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AN ECONOMIC ANALYSIS OF A PLS MODEL FOR THE FINANCIAL SECTOR

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This paper discusses the main analytical issues pertaining to PLS banking. The risk-return trade-offs and their bearing on the supply of funds are considered in a financial system where PLS deposits are the only income bearing financial asset. A PLS model is presented in which banks are pure intermediaries and the sole source of funds *(mudarabah)*. The workings of this model is illustrated with some simple comparative static exercises. Other cases considered are where banks are not pure intermediaries and where entrepreneurs have their own source of funds in retained earnings *(musharika)*. Some economic implications of PLS banking are suggested, including those that bear on the size and composition of total investment.

I. Introduction

Two related issues are central to this paper. The first issue is the substitution of profit and loss sharing (PLS) for interest as a basis for conducting financial transactions in the market for loanable funds. PLS is a financial mechanism linking finance capital to industry and commerce without the use of interest. Essentially it is a form of equity capital where lenders have a share in the profits of the borrowers, if there are any, and are also liable to share in the losses which are incurred during normal business practice. The share in, not the absolute amount of, the profits are prespecified in the contract. How the market may be relied upon to determine shares is discussed later.

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The second issue is the abolition of the banking system in its present form in the market oriented economies, and the substitution in its stead of institutions that are solely intermediaries between lenders and borrowers.

Both these issues are related to the functioning of an economy with *riba*. This concept has been defined broadly as any kind of gain for which a corresponding socially productive countervalue was not forthcoming.[1] As it turns out, this definition prohibits the earning of income from interest, speculative activity, absentee land ownership, and profits accruing due to a monopoly position. Given such a definition, one set of policies related to an institutional change of the financial sector – to make it *riba*-free – include the substitution of PLS for interest and the conversion of banks into pure intermediaries in a monetary sense. It is important to bear in mind that PLS is only one element in a package; albeit a pivotal one, which is geared towards establishing a *riba*-free economy.

This paper is subdivided into seven sections. In the second section, profits are briefly defined using sources that also set the context for the PLS contract. In section three, the basic PLS model is outlined in symbols. In section four, PLS is compared with conventional banking methods to see how returns to lenders and borrowers fare under these alternative arrangements. A simple portfolio model is presented in which the "Islamic case" of allowing only PLS is contrasted with a "capitalist case" that allows first only fixed interest, and then both fixed interest and PLS. The results of these comparisons with respect to the supply of loanable funds are utilized in the next section.

Section five is concerned with the mechanics of the PLS model itself – the primary focus of the article. The supply and demand for loanable funds are described, following which the working of the loanable fund market under PLS is briefly analyzed. Section six considers some extensions of the basic PLS model, relaxing the assumption of banks being pure intermediaries.

Much of the literature on PLS banking is concerned with its operational details. These include a discussion of the establishment and management of PLS banks; monetary policy and the operational relationship between central and commercial banks; the making of interest-free consumer loans; the creation of reserve funds and other schemes to insulate depositors from losses on paper; the criteria for making loans; issues dealing with short-term loans and discounting bills of exchange; the ways of dealing with bad debts; the mechanisms for providing security for banks; the outlets for pleas for those whose applications for loans were turned down; and the basis of international financial transactions in a PLS banking system.[2]

[1] See Schact (1939) for a definition of *riba*. Also see Haque [(1980), p.16].

[2] For a general coverage of interest-free banking including details about operating principles, see Siddiqui (1983). For a different approach see Uzair (1978).

For the most part, this research bypasses such operational issues, and is concerned with producer loans in a closed economy. As indicated above, most of the issues to be dealt with are analytical. These issues have received less attention in the literature.[3]

II. Profits

From an Islamic perspective, the concept of PLS can make sense only if the origin of that profit itself is not based on *riba* but rather on some form of productive activity.

Clearly, a review of the various theories of profit is outside the scope of this paper, especially since several reviews already exist.[4] The broad view of profit, as residual income after all the (fixed) contractual payments, is being utilized here. The views of two leading economists, whose theories fit into this mould, are used to briefly outline the framework underlying the PLS contract.

Schumpeter (1963) attributes residual income to entrepreneurial innovation. Profits, and in fact economic development, result from "new combinations" or innovations which are the outcome of entrepreneurial action.

Profits arise from innovation because of a lag in imputation. Entrepreneurs pay for resources at the prices set by previous uses. Innovations enable a more productive combination of those resources and hence lead to a surplus.

At least two issues need consideration. Given the assumption of perfect foresight normally made in the analysis of a perfectly competitive economy, there would be no lag in imputation, which is required to explain profits. Furthermore, while Schumpeter's theory justifies a return to the entrepreneur (borrower), it does not justify, from the ethical perspective earlier referred to, the return to the lender. Interest in his larger theory [Schumpeter, (1963), pp.155-211] is merely a tax on profits.

These issues can be dealt with by examining Knight's (1964) theory of profit, the second of the two theorists alluded to above. This is really presented as an alternative theory, although it is an extension of, and a complement to, Schumpeter's theory. Knight (1964) relaxes the assumption of perfect foresight and defines uncertainty as a condition under which objective probabilities cannot be assigned to a distribution of outcomes of an economic action. Knight goes on to argue that where uncertainty is absent,

[3] Some of the issues covered are analysed in Siddiqui [(1983a), pp.97-123], who describes a market for loanable funds. Siddiqui does not attempt to derive or explain the supply and demand schedules. Also there are some problems in the analysis which are dealt with in detail elsewhere, [Khan (1983)].

[4] See Knight [(1964), pp.22-50] and Weston (1954).

the imputation of product values to product services will always be perfect and exhaustive, and profit will be absent except stochastically [Knight, (1964), p.98]. Profit is once again unimputable income, but it arises because, due to chance, there is a divergence of actual conditions from those that were anticipated. Factor incomes are determined by the competitive process on the basis of anticipated rather than actual conditions, and the residual value from sale of output, if positive, is profit [Knight, (1964), p.98]. Profits, on average, will be positive due to innovations.

On the basis of this reasoning, Knight (1964) asserts that it is uncertainty which leads to profit. He does admit that the precondition of uncertainty is "change", which is defined in much the same way as in the Schumpeter model (pp.141-173). It is for this reason that the two theories really complement each other, where change is the source of the profit and uncertainty is the basis of its realization.

Knight's (1964) breakdown of the entrepreneurial function into its various elements serves to resolve the second of the two issues mentioned above. The two functions of the entrepreneur are control and guarantee [Knight, (1964), p.284], both of which arise from the existence of uncertainty. Control is very closely tied to the innovative function of the Schumpeterian entrepreneur, since without that, a routine and purely managerial function for the entrepreneur would be adequate.

The guarantee function refers to the bearing of uncertainty. Since most productive resources require an *a priori* commitment to remuneration for their services (contract income), the guarantor shoulders the uncertainty in providing this contract income and settling for a return from the residual income if that is positive. This is in fact how PLS may be expected to operate, with the borrowers assuming the entrepreneurial role of innovation and control, and the lenders that of providing the guarantee. Since bearing uncertainty (tied to socially productive enterprise) is considered productive activity in Islam, the profit-share of the lender in his role of the guarantor would be legally justified.

Schumpeter's entrepreneur – in this case starting from the static state – is totally dependent on credit to be able to carry out his plans. Banks create the purchasing power or claims to resources by means of which entrepreneurs can bid away resources from their existing uses [Schumpeter (1963), p.73]. A temporary increase in the price level is inevitable (length depending on gestation periods), but ultimately deflation would result from the new influx of goods and services onto the market. Banks thus play a very crucial role in the development process, and it is precisely this role which makes their characterization as intermediaries inaccurate.

This is the point where this analysis has to differ, for operational reasons, from Schumpeter's. We accept the assertion that reform of the banking sector

along Islamic lines not only requires abolishing interest but also requires the conversion of banks into pure intermediaries. Not only does this deny the banks (as a whole) the ability to create purchasing power, but in every other way denies them any stake in profit. The reasons for this exclusion according to Islamic scholars are two fold. The first is based on the empirical observation that controllers of credit inevitably attain an unwarranted amount of influence and power. This would lead to *riba* insofar as it would enable powerful bankers to dictate terms to comparatively weaker depositors and borrowers. Beyond this, where fractional reserve banking is permitted, they have the ability to draw profits on funds that they have in no way expended productive effort in earning.[5] However, the question that immediately arises is: Can an orderly functioning financial market continue to exist after these fundamental changes? Let us now outline the PLS system.

III. Profit and Loss Sharing Model

The two active agents to a PLS contract are the lenders of funds (also referred to as depositors) and the borrowers of funds (also referred to as entrepreneurs). Banks will in general be assumed to play the purely intermediary role of bringing the two parties to the contract together. This assumption will be dropped in section six, where banks will be considered active parties to the contract.

As a pure intermediary, the bank provides a service for both parties, and it covers its administrative expenses by charging both parties a fee. If in a conventional banking system, the difference between lending and borrowing rates of interest includes a profit margin, then this differential exceeds the total administrative fee by the extent of that margin.

This leaves the shares of the active parties to the contract to be determined. To begin with, the *mudaraba* contract, where all funds are provided by the lenders, will be considered. In section six, the *musharika* contract, where the entrepreneurs also provide part of the funds for the project, say from retained earnings, will be analysed.

Let π be the average operating surplus (residual income, after all costs contracted on a fixed income basis have been subtracted from total revenue) that results from entrepreneurial activity. Let ρ be the share of this surplus forwarded to depositors in PLS accounts in the bank. We will illustrate in section five how ρ is determined in the market for loanable funds.

Given the above symbols, one can state the following:

$\rho\pi$ = share of the operating surplus forwarded to depositors in PLS accounts;

[5] For an assertion of these arguments see Qureshi [(1974), p.19].

$(1-\rho)\,\pi$ = share of the operating surplus retained by the entrepreneurs.

If κ represents the total funds forwarded by depositors, and the operating surplus accruing on these deposits is $\rho\pi$, then one can define a profit rate, r, where $r = (\rho\pi/k)$.

The most noticeable difference of PLS, as defined above, from the conventional debt financing for a fixed interest rate is that lenders are being constrained not only to shoulder the "risk" of project failures (which is always there) but also to settle for a variable return.[6] The implications of this constraint are analyzed in the next section.

IV. PLS versus Conventional Banking

Two points are central to a comparison of PLS (equity financing) with conventional debt financing. First, what is likely to be the returns on average to the parties under these two contracts? Second, what is the incidence of risk borne by the parties under these two contracts? A convenient framework has been developed by Tobin (1958) to analyse these issues.

We proceed with the standard assumption that the contracting parties are risk averse. Then using the neo-classical portfolio balance framework to adjust for risk aversion (the best that can be done, given that uncertainty is not measurable), one can show that, irrespective of the value of ρ, the elimination of risk-free assets with a positive return (in a pure PLS system) is a constraint on the financial system that will inevitably make lenders less well off. To demonstrate this, the portfolio model as presented in Branson [(1979), pp.251-258] is modified slightly to incorporate PLS.

Under PLS without risk-free assets, the lender has to bear the risk that is inherent in the productive activity itself. Thus, the two assets in this model are PLS claims and money, instead of bonds and money. Suppose risk under PLS is estimated from the probability distribution (normal) of expected returns on PLS deposits and represented by σ.[7] Then, if the total liquid wealth available for lending in PLS accounts is W, the total risk, σ_T, incurred on account of that lending must be σW, assuming all funds in PLS accounts are forwarded for use by entrepreneurs.

$$\sigma_T = \sigma W \qquad (1)$$

[6] Under conventional banking uncertainty can be introduced into a financial contract by making interest rate on a loan variable. This is a devise used by banks to pass some of the uncertainty resulting from a change in the future cost of borrowing on to the borrowers. There is no change in the conditions of drawing funds from depositors. Under PLS, part of the uncertainty attached to the production process is shifted back to the depositors.

[7] The representation of future returns as normally distributed and defined by two parameters (i.e., the mean and standard deviation) is a special case. The more general portfolio selection problem in which the choice is made over various distributions of return is subject matter for further research.

Similarly, if r_{-1} is the profit rate that prevailed in the last period, then the current expected return is

$$R = r_{-1} W \tag{2}$$

(assuming that the lender's profit expectations are based on last period's profit rate). Substituting $W = \sigma_\tau/\sigma$ from equation (1) into equation (2) results in

$$R = r_{-1} \frac{\sigma_\tau}{\sigma} \tag{3}$$

In Figure 1 below, the upper right quadrant shows the budget line representing the trade-off between risk and return. Its slope can be arrived at by differentiating equation (3) with respect to σ_τ

$$\frac{\partial R}{\partial \sigma_\tau} = \frac{r_{-1}}{\sigma} \tag{4}$$

The geometrical device in the lower right quadrant enables one to read the level of risk undertaken corresponding to the extent of liquid wealth a lender has in PLS accounts. That this is the case can be seen by differentiating equation (1) with respect to σ_τ:

$$\frac{\partial W}{\partial \sigma_\tau} = \frac{1}{\sigma} \tag{5}$$

W max on the vertical axis of the lower quadrant represents the point where all funds are deposited into PLS accounts. Using equation (5), one can read off from the lower quadrant σ_τ max as the maximum total level of risk that corresponds to ($W \text{ max} \times 1/\sigma = \sigma_\tau \text{ max}$). Using equation (4), one can read off from the upper quadrant R max as the maximum expected return which σ_τ max corresponds to [$\sigma_\tau \text{ max} \times (r_{-1}/\sigma) = R \text{ max}$].

So the information summarised in equations (4) and (5), when graphed, results in the two lines with the slope of (r_{-1}/σ) and $1/\sigma$. We can superimpose a preference ordering for a risk averse individual on the budget line represented by equation (4). The tangency of the budget line with the indifference curve represents the optimal portfolio balance between holding money and depositing it into PLS accounts as shown below, (see Figure 1).

The starred items below represent the optimal risk-return configuration for the lender. Corresponding to that is the optimal distribution of total wealth between PLS accounts (OM*) and money (M*W). Corresponding to OM* in PLS accounts is OR*, the expected return to the lender.

One result that follows from this analysis is that the supply of funds for profit-sharing accounts would vary positively with ρ given π_{-1} (where $r_{-1} = \rho_{-1} \pi_{-1} / k_{-1}$). This result would come about because a higher ρ would lead to a higher budget line and hence show wealth diverted into the PLS accounts and away from checking accounts representing the demand for money to hold.

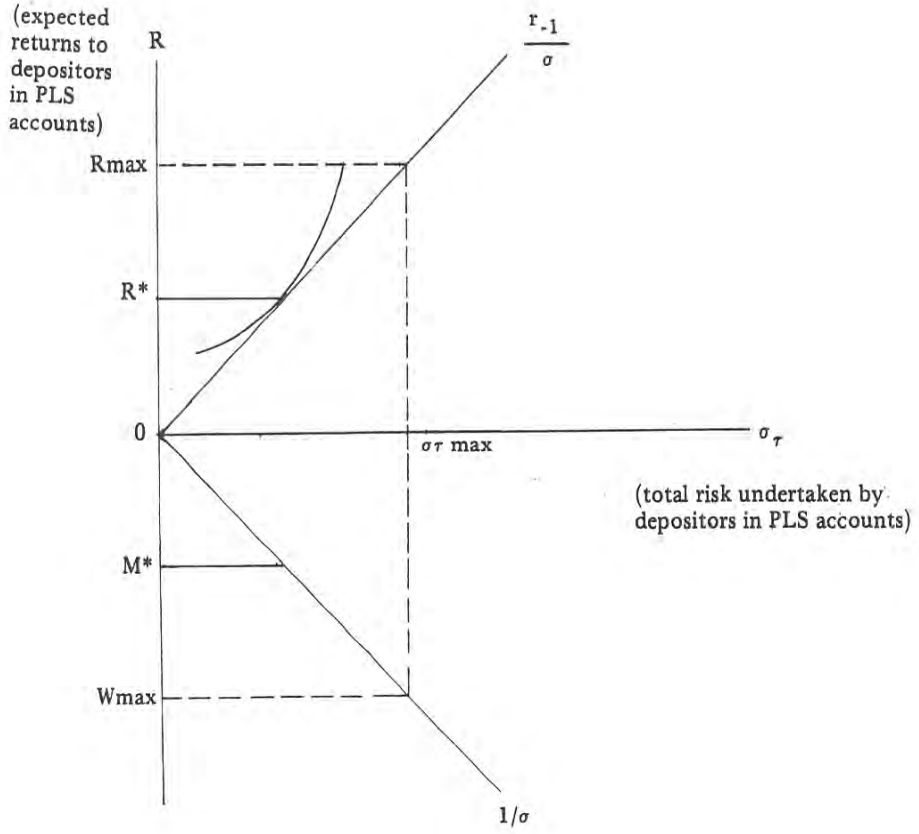

Figure 1

Portfolio selection between PLS and money

Let us now proceed to outline the argument that the addition of minimum risk assets within the PLS banking system would make the lenders better off within the context of a portfolio balance model. Let a guaranteed interest, i, on saving accounts be the additional asset. The third asset would now change the budget line into the budget-set 0iWx as shown in Figure 2 below. 0 represents a point of all money and zero risk. iW represents the maximum return (with zero risk) on saving accounts with a positive rate

of interest. Finally, x represents the maximum return (with maximum risk) derived from putting all of one's funds into PLS accounts. The budget-set represents a linear combination of these three points. Since iWx dominates a linear combination of money and PLS, the lender is unambiguously made better off, as one might expect, from the introduction of a guaranteed interest saving account.[8]

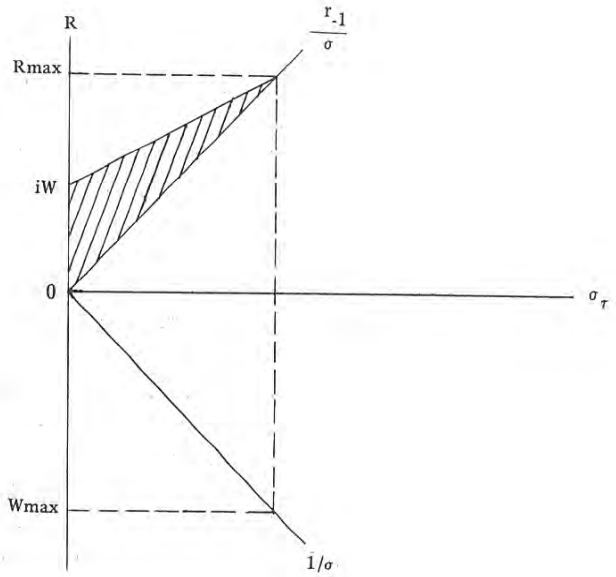

Figure 2

Portfolio selection between PLS., money and interest bearing saving accounts

Perhaps a more meaningful comparison would be that between PLS and a conventional financial system without PLS that offers the lenders a whole range of options (excluding PLS) to balance their risk and return depending on their preference function. This comparison is complicated due to an additional and qualitatively different element of risk that is introduced due to the possibility of realising capital gains or losses on financial assets. Under PLS, risk is related only to the variability of profit as arising from production and fluctuations in economic activity. Secondly, there is no way to relate *a priori* i with r. Thus, since the critical elements in the model are different, the comparison becomes difficult. To add to this complexity is the likelihood that the aggregate preference function itself may change in a Muslim country due to the introduction of a *riba*-free system.

[8] For details of differences of PLS from conventional equity as well as debt financing, see Khan [(1984), pp.48-50].

Thus, in conclusion it can be asserted that it is not possible to show that the replacement of a conventional financial system by PLS would unambiguously leave the lenders better or worse off. However, the welfare of a lender would be higher under PLS if "risk-free" financial assets with a positive return were also available.

V. The Market for Loanable Funds

a) Supply of Loanable Funds:

Little can be theoretically established about the position of the supply curve that would result from the substitution of PLS for a conventional banking system due to the reasons stated in section IV, although it is likely that the supply of loanable funds would decline if the interest option were no longer available and lenders were constrained to take a risk to get a return, as in PLS.

Based on what was discussed in the last section, the supply function can be written as: $s = f(\rho, r_{-1})$, (where r_{-1} is the last period's profit rate) and graphed with a positive slope with respect to ρ.

Some speculation about the supply of loanable funds under PLS is possible. One could argue that some funds will be drawn from hoarding into PLS accounts that claim to be *riba*-free. On the other hand, some people will avoid committing their funds to such accounts due to the absence of "risk-free" returns on deposits; instead they may seek non-monetary forms of investment such as land, durable goods, real estate, jewelry, or seek havens for their capital abroad.

Apart from capital outflows and hoarding, it is not clear that the funds that exchange hands in the rest of the transactions mentioned above are diverted away from the funds available for productive investment in PLS accounts. This is so because someone ends up with the funds expended in these transactions. However, given that only part of these funds may be forwarded into PLS accounts (and part again expended on the above mentioned transactions), the flow of funds into PLS accounts at a point in time will be reduced.

b) Demand for Loanable Funds:

The demand curve for loanable funds can be represented by function $D = f(\rho, \pi_e)$, where π_e is the operating surplus expected by the entrepreneur. This is based on current and anticipated choice of technology available, mix of government incentives and regulations, resource availability, product market demand conditions and the political climate. An individual entrepreneur could be thought of as building these expectations into his calculations.

Different entrepreneurs can be conceived of as attempting projects yielding different internal rates of return. This is based on differences in factors like knowledge, experience, information, contacts, location, and taste for bearing uncertainty. Successful entrepreneurs may, however, be expected to diversify towards projects that yield a higher return. Given an adequate availability of entrepreneurs, one could envisage an investment schedule varying inversely with the internal rate of return, implying that the projects with the higher yield will be attempted first. Thus, an expansion of the scale of the investment coincides with less profitable projects being attempted.

This notion about the existence of a pool of entrepreneurs who differ as suggested can be used to explain the slope of the demand curve for loanable funds. The entrepreneurs are likely to compare the expected profits retained with the opportunity cost of their time, and their aversion to bearing the uncertainty of a project failure. The lower ρ gets, the higher will be the expected profits retained on the average and the greater the number of borrowers in the market for loanable funds. Conversely, the higher ρ gets, the lower the number of borrowers that will remain in the market.

c) A Comparative Static Equilibrium:

Using the demand and supply curve for loanable funds, the equilibrium profit share of lenders and the level of investment financed by PLS can be arrived at.

A simple comparative static exercise is presented to illustrate the functioning of the loanable funds market. Figure 3 below illustrates a shift in

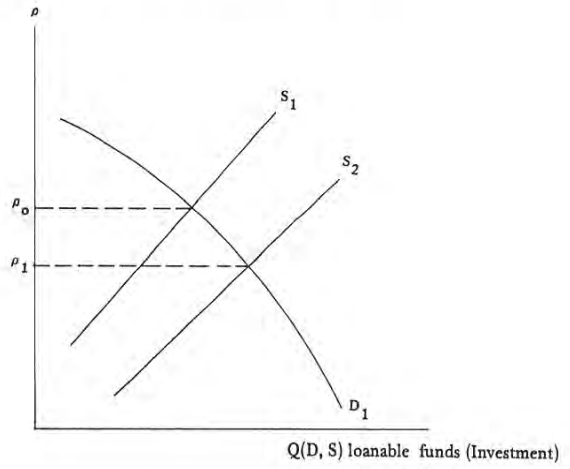

Figure 3

Comparative statics: capital inflow

the supply curve to the right (from s_1 to s_2) due to an injection of foreign remittances. It is assumed that part of this inflow finds its way into PLS accounts. As might be expected, an initial increase in funds in the market will reduce the returns forwarded to the PLS accounts on new contracts. This short-run change in ρ (from ρ_0 to ρ_1) will encourage investment as reflected by the movement along the demand curve below.

This is essentially a short-run model, though it is possible to ascertain some of the long-run forces that would be activated due to this initial change. The increase in investment would be associated with a decline in average profitability of investment even though the total operating surplus will rise. In the long run, to the extent that expected profits are based on past recorded profits, the demand for loanable funds may decline. Furthermore, if the rise in investment is associated with an increase in the cost of capital goods, recorded profits would be further reduced. Conversely, the whole investment schedule itself may shift out if the increase in income accompanying the increased investment sets into motion the accelerator, assuming that the structure of the economy allows one to become operative.

The analysis above shows that a competitive market for loanable funds can be theoretically relied upon to determine the equilibrium percentage profit-shares. A legislated profit share as an instrument of monetary policy, as suggested by some Islamic economists would lead to a distortion and hence allocative inefficiency in the same sense that price-fixing does.[9] Another misconception in the literature states that abolishing interest will enable all potentially profitable projects (no matter how low the profit) to be financed.[10] Given that the supply of loanable funds for PLS is not infinite, but rather varies positively with ρ, the above clearly cannot be the case. Having presented a model for PLS banking and described its workings, we now turn to some possible extensions.

VI. Some Extensions of the PLS Model

The extensions considered here are those that would follow from relaxing some of the assumptions of the model. So far, the *mudaraba* contract, in which the lenders provide all the funds, has been analysed. Let us now allow for the possibility of the entrepreneurs providing some of their own funds from retained earnings, as is the case in the *musharika* contract.

The working of the model remains essentially unchanged. The total funds forwarded for investment, now include the entrepreneurs' contribution.

[9] See Siddiqui [(1983), pp.121-123] and Uzair [(1978), p.49].

[10] See Rehman [(1979), p.269].

$$\kappa = \kappa_e + \kappa_\ell$$

(where e and ℓ represent the entrepreneur and the lender).

It is assumed that there is no source of funds provided on a basis other than PLS. ρ is still determined in the market for loanable funds and can now be interpreted to be the return on funds utilized by entrepreneurs for the bearing of uncertainty. $(1-\rho)$ continues to be the return for the entrepreneurial role of innovation and control. The return to capital provided from either source must be the same and so

$$\rho \frac{\pi}{\kappa} = \rho \frac{\pi_e}{\kappa_e} = \rho \frac{\pi_\ell}{\kappa_\ell}$$

or alternatively $$r = r_e = r_\ell$$

In section II the reasons why *riba* free banking would require banks to be pure intermediaries were explained. It is instructive to analyse the consequence of relaxing the pure intermediary assumption.

When the banking sector is competitive, there would be little difference in reality between non-intermediary and pure intermediary PLS banking. Non-intermediary banks would be offering lenders one profit-share on deposits and requiring another from borrowers on loans. This in principle would be different from the straight administrative fee charged by the pure intermediary bank for its operations. In practice, competition would reduce the return of the non-intermediary bank to cover costs plus a normal profit which would amount to the administrative fee charged by the pure intermediary banks. In other words, competition would force the non-intermediary banks to play the role of the pure intermediary.

When the banking sector is highly concentrated, banks are in a position to set profit-shares and thereby sever the direct link between the monetary and real sector. To explain this, some additional terminology has to be introduced and some issues reinterpreted.

Let $\rho\pi$ now be the bank's share of operating surplus since the bank is now effectively the lender. Part of this surplus has to be forwarded by banks to depositors in its PLS accounts. Let ϕ be the share of operating surplus forwarded in PLS accounts so that

$\phi\rho\pi$ = lenders' share of operating surplus;
$(1-\phi)\,\rho\pi$ = the share of operating surplus retained by the banks.

The two quadrant diagram below illustrates the determination of profit-shares to the lenders, banks, and entrepreneurs. The upper quadrant shows the determination of the equilibrium of profit-shares between the bank and

its depositors and also the level of loanable funds the bank possesses to forward to entrepreneurs at the equilibrium level of profit-shares. This is shown to be carried down to the lower quadrant in the form of a fixed supply, which interacts with the entrepreneurs' demand for loanable funds to determine profit-shares between entrepreneurs and the banks.

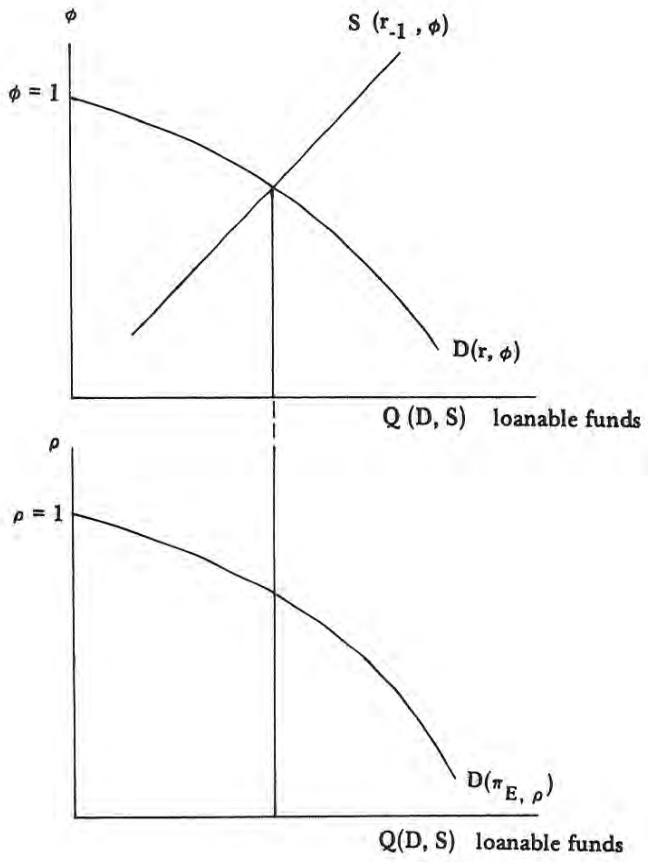

Figure 4

Determination of profit-shares with banks not being "pure-intermediaries"

Now, given that a bank faces a downward sloping entrepreneurs' demand curve for loanable funds, it can manipulate its supply to maximise its own share of operating surplus drawn from the entrepreneurs. It is no longer clear that a shift outward in the supply of loanable funds, say, due to more funds being brought into circulation as a consequence of dishoarding (in the upper quadrant), will mean an increased supply of funds to entrepreneurs at a lower ρ (in the lower quadrant).

This can be seen by analysing the condition under which it will not be in the banks' interest to increase the supply of funds. We can term the banks' net share of operating surplus π_β, so that

$$\pi_\beta = \rho\pi - c(k)$$

[where c(k) is the variable cost of supplying funds].

The condition we are looking for is one that makes

$$\frac{d\pi_\beta}{dk} < 0.$$

Now

$$\frac{d\pi_\beta}{dk} = \rho \underset{(+)}{\frac{d\pi}{dk}} + \pi \underset{(-)}{\frac{d\rho}{dk}} - \underset{(+)}{\frac{dc}{dk}}$$

The first term (on the right of the equality sign) shows that the total operating surplus will increase as more funds are utilized by entrepreneurs at a given rate of profit-sharing. The second term shows that the profit-share of banks, ρ, will decrease as more funds are supplied.

So $\frac{d\pi_\beta}{dh}$ will be < 0, If, $\pi \frac{d\rho}{dk} + \frac{dc}{dk} > \rho \frac{d\pi}{dk}$

As one might expect, this says that the banks will not offer more funds if the fall in their share of operating surplus, due to a fall in their profit-share plus the marginal cost of supplying these loans, exceeds the increase in operating surplus accruing to them due to the increased funds forwarded to entrepreneurs.[11]

VII. Conclusion

The main object of this paper was to illustrate the workings of the market for loanable funds when PLS is substituted for interest. This analysis shows that essentially the same market forces are operative, and profit-shares (based on expectations) instead of interest equilibriate the market for

[11] Various alternative scenarios could be analysed if the PLS contract is studied from the reference point of entrepreneurs rather than the banks. It does appear that not forcing a fixed interest (which is part of the variable cost like an excise tax) on the entrepreneurs and drawing a return from their profits (which like a profit tax may not affect price – output decisions) would have important effects on total investment. Moreover, the overall investment mix may turn towards the more risky with the change in risk-sharing the PLS contract implies. These are important areas for further research of the PLS financial mechanism.

loanable funds. Risk assumes a much more critical role in a financial market which allows PLS as the only form of investment since the returns are variable.

Perhaps the greatest challenge to PLS comes from the lack of an *a priori* guarantee that a comparable quantity of loanable funds will be available under PLS as in an interest based system. It was shown in section IV that lenders will be less well off unconditionally if risk free assets with positive return are eliminated from a system of PLS banking. However, it was not possible to theoretically establish how the welfare of lenders would be affected if conventional interest based banking (without PLS) is entirely replaced by PLS with no risk free assets with a positive return. Whether or not there would be an adequate supply of funds is therefore an empirical question. It does appear, however, that viewing PLS as a constraint on options available to lenders would adversely affect the supply of loanable funds. On the other hand, there is the possibility of tapping otherwise unavailable funds from devout Muslims.

Two findings emerge from the analysis of the market for loanable funds under PLS. First, that it would be inefficient to use profit shares as an instrument of monetary policy. Second, that it is a misconception to believe that interest-free banking would allow all profitable projects, no matter how low the profit, to be financed. The results in this paper also indicate that if the banking sector is concentrated, a non-intermediary PLS bank may restrict the supply of loanable funds to maximise its own return.

This analysis of risk is preliminary, and given the importance of the issue, more study is needed on how it affects both suppliers and demanders of loanable funds. Further research is also needed on the impact of PLS on both the likely composition and magnitude of aggregate investment.

A few general concluding remarks are tempting. Islamic proponents of PLS (or any other mechanism on which to base a *riba*-free banking system) look for advantages primarily on the ethical and socio-religious level. In this regard, there is always scope for interpretation and discussion. The author's view is that the approach currently in operation in the Middle East, where patronising interest-free banking is an option open to those so inclined, is preferable and consistent with Islam's religo-philosophical ethos. The above analysis also shows this to be the preferable option from an economic welfare maximisation standpoint.

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