

**MAKING THE TRANSITION FROM STATE AGRICULTURAL  
CREDIT INSTITUTION TO RURAL FINANCIAL INTERMEDIARY:  
ROLE OF THE STATE AND REFORM OPTIONS**

by  
Jacob Yaron  
and  
Stephanie Charitonenko  
of the  
World Bank

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## **I. INTRODUCTION: RATIONALE FOR STATE AGRICULTURAL CREDIT INSTITUTIONS**

1. The establishment of state agricultural credit institutions (SACIs) has been a hallmark of efforts to promote agricultural production and facilitate overall economic development over the last 40 years. The performance of most of these institutions; however, has fallen short of expectations, despite good intentions and continued, substantial public financial support. The main reason why most SACIs have been poor performers can be traced back to the assumptions on which their rationale, design, and implementation were based. Over time, the assumptions of the “traditional” approach to agricultural credit provision have increasingly become discredited and experience is supporting their replacement by a “new” approach which governments and the development community are progressively adopting to finance rural development.

### **A. Traditional Assumptions**

2. The traditional approach attempted to stimulate income growth and poverty reduction by providing competition for moneylenders and compensating farmers for low, controlled prices on agricultural goods as well as other urban-biased policies. Based on production needs and equity grounds, most agricultural credit programs under the traditional approach established state-owned, specialized agricultural banks that received concessional funds to be on-lent at below-market interest rates to targeted farmers for specific types of agricultural investments. Performance of these institutions has been principally assessed by the volume of loans disbursed and its assumed positive relationship with the level of agricultural production.

3. Supply-led credit provision under the traditional approach generally resulted in high levels of credit disbursement and alleged gains in agricultural production; however, these effects have been short-lived due to increasing program unsustainability. The strong emphasis on disbursement tended to neglect other concerns, including portfolio quality, non-farm rural development, savings mobilization, and the efficiency of markets for real goods and of financial markets. Repayment rates often fell well below 50 percent, costs of subsidies ballooned, and the credit often failed to reach the intended beneficiaries. Since the traditional approach primarily treated the symptoms of inefficient rural financial markets (lack of access to financial services) rather than the causes (high transaction costs resulting from asymmetric information, high covariance risk and seasonality in demand for financial services, and adverse economic and financial policies), a new approach which addresses the sources of rural financial market inefficiency has emerged to sustainably increase incomes and alleviate poverty.

4. With these goals, the field of microfinance developed rapidly during the last decade. It seeks to create the means to sustainably provide financial services to low income rural entrepreneurs. As more is learned about microfinance design and implementation, increasing numbers of institutions are entering the field, and leading institutions are defining the principles of the new approach. Some institutions, such as the Bank Rakyat Indonesia’s *Unit Desa* (Village Unit) System (BRI-UD), have

consistently achieved exceptionally high repayment rates of over 95%, reduced or eliminated their dependence on subsidy, and sustainably served rural, low-income clients. There is a growing consensus that once the start-up costs have been incurred, financial services can be effectively sold to the working poor without continued subsidy under certain conditions that allow the financial intermediary to become self-sustainable (Bennett and Cuevas, 1996). These conditions and other elements of the new approach are described further below.

## **B. The New Approach**

5. The new approach to rural finance emphasizes the role of efficient rural financial intermediation in sustainable income generation and poverty reduction. Where there is depressed growth, the new approach calls for an assessment of the efficiency of markets, including rural financial markets, and a determination of the underlying causes of inefficiencies. Various obstacles prevent financial markets in general, and rural financial markets in particular, from operating efficiently. Rural financial intermediation faces several challenges which are broadly related to: (a) systemic weaknesses of rural financial markets; (b) urban-biased policies; and (c) poorly designed interventions.

6. Many of the systemic weaknesses of rural financial markets stem from the promissory nature of financial contracts. Because of the time dimension of financial contracts, financial intermediaries and their clients require affordable and reliable information to determine the riskiness of transactions, a reasonably stable political and economic environment in which to extend contract maturities, freedom to price perceived risks appropriately, and the ability to exercise remedies when contractual terms are not honored. These conditions are rarely met. The main problems include:

- *The macroeconomic environment.* Unsound macroeconomic policies adversely affect the performance of financial markets, and negative external shocks can aggravate the situation.
- *The sectoral policy context.* Government price controls, trade policy, and public investment priorities frequently distort the allocation of resources by financial intermediaries.
- *Financial market constraints.* Financial market rigidities, imperfect information, and in some instances, social barriers to financial transactions preclude an optimal allocation of resources.
- *Legal and regulatory constraints.* Problems with contract enforcement increase uncertainty and reduce the expected returns to creditors. Increases in transaction costs due to legal and regulatory constraints reduce the demand for and supply of loan and deposit services.

7. In addition, poverty, low population density, isolated markets, high covariance risk, small-scale transactions, and seasonality often result in high transaction costs, lack of traditional collateral, high income fluctuations, and limited opportunities for risk diversification. These features distinguish rural financial markets from urban ones and often deter traditional private financial institutions from entering the rural market.

However, these challenges also underscore the benefits the rural poor would gain from access to efficient consumption-smoothing contracts and financial services that could help them out of poverty.

8. Economic development plans have historically been characterized by policies that were implemented in pursuit of accelerated industrial development. The following “eight pillars” of urban-biased policies have often hampered the development of rural communities and the promotion of rural financial markets (Table 1).

**Table 1: The Eight Pillars of Urban-Biased Policies**

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1. Overvalued exchange rates.
  2. Low, controlled, and seasonally invariant prices of agricultural products.
  3. High effective rates of protection for domestic industry, the outputs of which are used as agricultural inputs.
  4. Disproportionately high budgetary allocations for urban, rather than rural infrastructure (roads, electricity, and water supply.)
  5. Disproportionately high investment in human resources in urban, rather than rural areas (health and education.)
  6. Usury laws that rule out the formalization of the small, risky, and high-cost loans typical in rural areas.
  7. Underdeveloped legal and regulatory provisions regarding land titling and collateral for typical rural assets (land, crops, and farm implements) relative to urban assets (cars, homes, and other durables.)
  8. Excessive taxes on agricultural exports.
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*Source: Yaron, Benjamin, and Piprek (1997).*

9. Well-intended, direct rural financial interventions, such as subsidized credit targeted exclusively to agricultural production, have also generally impeded the development of rural financial markets. As a result, farm and off-farm micro and small-scale entrepreneurs still have inadequate access to credit, savings, and insurance services.

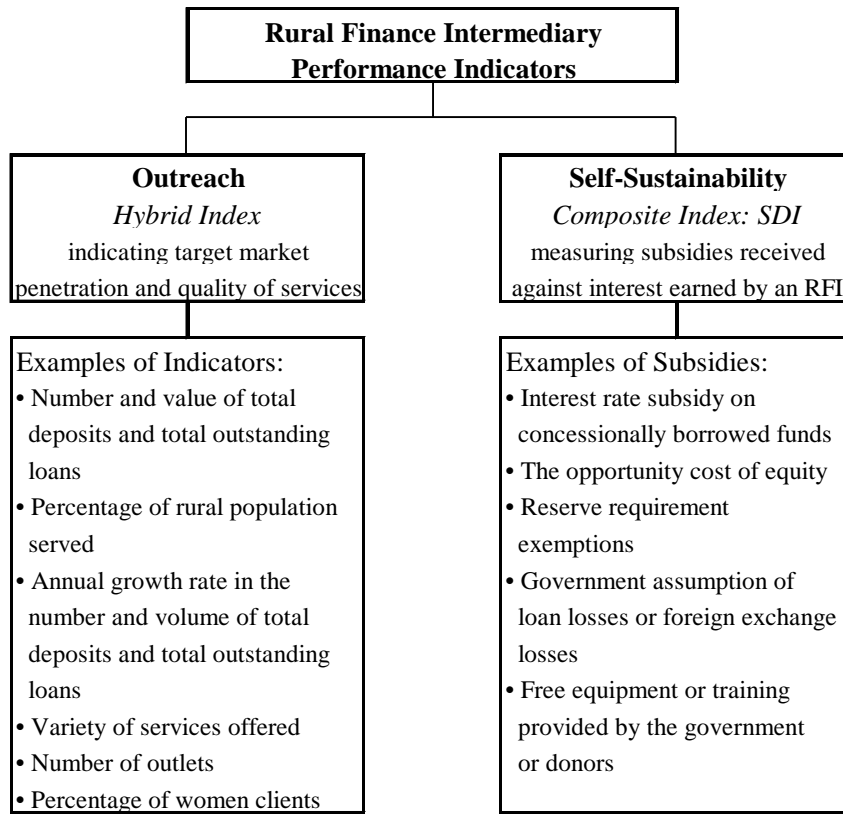
## **II. GENERAL PERFORMANCE EXPERIENCE**

### **A. Conventional Criteria**

10. There can be many measures of success in rural financial intermediation. Traditional financial ratio analysis can be used to gauge the success of financial intermediaries operating without substantial subsidy in developed economies. However, differences in accounting standards and operating procedures of rural finance intermediaries (RFIs) operating in developing economies make the meaningful use of traditional financial ratios difficult or impossible. Therefore, some adaptations of the ratios have been made to focus on the real financial cost of continued operations,

particularly when subsidies to the RFI concerned constitute common practice. A new framework for assessing the performance of RFIs (Yaron, 1992) has gained wide acceptance among academics and practitioners. The framework proposes two primary criteria, outreach and self-sustainability (Figure 1). Although neither addresses the effects financial intermediation has on the borrower's well-being, these criteria indicate the efficiency of financial intermediation carried out by institutions. They should be examined jointly since only by achieving a high degree of self-sustainability have rural microfinance intermediaries gained access to the funding that enables them over time to serve significant numbers of low-income clients (Rhyne, 1998).

**Figure 1: Rural Finance Intermediary Performance Indicators**



Source: Adapted from Yaron, Benjamin, and Piprek (1997).

## B. Key Performance Indicators

### i. Outreach

11. Outreach is a measure of an RFI's level of service to its clientele - generally the rural poor. Some indicators of outreach are: (a) the value of their outstanding loan portfolio and the average value of loans extended; (b) the amount of saving and the average value of savings accounts; (c) the variety of financial services offered; (d) the number of branches and village posts or units; (e) the percentage of the total rural population served; (f) the annual growth of assets in real terms; and (g) the percentage of

clients who are women (Yaron, Benjamin, and Piprek, 1997). The rate of change in an RFI's loan portfolio, average annual assets, and branches over time is important because it demonstrates increases or decreases in outreach. The growth rate of an RFI's assets might also serve as a rough approximation of new clients' access to the financial services offered. If the average loan size is relatively stable, and if the inflation adjusted value of the average annual outstanding loan portfolio or total deposits are increasing over time, it indicates growth in outreach as new clients have joined the system.

## **ii. Financial Self-Sustainability**

12. Financial self-sustainability addresses the ability of an RFI to continue operations without subsidization. It is achieved when the return on equity, net of subsidies received, equals or exceeds the opportunity cost of the equity funds. Some of the most common subsidies have included: (a) interest rate differences between the risk-adjusted market rate and the rates paid on concessionally borrowed funds; (b) foreign exchange losses on foreign currency-denominated loans that are not assumed by the RFI but rather by the state; (c) obligatory deposits by other financial intermediaries or by public institutions in the RFI at below market interest rates; (d) direct reimbursement by the state or other donor of some or all of the operating costs incurred by a RFI; (e) exemptions from reserve requirements or from mandatory investments; and (f) a direct financial transfer (Yaron, Benjamin, and Piprek, 1997). A dynamic approach is required to assess an RFI's progress in increasing its self-sustainability in light of all the forms subsidization can take over time.

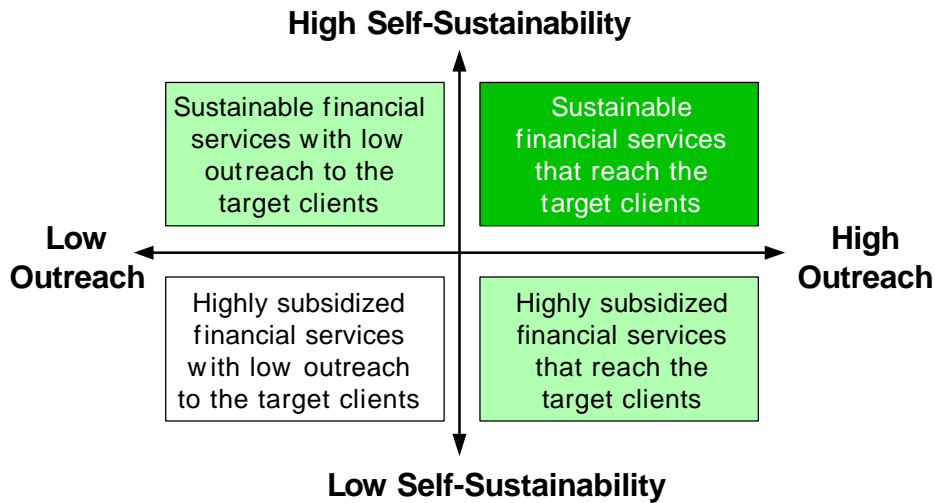
13. The Subsidy Dependence Index (SDI) is a composite measure of a rural finance intermediary's financial performance. Since it accounts for the subsidies received by an RFI, and shifts the focus away from traditional profitability ratios, the SDI provides a more appropriate measure for the performance assessment of a RFI than do standard financial performance indicators aimed at for-profit financial intermediaries. Since subsidy dependence is the inverse of financial self-sustainability, the SDI is particularly instrumental in: (a) quantifying the aggregate value of (explicit and implicit) subsidies received annually by the RFI; (b) tracking the progress made by an RFI in reducing its subsidy dependence over time; (c) comparing the level of subsidy dependence of RFIs providing similar services to similar clientele; and (d) providing the notion of "matching grants" in the sense that the value of subsidy received from society is measured against the total interest earned from its clients. The SDI should be used to monitor progress toward subsidy independence.

14. Formally, the SDI is the ratio of the net subsidy received by a financial intermediary over the interest income earned on its loan portfolio (Annex 1). This indicator measures the percentage increase in the RFI's average on-lending interest rate required to compensate for the elimination of subsidies. The index assumes, for simplicity in measurement and comparison, that an increase in the on-lending rate is the only change made to compensate for the loss of subsidy. Assuming a fixed loan portfolio and other things remaining constant, if an RFI with a positive SDI were to raise its

interest rate by a factor given by the SDI, the RFI would no longer be dependent on subsidies.

14. The two primary assessment criteria, outreach and financial self-sustainability, can be represented on two axes (Figure 2). Some theorists argue that there may be a trade-off between them, but many operational policies and procedures that improve one also promote the other. Improvement in the overall performance of a rural microfinance intermediary requires improvement in at least one criterion, while performance in the other is maintained.

**Figure 2: Optimizing Performance**



*Source: Ramola and Mahajan (1996).*

### III. OPTIONS FOR SACIS

15. There are essentially three options with which to address the problem of poorly performing SACIs: (a) liquidation; (b) privatization; or (c) restructuring and reform. The decision to pursue one of the three paths is driven by: (a) the extent to which the policy and regulatory environment is enabling to RFIs; (b) the profitability of the RFI as well as the profitability of the real sectors served by the institution; and (c) the social setting within which the RFI operates and its own institutional culture. Since the most decision is so context-specific, no blueprints are available to be widely applied with success.

### IV. COMPARISON AND CONTRAST OF REFORM EXPERIENCES

16. In Bolivia and Peru, the reaction to consistently poor performance by their respective SACIs was to liquidate them. In Indonesia and Thailand; however quite different approaches were taken. In Indonesia, the challenge was to transform 3,600

state-owned, rural branches acting as disbursement centers for subsidized agricultural credit into financially self-sustaining, microfinancial intermediaries. The Bank Rakyat Indonesia's Village Unit system was radically restructured and the reforms allowed the system to achieve high outreach and profitability within a couple of years. In the case of the Bank for Agriculture and Agricultural Cooperatives, incremental reforms in the bank's operational policies and procedures have allowed the bank to become internationally recognized as one of the few sector-specialized, state owned rural microfinance institutions which has demonstrated a notable degree of success in carrying out its mandate without need for substantial government subsidies. Further details on the reform processes of these Asian institutions is provided below.

#### **A. Bank Rakyat Indonesia's Village Units (BRI-UD)**

18. The Village Units of the Bank Rakyat Indonesia (BRI-UD) had their start in 1970 when the government of Indonesia began the BIMAS (*Bimbingan Massal*, or Mass Guidance) credit program as part of broader efforts to gain national self-sufficiency in rice production. At the peak of village unit establishment in 1984, BRI set up over 3,600 units with almost 14,000 staff at the sub-district level or below, effectively covering the country. BRI-UD disbursed BIMAS loans at subsidized interest rates to participating farmers selected by Department of Agriculture extension workers for participation in the BIMAS program. Most funds for BIMAS lending came from the Government of Indonesia at subsidized rates of interest. As BRI-UD grew in terms of the number of units and personnel, so did their lending activities. In addition to being a conduit for concessional BIMAS credit, BRI-UD was assigned in 1974 to administer two other loan products at subsidized interest rates for rural enterprises other than the agricultural production already covered by the BIMAS credit program. In 1976, the Units were also asked to mobilize deposits by participating in the national savings program. Some deposits were obtained, however, since the Government set the interest rate on the deposit accounts higher than the BRI-UD's lending interest rate, there existed a strong disincentive to mobilize deposit funds.

19. The BIMAS program, in general, was extremely successful in accomplishing the goal of achieving national self-sufficiency in rice production. The BIMAS credit program, however, by 1983 had run its course and the Government abruptly decided to discontinue it. The main reasons for this stems from the fact that the borrowing and lending interest rate spread were set too low to cover the total costs of the program and the Government ended up paying BRI for the operating losses incurred by BRI-UD. Also, normal banking procedures at BRI-UD were ignored, for example, collection efforts were sporadic and often ineffectual. Not surprisingly, BRI-UD incurred losses in all but one year from 1970 through 1984, and default rates on BIMAS credits rose to over 50% in the early 1980s. Instead of abandoning the high investment in human capital and physical infrastructure present in BRI-UD; however, the government decided to transform the system into a commercially-viable rural microfinance intermediary which would not require subsidy beyond a two-year transformation period.

20. In 1983, the Government significantly deregulated Indonesia's banking sector, removing quantitative controls, and permitting the banks to set their own interest rates on

virtually all loan and deposit products. In 1984, a single loan product and several deposit products tailored to the specific needs of rural savers were offered through BRI-UD. The loan product was designed with terms that would allow the BRI-UD to break even within two years. Assuming a conservative loan loss amount, and holding the interest rates paid on deposits and staff costs constant, the interest rate on BRI-UD's loan product was set high enough (increased from 15 percent to 32 percent in nominal terms) to provide a spread sufficient to cover all operating costs.

21. In addition to the introduction of the loan product, BRI-UD introduced deposit products tailored to meet the saving demands of the rural populace. As opposed to the loan product, BRI-UD's deposit products were developed gradually, after several survey results indicated the existence of the rural client demand for saving services. Before the deposit products were offered nationwide through the Units, they underwent several refinements during and after field tests and pilot projects. The rapid growth in the BRI Village Unit voluntary deposits instruments provides strong evidence to support the major research finding that savers value safe, liquid funds over return on those funds. The interest rates paid on consumer deposits vary by the average monthly amount deposited and by the liquidity of the account, and although the interest generally paid on deposits is very low, various lotteries associated with some account types provide an incentive to deposit funds with BRI-UD.

22. Although BRI-UD has made some adaptations in its products and services since 1984, the system operates today much like it was transformed in 1984. It is a "strategic business unit" of the Bank Rakyat Indonesia, which operates as a separate profit center within BRI. The purpose of the Units is to provide access to credit and savings services to people with low incomes without the need for government or donor subsidies, as a commercially viable bank. From 1984 through 1996, approximately 18.5 million loans were made from the 3,512 Units. For 1996, profits amounted to over \$170 million. As of the end of 1996, there were 2.5 million loans outstanding, valued at \$1.7 billion. The average loan and deposit sizes for 1996 were \$1,007 and \$184, respectively. The long-term loan loss ratio was 2.2 percent. Deposits increased from \$26 million in 1983 to \$3.0 billion by December 1996 in 16.2 million accounts. The Units have maintained a steady savings-to-loan ratio which was 174 percent as of the end of 1996. The Unit system is fully self-sustaining without subsidy. Furthermore, the system has achieved extremely high profitability that, in the absence of subsidies, has translated into a very highly negative subsidy dependence - in a class by itself among micro or rural financial intermediaries. A summary of attributes of BRI-UD before and after its radical, abrupt transformation is provided in Table 2.

**Table 2: Factors that Explain the Demise of BIMAS and the Success of BRI-UD**

Attribute	BIMAS Credit Program <sup>1</sup> 1970-84	BRI-UD 1984-present
Institutional objective	Disbursement conduit for subsidized credit	Profit-making, full-service rural bank
Financial autonomy	BIMAS windows in BRI branches, with accounts subsumed in BRI branches' financial statements	Distinct profit or loss centers, with separate financial accounting
Operational autonomy	Limited—borrowers chosen in practice by extension workers of the Ministry of Agriculture, which certified BIMAS participants	Full—borrowers selected on the basis of the financial viability of their farm or off-farm enterprise
Staff evaluation and accountability	Primarily based on the volume of disbursements or on hectares covered	Primarily based on the profitability of individual BRI-UD units
Staff incentives	Civil service-like flat salary structure, promotions	Profit-related bonus incentives, promotions
Target market	Rice farmers	Any income-generating enterprises
Client incentives	Timely payment incentive: effectively none	Timely payment incentive: substantial interest rebate, larger follow-on loans
	Penalty for delinquency: curtailment of further loans, although not well enforced	Penalty for delinquency: curtailment of further loans; incentives well monitored and enforced
Interest rates	12% (subsidized); below both the inflation rate and the interest rate paid on small savings deposits	Around 30% (not subsidized); well above both the (pre-crisis) inflation rate and the interest rates paid on small savings deposits
Main sources of funds	Concessional lines of credit, plus grants	Client deposits at market rates of interest
Dealing with losses	Soft budget constraint: operating losses covered by government	Hard budget constraint: loss-making operations suspended
The bottom line	Heavy losses and subsidy dependence	Exceptionally high profitability and self-sustainability since 1987

Source: Yaron, Benjamin, and Charitonenko (1998).

## B. The Bank for Agriculture and Agricultural Cooperatives

23. The Bank for Agriculture and Agriculture Cooperatives (BAAC) is a specialized government-owned agricultural bank. The Ministry of Finance holds 99 percent of paid-up capital. Established in 1966 by an Act of Parliament, BAAC replaced the former

<sup>1</sup> BIMAS is the acronym for the *Bimbingan Massal* (Mass Guidance) credit program that was part of Indonesia's broader efforts to gain national self-sufficiency in rice production in the early 1970s.

Bank for Cooperatives which suffered from poor outreach and loan repayment. BAAC's mandate was, simply, to do significantly better with respect to lending exclusively to the agricultural sector.

24. Rural credit policies initiated in Thailand in 1975 required commercial banks to lend to rural areas. In the early years, 5 percent of commercial banks' loans outstanding of the previous year had to be lent in rural areas; since 1987, 20 percent of their portfolios must go to rural areas: 14 percent to agriculture and 6 percent to non-agriculture. The commercial banks could either lend to farmers directly or they could deposit with BAAC any portion of the quota that they do not lend directly. Although these policies likely taxed the economy generally and the financial sector in particular, commercial bank deposits that came to BAAC as a result of these policies were a major source of BAAC's initial funds and significantly expanded its ability to provide loans to large numbers of farmers. This policy also reduced BAAC's cost of funds relative to the cost of mobilizing financial resources in the financial markets.

25. Within the framework of financial liberalization, the Bank of Thailand (BoT) eliminated interest rate ceilings on commercial bank deposits in June 1989. All interest rate ceilings were lifted in 1992; restrictions on banks' opening new branches were gradually removed; and the scope of agricultural credit quotas was broadened to include all types of rural credit. Nevertheless, some priority sectors, including agriculture, still enjoy preferential interest rates for political reasons. BAAC maintains a 3.5 percent per annum special credit accommodation with BoT under guarantee from the Ministry of Finance, accounting for a very small and declining share of BAAC's total liabilities and equity.

26. BAAC's dynamism over the last ten years has matched that of the Thai economy. BAAC has supported its rapid growth with careful strategic planning. The organizational structure has been articulated and expanded. Recruiting and training its large and growing staff has consistently been a high priority. Over time, BAAC has introduced a series of new products that are tailored to low-income farmers. It has aggressively pursued deposit-generating activities, including innovative savings instruments.

27. Most staff are employed in regional and district offices, thereby facilitating BAAC's unprecedented client orientation and outreach. In 1995, total staff numbered 12,812 people, 1,527 employees in the head and regional offices and 11,285 in 494 provincial and 847 district offices. Future plans envision more field staff with fewer people in the central office, especially when BAAC's operations go on-line via satellite.

28. BAAC's main objective is to deliver financial services to low-income farmers, and its performance in this regard has been spectacular over the past five years. Net loan amounts have grown more than four-fold from 31 million Baht in 1989 to 134 million Baht in 1995. BAAC's customer base has grown from 2.81 million households in 1989 to 4.66 million households in 1995, an increase of 1.8 million families. BAAC claims to currently serve about 80 percent of Thailand's 5.6 million farm families, a share that is unprecedented in the developing world. This very high penetration rate reflects BAAC's phenomenal success in establishing itself nationally as the farmer's bank. It also points

to a critical dilemma BAAC now faces, namely, that there is little room for market expansion if lending continues to be restricted by law to the agricultural sector.

## **V. CONCLUSION: LESSONS LEARNED AND IMPLICATIONS FOR LATIN AMERICAN SACIs**

29. Over the last 40 years of experience with SACIs, the support for the assumptions underlying the “traditional” approach has gradually withered under the weight of continued state financial support for poorly performing SACIs. Governments and the development community have progressively been adopting a “new” approach to financing rural development. The role of the state has gradually been converted from the simplistic function of compensating farmers for urban-biased policies by providing directed, subsidized credit to the more complex, holistic responsibilities of: (a) establishing an enabling environment for the development of rural financial markets, including the adoption of sound macroeconomic and sectoral policies as well as adequately providing physical and institutional infrastructure, and human services; and (b) providing a legal and regulatory framework which clearly defines property rights, effectively enforces the rule of law, and adequately regulates and supervises financial intermediaries.

30. Many of the tenets of the “new” approach, which stem from the blossoming of microfinance field have direct implications for poorly performing SACIs. Although much of the attention of the government and development community has been turned to microfinance and the promotion of NGOs and cooperatives, the vast majority of state financial resources in developing countries continues to be allocated to keeping troubled SACIs from going under. The usual high public investment in infrastructure and human resources of SACIs merits the attention of the government and development community to deal effectively with the existing SACIs, rather than to create new institutions. Estimation of the real costs of keeping SACI afloat is key and the SDI is a useful tool to facilitate such estimation. Decisions on the treatment of poorly performing SACIs need to take into account: (a) the extent to which the policy and regulatory environment is enabling to RFIs; (b) the profitability of the RFI as well as the profitability of the real sectors served by the institution; and (c) the social setting within which the RFI operates and its own institutional culture.

## ANNEX 1: CALCULATING THE SUBSIDY DEPENDENCE INDEX

To calculate the Subsidy Dependence Index (SDI) for a rural finance intermediary (RFI), all the subsidies received by the RFI must be aggregated. Total subsidies are then compared to the RFI's average on-lending rate multiplied by its average annual loan portfolio. The ratio of an RFI's annual subsidies to its annual interest income indicates the percentage by which the RFI's interest income would have to increase in order to eliminate the need for subsidy. The SDI can be expressed as follows:

$$\begin{aligned} \text{SDI} &= \text{Annual net subsidies received (S)} / \text{Average annual interest income (LP * i)} \\ &= (A (m - c) + [(E * m) - P] + K) / (LP * i) \end{aligned}$$

Where:

A = Average annual outstanding concessionally-borrowed funds;

m = Interest rate the RFI is assumed to pay for borrowed funds if access to concessionally borrowed funds were eliminated. This is generally the market reference deposit interest rate, adjusted for reserve requirements and the administrative cost associated with mobilizing and servicing deposits;

c = Weighted average annual concessional interest rate actually paid by the RFI on its average annual outstanding concessionally borrowed funds;

E = average annual equity;

P = Reported annual profit before tax (adjusted for appropriate loan loss provisions and inflation);

K = The sum of all other annual subsidies received by the RFI (such as partial or complete coverage of the RFI's operating costs by the state or other donor);

LP = Average annual outstanding loan portfolio of the MFI;

i = Average annual yield attained on the RFI's loan portfolio; and

= Annual interest earned / Average annual loan portfolio.

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Source: Adapted from Yaron (1992).