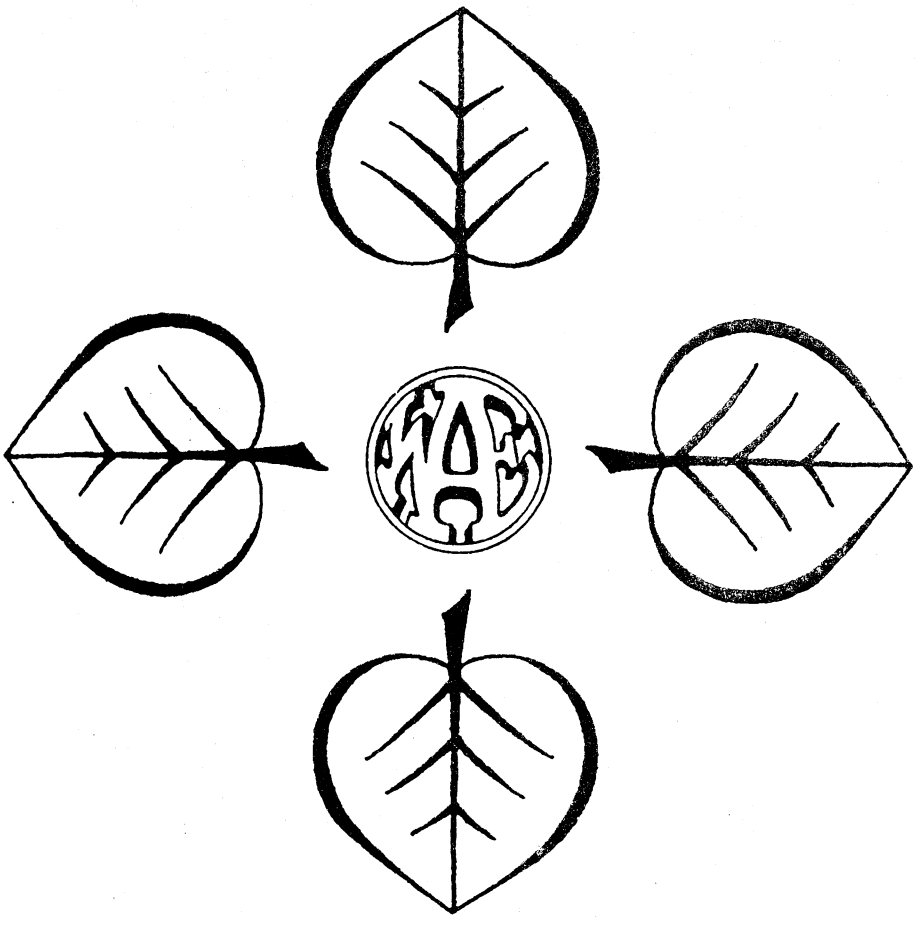
Papers of the 1992 Annual Meeting

Western Agricultural Economics Association



Colorado Springs, Colorado
July 12-15, 1992

Profit and Loss Sharing in Agriculture: An Application of Islamic Banking

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Abstract

This study reviews profit and loss sharing instruments used in Islamic banking. It is argued that profit and loss sharing instruments can also be used by U.S. financial intermediaries to provide external equity capital needed to finance agricultural production. Such an innovation would help reduce financial risk in agriculture.

Introduction

The farm financial problems of the last decade have graphically revealed the limitations and weaknesses of debt finance (Lowenberg-DeBoer). Favorable economic conditions in the 1970's, where the real cost of debt was close to zero and the real return on assets was high, created a climate where debt financing and high leverage was advantageous. Lower commodity and land prices, and higher and more volatile interest rates beginning in the early 1980's lowered the return to farm assets and increased farm financial risk. These conditions led to a significantly higher incidence of credit problems, loan delinquencies, foreclosures, and bankruptcies in agriculture (Brake and Boehlje). Farmers that were highly leveraged were affected the most.

This period of financial stress in agriculture, combined with the increasing difficulty farm firms face in accumulating the necessary and sufficient capital to take advantage of advancing technology, has revitalized the need to examine alternative sources to debt and owner equity financing. External equity financing of production agriculture is increasingly being proposed as a possible source of capital (Lowenberg-DeBoer et al.; Fiske et al.; Matthews and Harrington; Collins and Bourn; Raup; Penson and Duncan).

The structural characteristics of agriculture create barriers to the flow of equity capital between the farm and nonfarm sector (Lowenberg-DeBoer et al.; Fiske et al.; Matthews and Harrington; Collins and Bourn;). These barriers stem primarily from the organizational structure of production agriculture, with the corresponding high transactions costs; namely the search and information, underwriting, and monitoring costs associated with sole proprietorships and small partnerships contracting for external equity. These characteristics have discouraged the development of an equity market that can accommodate the flow of investment funds into agriculture, except for the direct or shared ownership of farm assets. Existing market mechanisms, such as going public, selling shares of common stock, or creating limited partnerships, involve relatively high transactions costs, even for large commercial farms. There is evidence that financing farm firms with external equity instead of debt has the potential for transferring financial risk from the farmer to the external investor and increasing capital availability.

There also is evidence that a sizeable supply of external investors exist that would find agricultural investments desirable (Barry; Gertel and Lewis; Hottel and Gardner; Pelzer; Wetzel; and Moss et al.) Collins and Bourn examined the economic conditions surrounding external equity financing and concluded: "Therefore it appears that the potential for a sizeable market may exist (for external equity), and the primary obstacle is the lack of appropriate financial institutions and instruments" (Collins and Bourn, page 1336).

The purpose of this paper is to introduce profit and loss sharing instruments used in Islamic banking with the expectation that some of these may be used to encourage external equity investment in agriculture. It is not our intent to suggest that Islamic banking should replace conventional banking in the U.S. However, Akacem (1991) editorialized that if the U.S. banking system had been operating on the profit or loss system the current Savings and Loan crisis could have been avoided. This would be the case because first, banks would not have parted with their funds for highly speculative purposes, and second, because the banks would be acting as shareholders in the projects they financed, they would have the incentive necessary to help make these projects profitable. His recommendations are that the current system be changed to allow banks to operate both as banks and as mutual funds under one roof. This dual window arrangement would give a larger sector of the banking public access to mutual funds, thus allowing the depositor to have a choice between interest bearing or profit sharing investments.

This concept of profit and loss sharing is a more complete philosophy than the shared appreciation mortgages type of financing instruments and appreciation sharing in the real estate industry. The concept that we are proposing is to allow some external equity investment in production agriculture to be structured in this country as it is throughout much of the Islamic world. First we discuss external equity in agriculture. Next, we introduce the principles and practices of Islamic banking to gain an appreciation of how Islamic profit and loss sharing instruments can be used to induce external equity into agriculture. Finally we provide some concluding comments as to how profit and loss sharing instruments might be adopted as a U.S. agricultural finance innovation.

External Equity

External equity is defined as equity capital that comes from sources other than the retained earnings, or the internal capital, of the firm. In the literature, external equity is sometimes referred to as off-farm or nonfarm capital. Financing farm firms with external equity instead of debt has the potential for transferring risk to external investors, and increasing capital availability to farm operators. Furthermore, the age distribution of commercial farmers is shifting upwards. The U.S. Census of Agriculture reports that the largest age distribution was the 55-64 category in 1987 (U.S. Department of Commerce). It is obvious that as the farm population ages, the number of individuals retiring from farming or exiting the farm sector in the immediate future will increase. This creates a condition where farm size will likely increase as the farms of exiting farmers are consolidated with other existing farm operations.

Beginning farmers historically have entered farming by either inheriting the family farm, or by climbing the agricultural ladder. Currently the most common method of exit-entry is intergeneration transfer of asset ownership from parents to children (Boehlje). When these assets are equally divided among the legal heirs, there generally is a transfer of equity out of the farm sector because many of the heirs are not involved in farming.

This outflow of equity affects the financial stability of the entire sector because the percentage of debt increases further as debt is substituted for equity. Additionally, there is an increase in the separation of ownership and management of farm assets increasing agency and transactions costs, and clouding management incentives. Also, the sale of the assets to a non-family operator who already is involved in farming will increase the consolidation of assets and result in larger farm sizes.

The method of capital accumulation also has important implications for farm firms risk management (Robison and Barry). The development of the farm credit market has allowed farmers the option of using debt financing to: a) leverage their owner equity to increase their assets, b) reduce their marginal costs by achieving a more economical size of operation, and c) control additional capital. However this also increases financial risk. As with owner equity, there are practical limitations to the amount of debt financing that is available, and prudent to use, in meeting these ever increasing demands for additional capital. It is important that innovations be considered that can provide farmers' with the option of using external equity . With this in mind, we explore innovations used in Islamic banking.

Islamic Banking Principles

Financial markets in the advanced industrial economies are highly sophisticated and complex. They function to provide lenders and borrowers with choices depending on their liquidity preferences and risk-return tradeoffs. Financial markets in the Islamic world exist to serve this same purpose, and the corresponding body of literature that has developed is based primarily on the same neoclassical economic theory as that of the western banking structure (Khan and Mirakhor 1986; Mangla et al.; Abbasi and Hollman).

Within that framework S.R. Khan (1987a) has identified four primary principles of Islamic banking. The first is that risk taking when related to a socially productive activity is entitled to a reward. The second Islamic principle is that all loans must be used to finance a socially productive activity. Third, financial risk remains solely with the lender and not with the managers. And fourth, interest is forbidden because it is a predetermined fixed amount irrespective of the outcome of the business venture.

Islamic banking assumed significance in the last decade when a host of Middle Eastern countries sanctioned the development of individual Islamic banks (Meeani; Wilson 1990). This trend in banking and finance has encompassed most of the Muslim world to the extent that presently there are approximately 45 countries that have some type of Islamic Banking or financial institutions (Khan and Mirakhor 1990). These banks and financial institutions are a direct result of the resurgence in the Muslim world of Islamic fundamentalism where there is no separation between religious, social, political, and economic issues. This comprehensive style of life follows strictly to the teaching of their two primary holy books, the Koran and the Traditions. The Koran is the Muslims' revealed sacred book, and the Traditions is the book of the Prophet's deeds (El-Ashker).

The motivation for these countries to establish their own banking system and financial contracts is to eliminate *riba*, or interest, from their transactions. *Riba* has been defined as an "increase or excess which, in an exchange or sale of a commodity, accrues to the owner (lender) without giving in return an equivalent countervalue or recompense to the other party (Khan, 1987b, p.45)." Riba is considered one of the most heinous of the major sins in the Koran. Consequently the concept of riba, and its elimination from their transactions, has recently stimulated much debate and analysis in countries where Islamic fundamentalism has had a resurgence (Ahmad; Wilson 1983; Pryor; Darrat).

While there is a consensus among modern Muslim researchers that riba is prohibited by Islamic Law, there is considerable controversy about it's application and consequently what financial transactions are permitted and what financial transactions are prohibited. The evolution and development of different forms of Islamic "interest-free" banking in Muslim countries is a direct result of attempting to incorporate these religious beliefs, and their various degrees of interpretation, into banking practice and procedures (Karsten; Khan 1984; Al-Saati; Khan and Mirakhor 1987; Agricultural Bank of Iran; Shirazi).

The two countries that have initiated the most comprehensive experiments with Islamic banking are Iran and Pakistan (Clad; Aryan; Gieraths). In the Islamic Republic of Iran the entire economy, including its financial institutions, were nationalized, restructured, and transformed into an Islamic one, whereas in Pakistan the Islamization of the economy is following a more gradual change, beginning with the financial sector (Khan and Mirakhor 1990). In Pakistan both traditional and Islamic banking is practiced and the Islamic banks are proving to be competitive and profitable (Aftab).

The body of financial literature that has developed with the resurgence of Islamic fundamentalism covers both macro and micro levels of analysis. The macro analysis is by far the most developed as the authors (most of who are Muslim) have attempted to demonstrate how changing the financial system from an interest based to an interest free system would affect monetary policy and the actions of banks. In an attempt to gain international attention and respect for the move to interest free banking, Ahmad (1980) published a compilation of eleven papers written by a group of economists and traditional Islamic scholars. These papers, originally presented at the First International Conference on Islamic Economics, held in 1976, provide a thorough survey of the contemporary Islamic economic and finance literature. The goal of this publication was to promote positive and creative discussion on the political and economic consequences of an Islamic economy.

Building on this base of papers, Khan and Mirakhor (1987) published a compilation of nine essays by leading Islamic Economists analyzing the theoretical aspects of the Islamic banking system. These papers compared the stability of the traditional banking system with the Islamic system. The papers represent an attempt by Islamic economists, trained and educated in economics and quantitative techniques at western universities, to use these economic techniques to demonstrate the characteristics of the Islamic interest free economic system. They demonstrate that replacing the traditional interest based system with some type of profit sharing arrangement makes the Islamic system an equity based system which is better able to absorb, and adjust to, shocks that can lead to banking crises. The role of Monetary policy is outlined, as is the impact of interest free banking on important macroeconomic variables like savings and investment.

Wilson (1990) brought together in one volume the experiences of Islam Banking and finance across a wide spectrum of the Muslim world. The experience of adopting Islamic banking in Turkey, Egypt, Kuwait, Jordan, Sudan, Iran, Pakistan, and Saudi Arabia, and the impacts on their respective economies, are explained and compared in detail. The degree and speed of transformation away from the traditional interest based system, and the success of the new system, has depended to a large degree on the immediate political environment of the country. Another important contribution of Wilson's work is to explore international Islamic finance and the national financial markets of these countries, and the competition among them.

At the micro level, the literature is more descriptive than analytical or technical (Wilson 1983; Butterworths; Khan, 1987b, 1987c; Iqbal and Mirakhor; El-Ashker). The next few paragraphs, explaining the general procedures of the Islamic financial system, are based primarily on these micro level publications.

There are two general types of financial investment contracts in Islamic banking: the partnership contracts, and profit and loss sharing contracts. The partnership contract is known as either *mufawada* or *musharika* investment. With this partnership contract, the bank and the borrower jointly contribute to the capital and the management of the business venture. Under this arrangement the shares of profit and the duration of the project are agreed upon in advance. It is common for this contract to be made to be self-liquidating. For this to happen the bank gradually relinquishes it's claim on ownership in accordance with the agents ability to pay back the principal. Loss from the business is shared in proportion to the contribution of each party to the capital. If the loss was due to the neglect or wilful conduct of the agent, he bears the loss. It is possible to specify that the agent is wholly responsible for the management. If this is a term of the contract, the agent is required to keep the bank informed with regular progress reports.

The Profit and Loss Sharing (PLS) Contracts are known as *mudaraba* investments. With this arrangement all funds are contributed by the bank and the agent is solely responsible for management and entrepreneurship. All profits are shared in accordance to an agreed upon formula and losses are entirely borne by the lenders, except in the case of wilful neglect. Consequently, the agent looses only his time and effort if the venture fails. The difference between the two types of investments, *musharika* and *mudaraba*, primarily is the degree to which the

agent provides capital in addition to his entrepreneurial and management skills, and the degree to which the bank supplies management in addition to its capital. For this reason, throughout the literature and throughout the remainder of this study, both *musharaka* and *mudaraba* are referred to as profit and loss sharing, or as PLS.

In addition to its own equity and capital an Islamic bank has two forms of deposits that make up its additional source of funds. Transactions deposits are one form of deposits and are comparable to demand deposits in a conventional western banking system. Although the bank would guarantee the nominal value of the deposit it would not pay a return on this type of deposit. Investment deposits are the second major source of outside funds to a bank and are comparable to shares in a firm rather than time and savings deposits in a typical western bank. The bank would not guarantee the nominal value of these deposits and it would pay no fixed return. Instead, the depositors would be treated as share holders in the bank and would be paid a share of the profits or losses that the bank made. The only agreement between the depositor and the bank is the proportion in which the profits and losses are to be distributed, and the time frame in which this is to occur. This contractual arrangement, specifying the time duration and proportion of profit distribution, can be altered only by mutual consent of the depositor and the bank.

Again, investment deposits are not guaranteed and have to be committed in minimum amounts and for minimum periods of time. Withdrawal of the money from the investment account prior to the specified time results in a penalty of a reduction in the amount of profits due to that point. In the event of a negative profit, or loss, the penalty would consist of assessing a larger percent of the loss to the investor than would otherwise have been assessed, had the money not been withdrawn early.

There are two types of investment deposits: authorized and unauthorized. Authorized investments are used for specific and particular projects that the bank intends to be a party to, and the investor shares in the profits or losses of that investment according to the percent of the total project he financed. Unauthorized investment deposits are used for a general investment fund, and the rate of return on these investments would be the rate of return that the bank receives on the projects that it has financed with the pool of funds in its total investment fund for that specific period.

In Pakistan there are two types of certificates that the banks can sell to raise investment funds (Iqbal and Mirakhor; Khan, 1987). Participation Term Certificates (PTCs) are transferable corporate certificates that allow for temporary partnership in authorized projects that the bank is financing. These PTCs are a financial arrangement for investing in musharika partnerships. Mudaraba Certificates (MCs) are transferable certificates that are used to finance the unauthorized investments of the bank. The face value of both of these certificates are adjusted semi-annually to reflect the actual market rate of these certificates based on the profit or loss of the investments they have financed.

This type of investment in MCs closely resembles portfolio investments that western banks and mutual funds participate in because the investor is investing in a pool of investments that the bank intends to make. As is well known from portfolio investment theory, by properly diversifying investments, the risk of the investment pool is decreased. It should be noted that in the fundamentalist Islamic world there are numerous shades of agreement and disagreement regarding whether this type of investment is allowed because the diversified return resembles a risk free return, or riba, which would be prohibited by law.

Bashir (1983) used portfolio investment theory to model the portfolio management of Islamic banks. His model was a one period certainty model that attempted to determine the profit sharing ratios, and the optimal portfolio investment proportions simultaneously. The results from his one period model showed a bias for return maximization, and produced an investment portfolio that was undiversified. Correcting the major weaknesses of his study by relaxing the limitations on time and uncertainty would likely result in a more robust model.

Uzair (1980) outlined some of the conceptual and practical aspects of Islamic banking. In his work he reconciles the theory of Islamic interest free banking with the traditional theory of interest, by using the Keynesian concept of liquidity preference as a justification for interest. In this context he explains that the factors of production in classical economics need a clearer interpretation. Land, for example does not mean land only, but in broader terms encompasses all natural resources. The term labor does not include just the physical output of the blue collar industrial worker but includes other components better termed as human resources.

He explains that the important postulate for the analytical framework of interest in Islamic economics is that capital as a separate factor of production does not exist, but is part of another factor of production called enterprise. This combining of capital with enterprise is conceptually similar to the manner in which interest is viewed in the classical literature. Interest can be divided into it's two components: the return on the capital, and a risk premium. This division implies that conceptually interest and profit have a resemblance where interest includes a reward for risk taking while profit includes a reward for uncertain events.

This substantiates Khan's (1986) claim that the principle difference between Islamic banking and traditional western banking is not that one allows for the payment of interest and the other does not. The difference is in the fact that the investment deposits are guaranteed a return by the bank or government in the traditional system. In the Islamic system investment deposits are treated as shares in the bank, and accordingly the bank does not guarantee their nominal value or their uncertain return.

While there have been significant advances in the development of the theoretical foundations of Islamic banking and finance, there are many issues that are not adequately addressed in the literature. For example, without exception in all of these works, the bank is the entity of emphasis. There are no reported studies where the impact on an individual firm, of changing from an interest bearing to an interest free or profit sharing method of financing, has been examined. The legal and institutional framework for applying these PLS contracts has yet to be fully developed. This is best summarized in the words of Khan and Mirakhor:

> "Serious issues also arise in the area of investment as the adoption of a profit-sharing arrangement between lender, that is, the bank, and investor may raise monitoring costs and discourage investment. To avoid this adverse effect and moral hazard issues that arise when the lender and investor have different information on the profits from the investment requires the implementation of a legal and institutional framework that facilitates appropriate contracts. The form of these contracts, and the mechanism for enforcing them, still need to be spelled out." (Khan and Mirakhor, 1990, page 357).

In summary, the basic principles of Islamic banking are that risk taking when related to a socially productive activity is entitled to a reward, all loans must be used to finance a socially productive activity, financial risk remains solely with the lender and not with the managers, and that interest is forbidden because it is a predetermined fixed amount irrespective of the outcome of the business venture. The primary contractual agreement between the depositor and the bank is the proportion in which the profits and losses are to be distributed, and the time frame in which this is to occur.

These principles are being practiced in numerous countries around the world in various forms and to various degrees. The major difference between an interest based system and a PLS system is that there is no guaranteed rate of return with PLS, but rather a guaranteed percentage of the profits of these investments. Theoretically, it has been shown that replacing the traditional interest based system with some type of profit sharing arrangement makes the Islamic system an equity based system which is better able to absorb, and adjust to, shocks that can lead to financial crises (Khan and Mirakhor, 1987).

Proposed Agricultural Adoption of PLS Innovation

Many of the PLS principles of Islamic banking could be applied as an innovation to American agricultural finance to aid the flow of equity capital from the nonfarm to the farm sector. The majority of the problems implementing PLS in the Islamic world have not been of an economic or political nature, but rather are religious. To apply these principles of profit sharing to production agriculture in this country would rest solely on the economic merits of the system. Any political and legal opposition should be overcome with the proper education of the economic merits of the system.

Therefore, from the perspective of applying selected PLS principles of Islamic banking to production agriculture in the United States, the following financial market structure is outlined as a proposed way for farmers to have a realistic opportunity to choose between debt and equity financing. There are three primary actors in this system: 1) the actual user of capital, or the farmer entrepreneur; 2) the intermediary, or the bank; and 3) the provider of capital, or the supplier of investment deposits. The bank provides an intermediary function in its truest form because it has a contractual relationship with the investor and with the farmer, but the farmer and investor do not have a direct relationship with each other. There would be a written contract between the intermediary and the farmer entrepreneur specifying the terms of their contractual arrangement. The actual terms of the contract would be drafted following the guidelines for agricultural contracting found in the state's legal code (Transaction Guide).

While any existing financial intermediary could serve to facilitate the agricultural PLS equity market in the United States, it seems reasonable that the Farm Credit System (FCS) would be an acceptable intermediary to administer the market. The FCS has in place the physical system necessary to make the options available in all areas of the country. Thus they would be able to diversify their investments geographically to protect against regional losses. Further, they have the technical expertise that would be necessary to audit and monitor the progress and accounting of the farms that have signed on to participate in the PLS equity program. The FCS could attract outside funds from investment banks that are looking to invest in agriculture as a diversified investment in rounding

out their own investment portfolio. Government financial backing may be required to start an agricultural PLS equity capital market. However, such a market has the potential of reducing financial risk in agriculture, hence, potential reduction in farm program costs.

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