the challenge. As the amount of investment increases, all other things being unchanged, market mechanism would tend to lower the share for mudarib. Before making a decision, a potential mudarib would always look at the two amounts, his earning in a fixed salaried job and his expected earning in mudarabah arrangement. He will only choose to become a mudarib if he is expected to make relatively higher income in a mudarabah arrangement. Finally, it can be argued that the share of profit assigned to a mudarib would, at least to some extent, also depend on his reputation as an honest and competent person in the relevant field of business.

The example above makes it clear that in a mudarabah arrangement, a mudarib is not necessarily exploited even if his share of profit appears to be lower than that of rab-ul-mal. Moreover, one should not think of rab-ul-mal as one rich person. A typical commercial or investment bank generates funds, among others, through many small depositors. All these depositors, along with the equity holders of the bank, are rab-ul-mals. Unless a good share of the business goes to the party called rab-ul-mal in a mudarabah arrangement through a financial intermediary, these small depositors would fail to get a reasonable rate of return. One should not forget that in case of a loss these small depositors too have to share the loss. Moreover, even though they are classified as small depositors, in many cases, as a whole they provide bulk of the funds to financial intermediaries as their number far exceeds those who hold big deposits.

It is thus of a great importance that the issue of profit and loss sharing ratio is given its due importance in future modeling. There are two important things to decide about this ratio in the context of an Islamic economy; (a) should there be a single or multiple rates prevailing for mudarabah financing of different volumes, and (b) should it be left to the free markets to be determine its 'equilibrium' value or there should be a general rule for different ranges financing. Our personal opinion is that there should be different rates as this would both encourage an optimal level of investment and also channel the proceeds of the surplus (or deficit) income to its rightful recipients. We also suggest that these rates should be set by an authority consisting of representatives of suppliers and users of investable funds and relevant government agencies. Furthermore, it should be set on a permanent basis and should not be an instrument of manipulation by government agencies. In this regard, it would be interesting to note that the authorities in Pakistan had set an upper limit of 10% of the profits (accruing to the amount supplied by the modaraba certificate holders) as the management fee for the modaraba management companies and has remained at that level since the rules were made in 1981.<sup>32</sup> The 10% upper limit was justified as modaraba management companies were

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<sup>32</sup> This point was made by Siddiqui (1998) to criticize Bacha's model which gave 70 % to mudarib when his contribution to the project was only 20% (and the investable fund was not a meager amount).

not required to contribute a substantial portion of their business outlay, and received 100% profits accruing to whatever little contribution they made from their own sources.

Siddiqi (2006;7) claims that even when mudarabah or other PLS devices are not used by banks on their assets side, the ability of Islamic banks to absorb business shocks will remain valid as long as they apply principles of PLS on the liability end. However, one may like to point out that this would result in bank depositors sharing the brunt of business down turn without necessarily hoping for better returns during high returns on investment during times in the economy. As long as banks keep investing in debt like assets they cannot make high profits in better times in the economy. Asking their depositors to take the brunt of the business losses without giving them the hope that they could earn higher profits in better times would discourage them to continue with Islamic banks.

## **5. Future Research**

As briefly mentioned in the introduction, the need for research related to monetary policy for PALSIB subsided as the focus of Islamic banking moved from profit and loss sharing to what could be justifiably termed as murabaha banking. It is difficult to think about a single most reason for this and the space of this paper does not allow a detail discussion on this issue. Siddiqui (2007) discusses the need for PALSIB and suggests a strategy for its gradual establishment.

However, in our opinion, the biggest failure was that it was started without a good understanding of the difficult task and without adequate preparation. Furthermore, instead of taking a gradual approach attempts were made to establish full-fledged Islamic banks (and in three cases to transform the entire banking system) from day one. Perhaps it was imposed on them for which they were not well prepared.

On the practical side, the most important issue should have been the solutions for problems of moral hazard and adverse selection. Even a small effort to understand these two problems could have led to the following suggestions:

- Some changes in rules of mudarabah to allow the banks to be involved in business decisions of the mudarib as well to access to any information they deem necessary to ascertain the true profitability and conduct of the mudaribs
- Establishment of speedy banking courts to settle any disputes between the banks and the mudaribs
- Establishment of central shariah board in a every country whose members would be paid by the government rather than individual banks
- Consideration of 100% reserve requirement and central banks becoming an active and the most important depositors of every Islamic bank, apart from being the lenders of last resort supplying any amount of liquidity on zero interest as long as the banks remained prudent and only required liquidity for unfounded threat of a bank run.

- A complete retraining of relevant banking staff leading to creation of mudarib evaluation, project evaluation and business monitoring departments in each Islamic bank
- Establishment of specialized financial institutions under the government (or arrangements made with Islamic commercial banks) for the financing of consumer durables

All this required some homework before launching of Islamic banks. Instead, a new system that was supposed to replace a well entrenched banking system favored by powerful interest groups in the societies was imposed on unwilling and / or unprepared authorities of central banks. A gradual approach could have given sufficient time to move in the desired direction even if the formal establishment of Islamic banks were announced without full preparedness.

In section 3 of this paper we looked at a number of important theoretical works that were published in the last two and a half decades. It is difficult to say to what extent they were able to answer the questions raised in earlier writings that we mentioned in section 2. The fear that Islamic banking system would lead to instability through negative impacts on savings and investment was quite convincingly refuted on theoretical grounds. It was also claimed by some that traditional monetary policies could be easily used to control money supply through manipulating the profit sharing ratio. In our opinion, none of the theoretical model was sound enough to easily accept this view. The treatment of the nature of the role of profit and loss sharing ratios was far from satisfactory. Moreover, as hardly any Islamic bank really worked on a profit loss sharing basis, empirical verifications of the results of these models are difficult to obtain.

An implicit assumption made by the early proponents of Islamic banking was that as soon as the announcement of the establishment of Islamic banks would be made, the behavior of suppliers and users of funds and bankers would change accordingly. It was not realized that the biggest losers in this new banking system would be the users of the funds who were paying a very low rate of real interest rates in almost all Muslim countries. They included all levels of producers and traders, big and small. How to get them to work with the new rules of the game should be one of the main areas of future research.

Finally, although there is a need for continued research in future to resolve unanswered questions, academic involvement in this area cannot be revived unless there are signs of a genuine interest to establish PALSIB in some part of the Muslim world. For the moment, the direction of contemporary Islamic banking appears to be somewhere else.

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## تقييم الأبحاث المتعلقة بالسياسة والاستقرار المالي لنظام الاقتصاد الإسلامي

شميم أحمد صديقي

قسم الاقتصاد

جامعة دار السلام - بروناي

**المستخلص:** لقد مثل اقتراح استبدال النظام المصرفي القائم على الفائدة بنظام بنكي قائم على الربح والخسارة (PLS) واحدة من أهم الوجوه البارزة في عملية "أسلمة" النظام الاقتصادية المعاصرة، فمع نهاية السبعينيات أصبح لمفهوم البنك الإسلامي شعبية كبيرة. في المقابل تطلب هذا الوضع ضرورة القيام بأبحاث تحليلية معمقة لانعكاسات تطبيق هذا النظام على مستويات الادخار، والاستثمار، واستقرار الاقتصاد ثم السياسة المالية. تحاول هذه الورقة القيام بتقييم نقدي لبعض النماذج النظرية التي قدمت في هذا الحقل لمحاولة الوقوف على مساوئ القلق المختلفة.

لقد لوحظ خلال هذه الفترة أنه على الرغم من بقاء العديد من الأسئلة من غير إجابة، إلا أن الأبحاث المتعلقة بهذا الجانب قد قلّت نظراً لعدم اعتماد البنوك الإسلامية على آلية الربح والخسارة في أدواتها المالية بدرجة تتطلب تغييراً معتبراً في السياسة المالية وأدواتها، وفي الختام تقدم الورقة باختصار بعض التأمّلات حول أسباب هذه الوضعية مع تقديم توصيات للأبحاث في المستقبل.