



ISLAMIC DEVELOPMENT BANK
ISLAMIC RESEARCH AND TRAINING INSTITUTE

ON THE EXPERIENCE OF ISLAMIC AGRICULTURAL FINANCE IN SUDAN : CHALLENGES AND SUSTAINABILITY

Research Paper
No. 63



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**ON THE EXPERIENCE
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IN SUDAN :
CHALLENGES AND SUSTAINABILITY**

ADAM B. ELHIRAIKA^{*}

***Research Paper
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^{*} Islamic Banking and Finance Division, Islamic Research & Training Institute (IRTI), Islamic Development Bank, P.O. Box 9201, Jeddah 21413, Kingdom of Saudi Arabia, Tel # 966-2-6466328, Fax # 966-2-6378927 Email: aelhiraika@isdb.org

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FOREWORD

The main objective of the Islamic Research and Training Institute (IRTI) of the Islamic Development Bank (IDB) is to carry out research in the areas of Islamic banking and finance, Islamic economics and economic cooperation among IDB member countries. Recently, IRTI research has concentrated on the experiences and practical problems of Islamic economic and financial institutions and instruments as applied in several countries. In addition to external factors, Islamic financial institutions confront internal challenges in the process of achieving financial viability and self-sustainability. These challenges are particularly important as regards the role of development banks and the financial instruments used in the financing of agriculture in an Islamic framework.

The present study deals with the important question of how to develop the agricultural financial market and to promote wider outreach and financial self-sustainability among agricultural financial institutions in Sudan, where all these institutions operate according to *Shariah* principles. After surveying the literature on the reasons for the widespread failure among directed agricultural credit programs worldwide, the paper discusses various formats of successful microfinance institutions that can assist in promoting wider outreach and financial self-sustainability in the agricultural financial market.

The key challenges and opportunities confronting the agricultural financial market in Sudan are analyzed in the context of recent macroeconomic and financial liberalization and full adoption of Islamic modes of finance since 1990. Survey data was used to assess the performance of a sample of commercial and specialized banks in 1991-2001. The paper provides evidence that the policy of directed credit in Sudan fails to induce sufficient flow of funds to agriculture, and frustrates the long-run development of the agricultural financial market. Meanwhile, advances in economic and financial liberalization implied squeezed finance to agriculture by commercial banks and specialized banks operating on commercial basis. The paper underscores this as a factor that partly explains the financial viability of these institutions as opposed to state-controlled specialized banks that failed as regards both outreach and self-sustainability.

In the light of international rural finance experiences, the experience of sampled financial institutions, prevailing institutional constraints and incentives and the nature of Islamic modes of finance, the study draws policy recommendations for promoting agricultural finance in Sudan in terms of establishing autonomous market-oriented and decentralized rural finance institutions that can serve agriculture as well as other sectors. The study outlines

relevant types of microfinance institutions that can provide successful alternatives in Sudan. I hope that the publication of this paper will contribute to a better understanding, among researchers, policy-makers and other stakeholders, of the problems of Islamic financial institutions and instruments in relation to agricultural finance in member countries. I also hope that the paper will stimulate further research in this important area.

Basheer A. Khallat
Acting Director, IRTI

ON THE EXPERIENCE OF ISLAMIC AGRICULTURAL FINANCE IN SUDAN: CHALLENGES AND SUSTAINABILITY

1. INTRODUCTION

The financing of agriculture has continued to pose serious challenges to governments in developing countries for decades. Agriculture plays a dominant role in the economies of these countries. In Sudan, for example, agriculture contributes about 40% of GDP, 90% of non-oil exports and provides employment to more than 50% of the population. In addition to supplying raw material to other sectors such as manufacturing, agriculture also plays a major role in government efforts to ensure food security. These facts explain the special attention accorded to agriculture in Sudan's economic policy, and also justify efforts by the government to develop the agricultural financial market. Unfortunately, these efforts have not yet produced the desired outcome in terms of a financially viable and wide-reaching agricultural financial system.

From independence and up to 1990, formal agricultural finance in Sudan relied almost entirely on government and donor sources. Due to tight budget constraints, and as part of a National Economic Salvation Program (NESP), the government designed credit policies to encourage increased bank lending to agriculture in the 1990s. This policy shift coincided with the full adoption of Islamic modes of finance in the entire financial system in 1990, and led to remarkable increases in formal agricultural loans, from just about 1% of total bank credit in the 1980s to about 30% in 1992-1997. But, as credit policy was gradually relaxed in the late 1990s, formal bank lending to agriculture started to dwindle. Consequently, government and donor support to agriculture had to be raised. The agrarian financial market of Sudan remains very unstable, and agricultural finance continued to raise important economic and social questions. This concern is especially critical in the traditional (crop and livestock) rain-fed subsector that contributes almost two-third of agricultural output, but receives a tiny proportion of formal finance.

This empirical study attempts to address the important and pressing policy question of how to develop a sound agricultural financial market and institutions that are both widely accessible and self-sustaining. We examine the theoretical aspects of agricultural finance from both conventional and Islamic perspectives and analyze relevant experiences and successful institutional arrangements. Thereafter, we use secondary as well as survey data to investigate the major problems and challenges encountered by Islamic financial institutions in relation to the financing of agriculture in Sudan over the period 1991-2001. Based on the extent of engagement in agricultural finance and regional

representation, a sample of 6 commercial banks was selected for closer examination along with all specialized banks that aim to concentrate on agricultural finance. The latter group of banks comprises two fully government-owned banks, one of which specializes almost exclusively on agricultural finance while the other is engaged in both agricultural and non-agricultural finance. The other two specialized banks are also engaged in both agricultural and non-agricultural finance, but dominated by private capital. In this survey, we aimed to gather information on such items as the size, number and maturity of various bank assets, nature of sources of funds, various costs and rates of return, and institutional structures and policies relating to bank operations and management.

Besides quantitative information, the survey also included a questionnaire completed with senior officials from sampled banks. The questionnaire dealt with such issues as the factors affecting the supply of agricultural finance, types and management of risk, loan approval and recovery procedures, collateral, and legal and other institutional constraints. However, because of paucity of information on traditional rain-fed agriculture and informal finance, the study is limited largely to formal agricultural finance in the modern irrigated and rain-fed agriculture.

The study hypothesizes that the involvement of commercial banks in agricultural finance is limited due to absence of adequate incentives, whereas specialized banks lack appropriate institutional structures and mechanisms for providing widely accessible and sustainable agricultural finance in Sudan. Also the development of sound market-based agricultural financial institutions in the country is influenced by other factors including macroeconomic instability, repressive credit policy, inefficient agricultural policy, weak physical and institutional infrastructure, a farm credit culture that emphasizes needs, and state interventions in the market. The study stresses the important role the government has to play in overcoming these challenges. But it argues for a radical reformulation of the nature of government intervention and the institutional and operational structure of agricultural financial institutions that are *shariah*-compatible.

The next section reviews the literature on agricultural finance, covering the need for farm credit, the reasons for both limited formal agricultural finance and observed widespread failure of directed agricultural finance programs. We then examine the argument for an alternative market-based financial service to agriculture, with special attention to the lessons learned from recent successful rural finance experiences in some developing countries. This section also briefly discusses the various modes of Islamic agricultural finance and their risk and return characteristics. The analytical framework of the study is presented in Section 3, while Section 4 analyzes the economic environment and policies affecting the agricultural financial market in Sudan. In Section 5, we present an

overview of this market, and use micro-level data from sampled commercial banks to assess their overall financial self-sustainability and outreach regarding agriculture. The performance of specialized banks is examined in Section 6, while Section 7 discusses bankers' perspectives on key operational constraints and opportunities in the agricultural financial market. Finally, Section 8 concludes with some policy recommendations for the promotion of viable agricultural financial institutions in Sudan.

2. LITERATURE REVIEW

The objective of this section is to review the literature on agricultural finance focusing on the importance and perception of credit, and the reasons for failure of government sponsored agricultural credit institutions. The section then discusses the requirements for developing sound agricultural financial institutions that promote both self-sustainability and outreach.

2.1 *Importance of Agricultural Finance and Reasons for Failure of Directed Programs:*

There is now a consensus among economists, policy-makers and donors (see e.g. Yaron *et al*, 1998) that financial services matter for the rural producers, while the existing sources of finance (formal and informal) are not sufficient to accelerate income growth; entrepreneurship in agriculture is constrained by lack of access to a wider range of financial services the availability of which will be welfare improving from a social perspective; and that there is now a better understanding of the basic requirements of providing farm credit. It is well-known that the expansion and modernization of agriculture requires capital injections that normally exceed the savings available to farmers. Funds are needed to finance infrastructure projects including irrigation, drainage and marketing, purchase of machinery, improved inputs, human capital development and so on.

In addition to channeling external resources to agriculture, financial intermediaries can facilitate the transfer of savings within agriculture, assist in appropriate risk and liquidity management and better use of financial surpluses and other assets, and provide an array of valuable noncredit services. Formal financial services are particularly important given the shortcomings of informal financial intermediaries that do not provide the necessary financial services such as deposit keeping and transfer of funds while focusing on short-term and small loans that may not suit the needs of borrowers. Informal finance is also expensive, and provides no scope for financial growth because informal lenders operate in isolated and geographically limited areas.

The literature attributes observed inadequate supply of farm loans by conventional banks in developing countries to two sources. First, information and incentive problems may lead to market imperfections (asymmetric

information, moral hazard and adverse selection) that induce credit rationing (Gonzalez-Vega and Graham, 1995: 5). Simply because it is too costly to collect information on and monitor scattered potential agricultural borrowers, banks may decide not to engage in agriculture altogether or provide as little farm loans as feasible. Second, contract enforcement problems plus lack of adequate collateral further induce banks to restrict lending to small farmers (e. g. Zeller *et al.*, 1997). Lack of real development (growth), weak physical and financial infrastructure and high transaction costs also frequently make it unworthy for poor farmers to seek formal loans. Improved farmers' access to credit therefore requires not just credit policies that force banks to lend to agriculture, but also improved opportunities for economic growth, institutional development, as well as financial innovations that are tailored to the needs of farmers (Von Pischke, 1991). Both market imperfections and institutional development limitations call for government intervention to help improve the welfare of rural and urban poor (see Stiglitz, 1994).

However, direct government intervention in most financial markets (via targeted credit programs, interest rate subsidies and other policies) has generally been disappointing and has tended to retard rather than promote the development of financial services in rural areas (Yaron, *et al.* 1998: 147). A major reason for this failure is the emphasis placed on credit needs among farmers without adequate attention to the importance of efficient credit decision making and loan administration to ensure that loans are repaid in full and in time. The concept of credit needs has been strongly criticized because it ignores risk and alternative ways to achieve development objectives (Von Pischke, 1989: 133), and raises a number of conceptual and practical problems. First, focusing on credit needs overstates the role of credit and underestimates alternative sources of finance including informal and farmers' own savings. Second, it does not encourage efficient assessment of the credit capacity of borrowers or the design of measures and loan terms that facilitate prompt loan repayment. Finally, by neglecting or diverting attention from the capability to repay, need-based credit programs destroy the financial institutions through accumulation of bad debts.

Consequently, need-based rural financial programs often rely heavily on external support and fail to be self-sustaining. After more than four decades of experiences, extensive empirical evidence (see Gurgand *et al.*, 1996) on the performance of rural credit programs clearly indicates that such programs fail both the objectives of increasing agricultural output and that of developing a sound rural financial market¹. The programs are usually designed to achieve short-term objectives aimed at increased agricultural output rather than long-term objectives aimed at the sustained expansion of rural incomes. Government

¹ The term rural financial market signifies both agricultural and non-agricultural credit markets in rural areas. It is used in this study to refer to the agricultural dimension of the market.

and donor funds are accordingly channeled to farmers at low interest rates and through agencies that lack autonomy and incentives for profit making. This development orientation and lack of profit motive is often associated with inadequate mobilization of deposits by specialized credit institutions. The chances for financial success among these institutions are further limited by specialization in agricultural credit with the accompanying instances of market failure, high monitoring costs as well as the negative impact of policies that penalize agriculture.

In many countries, governments force state banks to commit themselves to agriculture despite unresolved problems relating to agricultural production and marketing and the lack of suitable financial techniques. Meanwhile, the covariance of farmers' income plus unpredictable weather conditions imply greater risk in farm lending and lack of opportunities for diversification across local borrowers. This together with seasonality of income flows discourages banks from mobilizing deposits. Covariance risk and monitoring costs make farm credit difficult to manage and costly, and this partly explains the prevalence of adverse selection and moral hazard problems in farm credit.

Moreover, because of their public nature, specialized agricultural or development banks are not strictly subjected to prudential regulation and supervision, and lack appropriate internal control mechanisms as well as incentives for efficient lending operations among staff. They are normally characterized by highly centralized operational structures, deficient risk management, absence of proper accountability, technological obsolescence, and limited investment in human capital. With lending rates being fixed by government, the performance of such institutions is sometimes measured by the number of loans disbursed rather than the rate of return. As Gonzalez-Vega and Graham (1995) point out, ultimately specialized development banks lack institutional and financial viability as often reflected in their inability to expand, declining lending capacity, inability to mobilize resources, increased dependence on government subsidies, and high rates of default. It is common that state-owned development banks are subjected to borrower domination since all practices and procedures were designed to serve the interest of borrowers rather than that of depositors and/or the institution.

In summary, worldwide experiences corroborate that the institutional design and objectives of public agricultural credit programs/agencies creates a poor credit culture manifested by a dependency on subsidies, low recovery rates, inadequately diversified portfolios, mis-targeting of credit and rent seeking behavior on the part of credit officials and influential farmers. As a result of this culture, and the consequences on financial transactions of the special material conditions of agriculture, subsidized state-owned rural financial institutions grow at the expense of market-based private institutions. But subsidized credit institutions almost always fail to provide the services needed

for increased and sustained growth in farmers' income because they lack the means for survival in terms of financial viability and motivation to mobilize resources.

2.2 Promoting Wider Outreach and Financial Self-sustainability

On the basis of the limitations and dismal performance of numerous small farmer credit programs across the globe, a new direction in rural finance has emerged and gained strong grounds² in the 1990s. The new direction builds on the successes of several microfinance institutions and suggests that the successful provision of agricultural credit requires a market perspective that encourages the design of financial products that suit farmers' preferences and capacity to repay, stresses the significance of mobilizing savings and enhancing financial independence (Rhyne and Otero, 1994: 11).

Gurgand *et al* (1996) observe that on the basis of these principles a number of rural finance institutions in Africa have made significant achievements in terms of outreach and self-sustainability. This success involves market-related interest rates, cost-effective service delivery methods and improved institutional competence in such areas as delinquency control, information management and staff development. In addition to securing the continuity of financial services, financial viability creates incentives for borrowers, management and staff to continually assess and improve their performance (for extensive surveys on successful microfinance institutions see Ahmed, 2002, Robinson, 2001, and Elhiraika, 1999). There is a consensus in the literature (e.g. Seibel and Parhusip, 1998) that institutional design and operational structures are the cornerstones in the success of financial institutions that provide rural credit.

The fundamental aim of the alternative approach to rural finance has been summarized in recent research as the promotion of "outreach and sustainability" of financial services (Yaron *et al* 1998)³. This approach defines the role of the government in a very different way that emphasizes the setting of a favorable legal and policy environment for rural financial markets and addressing specific market failures cost-effectively through well designed and self-sustaining interventions (Yaron *et al*, 1998:147). These interventions should focus on proper institutional design, increased investment in rural infrastructure and human development, and adherence to appropriate policies that promote self-sustainability and greater outreach in the rural credit market. In general, governments should facilitate the workings of the market so that private agents can allocate resources efficiently according to price and profit signals (Yaron *et*

² By gaining support from governments, Non-Governmental Organizations (NGOs), donors and research institutions.

³ Also see FAO and GTZ (1998) for the case against subsidized agricultural credit programs, and the merits of the alternative approach to agricultural finance.

al, 1998), regulate financial intermediaries so as to limit excessive risk-taking by banks, and provide a sound legal and regulatory framework for enforcing contracts.

2.3 *Format of Successful Microfinance Institutions*

There are three types of common microfinance institutions. These are Non-Governmental Organizations (NGOs), Credit Unions and Cooperative Societies (CUCS), and banks. Historically, NGOs (local and international) are credited for initiating the design of innovative microcredit and the development of appropriate institutional and organizational structures. But NGOs encounter many challenges that force them eventually either to close down or transform into regulated financial institutions. These include lack of required expertise and the business culture needed to establish sustainable credit services, limited range of financial products, inability to expand and to mobilize savings because of legal restrictions, and absence of formal regulation and supervision system. Therefore, we will concentrate⁴ here on banks and CUCS as the relevant forms of microfinance institutions that can be adopted at different levels of development in the agricultural credit market. The discussion also deals with the issue of how banks and CUCS manage risks and costs that could constrain rural finance.

CUCS are normally set up by groups of people who have limited or no access to formal credit to pool their savings together and give loans to each other. Often CUCS have formal structures with regional and national networks as well as central finance facilities that allow the transfer of funds among member credit unions. They operate like a special category of banks and under separate regulation and supervision mechanisms. Whether CUCS operate as formal or informal micro lenders, they tend to have better ability than banks to screen, appraise and monitor borrowers because of social/group pressure and superior information on borrowers (Gurgand *et al*, 1996). However, by restricting financial services to members' savings, CUCS frequently have limited outreach and growth potential and fail to satisfy increasing need for funds by borrowers. The profitability of CUCS may also be weakened by low interest rates due to members' domination beside lack of professional management. As research indicates these limitations can be resolved through proper institutional design and selection of members (see Elhiraika, 1999). Diversity of members in terms of occupation, sophistication and diversification of assets and liabilities as regards size and maturity plus market orientation and managerial autonomy are factors that enhance the growth and viability of CUCS. The potential of CUCS can also be enhanced through links with banks and other financial institutions (see Schoombee, 1998) and technical assistance

⁴ The discussion is based largely on Klein *et al* (1999:19-22)

from local and international credit organizations especially at the early stages of their development.

Banks can provide microfinance either directly or indirectly through linkage programs with microcredit institutions. Indirect micro lending in which banks are not involved in loan product design and administration is only moderately successful in providing sustainable financial services (Klein *et al*, 1999:22). Alternatively, banks can provide microcredit services through specialized departments. Obviously banks can capitalize on their ability to mobilize relatively large resources and on their general financial expertise to offer extended and appropriate financial services to small borrowers. But, the ability of banks to engage in microcredit may still be constrained by lack of expertise in microfinance and the temptation of sticking to the traditional banking functions. For these considerations, the poor often remain unbankable for conventional banks. Therefore, instead of trying to drag traditional banks into microcredit, it may be preferable to create new and fully specialized banks that are committed to the expansion and sustainability of microfinance.

Banks and CUCS can complement each other with CUCS concentrating on areas with limited population and more homogeneous groups. Meanwhile, as the financial market develops and becomes more integrated microfinance institutions can operate alongside other financial institutions.

Microfinance institutions employ a variety of operating mechanisms and strategies to reduce transaction costs and risks (for details see e.g. Robinson, 2001). Strategies for cost reduction include standardization of loan products and lending procedures. Initially only short-term operating loans are given to clients on the basis of their saving performance. Thereafter, committed clients can get loans in excess of their savings and on the basis of project profitability. Various group lending modalities and staff and client incentives may be used to reduce transaction costs and improve loan recovery rates. Risk management by microfinance institutions often implies concentration on a target clientele, financing of a limited range of activities, and decentralized branch networking that reduces both information cost and loan default risk.

On the other hand, the lessons from microfinance may have a number of limitations regarding agricultural finance. In addition to dependence on the external environment and policy bias against agriculture, these include low population density and limited opportunities for diversification, capital inadequacy and fragile organizational and operational structures. To avoid these and other limitations, the literature suggests (see e.g. Gonzalez-Vega and Graham, 1995) that the ideal framework for promoting microfinance institutions (banks and CUCS) should include:

1. Deposit mobilization.

2. Adequate capitalization, with initial re-capitalization by government followed by expansion in retained earnings and sale of shares.
3. Independence from government ministries and political pressure that induce rent-seeking behavior and restrict interest rates.
4. Incentive-compatible governance, qualified staff and clear criteria for promotion and performance assessment.
5. Appropriate screening and monitoring of borrowers plus portfolio diversification in which non-farm enterprises are equally important.
6. Decentralization of branches, decision-making, performance-based evaluation etc.
7. Freedom to hire and fire and set wages free from civil services regulations.
8. Transparency in reporting to regulators and all stakeholders.
9. Financial performance must be regularly evaluated and explained.
10. Donor support limited to institutional development (to strengthen the human capital and information base) rather than fund loans.

To sum up, it is justifiable for the government to create and support a policy framework for efficient and cost-effective rural finance, but the government should not attempt to force financial institutions to direct credit to specific targets. Ultimately, government intervention should be limited to removal of the causes of market failure by such means as temporary and transparent grants or subsidies for generation of information and institutional development and capacity building, and by providing seed capital and refinancing facilities for term lending.

2.4 Islamic Modes of Agricultural Finance and Their Salient Features

The rationale for, as well as the basic concepts of, Islamic finance is now textbook knowledge (see e.g. Siddiqi, 1985, and Chapra, 2000). In this subsection, we briefly discuss the main modes of Islamic agricultural finance, their specific risk and return characteristics, and available empirical evidence on their application.

There is an array of modes of finance available to Islamic banks to meet various types of financing needs. The main modes of agricultural finance used by Islamic banks are *Musharaka*⁵ (including *Muzara*, *Musaqah*, Diminishing

⁵ A joint venture in which there is more than one contributor to the financial capital of a project, and profit/loss is shared as agreed in advance. In *Muzara* financing, one or more individuals enter into a contract to invest in an agricultural enterprise or operation, whereas *Musaqah* is a *Musharaka* agreement involving orchards/trees (or crops) in which one party provides

Musharaka), *Murabaha*⁶, *Salam*, *Ijara* and *Istisna* (see Gulaid, 1995). Whereas *Musharaka* may be suitable for equity or long-term finance, *Murabaha* instruments dominate short-term financing provided by Islamic banks. Discussion of *Fiqh* issues relating to these modes of finance as applied to agriculture may be found in Abdallah (1993).

Like all real investments in developing countries, *Musharaka* financing can be risky given the many adverse effects of changes in the macroeconomic environment and policies, and other factors influencing conditions in the market for the good in question. In general, the risk assumed by the bank depends on the nature of the asset involved and how it is managed. In the case of *Ijara*, for instance, misuse of leased assets by the client or his agent may constitute risk that can be mitigated by insuring the asset.

From *Shariah* viewpoint, the validity of the *Murabaha* contract hinges on the condition that the bank must own the asset financed before the transfer of the ownership right to the client, who placed a promise to buy (and not a purchase contract). There is no agreement among *Fiqh* scholars as to whether the promise is binding to the client or the bank, whereas the *Shariah* law states that it cannot be binding to the two parties. According to Khan and Ahmed (2001), this constitutes the most important risk associated with *Murabaha*. Another risk of *Murabaha* may arise from delayed payment by the client, while the bank is not allowed to adjust the agreed upon price.

The rate of return on *Salam* financing depends on the difference between the original sale price and the price of the good at the time of delivery. In addition to the factors that affect crop price, the relative negotiating power of lenders and borrowers, the extent of competition in the loan market and government regulation would influence *Salam* rate of return. Because of fluctuations in agricultural price and the cost of storing crops, crop price represents a major source of risk for lenders, on top of counterpart risk that includes failure to supply the goods agreed upon on time, completely or partially. Also there is a risk of the goods delivered being of different quality. These risks may be caused by natural factors such as drought and other

orchards and the other provides capital, labor, irrigation etc. Diminishing *Musharaka* is a financing contract in which a package of physical inputs is financed according to a specified share in profits/losses.

⁶ This is a purchase and sale contract in which the bank facilitates the financing of a specific requirement of the client, according to a mark-up that is mutually agreeable between the two parties. The client pays the original purchase price of the good plus the mark-up either in full or on installment basis. *Salam* is a sale agreement in which the price of the good is paid in advance against the promise of the seller to deliver the good at some specified future date. *Ijara* refers to a leasing contract in which some specified assets (e.g. tractor) are leased for use by a farmer/client according to an agreed price and for a specific period of time. *Istisna* refers to a request or an order placed with a manufacturer to make equipment, tools, a commodity, etc.

calamities or due to the quality of the farmer. In practice, it is difficult and expensive to verify if the farmer has genuine or acceptable excuse for failure to deliver the good in time.

Similar to *Salam*, *Istisna* is subject to risk relating to the quality and time of delivery of goods. But the goods involved are less exposed to natural calamities compared to *Salam*'s case. If the contract is considered not binding, as may be the case in some *Fiqh* opinion, the supplier may at any time opt not to honor his/her promise. On the other hand if the client is given the option not to accept the goods at the time of delivery, the bank faces additional risks since the bank would have already paid for the goods supplied by subcontractors.

In addition to *Musharaka* and *Murabaha*, *Mudaraba*⁷ is also used, though not frequently, as a means of medium and long-term agricultural finance. Being conducive to medium and long-term investment, the use of *Musharaka* and *Mudaraba* instruments is generally encouraged. In practice, however, their application is limited chiefly due to high risk arising from absence of collateral, high level of moral hazard and adverse selection, and limited competencies in project evaluation by banks (Khan and Ahmed, 2001:56). However, as equity holders, Islamic banks have to undertake thorough assessment of potential projects and participate in the management of the projects financed. Thus problems of moral hazard may be reduced through close monitoring of the use of funds, while profitability may improve through better project selection. In this connection, and as Dhumale and Sapcanin (2002) argue, Islamic finance could offer alternatives that are consistent with the underlying principles for successful microfinance as discussed previously. Dhumale and Sapcanin (2002:13) explain that viable projects that are rejected by conventional banks because of insufficient collateral might be acceptable to Islamic banks on a PLS basis. Islamic banks could provide comprehensive microfinance through the use of *Mudaraba* for the financing of fixed or investment capital and the use of *Murabaha* for providing working capital.

Limited available empirical evidence suggests that farmers are likely to prefer Islamic instruments of finance to conventional bank loans because of the risk sharing aspect. For instance, using a sample of 200 farmers from Iran, Yazdani and Hill (1993) find a high demand for PLS finance and that 66% of farmers prefer PLS finance. Sadr and Iqbal (2002) examined the experience of the Agricultural Bank of Iran (ABI) over the period 1984-1998. They found that ABI was able to raise its total loans to farmers by several folds, enjoy a high rate of loan collection that varied between 95% and 99%, and increase its equity (*Musharaka*) financing from 7% in 1990 to 48% in 1996. They attributed these successes to reduced information asymmetry resulting from the use of Islamic

⁷ A financial arrangement in which the bank provides all the necessary financial capital, while the investor provides all the human capital needed. The two parties share the uncertain profit according to an agreed formula.

instruments of finance that entail close relationship between the bank and its clients. The information requirement of Islamic instruments also enabled the bank to select better quality customers and more profitable projects. According to Sadr and Iqbal (2002), the success of ABI followed the initiation of a reform program that started in 1990 with the aim of achieving improved services, greater efficiency and increased returns. The program encouraged increased investment in supervision and monitoring, enhanced the role of research and development, and adoption of mechanisms for reduction of transaction costs. Sadr and Iqbal (2002: 149) concluded that the experience of ABI demonstrates that Islamic banks can broaden their client base through process simplification, diversify their asset portfolios to include substantial shares of equity and debt instruments and also optimize their returns.

Unfortunately, the study by Sadr and Iqbal (2002) was incomplete because they did not examine the liability side of ABI or assess its relative financial viability. This analysis is important for one to be able to judge the extent of resource mobilization by the bank, use or absence of subsidies, and sustainability of its services.

Ahmed and Roy (1995) analyzed the different aspects of financing provided by the Islamic Bank of Bangladesh. They concluded that because of the sharing of risk and outcome of joint efforts of the capital owners and the entrepreneurs, the recovery rates are quite high. Elhiraika (1996) and Ahmed (1998) report increased bank lending to agriculture in Sudan following the complete adoption of Islamic modes of finance. They attributed this to government policy as well as the nature of Islamic modes that allow banks to get relatively high returns on farm credit. But given the risks involved and the absence of insurance⁸ for crop loans, the agricultural financial market in Sudan is very unstable.

As regards the specific types of risks of Islamic financing techniques, empirical evidence⁹ gathered from 17 institutions from 10 countries, indicates the following (see Khan and Ahmed, 2001: 62-64). First, credit risk is highest in PLS modes (*Musharaka* and *Mudaraba*) in general and lowest in *Murabaha*, followed by *Ijara* and *Istisna*, respectively. *Salam* ranks average in terms of credit risk. Thus fixed income modes are perceived to be less risky than PLS modes. Second, mark-up risk is highest in product deferred contracts (*Istisna* and *Salam*) followed by PLS instruments. *Murabaha* has the least mark-up risk followed by *Ijara*. Price changes are the main cause of mark-up risk for *Salam*. Although *Ijara* contract is a long-term contract, it is less risky because of possibility of adjusting prices to reflect market conditions. Third, according to the ease and cost of liquidity of instruments (and length to maturity), *Mudaraba*

⁸ As further explained in Section 7, such insurance relates to the goods or crops involved.

⁹ This evidence was based on perception of risk by a sample of Islamic bankers.

has the least risk followed by *Murabaha*. Diminishing *Musharaka* has the highest risk followed by *Salam* and *Istisna*, respectively. Fourth, in terms of operational risk (legal risk, understanding of contracts, management of contracts etc), *Murabaha* and *Ijara* have the lowest risk, whereas *Salam* and *Istisna* (deferred sale) have the highest risk. PLS modes (*Mudaraba* and *Musharaka*) are somewhere in between. It has been argued that *Salam* and *Istisna* are rather complex and difficult to implement.

Obviously, the financing of agriculture by Islamic banks is subject to many of the problems encountered by traditional banks. These include problems emanating from the macroeconomic context, agricultural policies, prices, marketing and natural hazards, and legal and other institutional constraints. The arguments for a market-based agricultural credit system as opposed to a state-controlled system are equally valid in the case of Islamic finance. There is no reason, however, to believe that the use of Islamic modes of finance in agriculture should mean more risk or less profit. Theoretically, there is a wide range of instruments available to Islamic banks to engage in various types of financing in agriculture. At the same time, by investing in information gathering and close project supervision and monitoring, Islamic banks can reduce financing risk, diversify their asset portfolios in favor of equity finance, and still generate higher returns because of profit-sharing.

3. METHODOLOGY:

As indicated previously, the ultimate objective of developing a sound agricultural financial system is to help in achieving increased and sustained growth in farmers' income and reduce poverty. But, as many researchers (e.g. Von Pischke, 1991) suggest it is difficult and controversial to assess the effect of credit on incomes and poverty, and that such effect may be more objectively evaluated in terms of the outreach and self-sustainability of agricultural credit institutions. In this study, we examine the experience of a sample of agricultural financial institutions in Sudan, focusing on the conditions for success in terms of viability and sustainability.

Outreach may be measured by a hybrid index of indicators including number of clients and bank branches, the value of loan portfolio and its annual growth, the percentage of female clients, the average loan size, distribution of bank services, transaction costs, flexibility and suitability of services, and so on.

The self-sustainability of a financial institution is normally assessed by calculating the subsidy dependence index that is the percentage by which the agency's average on lending rate would have to increase to make it self-sustainable (see Yaron, 1998 and Ledgerwood, 1999). In addition to the subsidy dependence index, financial performance can also be evaluated by calculating the rates of return on equity and assets. Examples of subsidies include low interest rates on concessional loans; exemptions from reserve requirements, free

equipment and staff training provided by government or donors, and government assumption of foreign loans.

Following recent research (FAO and GTZ, 1998 and Yaron, 1994) we also examine the mechanisms that enhance the success of rural finance including:

1. Institutional objectives that shift emphasis from giving loans to motivating loan recovery and providing saving services.
2. Management autonomy in formulating operational policies and innovative low-cost systems.
3. Staff accountability, training and rewards.
4. Innovative and flexible loan terms and conditions adapted to social economic and cultural circumstances.
5. Close monitoring, high loan collection rate and low loan losses.
6. Mobilization of resources through deposits and saving accounts to reduce reliance on donors' funds.
7. Positive lending/profit rates with an adequate spread.
8. Reduced administrative expenses and use of economics of scale.
9. Advanced management information systems that facilitate effective planning, control and timely monitoring of loan repayments.
10. Concentration on rural markets that have relatively high population densities.

We briefly discuss the general economic environment, the nature, structure and performance of agriculture and the possible impact of these and other related factors on the agricultural financial market. Then, we use data to analyze the structure and expansion of this market besides the outreach and financial viability of key agricultural financial institutions in 1991-2001, the period when the banking system had been fully Islamized. Empirical evidence is also used to assess the relative importance of various instruments of Islamic finance over this period. This includes analysis of the risk, return and recovery aspects of the Islamic agricultural financial instruments in Sudan, in addition to the size and maturity of formal finance to rain-fed and irrigated agriculture, legal and institutional constraints, inadequate information, collateral.... etc. Supply side constraints such as meager bank capital and other resources, liquidity, lack of expertise and so on, and strategies for dealing with these problems are also covered. Besides quantitative and other institutional data, a questionnaire was devised in order to identify and assess the views of bankers regarding the various problems encountered in the use of Islamic financial instruments in agriculture. Special attention is given to the risk characteristics of

Shariah-compatible modes of agricultural finance as perceived by bankers, as well as the nature and efficiency of risk management systems in agricultural finance.

The study contends that the present agricultural financial system of Sudan is limited and not sustainable since it relies largely on government initiatives and support, while the modernization of agriculture (irrigated and rain-fed) as well as food security requires the availability of increased, relatively stable and wider range of financial (credit and non-credit) services. After analyzing the survey findings of this study, and in the light of relevant experiences of successful rural finance in some countries, we attempt to make recommendations that contribute to the search for a viable and sustainable agricultural financial system in Sudan.

Sources of Data:

Time series data relating to macroeconomic performance, monetary and financial aggregates, and government policies and programs was obtained from official sources including the annual reports of the Bank of Sudan and the Economic Survey of the Ministry of Finance as well as other publications. Bank level data was gathered through data sheets that were completed by officials of respective banks, with the follow up of a team¹⁰ of researchers. These data include detailed balance sheet items, income statements and a breakdown of financing by sector (irrigated and rained) and by type of financing instrument. As detailed in section 5, a sample of 10 banks was chosen, including 4 specialized banks and 6 commercial banks. The specialized banks represent an interesting mix comprising the Agricultural Bank of Sudan, the largest and fully state-owned bank, the Farmers Bank and the Animal Resources Bank, that are dominated by private capital, and the Savings and Social Development Bank, which is a government-owned bank that specializes in agricultural as well as other types of development financing. We also collected data from the Commercial Banks' Consortium on its various activities and credit performance. The questionnaires were completed with senior officials, who are responsible for agricultural finance at head offices in Khartoum.

¹⁰ Three Research Assistants were employed to collect the completed data sheets that were repeatedly revised and returned to banks for correction, additional information or clarification. Thus, the actual process of data collection took a complete month. Most of the banks lack standardized records on their activities. Even such information as number of accounts held at the bank in the current or past few years was hard to get. In most cases, officials at headquarters said they have to contact all their branches in order to gather such information. In some cases we were only able to get the information after numerous contacts with General Directors.

4. ECONOMIC ENVIRONMENT AND POLICIES AND THE ROLE OF AGRICULTURE IN SUDAN

In this section we discuss the main features of the general economic environment including the structure of aggregate output, the nature of agriculture and the key economic developments and policy issues affecting the performance of agriculture and/or the agricultural financial market for the period under review.

There was no change in government during this period, but economic policy and performance fluctuated very widely. Since independence and up to early 1990s, economic policy-making was based on a strong belief in the leadership of the public sector. Although emphasis on the importance of this sector changed somewhat over the period 1957-1990, it remained always dominant and moves toward privatization of state enterprises or liberalization of key policy variables such as the rate of exchange were limited and ineffective. Government dominated even production decisions in irrigated schemes that account for about one-third of agricultural output. At the outset, this indicates the roots of the legacy of state provision of farm credit that continued up to the present.

4.1 *Economic Structure and Performance*

In spite of drastic policy shifts since the early 1990s, the structure of the economy, in terms of relative contribution of various economic sectors to GDP, remained more or less the same except for the exploitation of oil in 2000. Agriculture has been the dominant sector throughout the history of Sudan. As Table 1 shows the share of agriculture fluctuated between 28.7% and 49.8% in 1990-2001. This wide fluctuation indicates erratic changes in agricultural production due mainly to weather conditions, the civil war that displaced millions of rural families, lack of investment in agriculture, and so on. The general upward trend in the contribution of agriculture to GDP reflects intensified government efforts aimed at achieving food security during that period. In the period 1990-1999, the trend of real GDP was very much related to that of real agricultural GDP. This relationship appears to be slightly weakened after the exploitation of oil in 2000. It is worth noting that agriculture still has a huge potential, with an estimated arable land of 200 million *Feddan*¹¹ of which only 20% is currently used.

Other notable changes in GDP structure include a huge increase in the share of industry, manufacturing and mining as from 2000 due to commercial exploitation of oil. Clearly there is a need for diversification of the national

¹¹ 1 *Feddan* = 0.41 hectares.

economy. Diversification of income sources, farmers' business and bank lending ultimately reduces exposure to agricultural risks, and can assist in promoting both agricultural investment and finance.

Table 1: Structure of GDP

Sector	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Agriculture	28.7	33.9	40	38	41.1	43	45	47.6	48.7	49.8	46.4	45.6
Industry, Manufacturing and Mining	9.4	9.7	9.0	9.4	7.6	6.7	7.4	8.3	8.1	9.1	15.6	16.6
Construction, Electricity and Water	8.1	7.4	7.5	8.1	8.2	7.5	7.0	6.8	6.9	6.7	6.4	6.2
Government Services	11.7	10.3	7.8	11.7	7.6	8.4	7.5	5.9	6.5	6.2	5.8	6.0
Other Services	42.1	38.7	35.7	42.2	35.5	34.4	33.1	31.3	29.8	28.2	26.4	25.6

Source: Bank of Sudan Annual Reports (various editions)

Key macroeconomic and financial indicators for the period under review are presented in Table 2. The rate of GDP growth was low and highly fluctuating in the 1980s, averaging about 1%. From the lowest growth rate of – 5.5% in 1990, real GDP grew at the average rate of 5.8%¹² in 1991-2001. This performance is attributable to favorable weather conditions, economic liberalization policies that encouraged greater diversification, and the exploitation of oil. The period 1990-1997 was characterized by massive economic instability reflected in a high inflation rate that varied between 47% and 130%¹³, rapid currency depreciation from SD0.5 per US dollar in 1990 to SD171 in 1997. With a low domestic savings rate and insufficient external capital inflows, the government relied on heavy domestic borrowing (inflationary finance) to finance public projects. Undoubtedly, high and persistent inflation rates driven largely by money creation and currency depreciation have adverse significant effects on both the real and financial sectors.

Macroeconomic instability and uncertainty translated into record low rates of monetization as measured by the broad money to GDP rate in the period up to 1997. Notable demonetization ensued as holding physical assets become increasingly preferable to keeping financial assets, especially currency. In fact

¹² IMF estimates indicate that the rate of growth for 1991-1999 was lower than government estimates by 1-2 percentage points (IMF, 2002).

¹³ Again unofficial estimates confirm that the actual inflation rate was substantially higher than the officially announced rate (see Elhiraika, 1998).

the US Dollar was widely used as a measure of value so that as the local currency depreciated domestic price almost immediately adjusted upward. This change in public preference was also the result of government interventions in the financial market that shook public confidence in banks and led to unprecedented levels of financial disintermediation.

Table 2: Key Macroeconomic and Financial Indicators, 1990-2000

Variable	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Real GDP (SD bn)	431	463	494	516	522	553	586	623	663	706	749	799
Real GDP growth rate (%)	-5.5	7.6	6.6	4.5	1.1	6.0	5.9	6.3	6.5	6.4	6.1	6.7
Inflation rate (CPI)	125	119	101	116	69	130	47	48	17.1	16	8	4.9
Exchange rate (SD/US\$)	0.5	1.5	13.2	21.6	40	83.8	146	171	237	258	257.4	261.4
GDI (% of GDP)	9.3	13.4	17.3	19.8	23.5	16.1	16.7	18.1	18.4	18.1	n.a.	n.a.
GDS (% of GDP)	8	9.5	13.9	11.8	11.7	11.3	9.4	17.6	15.9	14.9	n.a.	n.a.
Total public deficit (% of GDP)	-22.3	-8.6	-26	-0.5	-2.3	-1.0	-1.9	-1.1	-0.7	-0.8	-0.7	-1.6
Broad Money (% of GDP)	28.7	27.4	33.6	28.3	21.5	12.8	11.3	9.5	9.0	10.0	12.0	13.3
Real total deposits (SD bn)	61.9	71.9	110.6	91.1	65	41.6	38.4	35.9	34.5	39.5	51.1	67.6
Total Deposit (% of GDP)	14.4	15.5	22.4	17.6	12.5	7.5	6.6	5.8	5.2	5.6	6.8	8.5
Time and savings deposits (% of total)	27.8	31.4	36.4	60.6	58.4	61.8	53.3	56.8	60.1	39.1	42.7	39.8
Real Total Domestic Credit (SD bn)	128	123	151	116	87	46	56	43	42	48	66	77
Private sector share in total credit (%)	23.4	27.5	25.6	24.7	32.0	31.4	34.4	35.5	32.6	27.3	31.1	35.7
Loan deposit ratio* (%)	48.5	46.9	35.1	31.5	43	34.9	50.1	43	39.4	33.5	40.2	40.6

Source: Bank of Sudan Annual Reports (various editions), and Ministry of Finance.

Notes: 1995=100; SD bn = Billion Sudanese Dinars; * Calculated for commercial banks only.

The government introduced various measures to curb bank lending and also restrict the withdrawal of deposits. These restrictions covered even the use of checking deposits. Eventually the funds withdrawn from banks never returned to them, and even when the policy was reversed in less than a year after its introduction in 1992, public confidence in banks remained low. As a

result of these developments, total bank deposits relative to GDP declined from 14.4% in 1990 to 5.2% in 1998. Also total deposits decreased in real terms from SD 110.6 billion in 1992 to their lowest level of SD 34.5 billion in 1998. Over the same period the share of time and savings deposits in total deposits fluctuated widely, between 29 and 62%. This indicates the weak financial position of commercial banks in regard to long-term finance in particular.

On the other side, Table 2 also signifies the domination of the domestic credit market by the government, with a private sector share that never exceeded 35% during the period 1990-2001. Meanwhile, for a variety of factors¹⁴, the loan-deposit ratio never exceeded the peak of 50.1% recorded in 1996.

4.2 Structure of Agriculture

The agricultural sector of Sudan consists of three distinct sub-sectors in terms of nature of production. First, irrigated agriculture, which accounts for about 14% of the total cultivated area in the country and uses modern technology and inputs to produce a variety of crops including wheat, cotton, groundnuts, sorghum and vegetables. Expansion in irrigated agriculture requires relatively huge capital outlays for construction of dams, digging of canals, maintenance and upgrading of irrigation facilities. All irrigation work is done by the administration of the scheme, but eventually charged on tenants who are also responsible for various agricultural operations. Funds are normally needed for provision of inputs and the financing of production operations that involve seasonal labor. Once such requirements are met, planned output levels are normally realized. Through Scheme administrations, the government determines crop-mix policy and the technical aspects of production and is responsible for the marketing of cash crops. In return, part of the proceeds from cash crops is appropriated by the administration and the government to cover their costs. Attempts to restructure the schemes to allow full private control are so far unsuccessful though many of the services that used to be provided by government are now privatized. The success of a market-based lending program in irrigated agriculture would depend to a large extent on structural reforms that enhance its profitability.

Second, mechanized rain-fed agriculture occupies 37% of the cultivated area divided into relatively large farms that employ tractors and modern machinery to produce a variety of cash crops for export as well as domestic consumption. Output level in this subsector relies heavily on the amount and duration of rainfall, while profits depend on local and external market conditions and prices. Finally, traditional rain-fed agriculture accounts for

¹⁴ As elaborated in the following section, these include external as well as internal factors relating to credit policy, lending risk and so on (also see Al-laithy, 2000).

nearly 50% of the cultivated area and provides income and employment to the majority of the rural population. It consists of small farms that use traditional tools and inputs to produce subsistence crops as well as cash crops. This subsector also provides the bulk of livestock and forestry output, and all major export crops such as Gum Arabic.

In terms of population of farmers, it was estimated in 2002 that there are 250000 tenants in irrigated agriculture, 300,000 in mechanized rain-fed agriculture and about 6 million small farmers in the traditional rain-fed subsector. The relative shares of the above mentioned subsectors in total agricultural output in 1990-2001 are shown in Table 3. On average, irrigated agriculture contributes about 30% of output, mechanized agriculture 6%, and traditional agriculture (including crop, forestry and livestock) about 64%. Yet, aggregate formal credit is confined virtually to the irrigated subsector with only about 1% of formal production loans¹⁵ received by traditional agriculture in 2001.

Providing adequate and sustainable finance to agriculture requires a clear understanding of the specific factors that constrain the agricultural financial market by raising lenders' risk. As summarized by Ahmed (1998: 86), these factors include low level of technology especially in rain-fed agriculture which translates into low productivity or low debt capacity; inefficient management of agricultural schemes, especially in the irrigated sector; lack of coordination among various agricultural subsectors and inappropriate farm practices; instability in government policy toward agriculture, in relation to, for instance, input and output prices, marketing policies, especially export policies; and finally lack of sufficient and detailed statistics on agriculture.

Table 3: Structure of Agricultural Output (%)

Subsector	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Agricultural GDP (SD bn)	192	252	319	361	428	469	527	571	620	624	654
Irrigated Agriculture	35.8	37.2	27	27.6	25.7	29.7	25.7	19	25.7	27.4	29.4
Mechanized rain-fed sector	5.2	14.3	12.2	5.7	6.4	4.9	5	5.2	5.4	2.4	2.4
Traditional rain-fed crop sector	6.5	7.5	10.3	10.3	15.5	13.3	7.5	16.1	17.5	16.4	13.8
Livestock	42	32.6	43.3	48.7	44.6	44.5	51.7	47.6	44.8	47	47.6
Forestry and other	10.8	8.3	7.2	7.6	7.8	7.7	10.1	12.1	6.5	6.8	6.8

Source: The Economic Survey, Ministry of Finance and National Economy (various editions)

¹⁵ It is worth noting that banks provide significant amounts of credit to finance local and international trade in traditional rain-fed crops and livestock.

5. STRUCTURE OF THE AGRICULTURAL FINANCIAL MARKET AND THE ROLE OF COMMERCIAL BANKS, 1990-2001

This section begins with an overview of the institutional structure of the agricultural financial market in Sudan, the changing role of commercial banks, and the main Islamic instruments of agricultural finance. To identify the key factors affecting the performance of financial institutions in a comparative context, this section also presents and analyzes information from a sample of 6 commercial banks by examining their overall financial self-sustainability and outreach in regard to agriculture. These banks¹⁶ were selected on the basis of their involvement in financing various agricultural schemes and their regional spread. Two of these banks are 100% government owned, two 100% private banks, and two joint banks (with government shares of 1.5% and 15%). But one of the latter banks was dropped due to serious data gaps and lack of proper comparable records. In addition to the 6 commercial banks, the survey covered all specialized banks with substantial involvement in the agricultural financial market. The experience of these banks is examined in the next section, and analysis of the structure of the agricultural financial market is confined largely to the formal sector due to lack of information on the informal segment.

5.1 Structure of the Agricultural Financial Market

Like many other developing countries, Sudan has a dual agricultural financial system in which both formal and informal lenders operate. But, for the masses of small producers only informal finance may exist. Basically all farmers have to provide some critical amounts of self-finance. If self-finance is insufficient they resort to formal or informal lenders to bridge their financing gap. Informal finance exists due to unavailability of formal financial institutions or because of the inability of small farmers to satisfy the requirements of formal financial institutions including collateral, records, and so on. It is estimated that, together with self-finance, informal finance provides about 80% of the financial requirements of agricultural operations (Ministry of Finance, MOF, 2002).

Informal finance consists of *Shail*¹⁷ or unorganized *Salam*, which involves deferred delivery sale of crops to a village lender (normally a merchant). *Shail* loans can also be repaid in cash. Because of monopoly power

¹⁶ Tadamn Bank, Khartoum Bank, AL-Gareb Islamic Bank, Elnielen Group Bank, Sudanese Islamic Bank, and the Islamic Cooperative Development Bank.

¹⁷ See Saleem (1987) and Kevane (1993) for extensive analysis of the informal credit (*Shail*) market in Sudan.

and undervaluation of the borrower's crop, the lender¹⁸ can be very exploitative and usurious. Aside from exorbitant interest rates, *Shail* credit is characterized by low administrative cost, simple procedure for obtaining loans, absence of collateral requirements, suitability to the farmer's actual need, and flexibility in repayment (in cash or kind). The second common form of informal finance, especially in irrigated agriculture, is informal *Musharaka* (or sharecropping). According to this arrangement, one partner provides land and the other provides labor. Operational capital may be jointly or individually provided by one of them, while output is shared as agreed in advance. This type of financing is acceptable from *Shariah* perspective, except that it often entails an unfair share for the provider of labor, who is normally a landless rural poor, and that some contracts do not allow for loss/risk sharing. Third, loans from family members are also common in Sudan because of extended family ties. These loans are very cheap (interest-free) compared to other types of informal finance.

Prior to 1990, formal agricultural credit was almost entirely confined to the irrigated schemes, which used to receive funding from the government by virtue of the then prevailing production relations in all schemes (Gezira, Rahad, and Halfa). Scheme administrations were responsible for the disbursement of cash and kind advances to tenants. After marketing the cash crops (cotton and wheat) submitted to them by tenants, the administration deducts the amount of credit¹⁹ owed by each farmer before he receives his proceeds. In 1990, and in the context of the NESP, the government directed commercial banks to assume the responsibility for agricultural finance both by lending to farmers directly and indirectly through a Commercial Banks Consortium. Also the Agricultural Bank of Sudan was expanded horizontally and vertically and two other specialized agricultural banks were launched.

The present structure of the formal agricultural financial market of Sudan as displayed in Figure 1 includes:

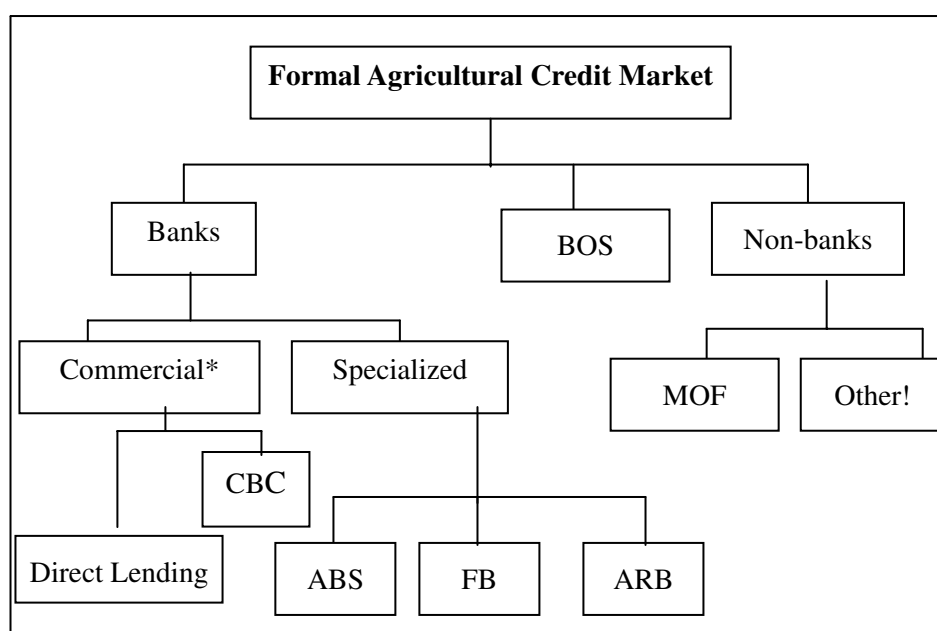
1. Commercial banks, specialized non-agricultural banks and the Commercial Banks Consortium
2. The Agricultural Bank of Sudan
3. The Farmers Bank
4. The Animal Resources Bank

¹⁸ Village lenders tend to operate in geographically limited places as they rely on local or personal knowledge of borrowers.

¹⁹ Up to 1981, tenants in the Gezira Scheme were jointly responsible for all the inputs (including loans of equal amounts per *Feddan*) provided by the administration as well as its overhead costs. As from then, an individual account system was introduced. This again explains the roots of the culture of credit needs and rights in Sudan

In addition to the above institutions, the Ministry of Finance has always been involved in the agricultural financial market through provision of funds for capitalization of specialized state banks, re-lending through both specialized and commercial banks and lines of credit to both banks and agricultural corporations responsible for financing such as the Sudan Cotton Corporation. Donors and NGOs such as the United Nations Development Program (UNDP) are also involved in the provision of farm finance in some areas of the country. External funds are delivered to agriculture through the channels used by the MOF that eventually administers these funds, while some agencies such as UNDP are engaged in direct microcredit to small farmers in various parts of the country.

Figure 1: Structure of the Formal Agricultural Credit Market in Sudan



Notes: BOS = Bank of Sudan; MOF = Ministry of Finance; CBC = Commercial Banks Consortium; ABS = Agricultural Bank of Sudan; FB = Farmers Bank; ARB = Animal Resources Bank. * Include non-agricultural specialized banks; ! Include NGOs and external funding (e.g. UNDP).

5.2 Commercial Banks and Agriculture

As mentioned before, formal finance to agriculture has been traditionally concentrated on irrigated schemes. Since its establishment in 1960, the BOS assumed the responsibility of bridging financing gaps in agriculture subject to the approval and guarantee of the MOF to cover bad debts. Farm credit used to be disbursed and managed by Schemes' administrations that receive funds directly from the BOS. Because of failure of scheme administrations to repay

credit on the one hand, and inability of the MOF to honor its promises on the other, the BOS always accumulated huge amounts of bad debts in the 1970s and 1980s. Outstanding loans to agriculture stood at SD17bn. (3.4% of GDP) in 1981 and SD85bn (2% of GDP) in 1989 (Salih, 2001).

The essence of this problem lies in the weak financial performance of the schemes that still qualify for financing on non-financial criteria. In the 1980s, the government exerted great efforts, with the help of the World Bank, to rehabilitate some of the schemes and privatize others (at least partly). These efforts implied the downsizing of scheme administrations, and more importantly a change in their financing. Key policy changes since then included:

1. Implementation of an individual account system instead of a joint account system for tenants.
2. Cancellation of the BOS funding in 1990 and its replacement with financing by a Commercial Banks Consortium (CBC).
3. Privatization and commercialization of the Irrigation Services Corporation.
4. Establishment of two more specialized agricultural banks (The Animal Resources Bank and the Farmers Bank).

Agricultural finance was a government responsibility, and hence commercial banks were free to determine their lending policies regarding agriculture prior to 1990. But, lending by these banks to agriculture was limited, averaging about 1% of total bank credit in 1980-1989. Under the NESF, commercial banks were obliged to finance agriculture directly or indirectly, through the CBC, according to a policy that is essentially based on the financial needs of farmers in the irrigated schemes in particular. Each year, the MOF in consultation with the Ministry of Agriculture and Schemes' administrations determines the cost of agricultural production per *Feddan*. After estimating potential self-finance, the external funding requirement per *Feddan* is accordingly determined²⁰, and efforts made to mobilize funds from various sources. As a result of large-scale mobilization, commercial bank lending to agriculture jumped to 27% of total loans in 1991 and 33 % in 1998 before falling to 17.6% in 2001 (Table 4).

²⁰ According to this arbitrary criterion and by comparing estimated production cost and actual credit provided, self finance and informal finance contributed 80% of total agricultural finance in 1994-1998.

Table 4: Some salient features of commercial banks, 1995 = 100

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Real total assets (Sd bn)	108	172	226	160	104	92	88	94	115	92	112
Real total deposits (Sd bn)	72	111	91	65	42	38	36	35	39	51	68
Real total loans (Sd bn)	34	39	29	28	15	19	15	14	13	21	27
Loans to agriculture (% of total)	27	34	35	29	25	27	30	33	30	23	18
Nominal <i>Murabaha</i> rate (minimum mark up)* (%)	25	25	35	30	32	33	46	46	20	18	15
Inflation	119	101	116	69	130	47	48	17.1	16	8	4.9
Loan recovery rate# (%)							85	78	76	84	86

Source: Annual Reports, Bank of Sudan (various editions)

Notes: * *Murabaha* transactions can be of very short-term nature. There is no proper classification of loans by maturity. Hence the actual *Murabaha* rate may be different from the annual rate of return. Since 1999 *Musharaka* and *Mudaraba* ratios are set by banks. # Agricultural loans account for over 50% of bad loans.

Again, this behavior of bank lending to agriculture is attributable chiefly to formal credit policy. For example, in 1990, the Bank of Sudan stipulated 80% of total bank finances to priority sectors²¹, with 40% of the credit ceiling of individual banks to agriculture. The share of priority sectors was further raised to 90% and that of agriculture to 50% in 1993 (Elhiraika, 1998). The policy of credit ceilings for agriculture continued until 1997 although overall credit ceilings were gradually relaxed as from 1994. Also banks were directed to lend at least 50% of funds raised by branches to local borrowers in order to boost the availability of finance in rural areas. Prior to 1998, the credit policy also used to determine profit margins as well as *Musharaka* and *Mudaraba* profit-sharing rates and administrative charges on current accounts and other banking services.

The trend of commercial bank loans to agriculture was drastically reversed following the relaxation of the requirements of bank financing of agriculture in 1998-2001. The volume of agricultural finance decreased although aggregate bank loans increased in real terms during this period. In 1995-2001, policies of financial liberalization were gradually, though partially,

²¹ These sectors include Agriculture, Manufacturing, Exports, Mining, Power, Transportation, crafts and productive families.

implemented with the hope of enhancing financial development and banking efficiency. Consequently, *Musharaka* and *Mudaraba* profit-sharing rates were set in relation to inflation, resulting in positive real rates of return in 1998-2001. As from 1998, the BOS allowed interbank lending, directed banks to extend 70% of their finance to the private sector, and disallowed lending by commercial banks to government and central government units. The BOS also authorized direct equity investment by banks and allowed them to determine their *Musharaka* rates and administrative charges. In addition to *Salam*, the period since 1998 witnessed wider application of other financial instruments in agriculture. These included *Murabaha*, *Murabaha lilamir bilshara* and *Musharaka*.

However, as Table 4 attests, attempts to liberalize the banking sector meant squeezed lending by commercial banks to agriculture. This squeeze was attributable to relatively high risk coupled with relatively low or even negative real rates of return on agricultural finance. Meanwhile, indirect supply of agricultural finance by these banks dropped remarkably as banks become very reluctant to contribute to the CBC. In effect, the agricultural financial market is presently as dependent on the state as it used to be in the 1980s prior to the liberalization attempts.

5.3 The Commercial Banks Consortium

The Commercial Banks Consortium (CBC) was set up by the BOS in 1991 when commercial banks were compelled to contribute to a central agricultural finance fund. Each bank was asked to contribute 30% of its credit ceiling to agriculture, i.e. 33.3% of its overall financial ceiling, to the fund. Because of binding credit policies, moral suasion and national mobilization to fight recurrent food shortages, banks were committed to support the CBC until 1993. The CBC's capital rose from SD 1.7bn. in 1991 to SD 5.2bn. in 1993, but decreased to SD 2.8bn. in 1995. As from 1994, the BOS had to make significant injections to keep the CBC functioning. The BOS contributed SD 1.8bn. (or 44% of CBC funds) in 1995. This contribution increased to SD 7bn. in 1998 and, together with the donation of SD 10.5bn. by the MOF, accounted for 73.1% of the total fund. State-owned banks donated 17% and the balance (about 10%) came from private and joint commercial banks.

It is clear that the CBC is becoming increasingly a government financial program, a feature that defeats its overall stated objectives of:

1. Transforming the agricultural financial system from a government-sponsored one to a private commercial system.
2. Encouraging tenants and scheme administrations to become more reliant on self-finance.

3. Facilitating increased use of bank resources by means of reduced lending risk (through pooling of funds and risk).
4. Infusing commercial spirit in agricultural activity, and
5. Achieving sustainable desired levels of financial services in agriculture based on the financial viability of the institutions involved.

Unfortunately, there was never a clear vision regarding the practical steps for realizing these objectives, and policy implementation was patchy and some times inconsistent. For example, the CBC extracted about one-third of bank resources for lending to agriculture at real rates of return that were lower than the rates of return on investment in other sectors. With hyperinflation, and generally falling real incomes, this policy weakened both the ability and incentive for banks to mobilize deposits, especially savings and investment deposits, as shown in Table 4.

Table 5: Sources and Uses of CBC's Funds

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Total contribution (Sd bn)	1.75	3.04	5.24	2.8	4.1	4.0	8.54	24.0	16.4	3.8	12.2
Commercial Banks* share (%)	100	100	100	100	56	47.8	51	26.9	47	47	28
Bank of Sudan share (%)	-	-	-	-	44	52.2	49	29.1	53	53	20
Ministry of Finance share (%)	-	-	-	-	-	-	-	44	-	-	52
Actual nominal rate of return	10	23	26.5	25	19	22	32	30	na	na	10
Inflation rate	119	101	116	69	130	47	48	17.1	16	8	4.9

Source: CBC Office, Bank of Khartoum, Sudan; * Include private, state-owned and jointly-owned commercial banks.

The schemes covered by the CBC's finance are Gezira, Rahad and Halfa, and the main crops financed are cotton and wheat. The instruments of finance used are *Salam* only in 1992-1993, *Salam* and *Murabaha* in 1994, *Muqawala* and *Murabaha* in 1995-2000 and *Salam* and restricted *Mudaraba* in 2001. The use of *Salam* has declined in recent years due to difficulties in fixing *Salam* price and the high cost of credit management. As already highlighted, *Salam* contracts involve physical deliveries of crops at the harvest season. Banks have to provide storage facilities before selling the crops when market prices are sufficiently rewarding. Obviously, this implies huge costs and risks, which together with a relatively high default rate make *Salam* finance increasingly less

attractive to banks in Sudan (see Ahmed, 1998 for further elaboration on problems of *Salam* as practiced in Sudan). Moreover, the relative decline in *Salam* arrangement is attributable to the fact that *Salam* credit is received by tenants to finance agricultural operations whereas other instruments relate mainly to the finance of post harvest operations such as cotton ginning and mill flour. Credit for these activities are large in size and are easily administered by scheme administrations, a factor that minimizes both risk and cost from banks viewpoint.

The main advantage of the CBC is the pooling of funds from various sources that also share the financial risk. All the funds contributed to the CBC were always fully used, and by giving the responsibility for loan disbursement and collection to scheme administrations, banks economized on the cost of administering loans. On the other hand, the CBC lending rates are not competitive and were negative in real terms throughout 1991-1997; and scheme administrations frequently fail to collect and repay loans in time or in full due to low productivity of agriculture and other factors. In effect, when commercial banks were given the choice to abandon the CBC, they immediately opted out. In fact, as from 2000 it was more safe and profitable for commercial banks to invest their excess funds in government and central bank *Musharaka* certificates that yield an average rate of return of about 30% per annum. Being confined to the schemes it started with and shrinking in size, the CBC as a step towards privatizing agricultural finance has been a clear failure in terms of expanding formal finance to farmers.

5.4 Survey Results: Sampled Commercial Banks

Wider outreach requires the ability of financial institutions to extend credit to clients who are normally excluded from formal lending, besides achieving long-term growth in deposits and loans (Elhiraika, 1999:356). Meanwhile financial self-sustainability requires a high loan recovery rate, low administrative costs, and market-related rates of return and incentives that enable the institution to maintain a strong financial position. Financial viability is a prerequisite for wider outreach. To evaluate financial viability, we have computed average or unit revenue and costs by dividing respective revenue and cost by total financial output. Following Desai and Mellor (1997), it is assumed that the total output of a financial institution consists of the sum of its assets and liabilities. Thus, the average or unit cost (revenue) of a bank is obtained by dividing its total cost (total revenue) by its total output. The same procedure has been adopted in the calculation of all types of unit costs and revenues hereunder. Banks achieve financial viability when average gross margin (total unit revenue less unit financial cost) exceeds average transaction costs (covering such items as personnel, office expenses and training). The institution breaks even when average gross margin equals average transaction cost.

All key financial indicators show a notable decline in the operations of sampled commercial banks prior to 1997 when the financial reform program was launched, and a gradual recovery in 1999-2001. It can thus be argued that financial reform has an overall positive impact on the performance of financial intermediaries. But, as observed in many countries, this effect could be negative as far as rural credit is concerned, at least during the transitional period. Indeed streamlining of banking activity meant constrained access to commercial banks in rural areas in Sudan. The number of branches of the sampled banks increased from 115 in 1991 to 246 in 1997, but dropped to 198 by 2001. Real average capital increased but remains below the international standard. As Table 6 shows total bank deposits and assets are yet to recover to their early 1990s levels. Real total bank deposits decreased from SD 41bn. in 1992 to SD 14bn. in 1997 before rising to SD 23bn. in 2001. Meanwhile, the share of savings and investment deposits in total deposits dropped from 20% in 1991 to 11% in 1994 and gradually improved since then to reach 35% in 2001. Perhaps, this reflects improvement in the macroeconomic environment and increasing real rates of return. On the other side, real total finance by sampled banks dropped drastically from SD 34bn. in 1992 to SD 5bn. in 1999 but recovered to SD 10bn. in 2001. The loan-deposit rate fluctuated between 88% in 1998, 21% in 1997-1999 and 32% in 2001. This implies that either extending credit was not a major income-generating activity for commercial banks or that they accumulated idle resources. In general the decline in credit is attributable to a host of factors including under capitalization of most banks, too high credit risk in sectors other than trade, relatively high – namely *Murabaha* - cost of borrowing, high lending cost associated with such modes as *Salam*, lack of credit lines from abroad and high yields on government and central bank *Musharaka* certificates (Kireyev, 2001:20).

Accordingly, it is not surprising to note that by the end of the period considered, the size of the sampled banks shrunk to about half of what it used to be 10 years before. This means that commercial banks were not able to expand in terms of volume of real resources mobilized and allocated. There is no information on the number of borrowers and depositors served by sampled banks, but the number of bank branches decreased by 25% between 1995 and 2001, and 30% of branches are in the capital city, Khartoum.

Table 6: Resource Mobilization and Financing by Sampled Commercial Banks, 1995=100

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Number of branches	115	143	250	261	257	250	246	246	229	208	198
Number of branches in capital	30	37	66	70	70	69	69	71	65	59	58
Real capital (SD bn)	0.41	0.42	0.44	0.35	0.22	0.46	0.48	0.33	0.97	1.1	2.0
Real total Assets (SD bn)	39	67	76	62	29	27	24	29	43	31	34
Real total Deposits (SD bn)	36	41	39	36	18	16	14	14	16	22	23
Real savings and investment deposits (SD bn)	7	6	4	4	3	3	3	4	5	7	8
Real total finance!	32	34	29	21	7	11	8	7	5	7	10
Loan-deposit ratio (%)	88	82	75	57	39	69	58	50	32	32	43

Source: Data collected from respective banks

Notes : ! Outstanding finance/loans (no information on loan flows).

Table 7 displays indicators²² of financial self-sustainability of sampled commercial banks. Examining the financial self-sustainability of these banks helps us to underline the fact that financial viability either requires concentration of finance in sectors other than agriculture or that it does not necessarily imply improved access to finance for agricultural borrowers. Also assessing commercial banks' financial performance allows useful comparisons to be made with the state-owned development banks that operate under the same macroeconomic environment. It is hypothesized that because of their profit orientation and wider diversification of loan portfolios, commercial banks are more profitable than development or specialized banks.

Indeed, with tight restrictions on the direction of bank finances and charges and in view of the huge macroeconomic instability that characterized most of the period under review, commercial banks drew the bulk of their income from sources other than lending. These sources include charges on depositors, transfers of money and letters of credit, sale of foreign currencies, purchase and sale of government and central bank certificates, and direct equity

²² Due to elimination of interest rates in Sudan and the fact that subsidized institutions (state-controlled specialized banks) are virtually completely dependent on subsidies, it was not possible to calculate the subsidy dependence index.

investment. On average, income from loans or financing accounted for only 42% of commercial banks' total income in 1991-2001. The share of non-credit income rose conspicuously in the liberalization era to reach 70% in 1999-2001. On the other side, administrative expenses represented 59% of total expenditure (excluding payment to depositors), whereas average profit amounted to 10% of outstanding loans and 5.2% of total deposits. With the average inflation rate of 61% for the whole period, the real profit rate was highly negative. But as the inflation rate decelerated in 1999-2001, the real profit/lending rate was positive and high. The nominal average rate of return on assets of 3% per annum is very low and may well explain why banks were not able to expand. With rapid appreciation in the value of real estate and other real assets, banks were apparently unable to offer attractive incentives to shareholders and depositors.

For the entire reference period, sampled commercial banks' average revenue was 4.5, and given the relatively low average financial cost of 1.5, this translated into an average gross margin of 3. With the average transaction cost of 1.8, commercial banks enjoyed a positive net margin of 1.2. This implies that the sampled banks were financially viable. Banks do not provide reliable information on write-off debt, but sizeable provisions for bad debts signify the high risk of default faced by commercial banks in Sudan. As mentioned previously, the average loan recovery rate of 82% for all commercial banks in 1997-2001 is very low compared to the international minimum acceptable rate of 95%. It is worth noting that between 60% and 85% of nonperforming loans originate from agriculture (Kireyev, 2001).

Agricultural financing by commercial banks appears to be concentrated on three basic instruments of finance: *Salam*, *Murabaha*, and *Murabaha Lilamir Bilishara* with the respective average shares of 32%, 15.4% and 37% in 1991-2001 (see Table 8). *Murabaha* and *Murabaha Lilamir Bilshara* are increasingly preferred by banks for the security they provide. This is especially true in irrigated agriculture where direct commercial bank lending is being recently concentrated on post harvest activities. Among the notably limited range of Islamic instruments used in the financing of rain-fed agriculture, *Salam* seems to be the most suitable one. Within rain-fed agriculture formal loans are confined largely to mechanized farms. There is no information on loan maturity, but as can be gauged from the share of *Mudaraba* and *Musharaka* agreements, medium and long-term loans to agriculture account for less than 15% of total financing by commercial banks.

The analysis in this section points out that commercial banks may have to be forced in order to make a significant contribution to the agricultural financial market. In view of risk and relatively low returns, agriculture will continue to be unattractive to commercial banks in the foreseeable future.

Table 7: Financial Self-sustainability of sampled commercial banks

Real variable	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Real loan income (SD bn)	1.47	2.06	2.34	2.57	1.11	1.13	1.15	2.01	0.85	0.87	0.94
Real total income (SD bn)	2.25	5.11	5.03	5.84	2.92	2.95	2.67	3.58	2.91	3.01	2.95
Administrative expenses! (SD bn)	0.65	1.04	1.62	2.18	1.17	1.26	1.26	1.39	1.16	1.52	1.41
Total expenditure*	1.32	2.01	2.87	3.73	2.06	2.20	2.02	2.37	2.01	2.28	2.04
Profit	0.93	3.10	2.17	2.11	0.86	0.76	0.66	1.21	0.90	0.73	0.91
Profit/loans outstanding (%)	1.30	9.13	7.41	10.2	12.3	7.07	8.39	17.2	17.5	10.7	9.42
Profit/deposits (%)	2.60	7.53	5.54	5.84	4.79	4.90	4.87	8.52	5.55	3.40	4.01
Rate of Return on Assets (%)	2.38	4.66	2.87	3.42	3.01	2.78	2.72	4.14	2.10	2.39	2.71
Inflation (annual CPI)	119	101	116	69	130	47	48	17.1	16	8	4.9
Provisions for bad debt (SD mn.)	0.01	0.01	0.01	0.54	0.59	1.12	1.43	1.30	0.65	0.67	1.55
Average total and net revenue											
Unit transaction cost	0.8	0.8	1.1	1.8	2.0	2.3	2.6	2.4	1.4	2.5	2.1
Unit total revenue	2.9	3.8	3.3	4.7	5.1	5.4	5.6	6.1	3.4	4.9	4.4
Unit financial cost	1.2	2.3	1.4	1.7	1.5	1.4	1.4	2.1	1.1	1.2	1.4
Unit gross margin	1.7	1.5	1.9	3.0	3.6	4.0	4.2	4.0	2.3	3.7	3.0
Unit net margin	0.9	0.7	0.8	1.3	1.6	1.7	1.6	1.7	1.0	1.2	0.9

Source: Data collected from respective banks

Notes: ! Calculating administrative expenses was problematic for classification differences * Excludes payments to depositors.

Table 8: Relative importance of Islamic financial instruments in agricultural finance by sampled commercial banks 1995=100

Mode of Finance (%)	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<i>Salam</i>	0.2	26	32	32	12	52	50	51	24	18	25
<i>Muzaraa</i>	-	-	0.4	0.8	19	-	-	-	-	-	-
<i>Muqawala</i>	-	-	0.2	0.7	3	1	0.2	0.7	0.3	0.1	0.6
<i>Mudaraba</i>	-	11	8	13.3	10	1	20	1.4	-	12	15
<i>Musharaka</i>	0.5	1.6	3.2	10	14	3	0.8	4	3	7	4
<i>Murabaha lilamir bilshara</i>	99.3	61	38	32	40	35	44	28	53	15	23
<i>Murabaha</i>	-	-	18	11	2	8	4	15	19.3	48	29
Other	-	0.2	0.5	0.8	-	-	-	0.4	-	1.7	4
Total loans to agriculture (SD bn.)	6.7	4.2	5.0	3.1	1.4	2.3	2.1	1.5	0.8	1.5	1.6
<i>Salam</i>	100	100	97	98	34	91	95	48	77	55	54
<i>Murabaha lilamir bilshara</i>	-	-	-	-	-	1	1	1	8	9	16
<i>Murabaha</i>	-	-	-	-	-	8	4	51	15	35	30
Other	-	-	3	2	66	8	-	-	0.3	1	-
Real total loans to rain-fed agriculture (SD bn)	0.07	1.1	1.2	1.6	0.5	1.1	0.82	0.5	0.2	0.44	0.66
As percentage of total loans to agriculture (%)	0.01	26	31	50	33	48	39	33	24	29	41

Source: Data collected from respective banks

Notes : # Include *Muzaraa*, *Muqawala*, *Mudaraba*, and *Musharaka*

6. THE EXPERIENCE OF SPECIALIZED BANKS

We assume that the nature of ownership, profit orientation and government intervention significantly influence the performance of financial intermediaries. In what follows we contrast the outreach and financial self-sustainability of the Agricultural Bank of Sudan (ABS), the Farmer's Bank²³ (FB), the Animal Resources Bank (ARB) and the Savings and Social Development Bank (SSDB). The ABS and the SSDB are characterized by a 100% government ownership. But the former specializes almost exclusively on agriculture, while the latter has a more diversified loan portfolio by economic sector. The client base of SSDB consists largely of civil employees, tenants and small enterprises.

²³ As already stated, ARB and FB are dominated by private capital and operate like typical commercial banks.

6.1 *The Agricultural Bank of Sudan*

The ABS is the largest and oldest specialized bank in the country, established by the government in 1959 to supply funds, accept deposits and provide various modern farm inputs, including improved seeds, fertilizers, insecticides as well as extension and marketing services. In principle, the ABS gives preferences to small and medium sized farmers. The main sources of the ABS' funds are loan recoveries, deposits, own capital, and external support from the government and from donors. Since 1990, the bank relied heavily on funds received from the Ministry of Finance (MOF) and from the BOS. As part of the government effort to boost food security and in the context of the NESP, the ABS expanded considerably, with its total branches rising from 15 in 1990 to 121 in 1994 (Table 9). From thereon, this expansion proved unsustainable, and the number of branches contracted to 101 in 2001. The decline in the ABS' operations is well reflected in the trend of its real total assets, total deposits and total loans.

Real total finance by the ABS decreased from SD 9.3bn. in 1991 to SD 1.28bn. in 2001, and since 1999 the bank began to venture into commercial lending to reduce risk and increase its income. Being unable to attract adequate amounts of savings, 75% of lending by the ABS relied on external subsidized funds (other than capital and deposits). The real income of the bank, relying almost entirely on agricultural finance, declined sharply from SD 4bn. in 1992 to SD 0.4bn. in 2001. As Table 10 shows, the ABS sustained huge losses since 1998 due largely to nonperforming loans that claimed between 41% and 14% of total annual finance.

Table 9: Resource Mobilization and Allocation by ABS, 1995=100

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Number of branches	89	120	118	121	118	107	107	106	103	102	101
Number of branches in capital	4	15	14	15	14	14	13	13	12	12	12
Real capital (SD bn)	0.60	2.05	1.01	0.51	0.20	0.16	0.11	0.08	0.28	0.27	0.25
Real total Assets (SD bn)	16.7	27.3	17.7	11.4	5.21	3.90	3.95	3.89	3.48	3.23	3.66
Real total Deposits (SD bn)	0.77	1.36	1.15	0.82	0.52	0.53	0.56	0.62	0.75	0.87	0.73
Real savings and investment deposits (SD bn)	0.10	0.09	0.07	0.05	0.05	0.06	0.06	0.07	0.18	0.21	0.13
Real total loans!	9.29	6.93	5.59	2.29	1.02	1.46	1.52	0.88	0.86	0.79	1.28
Loan-deposit ratio	12.1	5.10	4.87	2.81	1.96	2.73	2.73	1.43	1.14	0.91	1.76

Source: Data collected from ABS

Notes: ! Outstanding loans (no information on loan flows); Information on number of depositors and borrowers was not available.

Table 10: ABS Financial Self-sustainability

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Real loan income (Sd bn)	2.9	3.5	1.6	1.8	0.6	0.9	0.7	0.4	0.7	0.5	0.3
Real total income (Sd bn)	2.9	4.0	2.0	1.8	0.7	0.9	0.8	0.6	0.7	0.7	0.4
Administrative expenses! (Sd bn)	0.2	0.6	0.7	0.7	0.4	0.5	0.6	0.6	0.7	0.8	0.6
Total expenditure*	0.5	1.5	2.0	1.7	0.6	0.9	0.8	0.7	0.9	0.9	0.8
Profit	2.4	2.5	0.0	0.2	0.1	0.0	0.0	-0.1	-0.2	-0.2	-0.4
Profit/loans outstanding (%)	26.2	36.3	0.00	7.51	6.35	0.00	0.00	-9.52	-19.6	-24.7	-30.2
Profit/deposits (%)		185	0	316	12	0	0	-14	-22	-23	-53
Rate of Return on Assets (%)	73.2	9.22	0.00	1.51	1.25	0.00	0.00	-2.16	-4.85	-6.08	-10.6
Inflation (annual CPI)	119	101	116	69	130	47	48	17.1	16	8	4.9
Loan recovery rate (%)	59	67	65	67	77	86	86	81	80	75	70
Write off debts (SD mn)	0.0	387	0.0	139	0.0	0.0	41.6	19.6	31.2	1.6	30.8
Average total and net revenue#											
Unit total revenue	8.7	7.4	5.7	8.0	6.6	11.9	9.8	7.6	10.7	10.6	6.1
Unit transaction cost	0.7	1.0	1.9	3.3	4.1	6.3	7.4	7.3	10.7	11.6	8.9
Unit total cost	1.5	2.8	5.7	7.3	6.0	11.9	9.8	8.7	13.1	13.6	11.4
Unit net margin	7.2	4.6	0.0	0.8	0.6	0.0	0.0	-1.1	-2.4	-3.0	-5.3

Source: Data collected from ABS

Notes: ! Calculating financial expenses was not possible. * Excludes payments to depositors; # No separate data on payment to depositors (financial cost).

Table 11: Relative importance of Islamic financial instruments in agriculture* for ABS (%)

Mode of Finance (%)	1994	1995	1996	1997	1998	1999	2000	2001
<i>Salam</i>	22	18	32	37	29	21.4	28	32
Muqawala	0.4	0.4	0.2	0.5	-	-	-	9
<i>Mudaraba</i>	-	-	-	0.7	-	-	1.6	-
Diminishing <i>Musharaka</i>	2.9	4.7	2.3	1.2	0.6	4.1	0.7	2
<i>Murabaha lilamir bilshara</i>	75	77	65	61	71	74	65	57
Other	-	-	-	-	0.3	-	4.5	-
Real total loans to agriculture (SD bn)	2.29	1.02	1.46	1.52	0.88	0.86	0.79	1.28
Total loans to rain-fed agriculture* (% of total)	49	53	56	56	56	40	44	37

Source: Data collected from ABS

Notes: * No separate details for rain-fed agriculture. Breakdown of total loans by instrument is only available for 1994-2001. Totals may not add up to 100 due to rounding.

Murabaha Lilamir Bilshara constituted about 70% of the ABS finance, followed by *Salam* (20%) in 1994-2001. On average 50% of the ABS loans went to rain-fed agriculture. But due to its restructuring, the share of rain-fed agriculture in the ABS financing fell dramatically in 1999-2001 (see Table 11). This, together with attempts to venture into commercial activities, is a strong indication that agricultural finance is risky and less rewarding with lending to rain-fed agriculture being least preferred.

The inability of the ABS to mobilize sufficient deposits to expand its financing to agriculture and to achieve financial viability despite heavy government support is a manifestation of the inefficiency of its institutional design and operational structure. The experience of this bank provides a classical example of the inefficiency of state-owned specialized credit institutions. More specifically and aside from the weak macroeconomic environment that prevailed during most of the period under review, the ABS failed to perform because of its lack of profit-orientation, state intervention, manipulation of funds by influential groups and lack of adequate incentives for both personnel and clients.

The ABS operates as a conduit to subsidized government finance perceived by clients as an entitlement. Lacking proper profit orientation, the bank does not have strong incentives to mobilize funds or attract private savers. Most of its deposits are owned by government departments. Meanwhile, the ABS by virtue of its relations with the MOF remains committed to sizeable loan

portfolios determined according to the financing needs of agriculture as assessed by the MOF in consultation with the Ministry of Agriculture. Operating like a public services institution, the ABS also lacks adequate credit assessment, management and follow-up procedures, which resulted in a low loan recovery rate of 74% in 1991-2001. Under government directives lending to specific groups of farmers is based on their needs without proper assessment of the repayment capacity of individual farmers by the bank. It was stressed during discussion with the officials of the bank that besides shortages in experienced and trained credit personnel, staff rewards are low relative to those offered by private banks. It is common in bank branches that political considerations play a vital role in access to bank funds and big farmers can afford not to repay and still escape the law.

Direct government intervention in the ABS' business is a recipe for overall financial mismanagement within any institution that can cover its financial losses from subsidies as the ABS did during most of the period considered. The government is now fully aware of the fact that the operations of the ABS are no longer sustainable and that adjustment is imperative. Yet, subsidized lending by the bank continues because of lack of efficient alternatives and a strategic vision for the restructuring of the agricultural financial market in Sudan, while the government remains committed to confronting the financial needs of the irrigated schemes in specific. Challenges of agricultural finance will keep accumulating under the present setting, and a long-run market-based remedy has to be keenly sought.

6.2 *The Farmer's Bank*

The idea of establishing a non government specialized agricultural credit institution was first initiated by the Union of Gezira Tenants but later adopted by the Sudan General Farmers Union, with farmers from Gezira, Rahad, Halfa, Northern and White Nile Schemes being the main shareholders. The main objectives of the bank are provision of agricultural finance in specific and rural finance in general, supply of inputs, mobilization of savings from rural and urban areas through easy banking and competitive rewards, and participation in the establishment of various development and social projects in industry, agriculture and other sectors.

The FB began operations in 1993, and in 1998 merged with the Commercial Bank to become the Farmers Commercial Bank. Presently the bank is 66% private and 34% public on the basis of share capital. In contrast with the ABS, lending by the FB relies chiefly on deposit mobilization and other internal sources. The FB eventually behaved like any commercial bank. Capitalizing on income from other sources, the bank maintained a low loan-deposit ratio, averaging 60% in 1994-2001, with about 53% of its loans directed to sectors

other than agriculture (Table 12). Consequently more than 60% of its income originates from sources other than lending.

Table 12: Resource Mobilization and Allocation by FB, 1995=100

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Number of branches	26	26	38	41	41	38	38	29	28
Number of branches in capital	11	11	12	13	13	11	11	10	10
Real capital (SD mn)	365	305	326	278	215	202	181	172	239
Real total Assets (SD bn)	6.9	4.7	3.6	4.2	3.2	2.9	3.9	4.9	5.8
Real total Deposits (SD bn)	2.3	1.7	1.3	1.6	1.4	1.2	1.8	2.6	3.6
Real savings and investment deposits (SD bn)	0.83	0.33	0.07	0.23	0.24	0.08	0.83	1.13	0.97
Real total loans!	0.3	0.8	0.6	1.6	0.8	0.3	1.1	1.5	2.8
Loan-deposit ratio (%)	0.11	0.48	0.49	1.00	0.59	0.27	0.59	0.59	0.78
Agricultural finance (% of total)	15.8	70.7	36.1	30.3	27.7	63.3	85.7	26.2	33.2

Source: Data collected from FB

Notes: ! Outstanding loans (no information on loan flows); Information on number of depositors and borrowers was not available.

As Table 13 depicts, being a profit-oriented institution, the FB managed to slowly reduce its real administrative and total expenses at the time when its total profit was falling in 1999-2001 following its merger with the then troubled commercial bank. However, efforts to contain costs and maintain profitability seem to have steered lending away from agriculture in general and rain-fed agriculture in particular (Table 14). In terms of net average revenue, the FB has been able to achieve and maintain financial viability, but it seems to be less profitable than the average commercial bank.

While the FB may be judged as a success on the basis of financial self-sustainability, it definitely failed to realize the objective of extending increased financial services to its target clients. Its total branches declined from 41 in 1996 to 28 in 2001 with 36% of them in the capital city. The FB lacks enough security given its small capital, which failed to keep pace with increases in deposits. It relies on a limited number of financial instruments in dealing with agriculture, namely *Salam* and *Murabaha*, which accounted for more than 95% of its agricultural finance in 1998-2000. One of the major reasons for the limited role of the FB in agricultural finance is that instead of being deeply rooted in the interest of, and managed by, farmers, the founders of the bank preferred to run it like any other commercial bank with much of its activities based in the capital. The bank has to compete for deposits with other commercial banks and to do so successfully it has to generate competitive returns by employing its funds in commercial and other activities. It failed to raise deposits from the rural people

it purports to serve or to link access to loans to savings by clients, as successful microfinance institutions do.

Table 13: FB Financial Self-sustainability

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Real loan income (SD bn)	0.24	0.34	0.33	0.48	0.37	0.23	0.11	0.21	0.25
Real total income (SD bn)	0.48	0.83	0.58	0.83	0.72	0.54	0.32	0.43	0.40
Administrative expenses! (SD bn)	0.27	0.37	0.26	0.38	0.41	0.31	0.12	0.23	0.20
Total expenditure* (SD bn)	0.34	0.48	0.37	0.50	0.55	0.46	0.30	0.36	0.35
Profit	0.14	0.34	0.21	0.33	0.17	0.09	0.02	0.07	0.05
Profit/loans outstanding (%)	54.2	41.3	33.2	20.7	20.5	26.3	1.9	4.7	1.7
Profit/deposits (%)	6.09	20.0	16.3	20.7	12.1	7.14	1.15	2.77	1.31
Rate of Return on Assets (%)	2.04	7.32	5.94	7.75	5.45	2.93	0.53	1.46	0.81
Inflation (annual CPI)									
Provisions for bad loans	10.9	44.4	23.0	19.3	14.1	9.78	10.0	12.2	7.15
Average total and net revenue#									
Unit total revenue	3.5	8.8	8.1	9.8	11.4	9.3	4.1	4.5	3.4
Unit transaction cost	1.9	4.0	3.6	4.5	6.5	5.3	1.6	2.4	1.7
Unit total cost	2.4	5.1	5.1	6.0	8.6	7.9	3.8	3.7	3.0
Unit net margin	1.0	3.7	3.0	3.9	2.7	1.5	0.3	0.7	0.4

Source: Data collected from FB

Notes: * Excludes payments to depositors; # No consistent information on payment to depositors or financial cost.

Table 14: Relative importance of Islamic financial instruments in agriculture*-FB

Mode of Finance (%)	1998	1999	2000	2001
<i>Salam</i>	66.9	69.8	46.1	
Muqawala	0.7	-	53.9	
<i>Musharaka</i>	0.1	-	-	
<i>Murabaha</i>	28.4	30.2	-	
Other	3.9	-	-	
Total loans to agriculture (SD mn)	205	920	396	924
Total loans to rain-fed agriculture (% of total agricultural loans)	44.3	79	57.8	37

Source: Data collected from FB

6.3 *The Animal Resources Bank*

The Animal Resources Bank (ARB) was launched in 1992 as a specialized financial institution affiliated to the Ministry of Livestock Resources with the objective of assisting in the modernization of the livestock sector through the provision of various credit and noncredit services. The activities of the bank were very limited prior to its privatization in 1996. The bank is currently dominated by private capital, and operates as a commercial bank. Perhaps due to this reorientation, the ARB was able to mobilize sizeable savings compared to the ABS. As in Table 15, the real total deposits of the ARB rose from SD 0.5bn. in 1993 to SD 3.7bn. in 2001, whereas real total loans increased from SD 0.04bn. to SD 3bn. during the same period. Since its privatization, the bank maintained a relatively high loan-deposit ratio, but its lending to agriculture fell dramatically, from 52.2% of total loans in 1993 to just 4.4% in 2001.

Table 15: Resource Mobilization and Allocation by the ARB, 1995=100

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Number of branches	7	18	23	23	23	25	22	23	22
Number of branches in capital	3	4	5	5	5	5	6	7	7
Real capital (SD bn)	0.38	0.43	0.24	0.23	0.17	0.25	0.25	0.30	0.50
Real total Assets (SD bn)	2.29	2.17	1.59	1.99	1.57	2.05	3.13	3.91	5.24
Real total Deposits (SD bn)	0.47	0.71	0.85	1.38	0.98	1.28	1.81	3.15	3.69
Real savings and investment deposits (SD bn)	0.2	0.1	0.1	0.53	0.47	0.67	0.85	1.61	2.62
Real total loans!	0.04	0.14	0.10	0.94	1.00	1.21	1.65	3.05	2.86
Loan-deposit ratio	0.08	0.20	0.01	0.69	1.02	0.94	0.91	0.97	0.77
Agricultural finance (% of total)	52.2	47.1	36.9	29.2	28.2	22.7	37.9	20.3	4.39

Source: Data collected from the ARB

Notes: ! Outstanding loans (no information on loan flows); Information on number of depositors and borrowers was not available.

Table 16: The ARB Financial Self-sustainability

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Real loan income (Sd bn)	0.01	0.08	0.05	0.15	0.09	0.12	0.20	0.17	0.24
Real total income (Sd bn)	0.04	0.18	0.15	0.33	0.24	0.24	0.35	0.36	0.42
Administrative expenses! (Sd bn)	0.04	0.13	0.07	0.10	0.14	0.15	0.15	0.17	0.21
Total expenditure*	0.06	0.18	0.10	0.13	0.17	0.18	0.19	0.21	0.25
Profit	-0.02	0.00	0.05	0.20	0.07	0.06	0.16	0.14	0.16
Profit/loans outstanding (%)	-0.51	0.00	0.49	0.21	0.07	0.05	0.10	0.05	0.06
Profit/deposits (%)	-4	0.00	1	14	7	5	9	5	4
Rate of Return on Assets (%)	-0.8	0.01	3.23	9.92	4.19	2.84	5.22	3.68	3.15
Inflation (annual CPI)									
Average total and net revenue#									
Unit total revenue	0.8	4.1	4.7	8.3	7.5	5.9	5.7	4.5	4.0
Unit transaction cost	0.8	3.0	2.3	2.6	4.3	3.6	2.4	2.1	2.0
Unit total cost	1.2	4.1	3.1	3.3	5.4	4.5	3.1	2.7	2.4
Unit net margin	-0.4	0.0	1.6	5.0	2.1	1.4	2.6	1.8	1.6

Source: Data collected from the ARB

Notes: * Excludes payments to depositors; # No consistent information on payment to depositors or financial cost.

Table 17: Relative importance of Islamic financial instruments in agriculture* -ARB

Mode of Finance (%)	1993	1994	1995	1996	1997	1998	1999	2000	2001
<i>Salam</i>	36	15	9.3	6.6	1.3	3.2	1.5	3.4	13.2
<i>Muqawala</i>	2.2	2.4	5.6	8.6	33	42	14	5.3	2.7
<i>Musharaka</i>	16.9	50	35	50	31	21.4	37	69	19
<i>Murabaha</i>	7.3	18	31	35	33	33	45	21.4	28
Other	36	15	9.3	-	2	0.5	2.6	1	0.6
Real total loans to agriculture* (SD mn)	19.6	65.7	38.7	276	281	275	623	619	125

Source: Data collected from ARB

Notes: * There are no separate details on lending to rain-fed agriculture.

Once again the experience of the ARB appears to confirm that financial success among banks requires less involvement in the agricultural financial market even by banks that were supposed to serve agriculture. Since 1999, non-loan income accounted for over 50% of the ARB's total revenue (Table 16). With the average profit rate of 7% and a rate of return on assets of 4% in 1993-2001, the ARB was competitive by commercial banks' standards. The only distinguishing feature of the ARB is its relatively high *Musharaka* transactions that accounted for 37% of its total financing.

Like the FB, the ARB clearly failed the objective of reaching out to the rural clients in the livestock sector, which is 99% traditional. Instead, the ARB based its financial success on commercial lending and activities outside agriculture. Essentially, as private banks, the FB and the ARB seem to concentrate on serving the interests of their influential shareholders and established clients in the business community, predominantly outside agriculture.

6.4 *The Savings and Social Development Bank*

Diversification of loan portfolio is considered as a means of reducing risk and promoting success among rural financial institutions. Among other objectives, the Sudanese Savings and Social Development Bank (SSDB) was chosen in this study to test this hypothesis. The bank was initiated by the government in 1974 as a pilot project in the Central Region, with the objective of extending banking facilities to rural areas, and accelerating development there by means of specialized local finance. It was originally intended to promote the accumulation of financial savings by tenants and farmers, and the utilization of these savings to finance local small and medium size projects on market basis and without intervention from government.

The SSDB was a relatively successful institution in terms of both outreach and profitability (Elhiraika, 1991 and MOF, 1989). It was characterized by its huge number of customers, which increased from 19 thousand in 1978 to 121 thousand in 1988 and 166 thousand in 1992, with savings and investment accounts representing more than two-third of total accounts. The SSDB invested considerably in spreading banking habits among the public, as well as on evaluating numerous small projects. To undertake these functions over a wide area, the bank used to use mobile banking and research units.

Advances by the SSDB were well distributed among various economic sectors, and in the 1980s period, the bank provided funds for agriculture, industry and housing far in excess of the funds jointly provided by the then three state-owned specialized banks including the ABS, the Estate Bank and the Industrial Bank. Commercial lending amounted to nearly 50% of the bank's

total advances in that period, and this was ascribed to the lack of sufficient profitable investment avenues in the targeted sectors and areas. Although the bank is subject to the central bank's credit policy, its loan-deposit ratio was always far above that of commercial banks' average. The SSDB contribution to real capital formation, particularly in transport, small and medium scale industries and agriculture, used to compare favorably with that of commercial banks as a whole.

In addition to diversification of sources and uses of funds, the success of the SSDB in the 1980s was attributed to its character as a fully autonomous development-oriented institution as opposed to state-controlled banks on the one hand and commercial banks on the other. But, the story of the SSDB changed completely since it was affiliated to the Ministry of Social Affairs in 1992 to serve as a conduit to government effort to reduce poverty. The head office of the bank was moved to Khartoum. From thereon, the bank suffered a substantial decline in number and volume of deposits, real assets and loans (Table 18). Total real deposits fell from SD 2.5bn. in 1991 to SD 0.4bn. in 1994 and recovered partly to SD 0.8bn. in 2001, whereas total loans declined from SD 2bn. to SD 0.3bn. and SD 1bn. during the same period. The bank relies now on sizeable government subsidies, and lending to agriculture accounted for only 21% of its total loans in 2001. Since 1994, the SSDB sustained huge losses averaging about 16% of total loans. The SSDB clearly lacks financial self-sustainability, yet directed 80% of its agricultural loans in 1991-2001 to rain-fed agriculture in fulfillment of its welfare mission under the auspices of the Ministry of Social Affairs. *Murabaha* and *Salam* are the only two instruments for disbursement of finance to rain-fed agriculture by the SSDB. In addition to these two modes of finance, irrigated agriculture receives *Musharaka* finances.

**Table 18: Resource Mobilization and Allocation by the SSDB,
1995=100**

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Number of branches	26	28	30	30	30	31	31	31	31	33	34
Number of branches in capital	2	4	4	4	4	4	5	5	5	5	6
Real capital (SD mn)	24.1	11.7	5.4	5.0	1.8	1.0	0.7	22.1	157	358	544
Real total Assets (SD bn)	3.87	2.45	1.15	1.83	0.76	0.80	1.01	0.59	1.00	1.31	1.71
Real total Deposits (SD bn)	2.5	1.6	1.0	1.0	0.4	0.5	0.5	0.4	0.5	0.7	0.8
Number of depositors (Thousand)	161	166	163	113	103	87	77	76	67	110	118
Real savings and investment deposits (SD bn)	0.8	0.4	0.3	0.3	0.1	0.1	0.2	0.1	0.1	0.2	0.3
Real total loans!	2.0	1.3	0.5	0.5	0.3	0.3	0.2	0.3	0.6	0.9	1.0
Agricultural loans (% of total)	32.4	53.5	61.9	37.2	29.3	35.3	35.4	29.2	19.4	23.3	20.9
Loan-deposit ratio (%)	80.8	77.5	52.4	54.6	71.4	52.2	43.2	85.4	133	124	124

Source: Data collected from SSDB

Notes: ! Outstanding loans (no information on loan flows); Information on number of depositors and borrowers was not available.

Table 19: The SSDB Financial Self-sustainability

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Real loan income (SD bn)	0.12	0.14	0.15	0.10	0.07	0.08	0.04	0.02	0.07	0.08	0.12
Real total income (SD bn)	0.31	0.20	0.19	0.14	0.09	0.10	0.07	0.05	0.11	0.14	0.19
Administrative expenses! (SD bn)	0.03	0.04	0.05	0.06	0.04	0.02	0.02	0.02	0.04	0.06	0.07
Total expenditure*	0.12	0.16	0.18	0.26	0.14	0.13	0.11	0.12	0.19	0.25	0.30
Profit	0.20	0.04	0.00	-0.12	-0.05	-0.03	-0.04	-0.08	-0.08	-0.11	-0.11
Profit/loans outstanding (%)	9.8	3.1	0.9	-22.2	-18.5	-10.3	-17.8	-22.9	-12.1	-12.9	-10.5
Profit/deposits (%)	7.9	2.4	0.5	-12.1	-13.2	-5.4	-7.7	-19.6	-16.0	-16.0	-13.0
Rate of Return on Assets (%)	5.1	1.6	0.4	-6.5	-6.9	-3.7	-3.5	-12.7	-7.8	-8.4	-6.4
Inflation (annual CPI)											
Write-off loans (SD mn)	0.00	0.00	10.9	5.55	1.00	6.24	4.08	3.16	0.54	3.11	4.44
Average total and net revenue#											
Unit total revenue	3.1	3.7	4.5	6.0	10.0	20.2	19.5	15.7	35.7	25.1	26.0
Unit (average) total cost	0.3	0.7	1.3	2.5	4.0	3.9	6.4	7.5	13.7	10.9	8.9
Unit transaction cost	1.1	3.0	4.4	10.9	15.9	26.0	29.4	41.1	60.1	44.7	40.9
Unit net margin	2.0	0.7	0.1	-5.0	-5.9	-5.8	-9.9	-25.4	-24.4	-19.6	-14.9

Source: Data collected from SSDB

Notes: # No consistent reporting on payment to depositors or financial cost; * Excludes payments to depositors.

Table 20: Relative importance of Islamic financial instruments in agriculture* (% of total) – SSDB.

Mode of Finance (%)	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<i>Salam</i>	-	-	12	26	11	26	31	44	9	26	12
<i>Musharaka</i>	-	-	-	-	-	-	11	6	16	11	17
<i>Murabaha</i>	100	100	88	74	89	74	58	50	75	63	71
Total loans to agriculture (SD mn)	654	670	337	200	84	101.	70.6	96.1	125	199	218
Total loans to rain-fed agriculture (SD mn) of which:											
<i>Salam</i>	534	529	274	170	68.0	84.9	71.4	84.3	100	170	179
<i>Murabaha</i>	-	-	15	31	13	31	44	50	12	31	38
	100	100	85	69	87	69	56	50	88	69	62
Rain-fed finance as percentage of total finance to agriculture	81.6	79.0	81.3	84.8	81.0	83.8	101	87.7	80.2	83.9	82.2

Source: Data collected from SSDB

Figure 2: Real total loans to agriculture

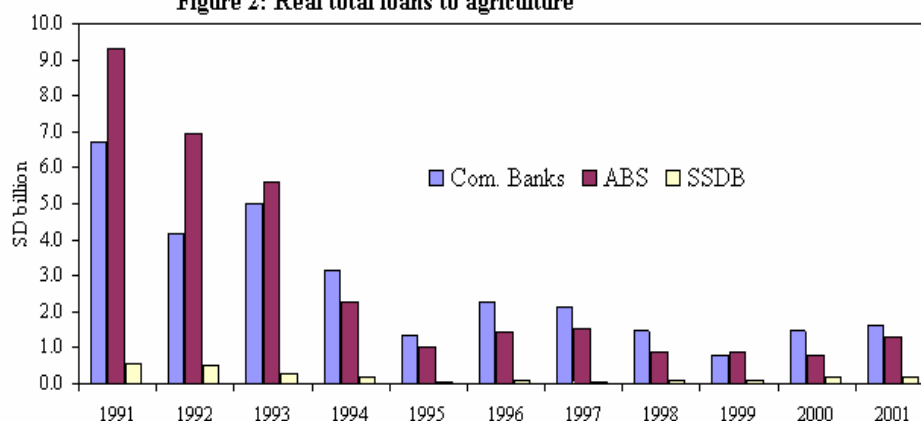
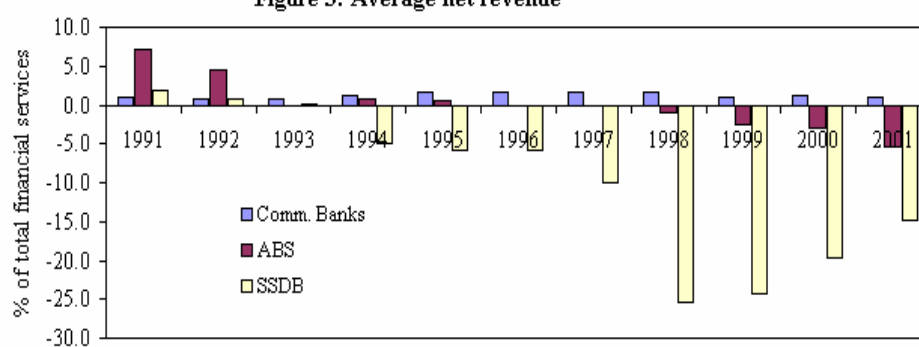


Figure 3: Average net revenue



The experience of the SSDB in the 1990s provides a robust further example of the inefficiency of direct government intervention in the rural financial market. The failure of the SSDB can well be explained by the same reasons behind the failure of the ABS to achieve wider outreach and financial self-sustainability. Indeed, government intervention (not just ownership) in the operations of financial institutions appears to be the critical factor behind the SSDB's generally declining role in the rural financial market. Figures 2 and 3 display a remarkable contrast between commercial banks and state-controlled specialized banks as regards volume of lending to agriculture and overall net returns, respectively. Comparing the experience of commercial banks, state-controlled specialized banks (ABS and SSDB) and other specialized banks (FB and ARB) the following conclusions may be drawn:

1. At least during the transitional phase, efforts by commercial banks to promote their financial self-sustainability in a liberalized financial system are most likely to imply limited outreach as regards agriculture.
2. Being less committed to target clients and in the absence of external support, private banks that attempt to specialize in agriculture (FB and ARB) can only achieve financial viability by operating like commercial banks, providing limited access to agricultural borrowers.
3. With direct government intervention and lack of autonomy, state-controlled special banks (ABS and SSDB) fail in terms of both outreach and financial self-sustainability.

These findings raise the important question of how to promote wider outreach and self-sustainability among agricultural financial institutions, and what should be the role of the government. These questions are discussed in section 8.

7. OPERATIONAL CONSTRAINTS AND OPPORTUNITIES

In addition to collection of information on the financial performance of sampled banks, we have completed a questionnaire (see Appendix 1) with one senior officials who is responsible for agricultural finance at the headquarters of each of these banks. Thus, we had a total of 10 interviewees. The aim of the questionnaire is to gauge the institutional and operational factors affecting the performance of banks with special reference to agriculture. The questions dealt with institutional objectives, financial and operational autonomy, staff incentives, evaluation and accountability of staff, client incentives and determination of PLS ratios and mark-ups. The questionnaire also covered the advantages and limitations of Islamic financial instruments applied to agriculture in Sudan from bankers' viewpoint.

7.1 *The Factors Affecting the Performance of Agricultural Financial Institutions*

As mentioned earlier, the sample includes an interesting mix of 6 commercial banks and 4 specialized banks and that two of the latter banks are 100% public, with one (ABS) specializing entirely on agriculture and the other (SSDB) engaged in both agricultural and non-agricultural finance. The remaining two specialized banks, FB and ARB, are dominated by private capital.

All the commercial banks, private and public, are predominantly profit-making institutions. On the other hand, the ABS and the SSDB have the main objective of disbursement of funds to target borrowers. As discussed previously, state control appears to have a strong bearing on the performance of these

banks, seriously restricting their ability to mobilize resources and to enhance profitability and self-reliance. In line with the quantitative analysis, the findings of the questionnaire also highlight some important differences in terms of operational structures, staff incentives and so on as we move from commercial banks towards the fully state-controlled specialized banks. It is, however, important to note that aside from the ABS, none of the other banks has distinct profit and loss centers with separate financial accounting for agriculture. And the branches of all commercial and specialized banks have no financial autonomy.

The main factors influencing the supply of agricultural finance, the types of credit risk and the mechanisms for dealing with risk are presented in Table 21. Respondents were asked to rank each category of factors according to a scale of four that begins with the least important factor and attaches the highest point to the most important one. According to bankers low return - and high cost of administering agricultural loans - is the key factor (2.6 points) constraining the supply of funds to farmers, followed by lack of resources (capital, deposits, and grants or lines of credit) (2.1 points), lack of qualified and adequately trained personnel (1.1) and repressive credit policy (0.4). With the relative relaxation of credit policy in recent years, bankers point out that lack of complementarity or harmony among various economic policies, e.g., exchange and marketing policies is more important than credit policy. The banks are currently free to set the profit-sharing ratios for depositors. (This partly explains the low profit rates paid to depositors by sample banks). But for most of financing operations (80%), PLS rates are determined or influenced by the central bank's policy.

Table 21: Ranking of factors affecting the supply of agricultural finance, and the main types of risk and mechanisms for its management

Salient factors affecting the supply of agricultural finance	Main types of risk in agricultural finance	Mechanisms for dealing with risks of agricultural finance
1. Low return and high administrative cost	1. Marketing risk	1. Screening of borrowers
2. Insufficient resources (capital, deposits, grants etc)	2. Default risk	2. Monitoring
3. Lack of qualified and trained personnel	3. Crop price risk	3. Rationing of finance
4. Repressive credit policy	4. Macroeconomic risk	4. Collateral

Source: Bankers' Questionnaire

Ironically, under normal weather conditions, marketing risk is considered as the main risk (with 2.4 points) associated with agricultural finance, given the nature of Islamic financial instruments (predominantly *Salam* and *Murabaha*) that are used in agricultural finance. Default risk ranks second (1.7) in terms of importance. Many bankers argue that delinquency is common among borrowers, some of whom consider access to loans from government banks as a right and demand high flexibility in repayment terms. In particular, *Salam* repayment problems have been aggravated in recent years following the introduction of a beneficence clause called *Band Al-Ihsan*. According to this clause, the adversely affected party to a *Salam* contract may be compensated if prices change by more than 33%. Implementation of the clause is often disputable as price levels vary from one place to another and over time. Whether the price increases or decreases, borrowers are inclined to demand that the contract conditions be adjusted, and this is one of the reasons for banks to prefer *Murabaha* to *Salam* agreements. Some bankers argue that because of the poor credit culture in irrigated schemes in particular and the political influence of unions, credit recovery is usually higher in rain-fed agriculture under normal weather conditions. Crop-specific price risk ranks third (1.6 points), followed by macroeconomic risk as proxied by inflation (1.4). This ranking reflects relative price stability in recent years. After many years of instability, maintaining a stable price level is expected to build up confidence and encourage increased resource mobilization and allocation by financial intermediaries.

The key mechanisms for dealing with the risks associated with various instruments of agricultural finance consist of screening of borrowers (2.4), followed by monitoring (1.2) and rationing of funds (1.2), and finally collateral (1.1). In general screening and monitoring of borrowers imply high costs to banks, whereas credit rationing (restrictions on number and size of loans) entails low lending rates. The low importance attached to collaterals reflects the fact that in principle PLS instruments should involve little or no use of guarantees and that in practice collaterals are costly to manage and liquidate.

Where applicable answers to the rest of the questions are analyzed by calculating the percentage of affirmative responses. The total number of respondents was 10, and percentages may not add to 100% because of multiple responses. With the acceptance rate of 100%, real estate and fixed assets are the most acceptable forms of collateral to all banks, followed by mortgages in possessions and letters of guarantee (60%) and group guarantees (normally provided by farmers' unions) (40%). However, 80% of bankers view group guarantees as generally unacceptable because the groups themselves lack credibility and the financial ability to meet their obligations when need arises. Very often farmers' unions fail to persuade delinquent borrowers to comply with their commitments, and, as put by some bankers, the mere presence of unions or group guarantees in borrowing arrangements encourages noncompliance. Some

borrowers have the power to influence the union and unions normally side with farmers in cases of dispute, and when they have no direct financial stake in repayment.

Meanwhile, farm finance appears to be nonexclusive in the sense that farmers are free to acquire funds from different sources at the same time. About 60% of banks do not put restrictions or conditions on borrowing by clients from other institutions. This can seriously constrain the capacity of farmers to repay loans. For *Murabaha* transactions loans are considered bad after one month of nonpayment and for most other transactions loans are treated as bad (nonperforming) after 3 months. In 90% of the cases, farmers who are able to repay but refuse to do so face legal procedure, followed by confiscation of collateral. In the case of genuine inability to repay, banks resort first to rescheduling of advances. For *Salam* advances, the farmer is exempted from kind payment and only the principal amount received by the farmer is rescheduled for repayment in subsequent seasons. (This procedure is called *Eqala*). For other types of lending arrangements, the borrower often gets help from social organizations such as the *Zakat* Department to repay his dues. Uncollectable loans are subsequently covered from provisions for bad debt.

For 60% of bankers the cost of legal procedures is the most significant legal problem, followed by delays in court action (40%), cost of liquidating collaterals (20%), and the fact that some contracts are not covered by the law (20%). It is also reported that banks are sometimes unable to track debtors who disappear from their stated residences, while their farms have no market value. This is particularly true in traditional rain-fed agriculture, where many potential borrowers fail to provide acceptable collaterals. This underscores the importance of careful, though costly, selection of borrowers.

All commercial banks and specialized banks with commercial orientation select borrowers according to the financial feasibility of their projects, but established customers are usually preferred to new ones with government directives playing the least effect on the selection of individual borrowers. Conversely, considerations of financial viability of projects rank second to government directives in choosing target borrowers by the ABS and SSDB. In the light of government directives groups of borrowers in certain schemes or areas are specified. All members of such a group are normally enticed to apply for loans creating huge problems of moral hazard. With little or no incentive for careful assessment of individual applicants also problems of adverse selection arise in the sense that some borrowers get loans not because they are good farmers but because they appear to be creditworthy.

The only reward for timely repayment by clients is enhanced access to future loans. For commercial banks, staff evaluation and accountability depends chiefly on profitability (70%), followed by expansion in operations. But, the SSDB considers the volume of loans disbursed as the benchmark for staff

evaluation and promotion. Staff incentives are based on a flat salary structure in 90% of the cases, and only 10% of respondents consider profitability as the most important criterion. One of the respondents explained that staff incentives in their bank depend on moves by other competing banks. This obviously indicates the lack of incentives for hard work and innovative behavior among staff that would just resign for doing their routine work as expected or instructed by their supervisors.

Commercial banks, by means of monitoring and follow-up of various stages of agricultural production, ensure that funds are used for the purposes for which they were obtained. On the other side, the fully state-controlled specialized banks do not keep track of the uses of operational loans. However, the application of Islamic modes of finance necessitates close follow-up and monitoring of clients. This includes periodic reports by financial supervisors on the activities of clients. This together with an installment-based disbursement of funds reduces lenders' risk.

Despite differences across banks, analysis of the operational structure of sampled banks reveals an adequate understanding of the risks and challenges faced by Islamic banks gained through more than 10 years of experience with Islamic finance under various policy regimes. Institutional design, motivation, and availability of expertise seem to be the critical factors in determining the way banks deal with these challenges. Numerous suggestions emerge from discussion with bankers regarding ways for improving the efficiency (outreach and sustainability) of agricultural financial institutions in Sudan. These include:

1. Linking access to funds to savings by farmers. This allows developing close relationships between lenders and borrowers who are also stakeholders in the financial institutions.
2. Clear marketing policies to serve as a framework for increased lending to agriculture. Efficient marketing channels ensure price stability and encourage lending to agriculture.
3. Diversification of crops financed with concentration of lending on the most profitable ones.
4. Availability of finance to cover all stages of production to ensure a successful harvest.
5. Establishment of an agricultural finance guarantee/insurance scheme.
6. Improved farming technology, inputs and practices.
7. Crop policy that suits the local environmental conditions and reduce weather risks.

8. Organization of farmers and other small producers through production and services cooperative societies (rather than politicized unions) that help them to economize on many common inputs such as irrigation, mechanized harvesting and so on.
9. Improved rural infrastructure.
10. Improved international marketing channels and links with the global market.
11. Efficient agricultural information data base.
12. Training for bankers involved in agricultural finance.
13. Increased capitalization of specialized banks, increased branches and special financial policy for these banks and other institutions involved in the agricultural financial market.

In general, the suggestions of bankers that are directly related to the agricultural financial market are consistent with the principles of successful microfinance discussed in Section 2. To justify substantial public sector investment in the development of the agricultural financial market, the institutions involved must have vested interest in the growth of output and employment in the rural sector. Perhaps microfinance institutions that are owned by rural producers who also participate in their management provide the benchmark model for developing an efficient rural financial system in the long run. The idea of “credit insurance” is used in a restricted sense in Sudan. Because Islamic finance is normally tied to crops or commodities, credit insurance refers to insuring the crops or commodities in question against natural hazards and other calamities.

7.2 Merits and Limitations of Islamic Financial Instruments as Applied in Sudan

In section 2, we discussed the various risk and return characteristics of the key Islamic financial instruments in relation to agriculture from both theoretical and empirical perspectives. In Table 22 below, we present, and thereafter discuss, the merits and limitations of each of these instruments as perceived by bankers in Sudan. It should be noted that the limitation or disutility of these instruments depends significantly on the terms and conditions that are specified in the form of a contract. The limitations or advantages of a contract may therefore vary from one country to another and/or over time when contracts are revised.

In accordance with the discussion in section 2, the general advantages of Islamic modes of finance as used in Sudan include facilitating risk and return sharing, reduced need for collateral, and the linking of finance to real economic

activity. This makes Islamic finance far less inflationary compared to traditional interest-based finance. The general risks associated with the use of Islamic instruments in agriculture comprise absence of compensation for delayed repayment by borrowers whether they are genuine or delinquent, loss of capital in cases of investment failure, high exposure to price risk, high evaluation, monitoring and follow-up cost, costly and lengthy legal procedures, lack of adequate guarantees for small borrowers, and frequent weather changes and other natural calamities.

In theory, Islamic banks are supposed to receive adequate compensation in accepting these risks because the application of Islamic tools of finance allows better project evaluation and selection, minimizes the chances of failure and generates high profits for banks. But the extent of compensation hinges crucially on the ability of banks to provide equity (*Musharaka* and *Mudaraba*) finance, which is extremely limited in practice. Also the reward to lenders would be sufficient if agricultural output and price levels are more predictable. Again in line with the quantitative findings presented in sections 5 and 6, qualitative evidence from Sudan confirms the high risk associated with the use of Islamic modes of Finance in agriculture.

Table 22: Pros and cons of Islamic financial instruments in agriculture as practiced in Sudan

Instrument	Advantages	Limitations
Salam	1. High Profit in good seasons, and secured principal in bad seasons. 2. Allows quick recycling of funds (short-term). 3. Flexible quantities of loans to suit actual needs at various stages of crop production. 4. Provides liquidity that gives farmers flexibility in the use of funds. 5. Opens a futures market for produce and hence encourages increased production.	1. Delinquency especially when harvest price is much higher than contract price. 2. No compensation to banks when harvest price is lower than contract price, while goods are costly to store. 3. High collection, storage and marketing and quality assurance cost. 4. Quality risk. 5. No clear guidelines for determining Salam's price.
Muzara	1. Provides resources for all agricultural operations. 2. Limited purpose and easy to implement.	1. Success depends critically on farmer's experience and honesty.
Ijara	1. Gives access to the services of expensive and bulky productive assets.	1. Subjects bank assets to misuse by clients. 2. Requires substantial experience from the client/operator.

Muqawala	1. Low risk due to nature of goods and linking of payment to satisfactory delivery. 2. Ensures proper use of finance to provide manufactured goods needed by farmers. 3. Suits construction and irrigation works that may not get finance through other modes.	1. Complex and multiple contractual relations. 2. High monitoring and supervision cost.
Mudaraba	1. low monitoring and supervision cost for lenders in case of trusted clients. 2. High profit in case of success.	1. High risk of capital loss. 2. Success relies on client's honesty and efficient use of capital. 3. High follow up and supervision cost when necessary.
Diminishing Musharaka	1. Allows farmers to obtain the services of bulky/expensive agricultural facilities and eventually own them. 2. Risk sharing.	1. Difficult to settle failing projects. 2. Sensitive to recession and changes in macro environment. 3. Difficult to proof negligence and misuse of funds by the client.
Musharaka	1. Inevitable project monitoring and supervision improves efficiency. 2. Mobilization of extra funds from outside banks. 3. Close cooperation between partners. 4. Absence of collateral requirements.	1. Lengthy, detailed and expensive technical assessment of projects. 2. High monitoring and supervision cost. 3. High risk due to changes in prices and related market conditions.
Murabaha lilamir bilshara	1. Security of bank assets in case of breach of contract. 2. Opens easy access to funding for new clients and small enterprises. 3. Low follow up cost.	1. High marketing costs especially if initial contracts are not binding. 2. Multiple contracts lead to implementation problems. 3. Raises questions of compliance with Shariah law.
Murabaha	1. Encourages banks to buy and sell goods or play active role in the goods market. 2. Absence of need for monitoring and supervision.	1. Costly storage of goods and less circulation of funds. 2. Marketing problems as the client does not have to honor his promise to buy.

Source: Bankers' Questionnaire

7.3 The Role of Salam in Promoting Islamic Agricultural Finance in Sudan

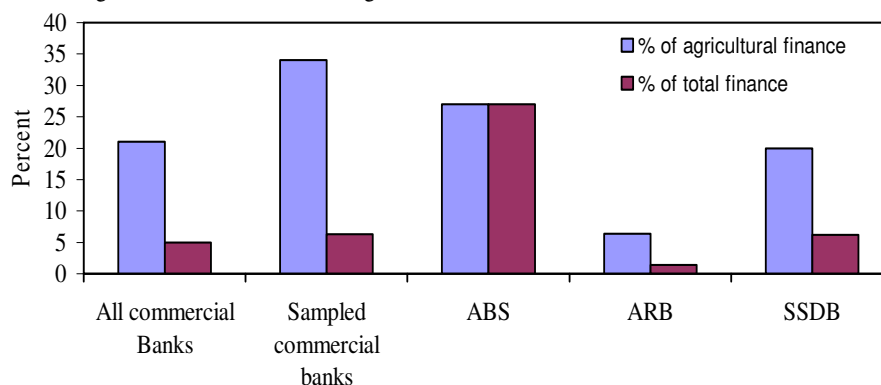
In connection with the above discussion on Islamic financial instruments, and due to its function in propagating Islamic agricultural finance in Sudan, this subsection gives special highlights on the experience of *Salam* and the reasons

for its popularity in the early 1990s and decline in recent years. By definition, *Salam* sale is applicable to the forward delivery sale of various types of commodities/crops and may be distinguished from *Istisna* in terms of the following main features. *Salam* involves upfront cash payments that can be freely utilized by the seller, and the cost of *Salam* finance is uncertain as it depends on the difference between contract price and the prevailing price at the time of delivery. On the other hand, *Istisna* provides asset-based or kind finance against future payment and on the basis of a mark-up or an agreed profit margin. Moreover, *Salam* contract, as opposed to *Istisna*, allows bankers to take security or guarantee of any kind, but disallows the imposition of penalty for late delivery (see e.g. Ahmed, 2003: 8-9).

However, in Sudan, *Salam* has been predominantly associated with agricultural finance. Immediately after the comprehensive adoption of Islamic principles of finance in 1990, *Salam* was almost the only available instrument of formal finance to agriculture especially by commercial banks and the Commercial Banks Consortium. In the period 1991-2001, various other methods were introduced, yet *Salam* was one of the two most important instruments (the other one was *Murabaha*). The following analysis and evaluation of *Salam* use by different financial institutions and the reasons for its earlier success and later decline are based on the information collected and discussed in various parts of this study.

The relative significance of *Salam* in agricultural and overall finance by commercial and specialized banks is summarized in Figure 4 below for the period 1993-2001, for which a breakdown of finance by mode is available. The share of *Salam* in agricultural and total finance was respectively 21% and 5% for all commercial banks, 34% and 6.3% for sampled commercial banks, 6.4% and 1.4% for the Animal Resource Bank (ARB) and 20% and 6.4% for the Sudanese Savings and Development Bank (SSDB). For the Agricultural Bank of Sudan, *Salam* accounted for 27% of total finance, which is limited to agriculture. However, for the reasons stressed below, the application of *Salam* declined considerably in irrigated agriculture since the beginning of the financial reform and liberalization program in 1997, but increased in rain-fed agriculture where the government still obliges specialized banks to provide finance. Prior to the start of this program, monetary policy used to directly or indirectly compel all commercial and specialized banks to finance agriculture.

Figure 4: The use of Salam in agricultural finance in Sudan, 1993-2001



The prominence of the *Salam* mode also stems from the fact that it is almost the only Islamic financial instrument for farmers to obtain the right amount of official cash finance, which they can use to cover various needs in the agricultural season. It also provides farmers with a market for their future crops and hence they may view *Salam* as a means of hedging against marketing uncertainties. As mentioned in Section 7.2, farmers sometimes complain of high *Salam* cost when harvest prices are considerably higher than contract prices and that *Band Al-Ihsan* was introduced for this purpose. This partly explains why the recent decline in the use of *Salam* in agriculture is attributable mainly to the supply side. In general bankers think that the risks and costs of *Salam* outweigh its benefits.

For bankers, *Salam* brings high returns only when the harvest season is just successful enough to ensure the capacity of farmers to deliver the quantities of crops agreed upon in advance while the prices are sufficiently greater than the contract prices. Over-production of crops may actually mean losses because it often causes harvest prices to be lower than contract prices and hence banks have to store crops until the market prices rise to a rewarding level. In addition to increased costs, this may raise liquidity problems for the banks. Banks also face this problem when farmers are not able to honor their promises of crop deliveries fully or partially because of a bad harvest season or any other reason. Difficulties in determining the correct *Salam* price may be particularly costly to banks in view of the fact that they are not compensated when harvest prices are lower than contract prices, while farmers may get compensation through the *Band Al-Ihsan* system when the opposite is true to a significant extent. Also difficulties in *Salam* pricing and management compound in relation to irrigated schemes because of various government policies concerning crop pricing and marketing (see Ahmed, 1998, for details).

Thus, banks confront a variety of risks in the application of *Salam* in Sudan. These risks can be summarized in mark-up or price risk, liquidity risk, operational risk due to the complex process of crop collection, storage and marketing, quality risk, and credit risk. The presence of these risks and costs together with the availability of alternative and relatively more rewarding financial instruments may well explain the declining trend of *Salam* role in agricultural finance in Sudan in recent years. This decline also coincided with the financial reform program that gradually allowed commercial banks to freely determine their policies regarding agricultural finance.

8. CONCLUSION AND RECOMMENDATIONS

The objective of this study is to examine the key challenges and opportunities for the development of a sound agricultural financial market in Sudan in the context of recent macroeconomic and financial liberalization and the full adoption of Islamic modes of finance that started in 1990. After discussing the issue of policy design in the light of international experiences, aggregate as well as bank level data was used to examine the external and internal factors affecting the structure and performance of formal financial institutions in relation to agriculture. The analysis started with the constraints relating to the macroeconomic environment, and then focused on the performance of a sample of commercial and specialized banks by evaluating their outreach and financial self-sustainability in the period 1991-2001. The institutional constraints and incentives as well as the merits and limitations of Islamic modes of finance as practiced in Sudan were also discussed with the help of a questionnaire completed by officials from sampled banks.

Both theoretical and empirical research indicates that Islamic financial instruments and institutions might offer efficient alternatives in rural and microfinance on a profit-and-loss sharing basis. For example, Islamic banks can use *Mudaraba* and *Murabaha* modes to finance the fixed and working capital needs of micro entrepreneurs and small farmers who cannot provide sufficient collateral to qualify for finance by conventional institutions. Meanwhile, close monitoring and better project selection criteria implied by the adoption of Islamic modes of finance may reduce problems of moral hazard. This together with profit and loss sharing can help to improve the profitability and self-sustainability of Islamic banks that offer microfinance.

In Sudan, following a decade of high economic instability, it seems that substantial progress has been made towards achieving the objectives of stabilization (in terms of inflation and exchange rate stability), while oil exploitation can offer a major boost to growth in Sudan. Yet, economic performance in the country will continue to be conditioned by agriculture, which is in turn dominated by rain-fed production. There is a strong need for increased agricultural finance and that private funding to agriculture cannot be

enough in the immediate future because of low profitability in irrigated schemes, whereas traditional agriculture lacks appropriate infrastructure (physical and institutional). Government investment in rural infrastructure is particularly important for the successful application of Islamic modes of finance that entail extended involvement of banks in the goods market. Attempts to use monetary and credit policy to force institutions to lend to agriculture are not, and cannot be, successful. Although it is early to judge the outcome of recent financial sector reform programs, there is no clear vision so far as to the development of a sound agricultural financial market. This makes the present study both timely and significant.

The evidence from Sudan suggests that achieving financial self-sustainability by commercial banks implies limited lending to agriculture because of risk and return considerations. The specialized banks that achieved financial viability did so by operating like commercial banks, and substantially limiting access to funds for farmers. On the other hand, despite huge government subsidies, state-controlled specialized banks fail both outreach and self-sustainability objectives. Direct state intervention in the activities of agricultural financial institutions frustrates the development of efficient operational structures, distorts incentives, allows manipulation of bank lending by influential groups and ultimately nurtures a culture of credit rights that discourages timely repayment.

The promotion of self-sustaining agricultural or rural financial institutions is a prerequisite for the development of a well-functioning agricultural financial market in the long run. In this connection, the present study argues for a radical reorientation in government role and policy concerning agricultural finance and draws the following main recommendations:

1. Government intervention in the agricultural financial market remains a necessity in view of absence of competent private institutions and the huge challenges facing agricultural finance. Financial and technical support from the government will be needed in the immediate future to lay down the foundations for a well functioning agricultural financial market. After formulating a phased plan for the development of this market, government and donor support should focus on the institutional development in the medium-term and later on promoting healthy competition (through regulation and supervision) in the rural financial market. More specifically, government and donor assistance may be more efficiently utilized in initiating or helping the setting up of new market-oriented and autonomous microfinance institutions. Indeed, in view of the failure of directed credit programs and the poor credit culture nurtured by government intervention in the operation of

specialized banks, creating new microfinance institutions that have clear corporate mission and set of objectives is perhaps the only choice for a country like Sudan. Where appropriate, in terms of population density and geographical constraints, we propose the establishment of microfinance banks that specialize in both agricultural and non-agricultural finance. The nature of these institutions and the way they may deal with the problems that the existing institutions face, have already been discussed in Section 2 with reference to the benchmark model of successful microfinance banks. Because of the geographical spread of the country, formal rural financial institutions should be decentralized. In this framework, local branches of microfinance banks should have more autonomy and operate in harmony with local stakeholders. In addition to adopting various modalities for reducing administrative costs and increasing financial viability, these institutions should base lending on the mobilization of savings that also serve as a precondition for access to funds by clients. Besides international experiences, the achievements of the SSDB as an autonomous rural financial institution in the 1980s should provide a strong stimulus for the government to embark on a serious rural finance reform program.

2. Alternatively, where fully-fledged banks are not feasible or less efficient, small farmers and enterprises should be organized along professional or geographical lines to form savings and credit institutions possibly in the form of Credit Unions and Cooperatives Societies (CUCS) that serve local farm and non-farm credit needs. This may be especially relevant to the case of the traditional rain-fed agriculture. The institutional and operational structures of such institutions as CUCS are discussed in Section 2. Potential borrowers have to contribute to the capital of these institutions and become part owners who will have a say on how they are managed. Government support is needed at the development stage in providing legal and institutional support, office facilities and other forms of seed capital. Also as the experience of successful credit unions and saving and credit cooperative societies implies government support in the form of training of personnel, accounting standards, auditing and so on, can be critical. A special office or a federation of these institutions may be set up for this purpose, and be empowered to operate as a special central bank that facilitates inter-organizational lending, credit insurance, provides training, international linkages and other services that foster their institutional development. A special supervisory and regulatory framework has to be created for these institutions to grow and compete on market basis. Like the case in some countries, CUCS can eventually expand and become fully-fledged microfinance banks or

even universal banks as the economy grows and the financial sector becomes more integrated. At the same time, the case for microfinance services does not imply the rejection or exclusion of other financial services. In reality, large-scale farmers and rich rural producers can always depend on modern banking services or a combination of traditional and modern credit facilities. Also to ease the resource constraint that often inhibits the expansion of CUCS, linkages between microfinance institutions and the rest of the financial system can be paramount.

3. Because of the important specific risks relating to the nature of agriculture on the one hand and the nature of Islamic modes of finance on the other, farm credit insurance, or insurance of the goods financed as explained previously, may be critical in stimulating formal agricultural finance.
4. On the policy side, crop policy, marketing and production relations in irrigated agriculture have to be reformed to make the schemes operate on sound commercial grounds. Should government support be required for social or strategic reasons, as it is the case in many countries, such support should not come through subsidized funds, but rather through other explicit means. Financial subsidies create distortions in incentives and frustrate the long run development of the financial market that should operate on market basis.
5. The focus of formal farm loans on irrigated agriculture is perhaps neither financially or economically justifiable. Rain-fed agriculture deserves greater attention since it provides nearly two-third of agricultural GDP and has a greater potential. It is worth cautioning that in the absence of detailed information on actual market conditions and form of contracts, the recommendations relating to traditional rain-fed agriculture are rather tentative.

As a general note, modernization of livestock and crop production and better marketing plus improved physical infrastructure will boost rural income and incentives to increase production. Formal finance can play a paramount role in the development and integration of agriculture. Meanwhile, as research²⁴ suggests establishing a futures market in agriculture may ultimately assist in the development of the rural financial market at a later stage. This may be particularly relevant to Islamic banks because many of the instruments used in agricultural and other types of finance involve the purchase and sale of commodities with deferred delivery.

²⁴ See Khan (1997) for a comprehensive theoretical analysis.

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Appendix 1: Data Format and Questionnaire
Table 1: Assessing outreach and sustainability (Million SD)

No.	Variable	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Investment in agriculture:											
1	<i>Salam</i>											
2	<i>Istisna</i>											
3	<i>Muzaraa</i>											
4	Leasing/ <i>Ijara</i>											
5	<i>Muqawala</i>											
6	<i>Mudaraba</i>											
7	Diminshing <i>Musharaka</i>											
8	<i>Musharaka</i>											
9	<i>Murabaha</i> lilalamir Bealshraa											
10	<i>Murabaha</i>											
11	Real estate											
12	Other investment in agriculture (specify) -----											

13	Total investment in agriculture: number											
	Amount:											
14	Total finance to irrigated schemes											
15	Total finance to rain-fed agriculture											
16	Investment in other sectors (e.g Manufacturing, trade . . etc.): Number :											
	Amount:											
17	Off-balance items											
18	Premises and fixed assets											
19	Equipment											
20	Total Assets											
21	Current Account deposits: number											
22	Amount											

23	Saving/investment deposits: Number											
24	Amount											
25	TOTAL DEPOSITS											
26	Grants (e.g from central bank)											
27	Concessionary loans (e.g. from central bank)											
28	Share capital											
29	Retained earnings											
Income Statement												
30	Income from investment in agriculture											
31	Income from investment in other sectors											
32	Income from grants, concessionary loans											
33	Income from other sources											
34	Tax concessions											
35	Total Revenue											
36	Staff expenses											
37	Total wages and salaries											
38	Depreciation											
39	Premises and office expenses											
40	Total Cost											
Other information												
41	Total distributed profit to depositors											
42	Provisions for losses (bad investment/loans)											
43	Write-off investment/loans											
44	Number of full time managerial staff											
	Number of full time general staff											
45	Number of bank branches											
	Number of bank branches in Capital											

Table 2: Financing of rain-fed agriculture

No.	Variable	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
	Investment in rain-fed agriculture:											
1	Salam											
2	<i>Istisna</i>											
3	<i>Muzaraa</i>											
4	Leasing/ <i>Ijara</i>											
5	<i>Mugawala</i>											
6	<i>Mudaraba</i>											
7	Diminshing <i>Musharaka</i>											
8	<i>Musharaka</i>											
9	<i>Murabaha</i> lilalamir Bealshraa											
10	<i>Murabaha</i>											
11	Other investment in rain-fed agriculture (specify) ----- -----											
12	Total investment in rain-fed agriculture: number :											
	Amount											

Questions: (When answering questions, please use extra sheets if necessary)

1. Sources of capital/ownership as at end of 2001. Please tick the appropriate box(es).
 - ☐ Government (%) -----
 - ☐ Private sources (%) -----
2. What do you think are the factors that constrain expansion in agricultural finance? Please rank your answers.
 - ☐ Lack of resources (from savings, grants and so on)
 - ☐ high cost and relatively low profitability of agricultural investment
 - ☐ Inadequate training of employees
 - ☐ Credit policies
3. How are the profit-sharing rates determined for depositors?
 - ☐ according to official directives/policies
 - ☐ by the bank itself
 - ☐ other (specify) -----
4. How are the profit-sharing rates determined for investors/borrowers?
 - ☐ according to official directives/policies
 - ☐ by the bank itself
 - ☐ other (specify) -----
5. For each of the modes of agricultural finance listed below, please indicate the key advantages and disadvantages of those employed by your bank. (Please explain your remarks).

Financing instrument	Advantage	Disadvantage
Salam		
Istisna		
M		
Leasing/Ijara		
Muqawala		
Mudaraba		
Diminshing Musharaka		
Musharaka		
Murabaha lilalamir Bealshraa		
Murabaha		

6. What do you think are the main risks associated with agricultural financet? Please rank your answers.
 - ☐ price changes (inflation)
 - ☐ non-repayment
 - ☐ marketing of produce (local and foreign)
 - ☐ changes in the price of crops financed
 - ☐ other (specify) -----

7. What do you think are the main mechanisms for dealing with the risks of agricultural finance's instruments? Please rank according to importance.

- ☐ screening of borrowers
- ☐ close monitoring
- ☐ credit rationing
- ☐ collateral and compensating balances
- ☐ other (specify)-----

8. Type of acceptable collateral:

- ☐ real estate
- ☐ movable property (e.g. animals)
- ☐ group (union) guarantee
- ☐ other (specify)-----

9. What do you think of group lending/guarantee as a means to reduce cost/risk? Please explain your response.

- ☐ Workable
- ☐ Not workable

Reasons:-----

----- Are those who take finance from you allowed to take finance from other sources?

- ☐ Yes
- ☐ No.
- ☐ Do not know

10. When do you classify a loan as a bad one?

- ☐ after 3 months of non-repayment
- ☐ after 6 months of non-repayment
- ☐ After-----

11. How do you deal with farmers who refuse to repay although they can afford to do so?

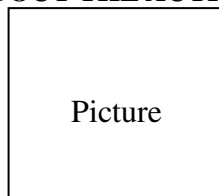
- ☐ confiscate collateral
- ☐ court action
- ☐ arbitration
- ☐ other (specify) -----

12. How do deal with losses occurring due to clear factors beyond farmers' control (e.g. drought)?

- ☐ losses are covered by government subsidies
- ☐ other sources -----

13. What type of legal problems do you encounter in the agricultural finance market? Please rank your answers.
- ☐ contracts are not covered by the law
 - ☐ legal procedures are too costly
 - ☐ other (specify) -----
14. Operational autonomy: how do you select potential clients (borrowers)?
- ☐ according to government directives (e.g. all farmers in irrigated schemes)
 - ☐ according to viability of individual applicant's enterprise
 - ☐ other (specify)-----
15. What are the basis for staff evaluation and accountability? Please rank your answers.
- ☐ volume of loans disbursed
 - ☐ profitability
 - ☐ other (specify) -----
16. Staff incentives are determined according to:
- ☐ a flat salary structure and promotion system
 - ☐ profit-related bonus incentive and promotion system
 - ☐ other criteria (specify) -----
17. Client incentives (reward for punctual repayment):
- ☐ reduced profit payment to banks
 - ☐ increased access to future loans
 - ☐ other (specify) -----
18. Are you always confident that farm loans are used for production and not for other purposes?
- ☐ Yes
 - ☐ No
19. What mechanisms (if any) do you have for monitoring the use of finance?
-
-
20. Any proposal for improving the efficiency (outreach and sustainability) of the market for agricultural finance in Sudan? (e.g. in terms of instruments, institutionaletc perspectives)
-
-

ABOUT THE AUTHOR



Adam B. Elhiraika

Year and Place of Birth: 1961, Muglad, Sudan

Education:

- B.A. (Honors) in Economics, University of Gezira, Sudan, 1985
- M.A. in Economics, University of Kent at Canterbury, U.K., 1989
- PhD in Economics, University of Glasgow, U.K., 1991 (Dissertation Title: Financial Development and Economic Growth in a Developing Country, Sudan, 1960-1988).

Work Experience:

- Formerly Associate Professor of economics at the United Arab Emirates University (UAE). Also taught at the University of Gezira (Sudan), University of Fort Hare (South Africa), and University of Swaziland (Kingdom of Swaziland).
- Served as Researcher/Consultant in several local and international projects in the areas of monetary and financial policy and development financing.

Publications:

- Published in international refereed journals including: The Journal of Development Studies, Development Policy Review, The Middle East Business and Economic Review, The Journal of Agricultural Economics, Canadian Journal of Development Studies, Savings & Development, IIUM Journal of Economics and Management, Eastern Africa Social Science Research Review and The Journal of Administrative Sciences (KSU).
- Contributed articles to several monograph series, policy studies and reports.

Conferences/Seminars:

Attended and contributed research papers in several local, regional and international conferences/seminars on economic policy issues and finance.

Present Position: Economist, Islamic Research & Training Institute, Islamic Development Bank.

Email: aelhiraika@isdb.org

ISLAMIC DEVELOPMENT BANK
ISLAMIC RESEARCH AND TRAINING INSTITUTE
P.O. Box 9201, Jeddah 21413, Kingdom of Saudi Arabia
Cable Address: BANKISLAMI-Jeddah Telephone: 6361400
Telex: 601137/601945 Facsimile: 6378927/6366871
E. Mail: ibfd@isdb.org Home Page: <http://www.irti.org>

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